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# DOPSoft User Manual

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# DOPSoft User Manual

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# 1

## Welcome to DOPSoft

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This chapter introduces the user-friendly features and operating environment of DOPSoft, and the list of supported models.

1.1	Features of DOPSoft .....	1-2
1.2	Operating environment.....	1-2
1.3	List of supported models.....	1-3

## 1.1 Features of DOPSoft

DOPSoft software supports editing the DOP-100 series HMI screens. This version provides more advanced and handy functions as follows:

- (1) User-friendly programming interface
- (2) Versatile 3D image library
- (3) Delicate elements
- (4) Smoother display for Meter and other elements
- (5) Faster software download speed
- (6) Powerful search function
- (7) Improved readability for the output results after compilation

## 1.2 Operating environment

Hardware / software	Specifications
PC	Pentium 4, 1.6 GHz or above
Memory	2 GB or above
Hard drive	400 MB or above
Display	Full-color display with the resolution of 1024x768 or higher
Printer	Printers compatible with Windows 10
Operating system	Windows 10

## 1.3 List of supported models

Series	Model number	Note
DOP-100 series	DOP-103BQ	You can open the DOP-B and DOP-W series projects on the DOP-100 series models, and the software converts them into DOP-100 series projects.
	DOP-103WQ	
	DOP-105CQ	
	DOP-107BV	
	DOP-107CV	
	DOP-107DV	
	DOP-107EG	
	DOP-107EV	
	DOP-107IV	
	DOP-107WV	
	DOP-108IG	
	DOP-110CG	
	DOP-110CS	
	DOP-110IS	
DOP-107H series	DOP-110WS	
	DOP-112MX	
	DOP-112WX	
	DOP-115MX	
	DOP-115WX	
DOP-107H series	DOP-107HE42	You can open the DOP-H series projects on the DOP-107H series models, and the software converts them into DOP-107H series projects.
	DOP-107HE46	
	DOP-107HE47	
	DOP-107HS42	
	DOP-107HS46	

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# Installation and General Operation

# 2

This chapter covers the information about how to install the software, use the general function bars in the software window, create a project, select a controller, edit screens, and download the screens to the HMI.

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## 2.1 How to install DOPSoft

You can install the DOPSoft on Windows 7 and Windows 10 operating systems. The following section introduces the methods of installing the software on Windows 7 and Windows 10.

To download the DOPSoft, go to Delta's website at

[https://downloadcenter.deltawww.com/en-US/DownloadCenter?v=1&CID=06&itemID=060302&downloadID=DOP-100&sort\\_expr=cdate&sort\\_dir=DESC](https://downloadcenter.deltawww.com/en-US/DownloadCenter?v=1&CID=06&itemID=060302&downloadID=DOP-100&sort_expr=cdate&sort_dir=DESC).

### 2.1.1 Install DOPSoft on Windows 7 operating system

After downloading the DOPSoft software at Delta's website, you can start your PC and enter the Windows 7 operating system. Before executing the DOPSoft, go to [Control Panel] > [User Accounts and Family Safety] > [User Accounts] > [Change User Account Control settings] and set **Never notify** for the account level, as shown in Figure 2.1.1.1 and 2.1.1.2.



Figure 2.1.1.1 Change User Account Control settings on Windows 7

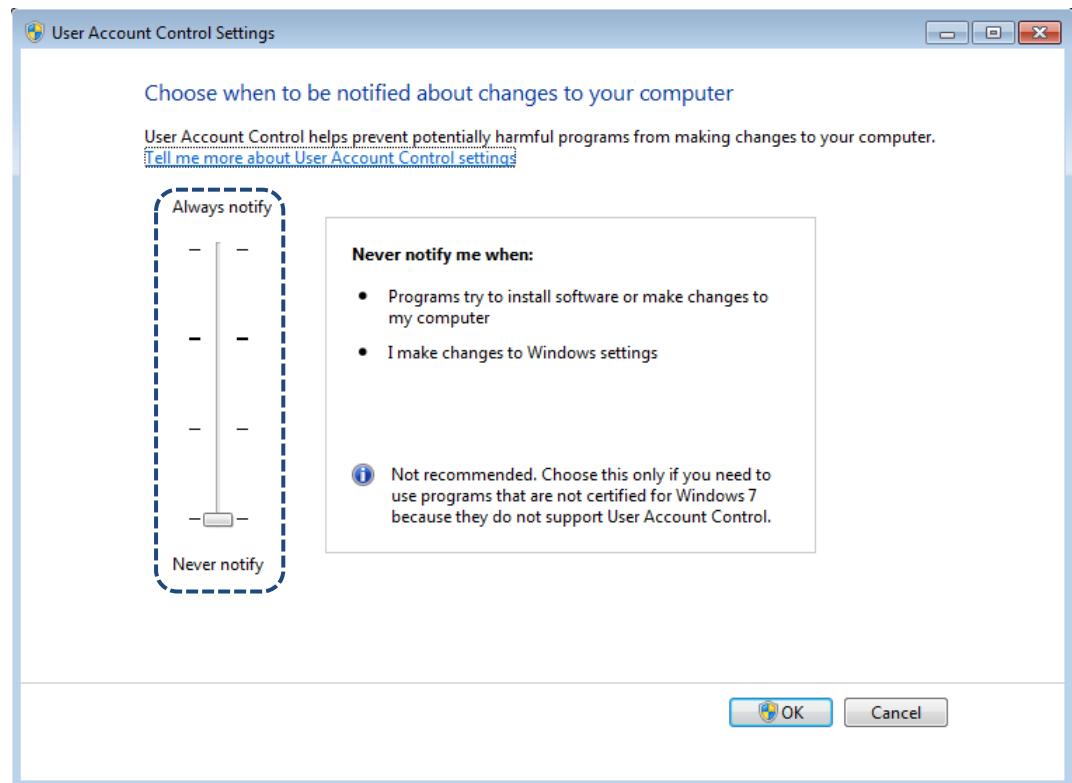


Figure 2.1.1.2 Select Never notify for the User Account Control settings on Windows 7

After completing the User Account Control settings, execute the DOPsoft and follow the installation instructions:

- Select the Installer Language. There are four languages available, Traditional Chinese, Simplified Chinese, English, and Turkish. After selecting the language, click **OK**.

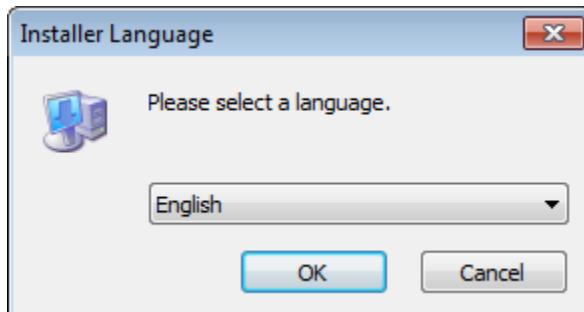


Figure 2.1.1.3 Installer Language on Windows 7

- Click **Browse** to select the installation location for the software; to use the default location, click **Next**.

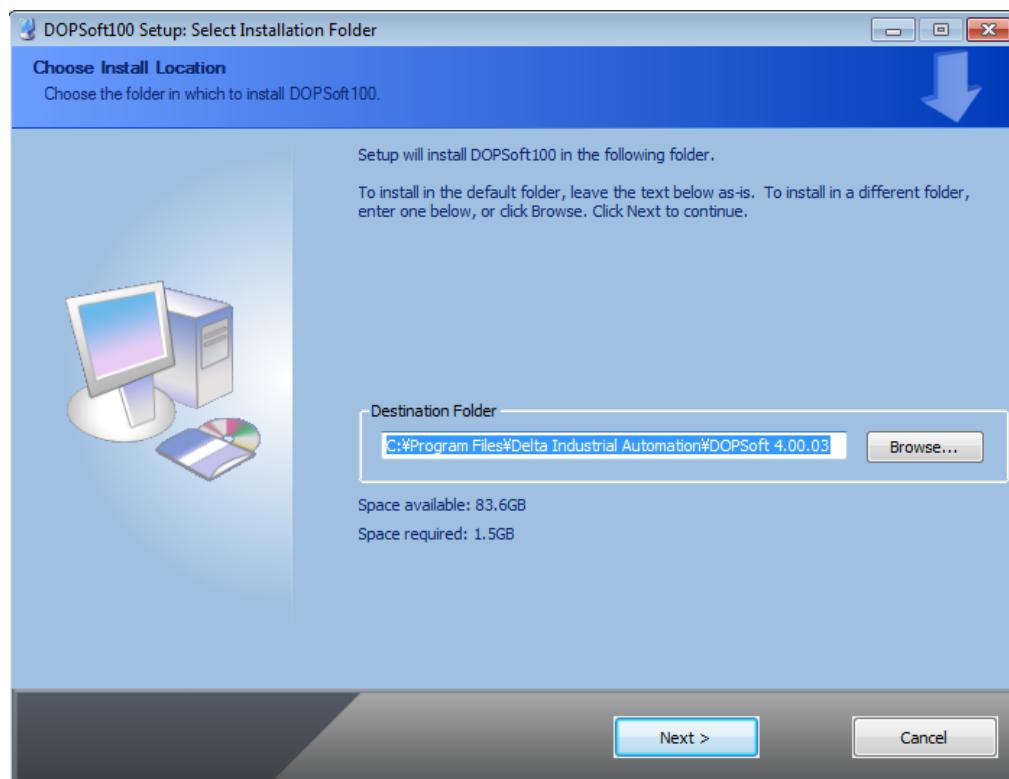


Figure 2.1.1.4 Choose Installation Location on Windows 7

- Make sure you have selected the DOPSoft100 component, as shown in Figure 2.1.1.5, and click **Install**.

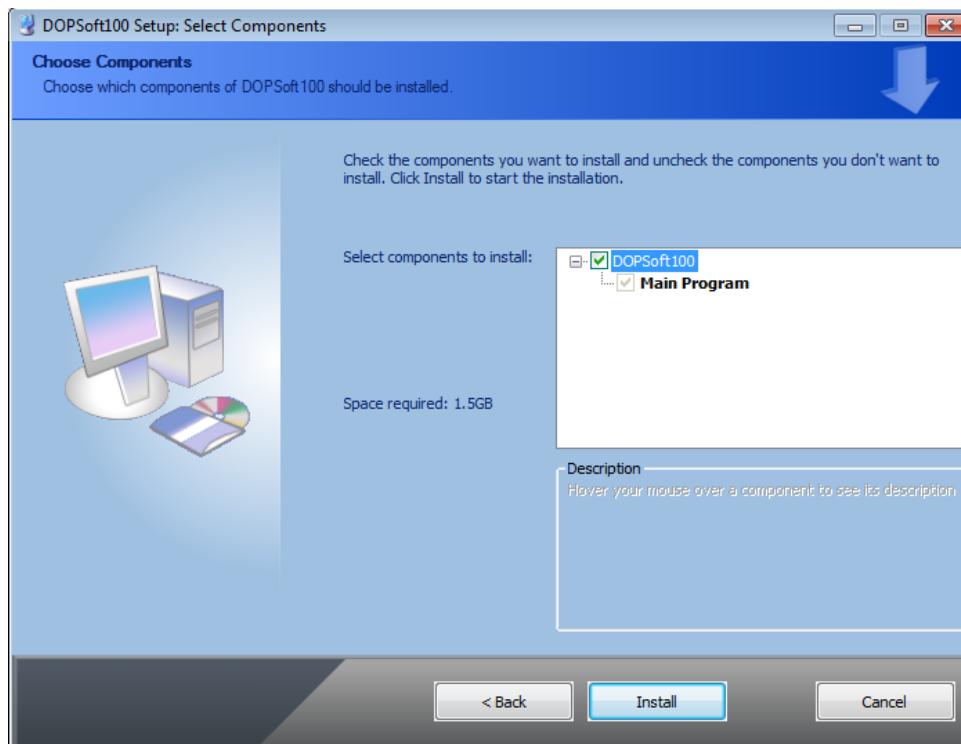


Figure 2.1.1.5 Select the component to install on Windows 7

- After you click **Install**, the software displays the installation progress bar.

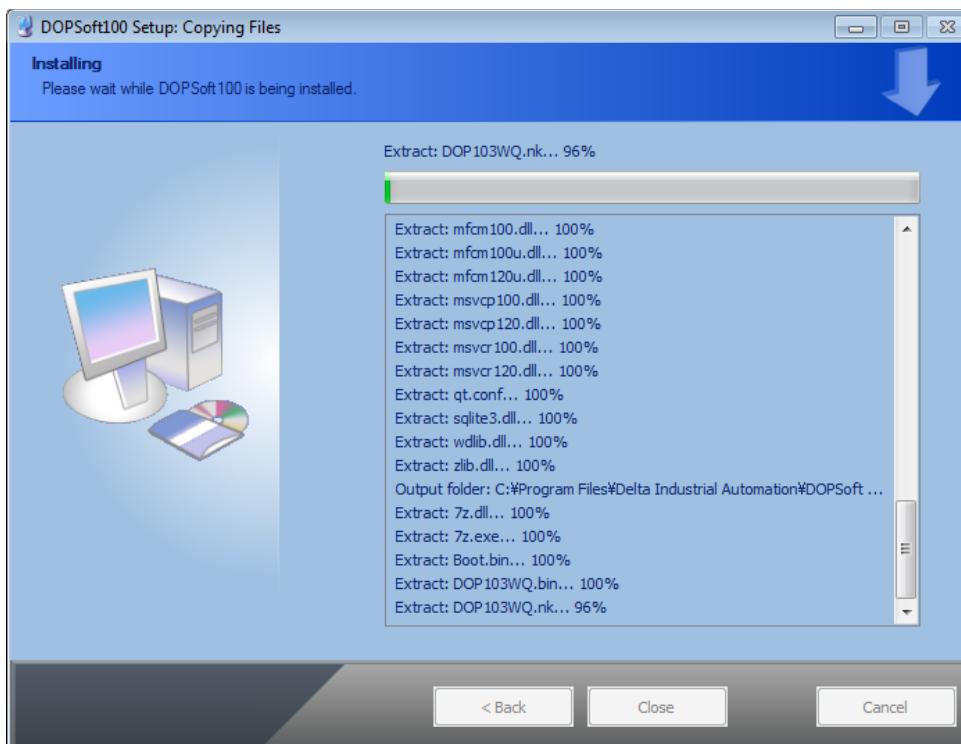


Figure 2.1.1.6 The installation progress bar on Windows 7

- When installation is complete, the progress bar displays “Completed”. Then, the PC displays the device driver for installation. Click **Next** to continue.

2

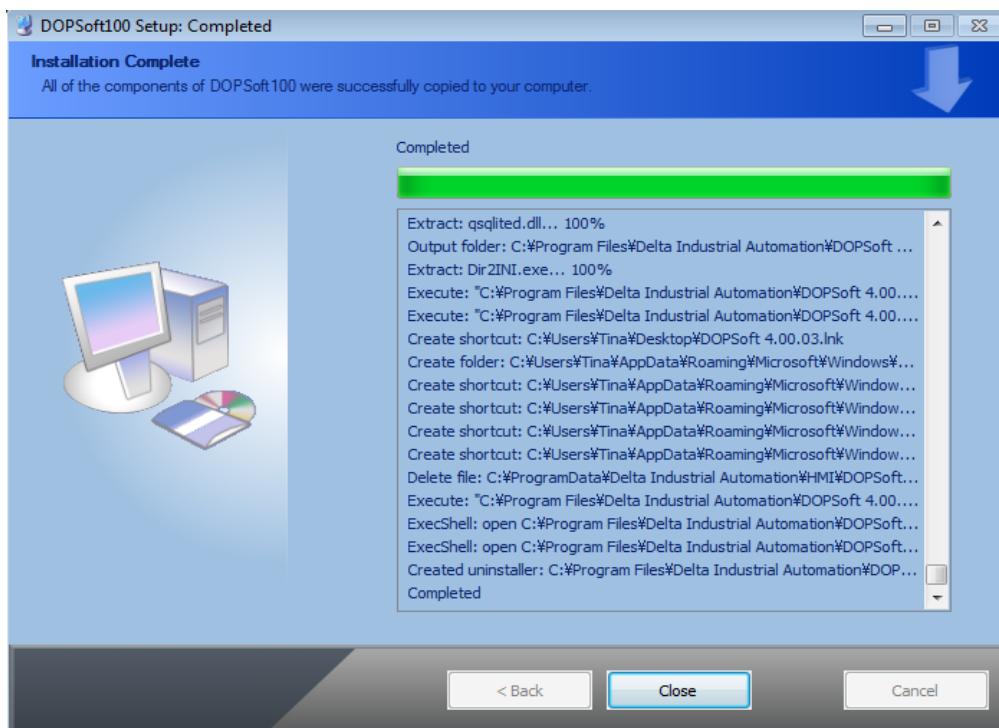


Figure 2.1.1.7 The progress bar shows the installation on Windows 7 is complete

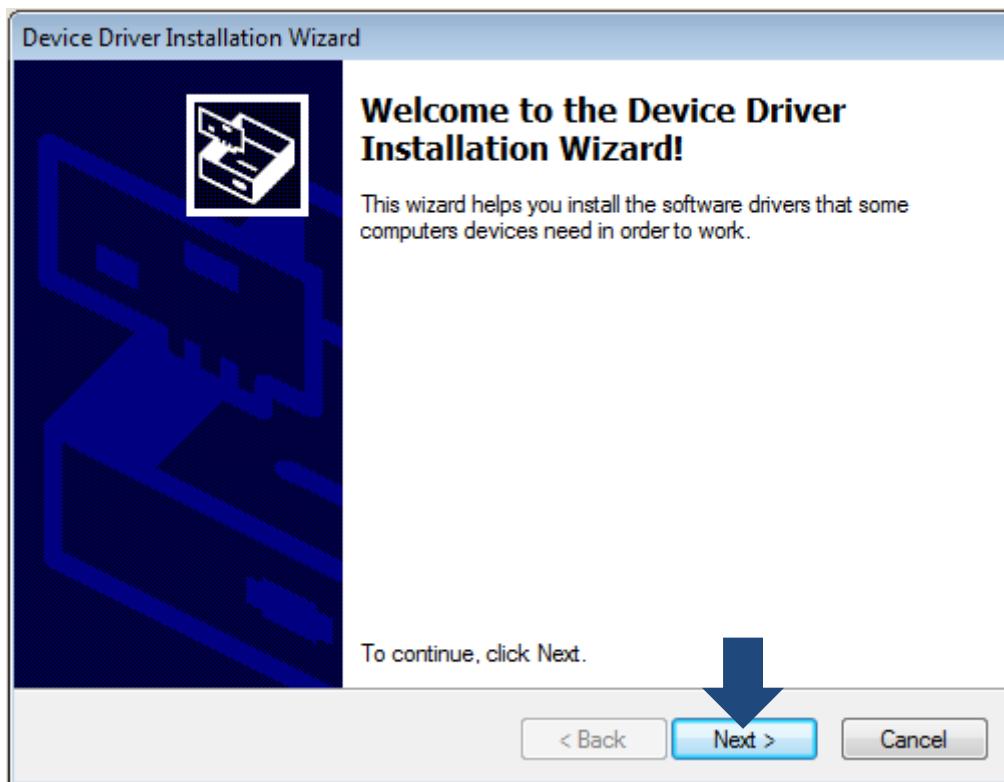


Figure 2.1.1.8 Device Driver Installation Wizard

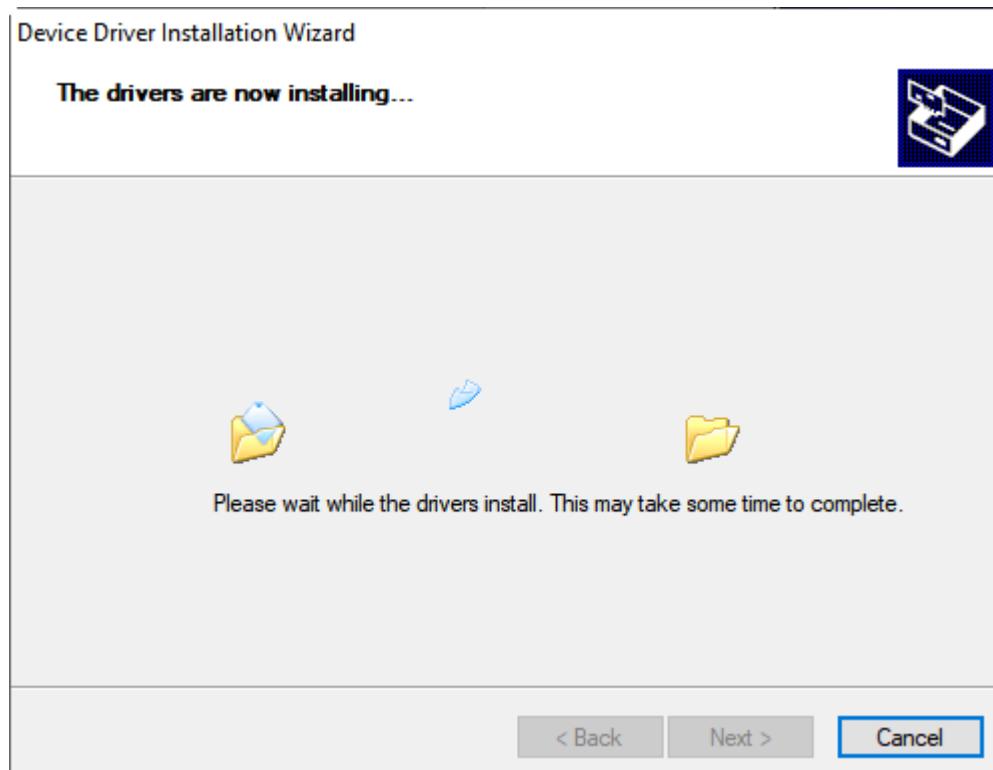


Figure 2.1.1.9 Device Driver Installation

- After the driver is installed, the screen shows the installation complete status. Click **Finish** to close the driver installation window and then click **Close** to exit the DOPSoft installation screen.

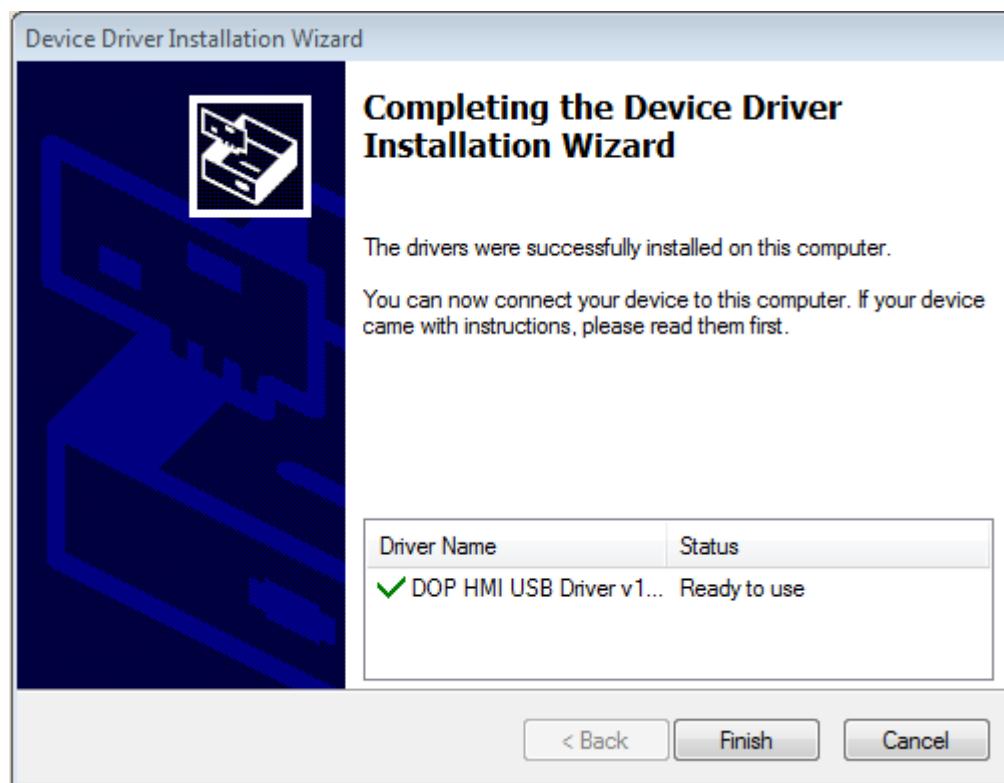


Figure 2.1.1.10 Device Driver installation is complete

2

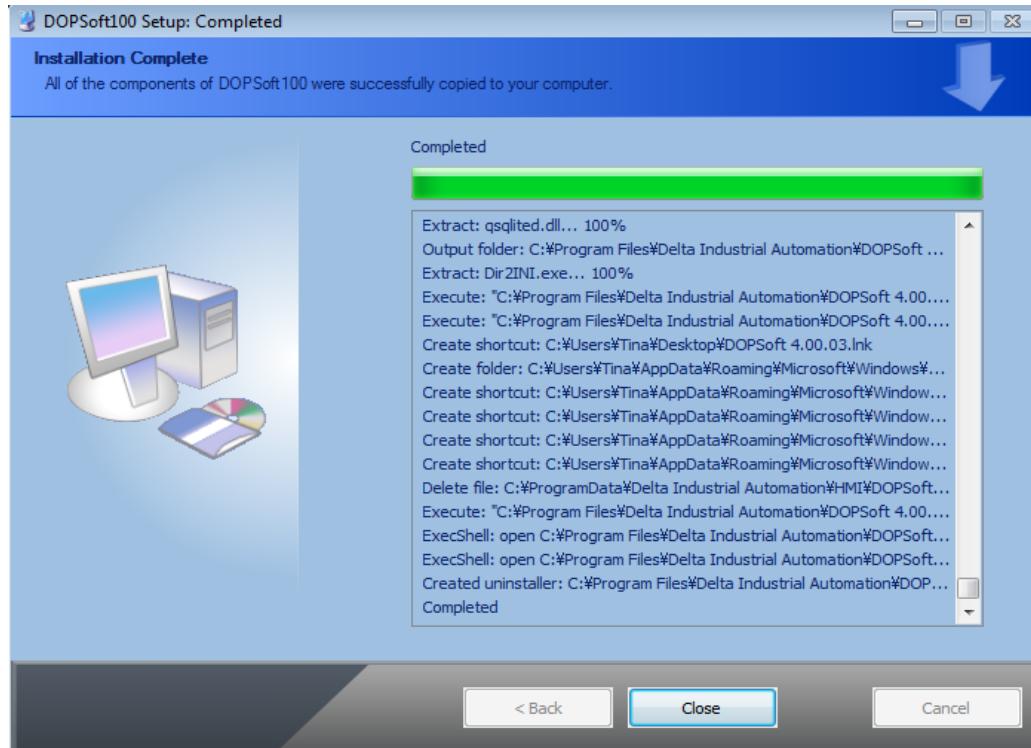


Figure 2.1.1.11 Windows 7 installation completed

- Go to the toolbar at the bottom of the PC screen. Select [Start] > [All Programs] > [Delta Industrial Automation] > [DOPSoft 4.00.08] to execute the DOPSoft application.

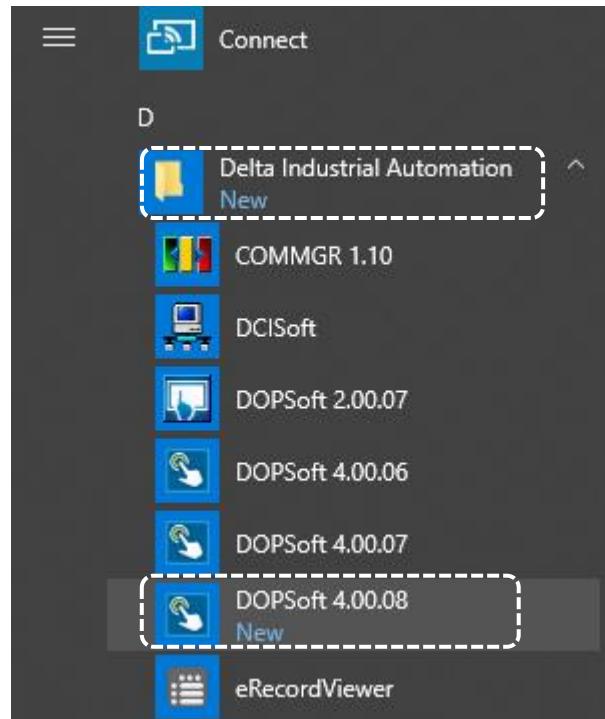


Figure 2.1.1.12 Follow the path to run the software on Windows 7

## 2.1.2 Install DOPSoft on Windows 10 operating system

Execute the DOPsoft and follow the installation instructions:

- Select the Installer Language. There are four languages available, Traditional Chinese, Simplified Chinese, English, and Turkish. After selecting the language, click **OK**.



Figure 2.1.2.1 Installer Language on Windows 10

- Click **Browse** to select the installation location for the software; to use the default location, click **Next**.

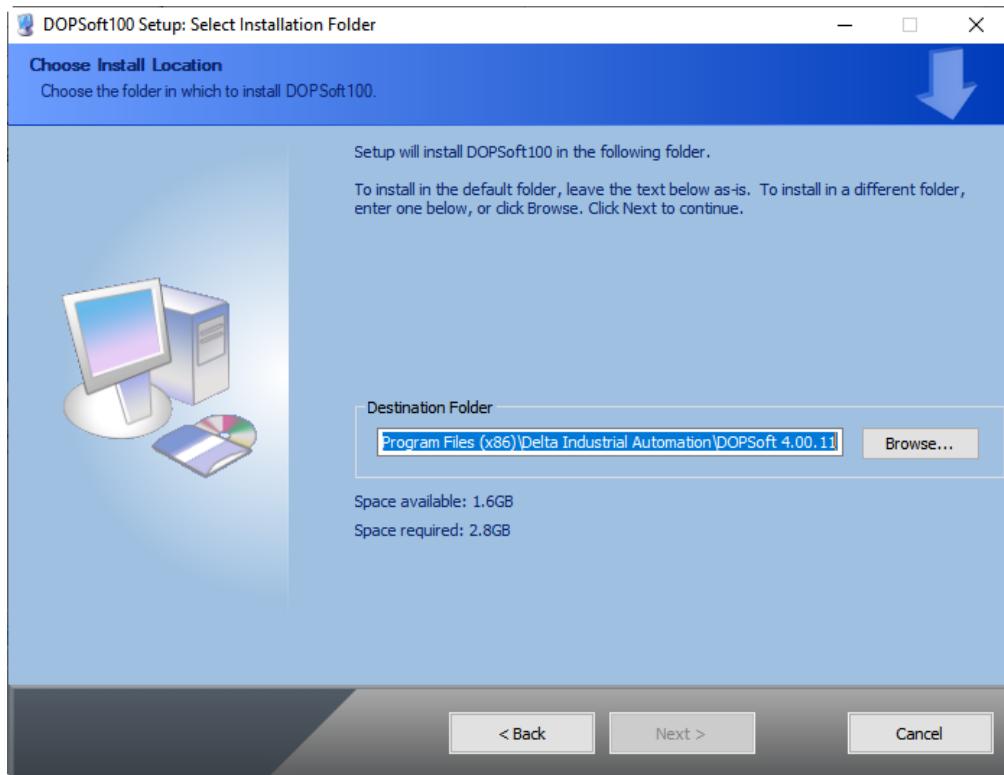


Figure 2.1.2.2 Choose Installation Location on Windows 10

2

- Make sure you have selected the DOPSoft100 component, as shown in Figure 2.1.2.3, and click **Install**.

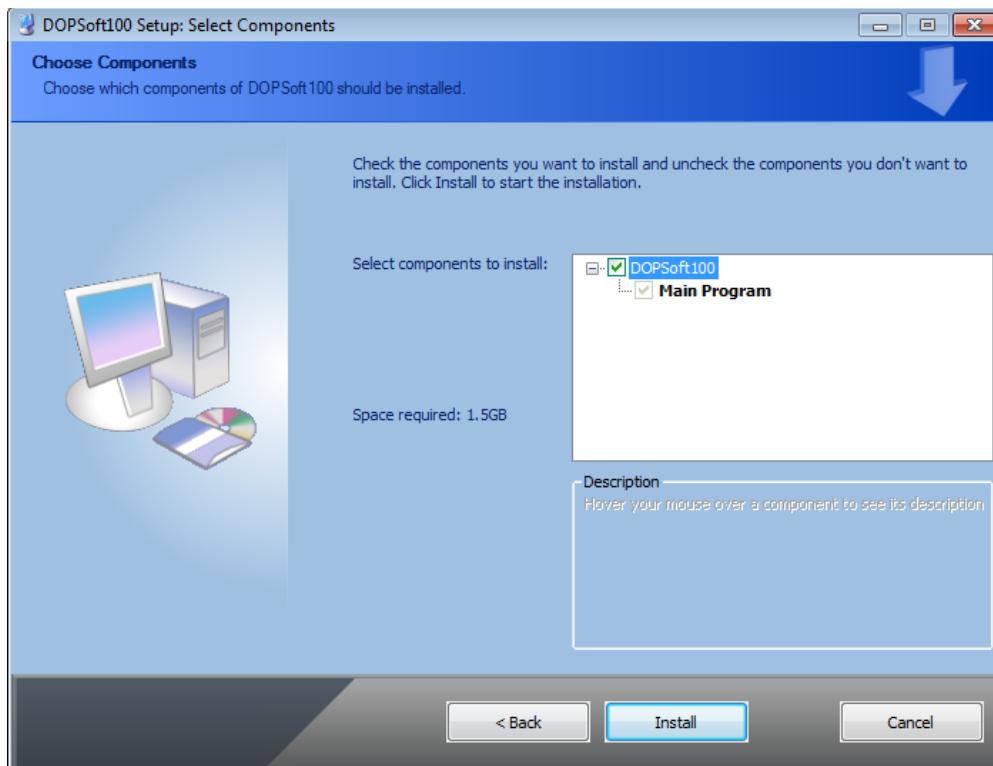


Figure 2.1.2.3 Select the component to install on Windows 10

- After you click **Install**, the software displays the installation progress bar.

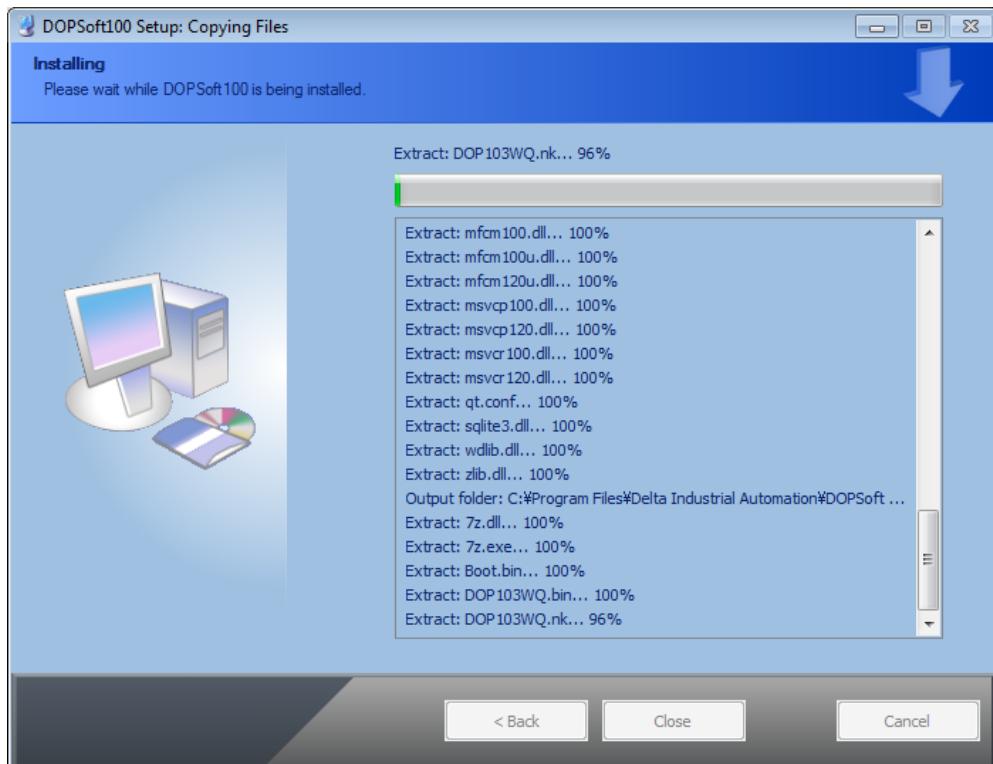


Figure 2.1.2.4 The installation progress bar on Windows 10

- When installation is complete, the progress bar displays “Completed”. Then, the PC displays the device driver for installation. Click **Next** to continue.

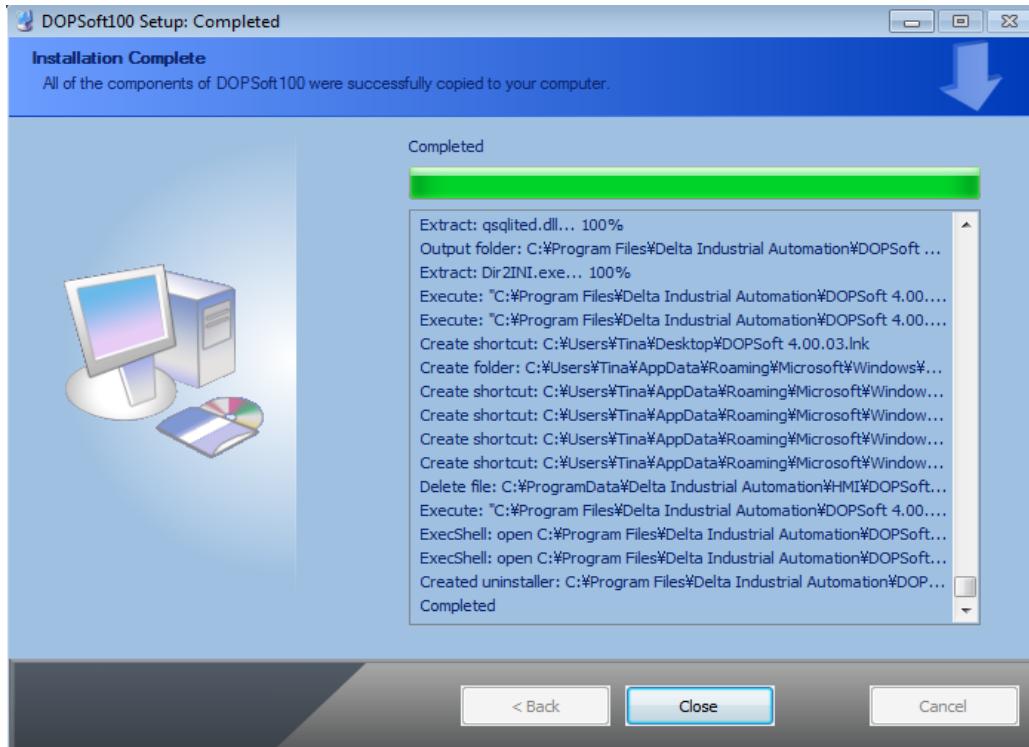


Figure 2.1.2.5 The progress bar shows the installation on Windows 10 is complete

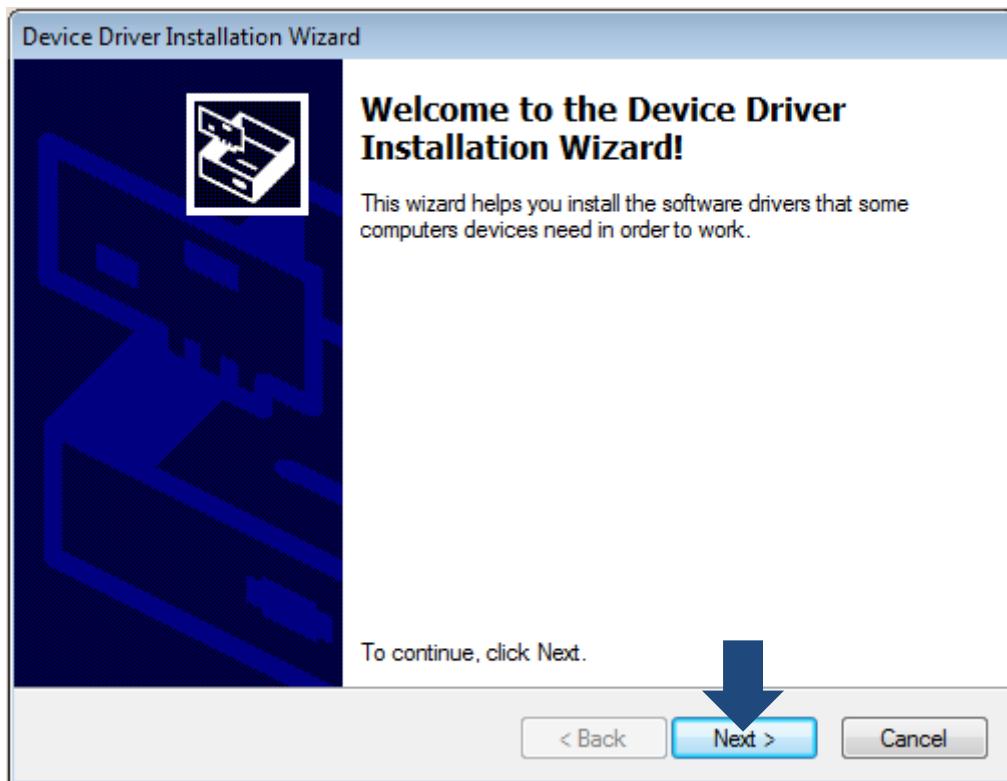


Figure 2.1.2.6 Device Driver Installation Wizard

2

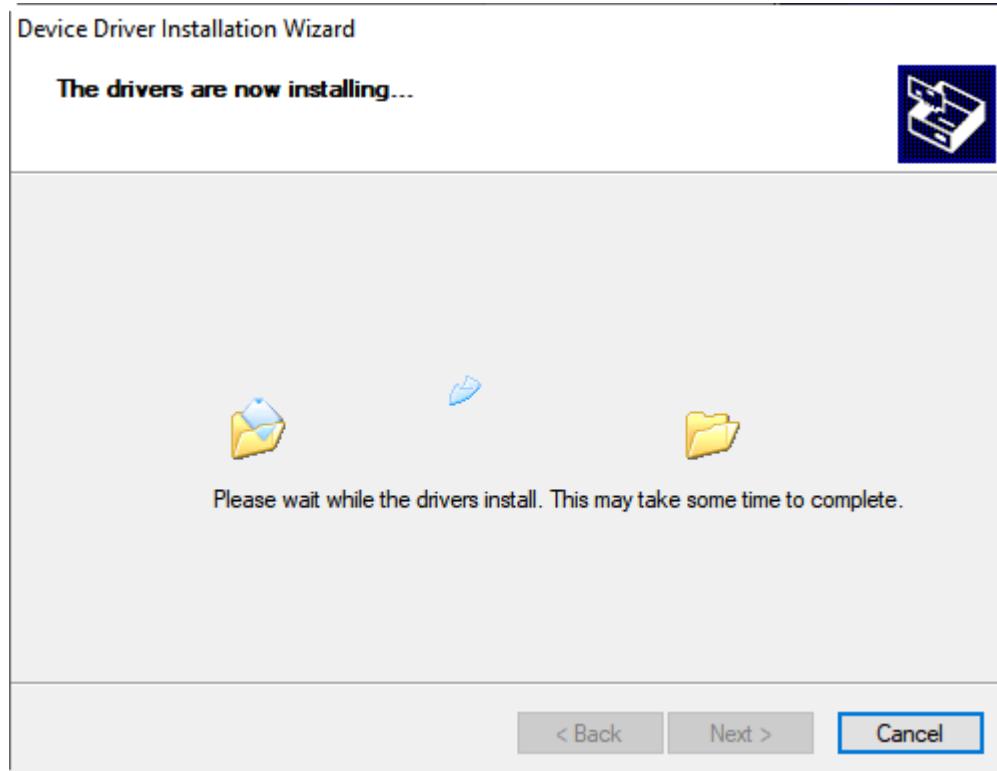


Figure 2.1.2.7 Device Driver Installation in progress

- After the driver is installed, the screen shows the installation complete status. Click **Finish** to close the driver installation window and then click **Close** to exit the DOPSoft installation screen.

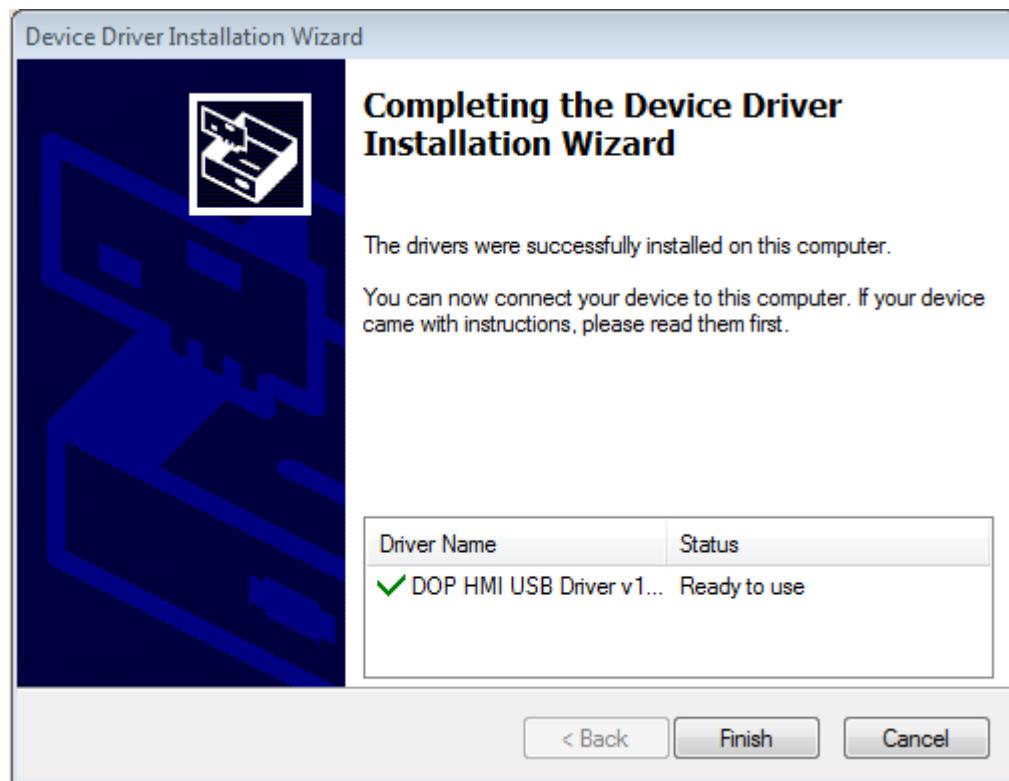


Figure 2.1.2.8 Device Driver installation is complete

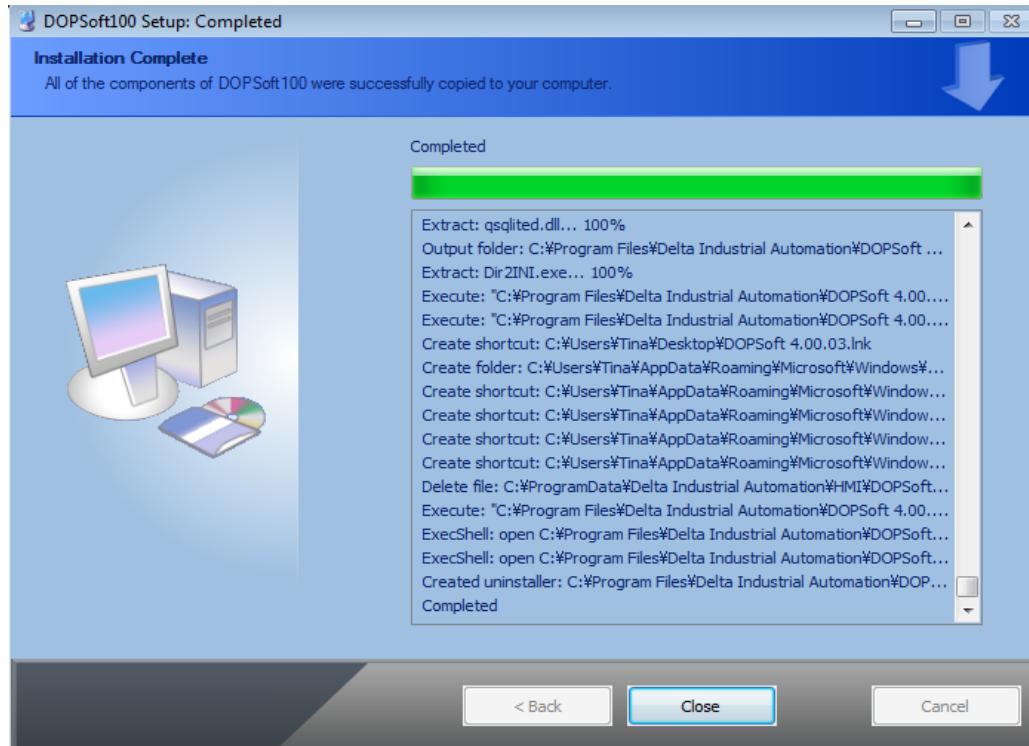


Figure 2.1.2.9 Windows 10 installation completed

- Go to the toolbar at the bottom of the PC screen. Select [Start] > [All Programs] > [Delta Industrial Automation] > [DOPSoft 4.00.08] to execute the DOPSoft application.

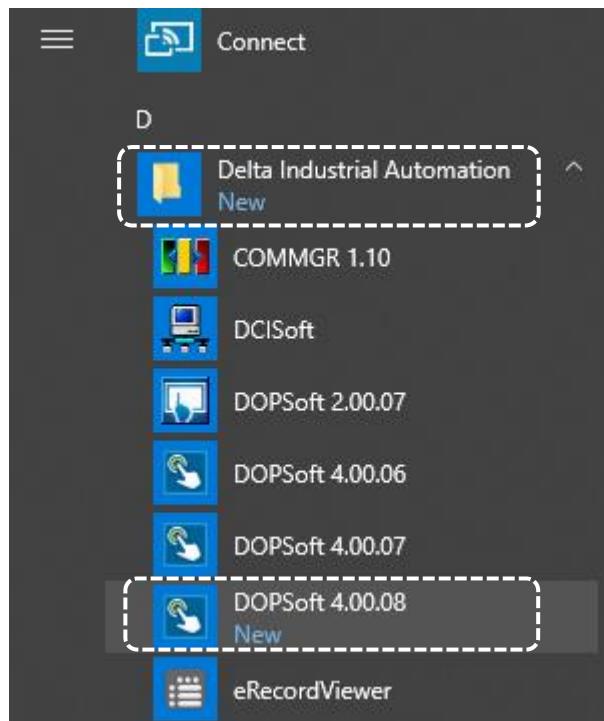


Figure 2.1.2.10 Follow the path to run the software on Windows 10

## 2.2 Window toolbar

The editing window of the DOPSoft has eight sections, including a function list, toolbars, element windows (Element List and Element Bank), a properties window, an output window, a screen management window, a screen editing window, and a status bar as shown in Figure 2.2.1. The parts marked with arrows are the toolbars provided by the software.

The toolbars are standard Windows® programs so they work the same ways as that in Windows®. They are customizable; for example, the element toolbar can be moved to the left side of the screen. You can drag the toolbars to the position based on your preference as shown in Figure 2.2.2.

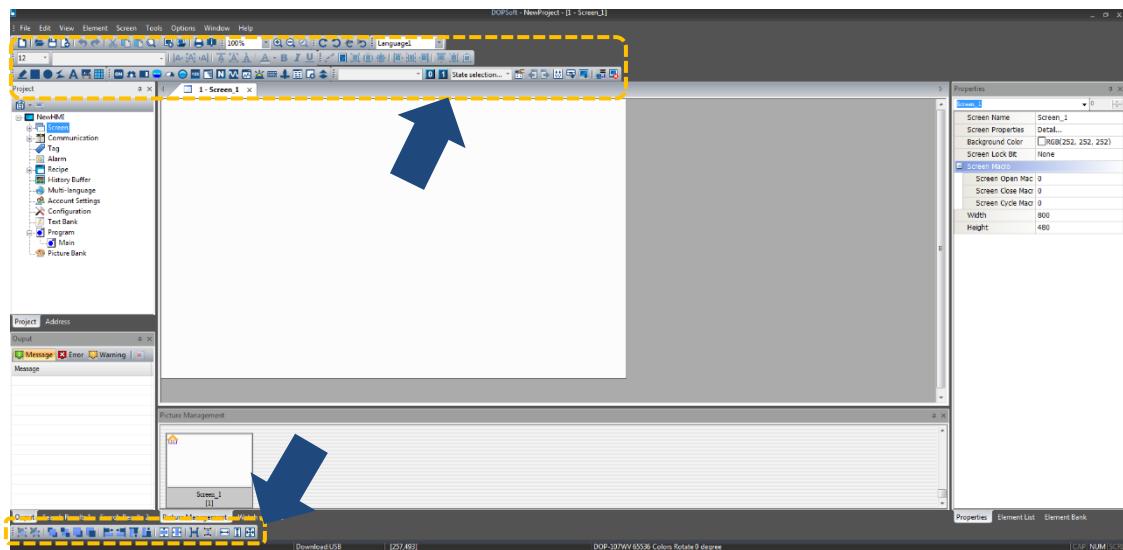


Figure 2.2.1 DOPSoft toolbars

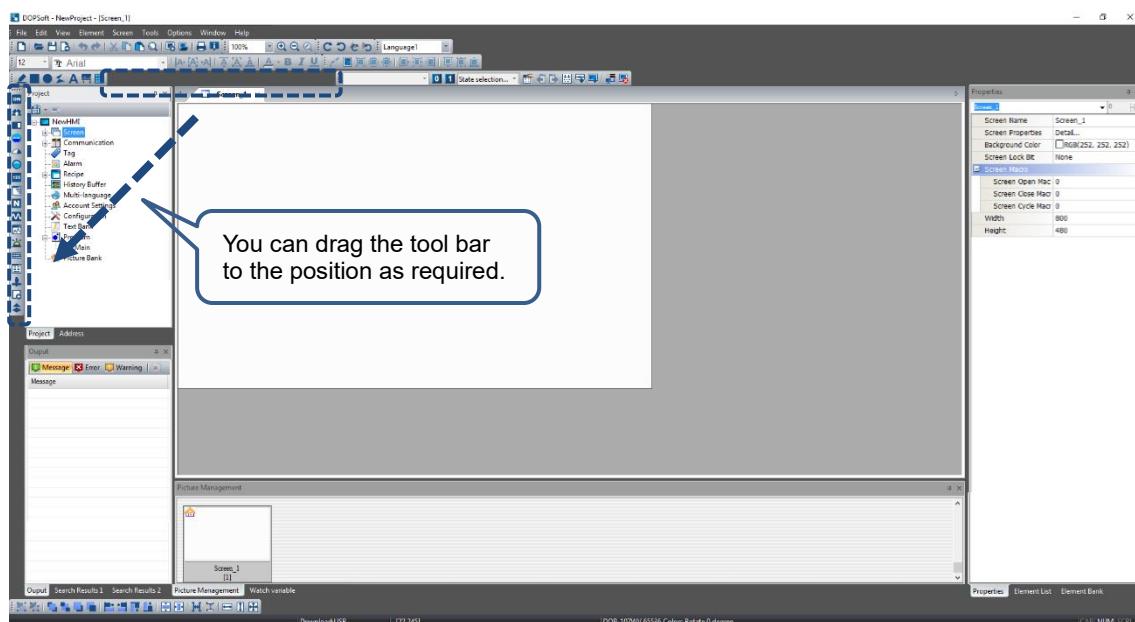
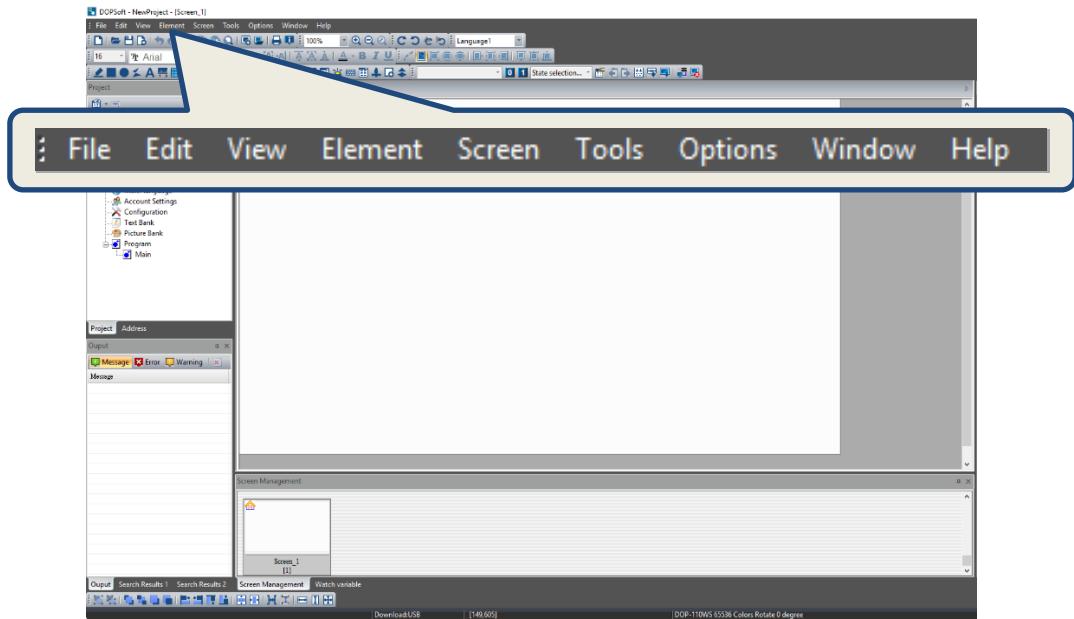


Figure 2.2.2 DOPSoft draggable toolbar

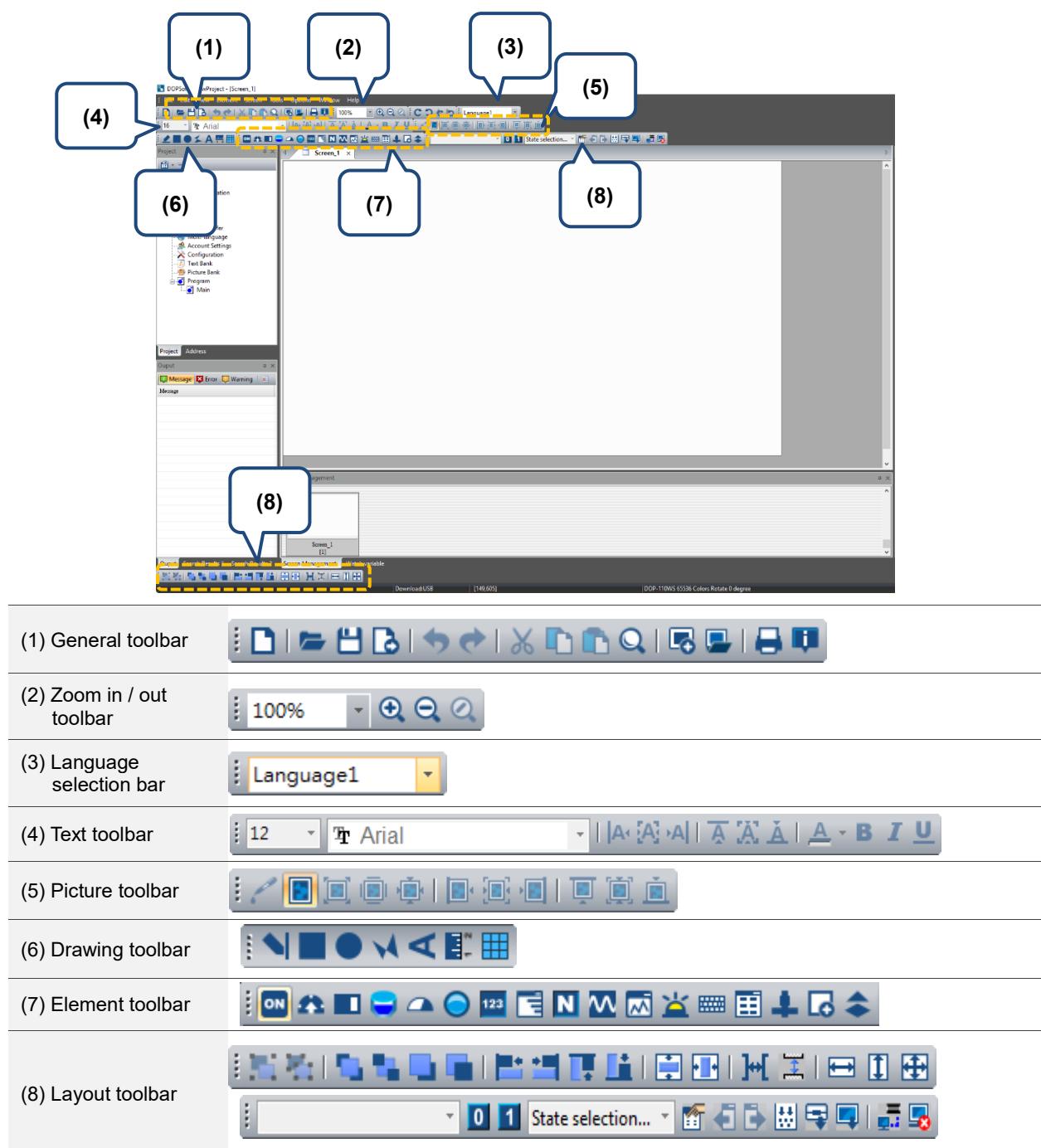
### ■ Function list

As shown in the following figure, the DOPSoft provides nine function categories.



### ■ Toolbar

The DOPSoft provides 8 toolbars.



- Element Bank window

The Element Bank window includes the Element Bank, which stores the elements you have finished editing. You can save the edited elements in the Element Bank and drag it to the editing window next time you need to use it.

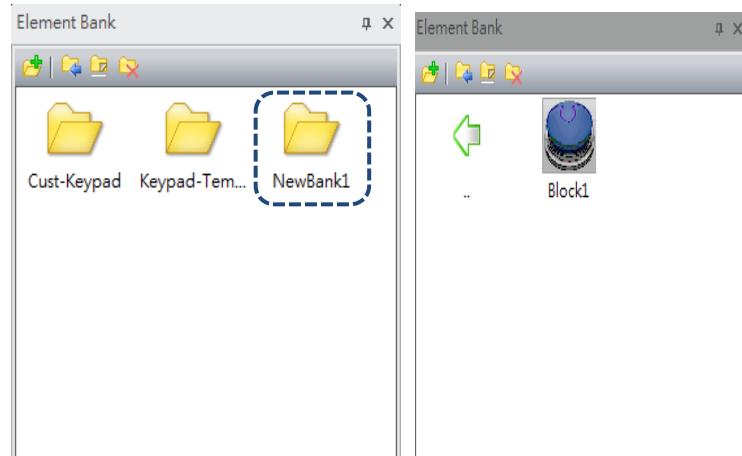


Figure 2.2.3 Element Bank

Figure 2.2.4 illustrates how to create an Element Bank. (1) Go to the Element Bank page. (2)

Click  to create a new Element Bank. (3) Create an element; (4) Click  to import the element data.

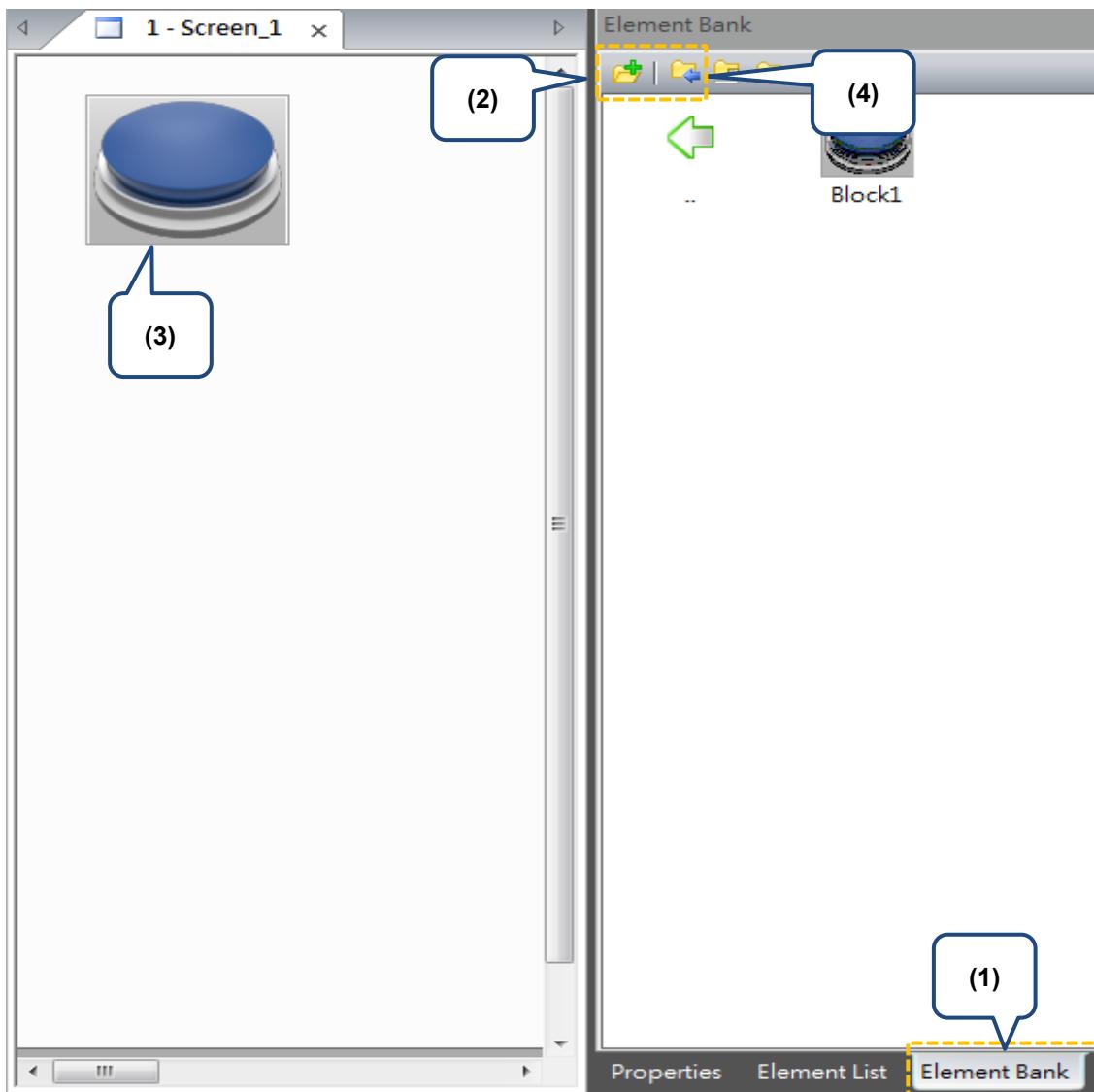
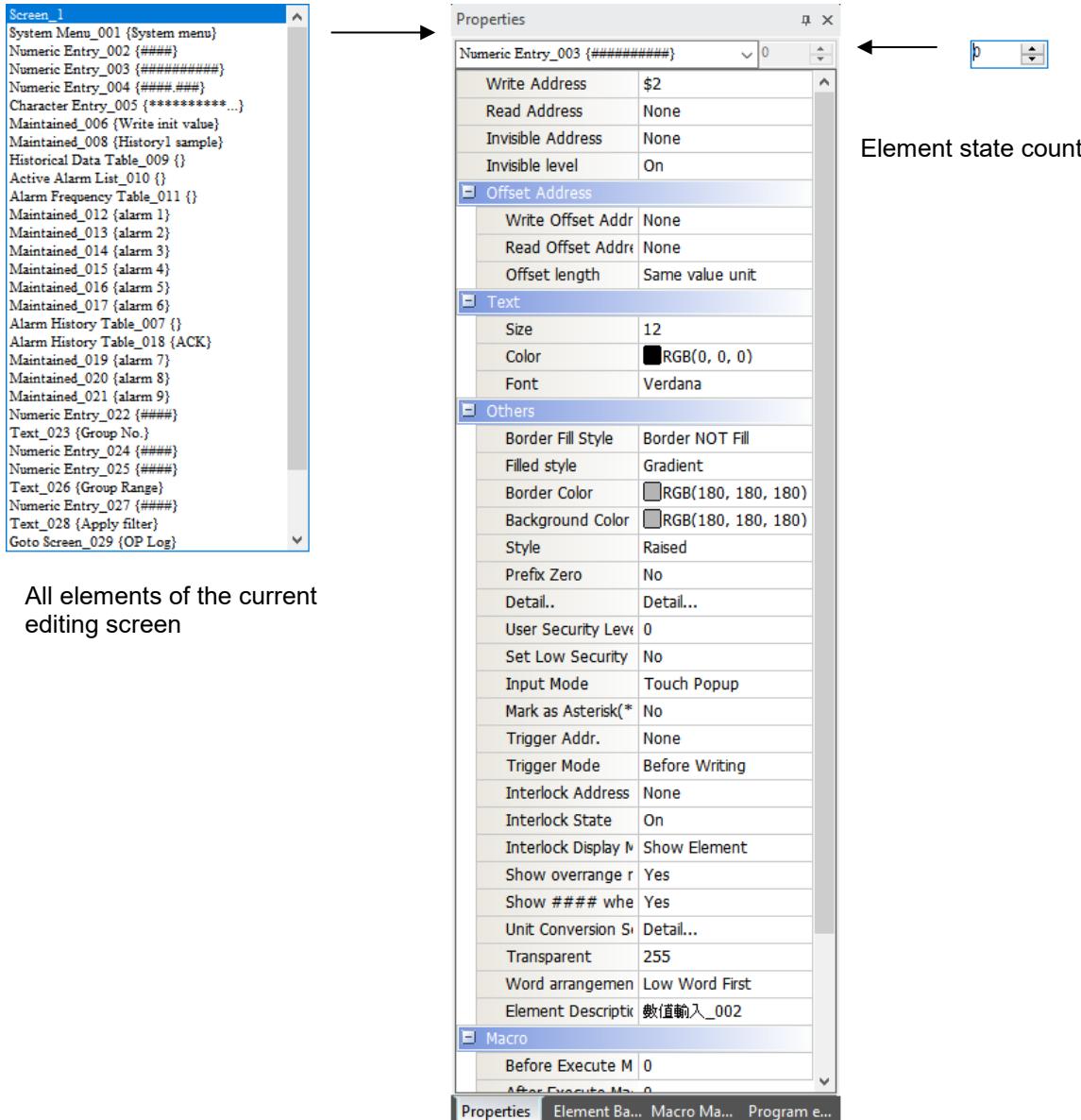


Figure 2.2.4 Steps to create the Element Bank

## ■ Properties



Element state count

2

Figure 2.2.5 Properties window

### ■ Output window

This window records users' editing operations and output messages for screen data compilation. When you execute the Compile function, the DOPSoft compiles the program data. After the compilation is complete, you can use the filter in the Output window to promptly check errors and warning messages. The Message tab displays all compiling records; the Error tab displays the error message only; the Warning tab displays the warning messages only, as shown in Figure 2.2.7. By clicking on the error message, you are automatically directed to the screen where the error element is located.

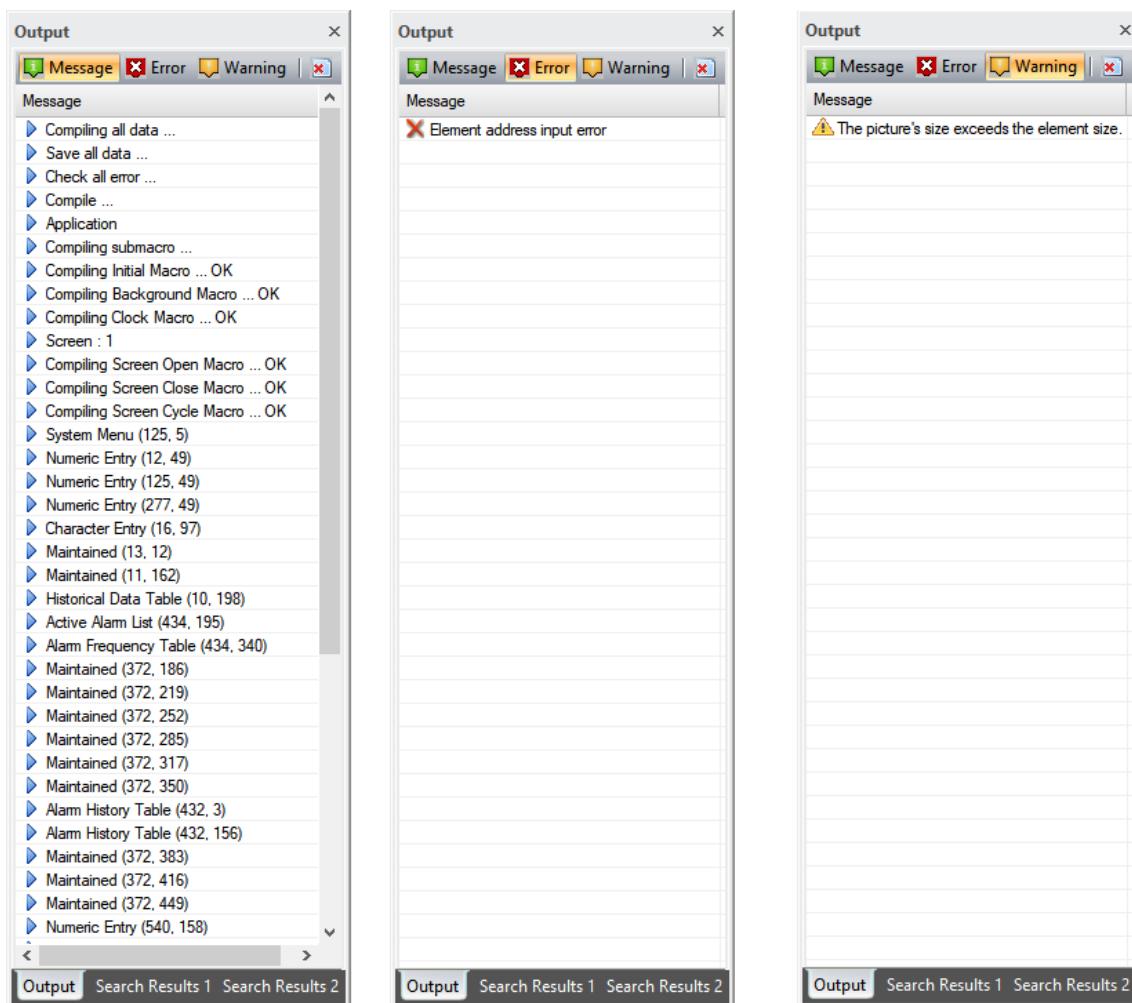


Figure 2.2.6 Output window

### ■ Screen Management window

If you have created multiple screens, you can use the Screen Management window to preview the screens. It allows you to check which elements are in the screen without switching to the actual screen. You can also double-click the screen you need to view and switch to this screen.

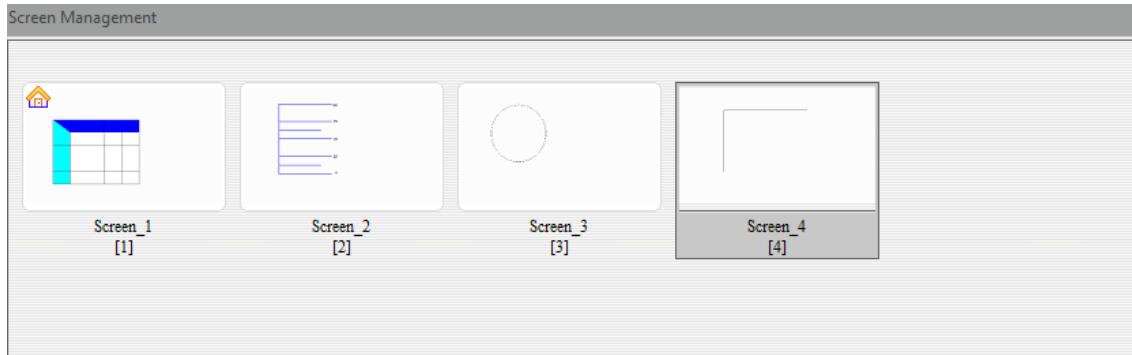


Figure 2.2.7 Screen Management window

### ■ Status Bar

The Status Bar displays the current editing status, as shown in Figure 2.2.8.

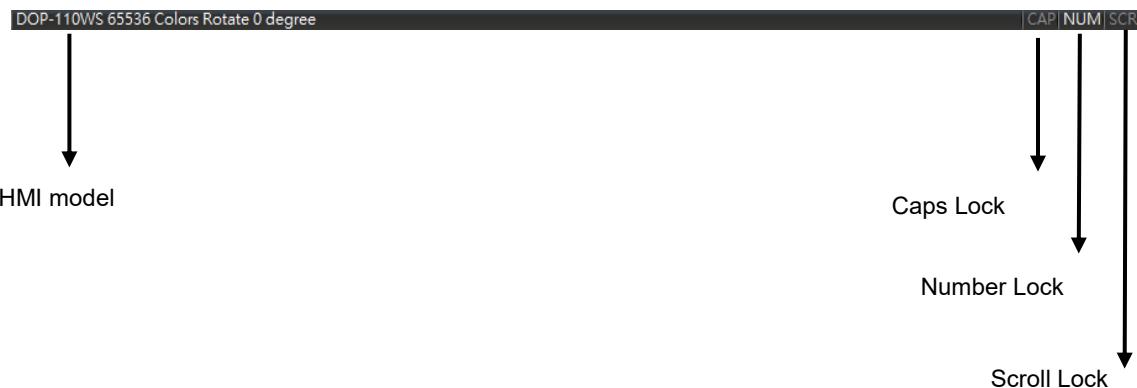
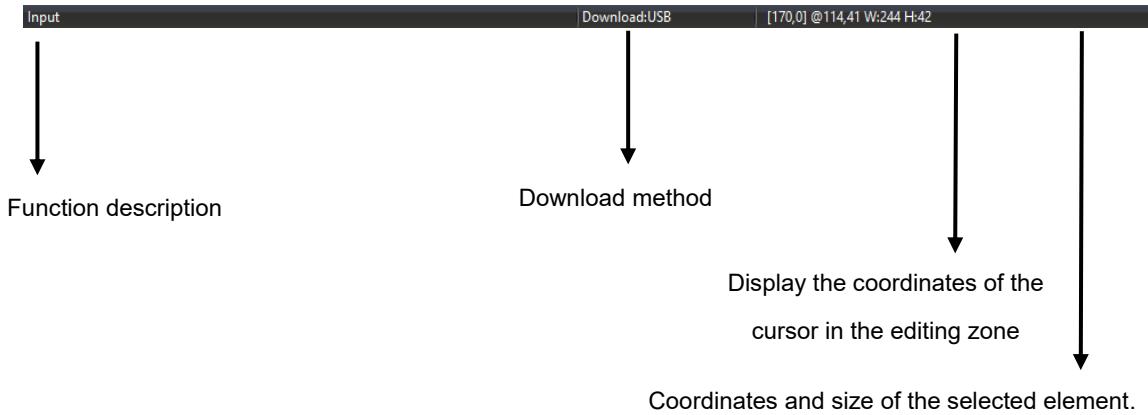


Figure 2.2.8 Status Bar

- Screen editing zone

Provides applicable editing range based on the selected HMI model.

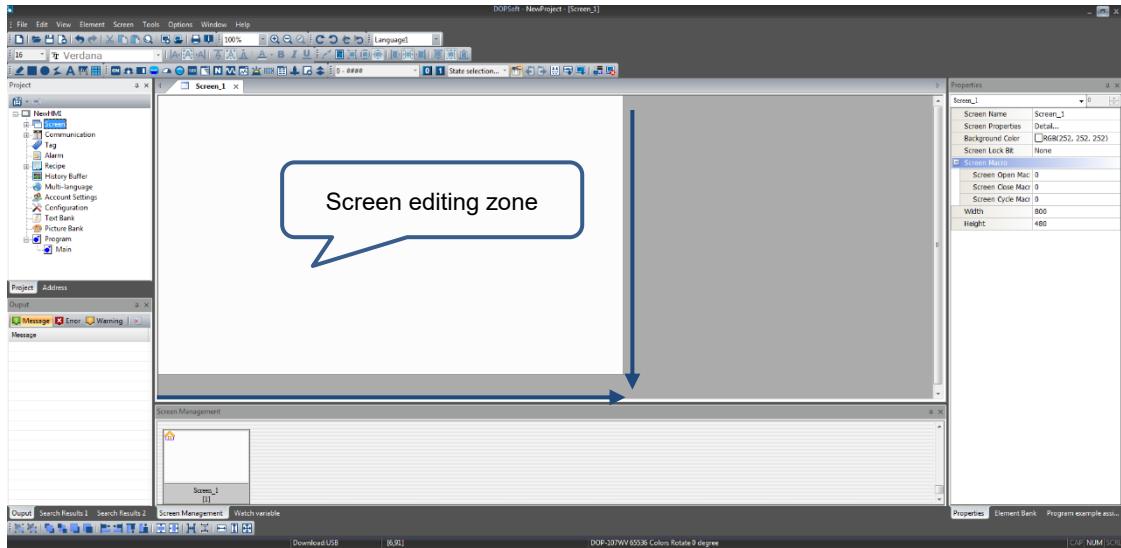


Figure 2.2.9 Screen editing zone

The following introduces the general function lists such as File, Edit, View, Screen, Tools, Window, and Help.



### 2.2.1 File

In addition to general functions of opening, closing, and saving files, the File list also provides options of Create Screen Data File, Create Auto Update Data File, Open Screen Data File, Create Download Screen Exe. File, and Password Protect.

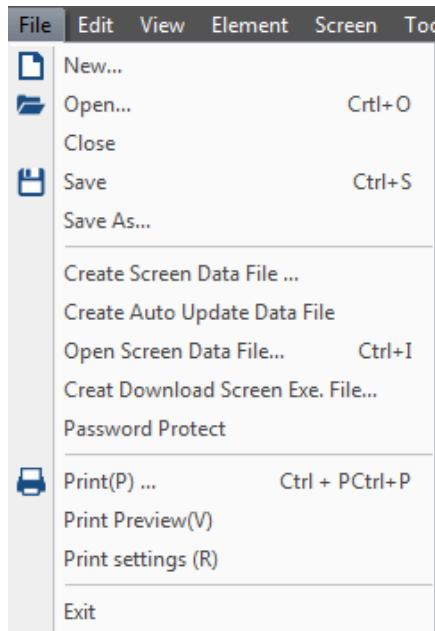


Figure 2.2.1.1 File function list

### 2.2.1.1 New...

When you click  or use the system keyboard shortcut **Ctrl+N** to create a new project, DOPSoft prompts the Project Wizard as shown in the following figure, and you can select the HMI model or printer to use and edit the project name and screen name. After you complete the basic settings in Project Setup, click **Next** to go to the Communication Settings.

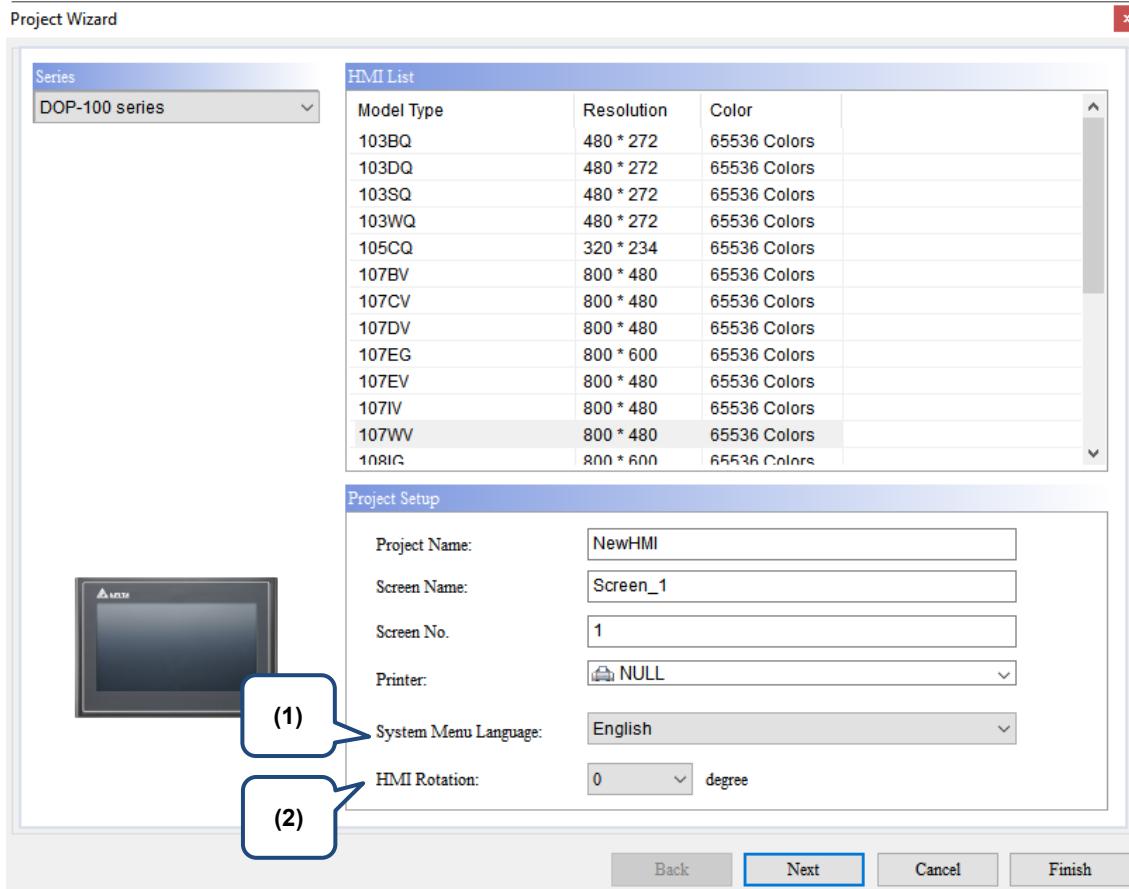


Figure 2.2.1.1.1 Project Wizard

No.	Item	Description
(1)	System Menu Language	Available system languages are English, French, Russian, Spanish, Traditional Chinese, Simplified Chinese, and Turkish.
(2)	HMI Rotation	Selectable rotation degrees are 0°, 90°, 180°, and 270°.

For Communication Settings, you can set the controller model and COM port or Ethernet port to use, as well as the parameters for communications between the HMI and controller, as shown in Figure 2.2.1.1.2.

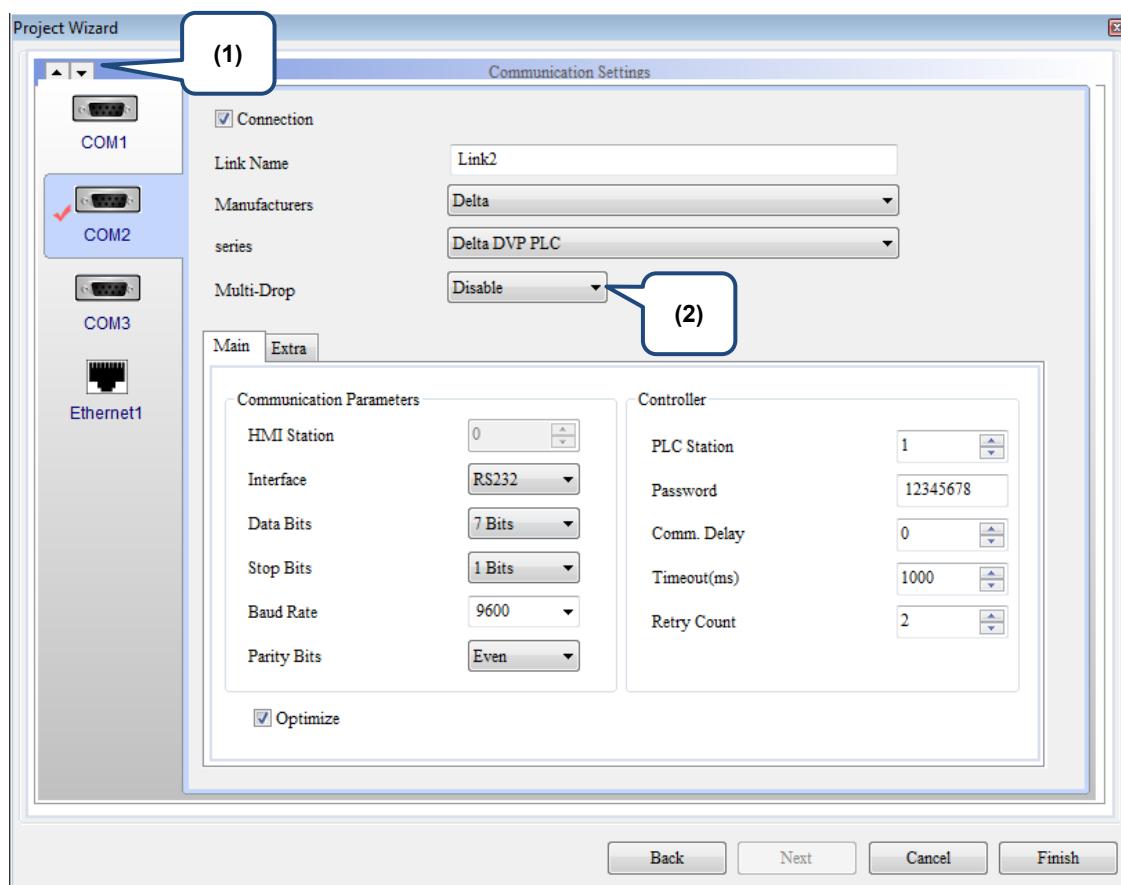


Figure 2.2.1.1.2 Project Wizard

No.	Item	Description
(1)	Up and Down arrows	Use the up and down arrows to switch among COM1, COM2, and COM3.
(2)	Multi-Drop	To enable the Multi-Drop communication mode, you can simply select Host or Client for Multi-Drop. To disable the Multi-Drop mode, select Disable.

If you are using Ethernet for communication, click the Ethernet1 icon to set the controller parameters. Go to the Device page and click to add an Ethernet link and set its parameters such as Controller model, Controller IP address, Comm. Delay Time, Timeout, and Retry Count, as shown in Figure 2.2.1.1.3.

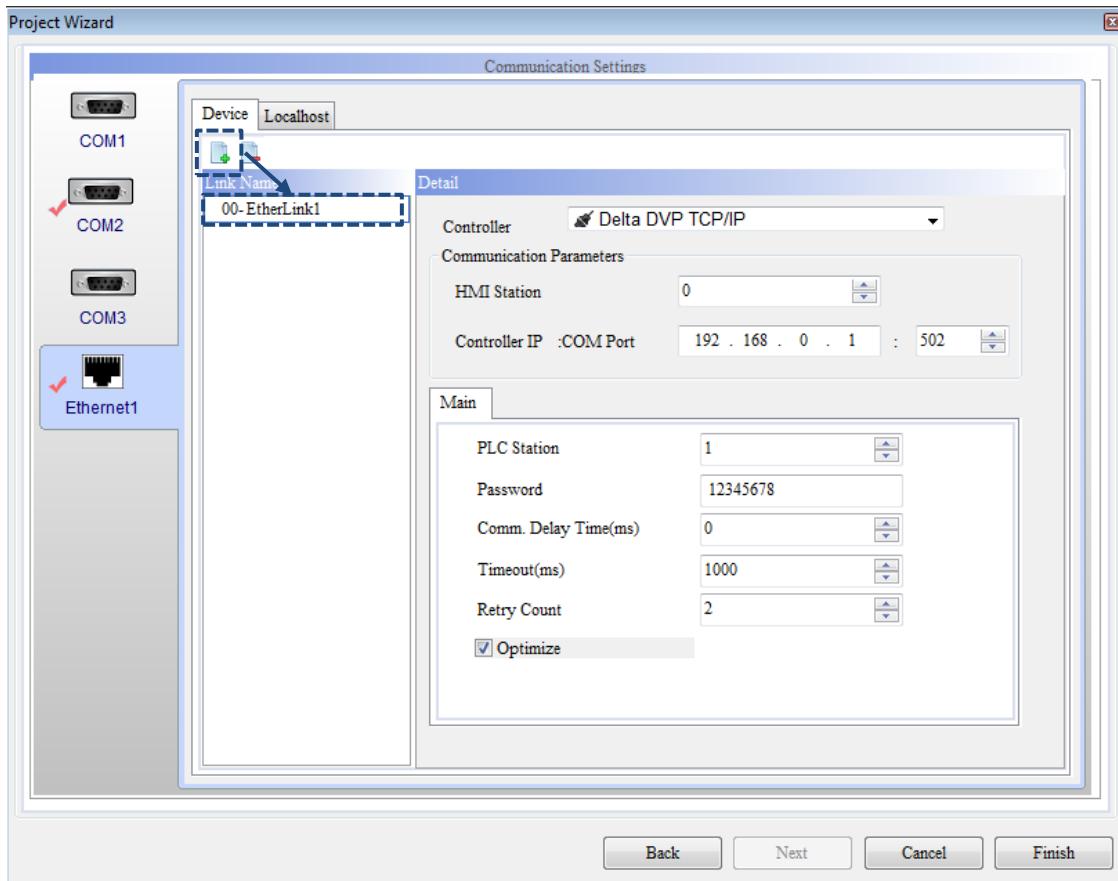
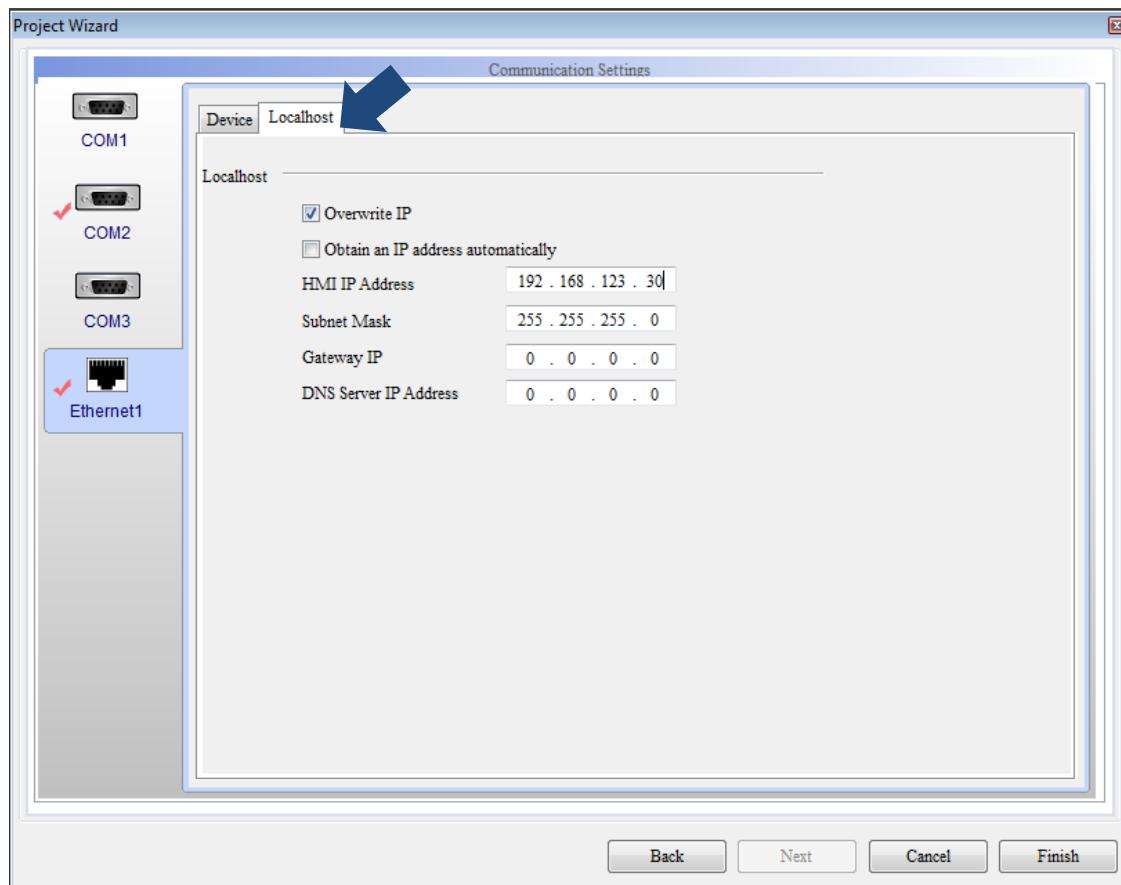


Figure 2.2.1.1.3 Project Wizard

You can also switch to the Localhost page to set the Localhost IP address and enable the network applications, as shown in Figure 2.2.1.1.4.



2

Figure 2.2.1.1.4 Project Wizard

#### About the Localhost:

This is the Localhost IP address of the HMI, which you can set the IP address or to obtain an IP address automatically.

- The check box for **Overwrite IP** is not selected:

When the check box is not selected, the HMI uses the default IP address, 0.0.0.1.

If you choose not to use the Overwrite IP option in the software, you can go to [System Setting] > [Network] to change its IP address.

- Select the check box for **Overwrite IP**:

If you select **Overwrite IP**, it means you are going to change the IP address with the software, so you can set the IP address to be written and the HMI model name.

- Select check boxes for both **Overwrite IP** and **Obtain an IP address automatically**:

If you select both options, it means the HMI uses the DHCP mode to get the IP address.

To check the exact IP address, you can go to [System Setting] > [Network].

After you complete all the settings, click **Finish** to go the DOPSoft project editing screen.

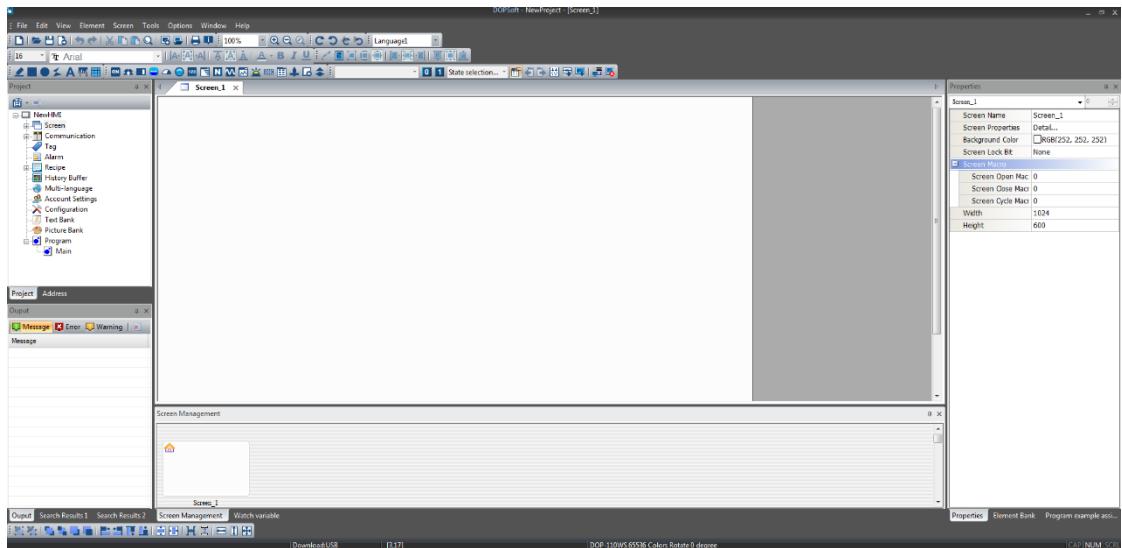


Figure 2.2.1.1.5 DOPSoft editing screen

### 2.2.1.2 Open...

To open the project file that has been saved in DOPSoft, you can click [File] > [Open...], as shown in Figure 2.2.1.2.1, click  in the toolbar, or use the system keyboard shortcut **Ctrl+O**.

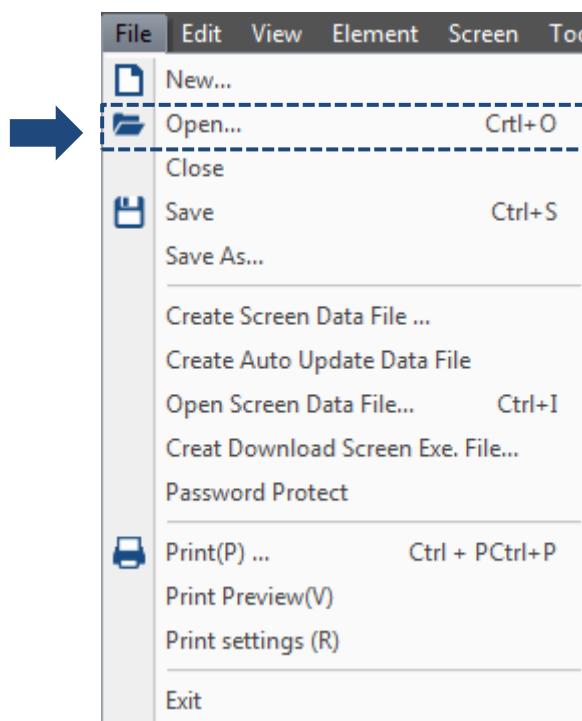


Figure 2.2.1.2.1 Open... option

If there is a modified project in the software editing screen and you click **Open...**, the software reminds you that the program has been changed and asks if you want to save the changes, as shown in Figure 2.2.1.2.2.

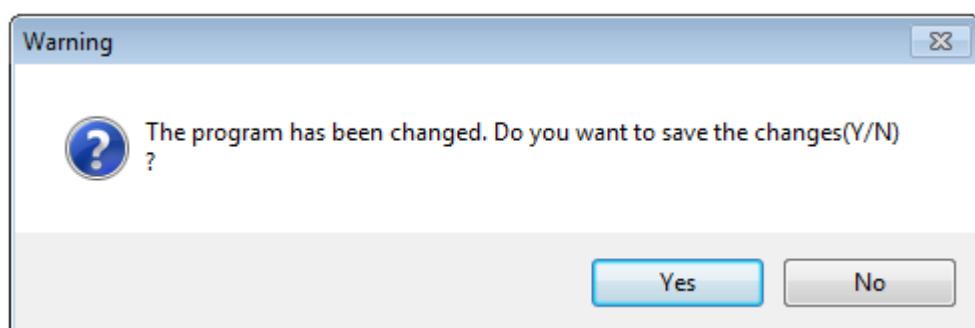


Figure 2.2.1.2.2 Confirmation dialog box for saving the changes

You can click **Yes** to save or click **No** to not to save the project. Whether the project is saved, the previous project will be opened, as shown in Figure 2.2.1.2.3.

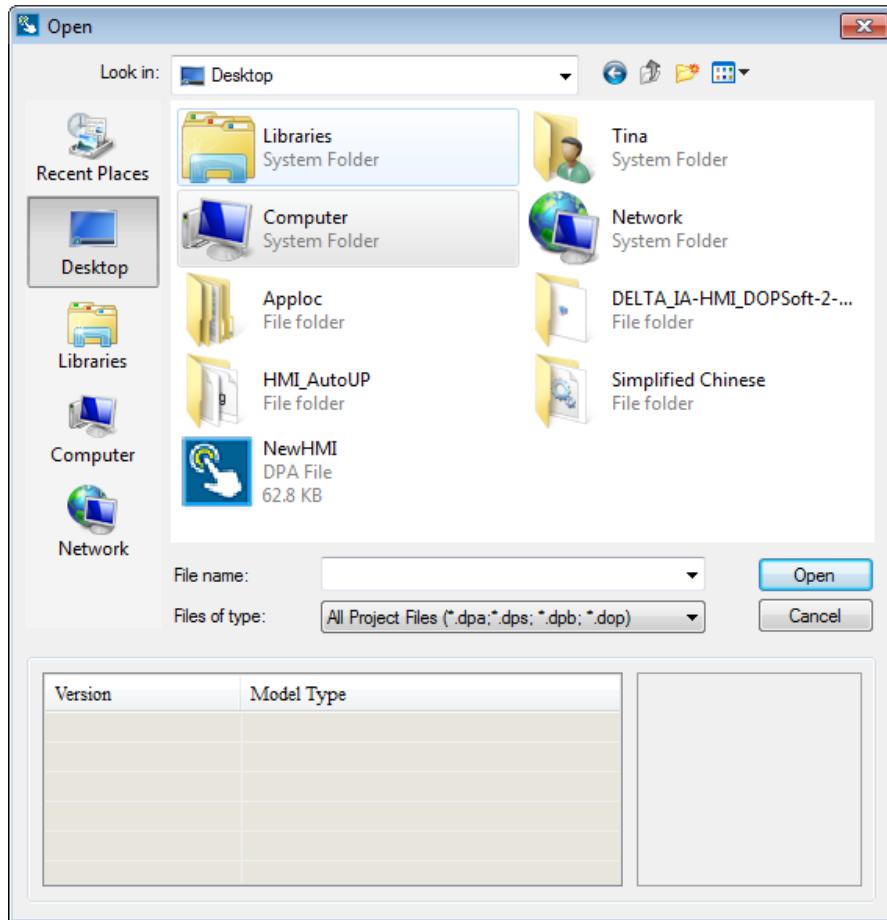


Figure 2.2.1.2.3 Open the previous project

The filename extension for the file in DOPSoft 4.0 is “.dpa”, but it can also be “.dps” (edited with DOPSoft 2.00.0x), “.dpb” (edited with Screen Editor 2.00.xx), or “.dop” (edited with Screen Editor 1.05.xx). If you open a “.dpb” file, it means the previous screen data is copied to the DOPSoft for editing without anything changed.

2

If you select a “.dop” file to open, the DOPSoft converts all the data in the A series HMI into the data for the 100 series for screen editing. So, the software prompts a message asking you which series of HMI to use, as shown in Figure 2.2.1.2.4 and Figure 2.2.1.2.5.

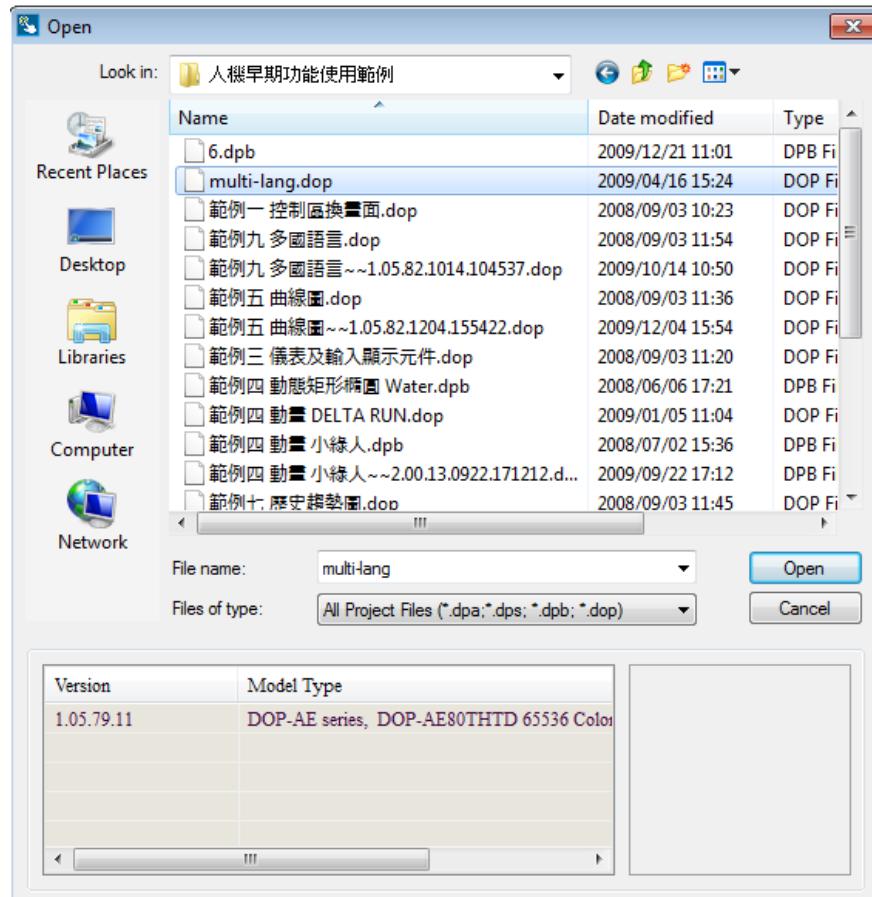


Figure 2.2.1.2.4 Open file of the A series HMI

2

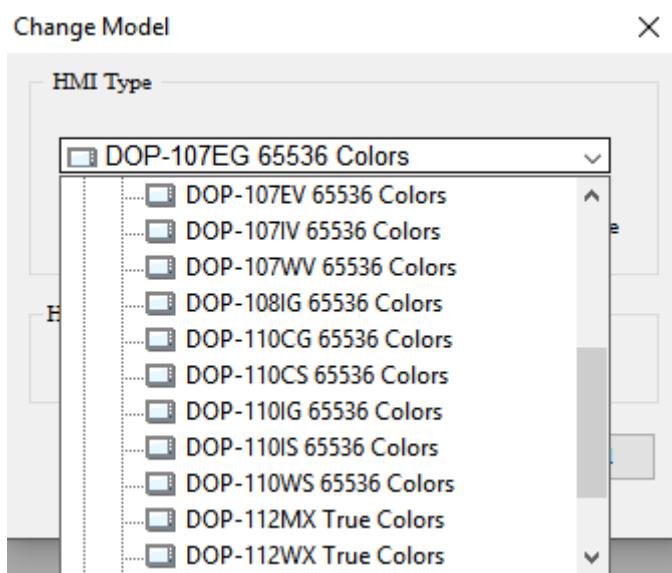
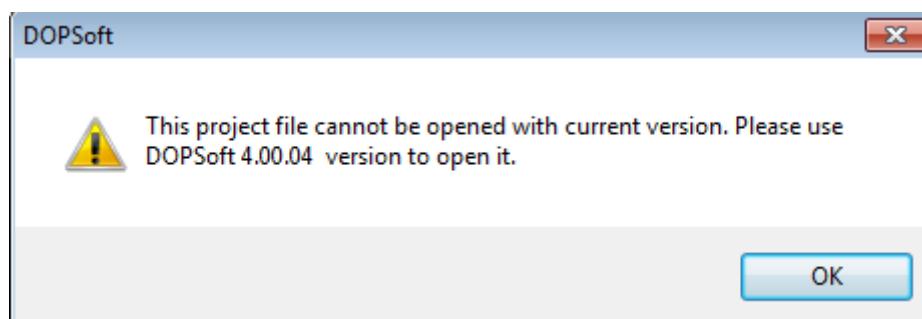


Figure 2.2.1.2.5 Select the HMI model to convert to

Note: if you open an old version HMI project such as a .dpb or .dop file that has been edited with the Screen Editor, and assume you have compiled the file with the DOPSoft and overwrite the original file, then you are unable to open this file with the previous version of DOPSoft. Therefore, backup the old file for future use if needed.



### 2.2.1.3 Close

It is to close the currently editing project file. To close the file, you can only go to [File] > [Close].

After the file is closed, if there are edited projects in the window, a window pops up to check whether you want to save this project. Click **Yes** to save the changes before closing the project; click **No** to discard the changes and directly close the project; or click **Cancel** to cancel the action of closing the project.

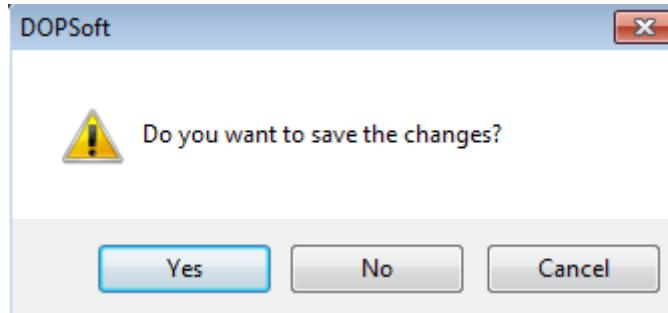


Figure 2.2.1.3.1 Close the project

### 2.2.1.4 Save

To save the current project file, you can go to [File] > [Save], use  on the toolbar, or use the keyboard shortcut **Ctrl+S** provided by the software. You can use all the above three methods to save the file. When you use any of the three methods, the software detects whether the current project file is newly created or existing. If it is a newly created project file, the software prompts a Save As window asking you to save the current project file, as shown in Figure 2.2.1.4.1. On the other hand, if it is an existing project file and you click **Save**, the current project file is directly saved without any window popping up.

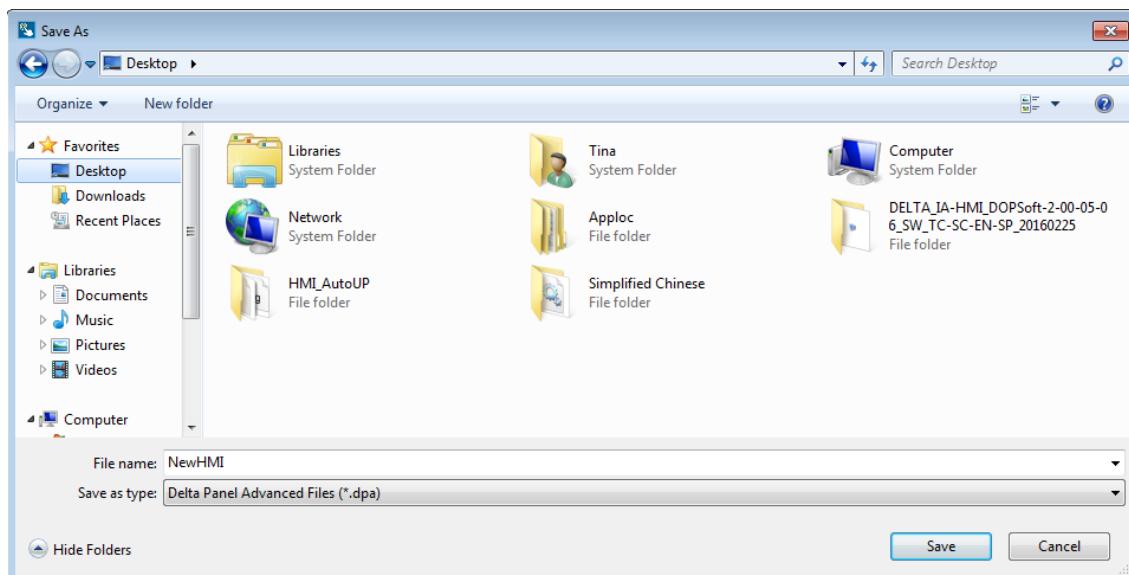


Figure 2.2.1.4.1 Save the file

### 2.2.1.5 Save As

Save As is to save the screen data you are editing to the system disk and you can name the file. You can execute this action only by going to [File] > [Save As]. Whether the project file is a new or an existing one, as long as you execute this function, the software prompts a Save As window, as shown in Figure 2.2.1.5.1. Click **Save** and the project will be saved in the path you specified for Save As.

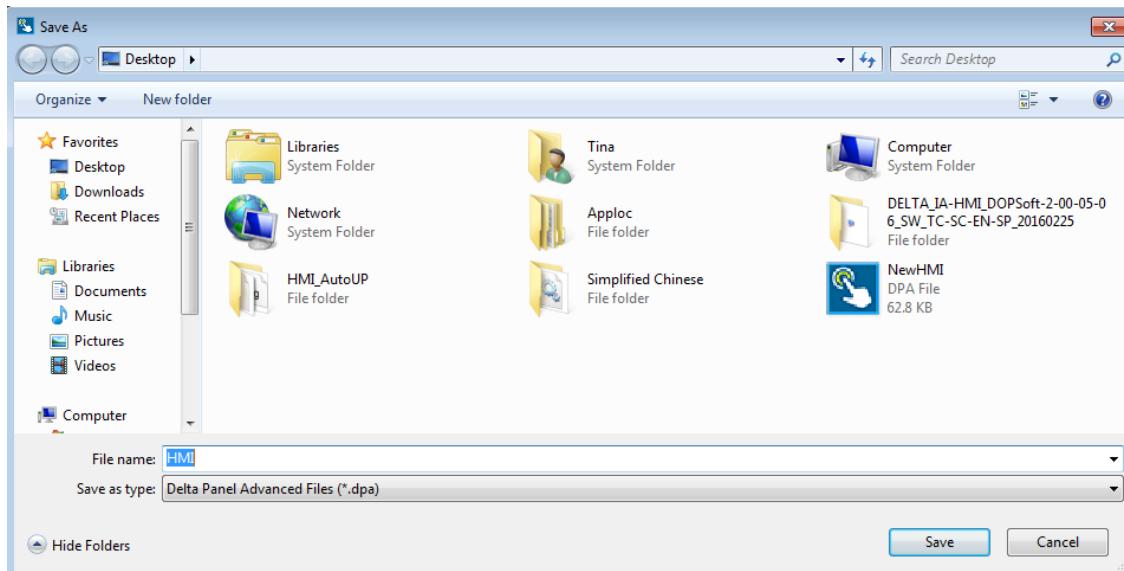


Figure 2.2.1.5.1 Save As

### 2.2.1.6 Create Screen Data File...

After you create the screen data file, the DOPSoft automatically compiles the screen data. After the compilation, the software prompts a saving directory for you to select. When you select the check box of **Enable Protection**, it means you have to enter the password you set to copy the files. The default is 12345678.

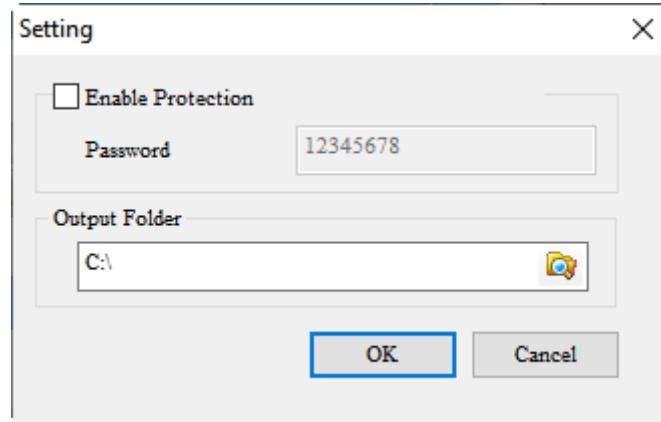


Figure 2.2.1.6.1 Create the screen data file

After you select the directory, the software copies the compiled screen data to the specified directory, which is usually in the SD Card or USB Drive, as shown in Figure 2.2.1.6.2. You can insert the SD Card or USB Drive and start the HMI. Go to the system screen and click [System Setting] > [File Manager] to use the functions of Format, File Copy, and Firmware Update. Details for these three functions are described in Appendix A System Screen.

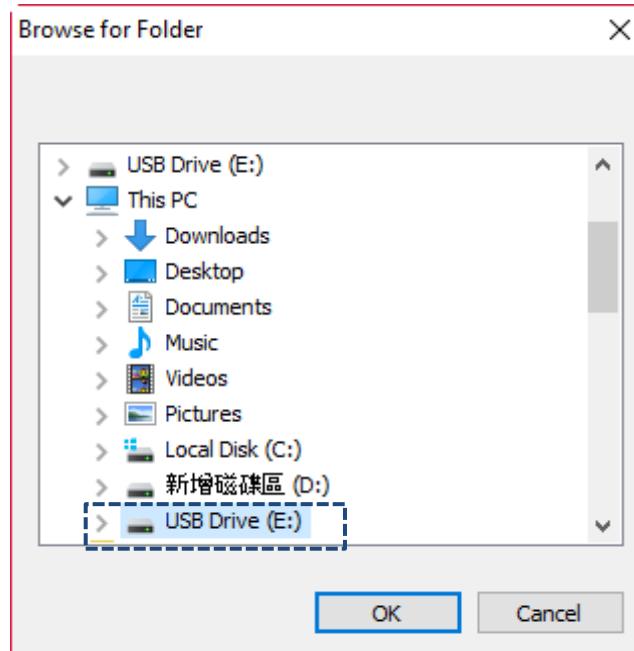


Figure 2.2.1.6.2 Directory for saving the create screen data file

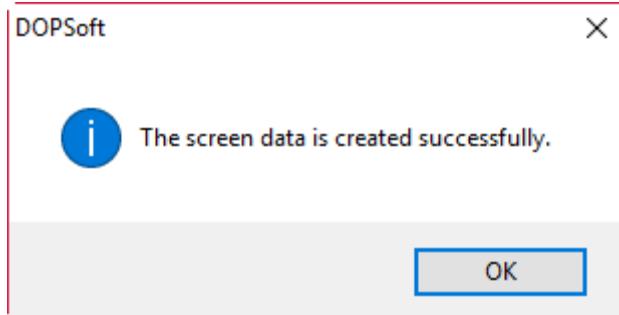


Figure 2.2.1.6.3 The screen data is created successfully

### 2.2.1.7 Create Auto Update Data File

After you create the auto update screen data file, the DOPSoft automatically compiles the current screen data. After the compilation, the software prompts a saving directory for you to select. When you select the check box of **Enable Protection**, it means you have to enter the password you set to copy the files. The default is 12345678.

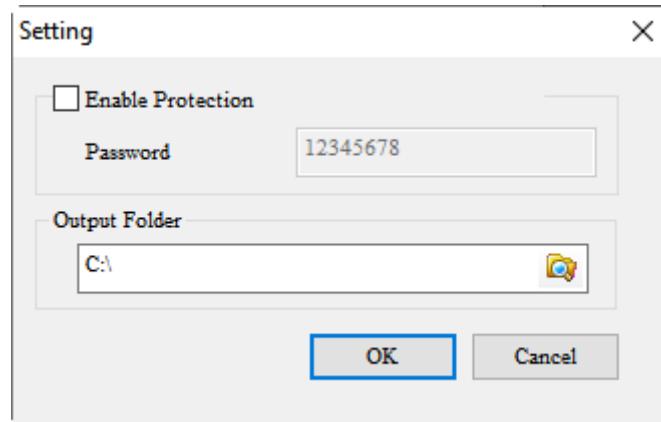


Figure 2.2.1.7.1 Create auto update data file

After you select the directory, the software copies the compiled screen data to the specified directory, which is usually in the SD card or USB drive, as shown in Figure 2.2.1.7.2.

The only difference between this function and Create Screen Data File is that before HMI powering on or returning to the system screen, if you insert a USB Drive, the HMI detects whether there is an auto update file (Disk Auto Update Check). If detected, the HMI prompts a window to ask if you want to start the automatic update, as shown in Figure 2.2.1.7.4. Select **OK** and the HMI automatically updates the firmware and screens; select **Cancel** and the HMI is unchanged.

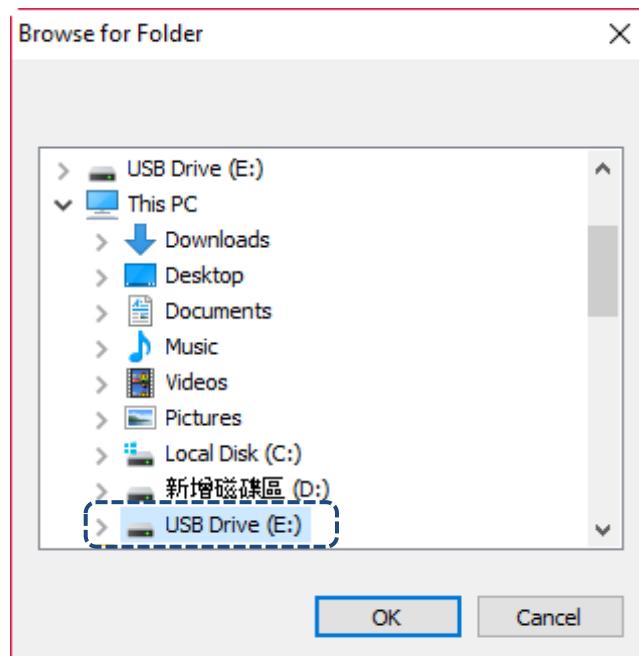


Figure 2.2.1.7.2 Directory for saving the create screen data file

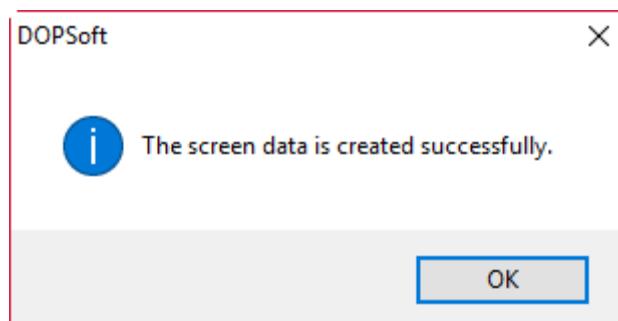


Figure 2.2.1.7.3 The screen data is created successfully

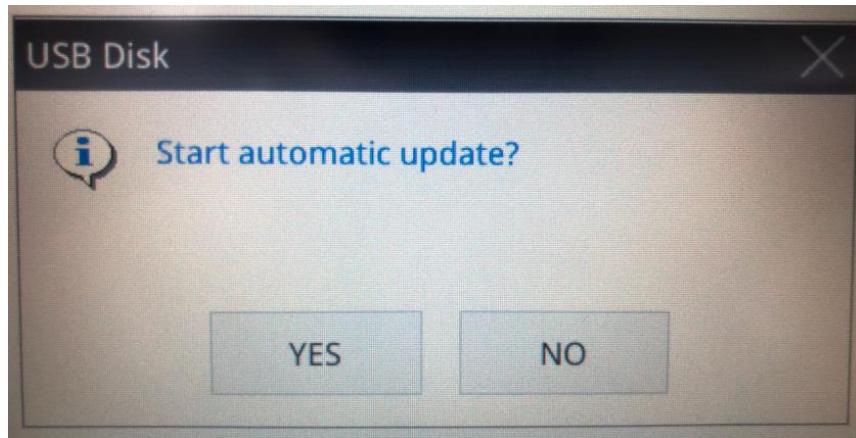


Figure 2.2.1.7.4 The HMI prompts a screen asking whether to start the automatic update

Once the auto update screen file is created, there will be an HMI\_AutoUP folder saved in the external device.

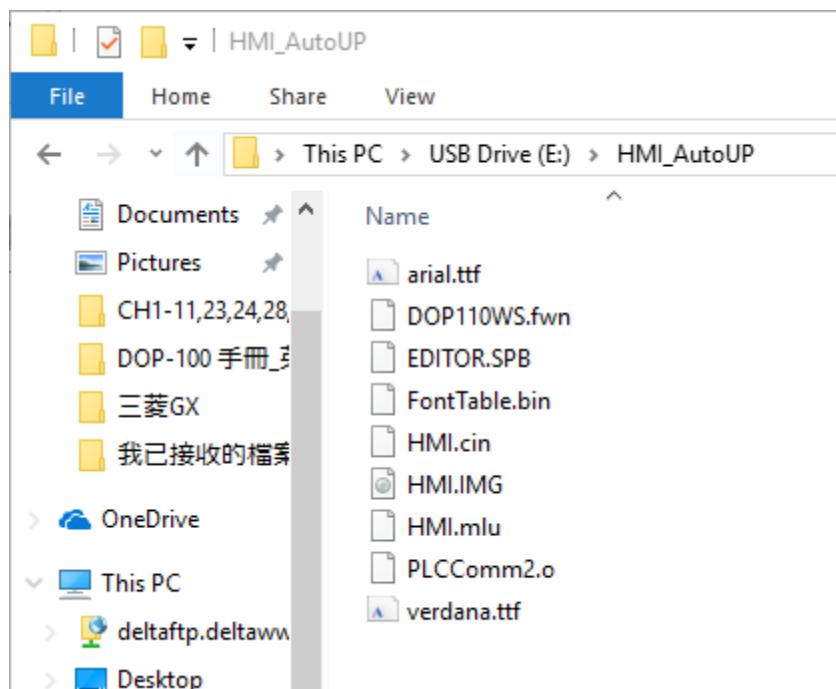


Figure 2.2.1.7.5 The directory generated by the auto update screen file you created

Note: if the external devices, the USB Disk and SD Card both have this HMI\_AutoUP folder for firmware and screen update, the HMI first updates the USB Disk and then the SD Card.

The rest of the functions are the same as the function of Create Screen Data File. You can insert the SD Card or USB Disk and start the HMI to go to the system screen. Click [System Setting] > [File Manager] to use the functions of Format, File Copy, and Firmware Update. Details for these three functions are described in Appendix A System Screen.

### 2.2.1.8 Open Screen Data File...

Once you click [Open Screen Data File], the software prompts you to select the directory where the screen data file is saved, as shown in Figure 2.2.1.8.1.

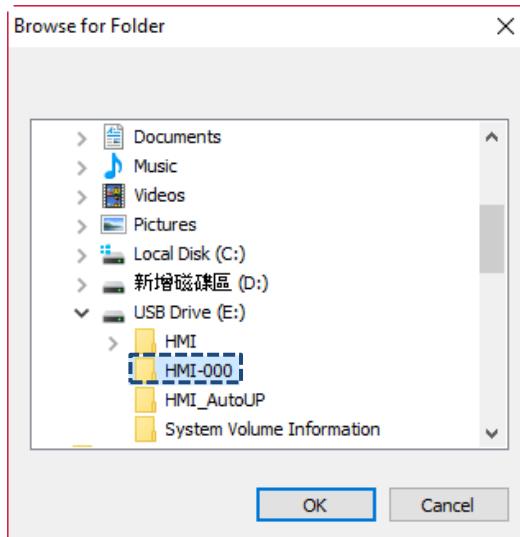


Figure 2.2.1.8.1 Select the screen data file

After you select the screen data file to open, the software will again ask you whether to rename or save the screen data file you open, as shown in Figure 2.2.1.8.2.

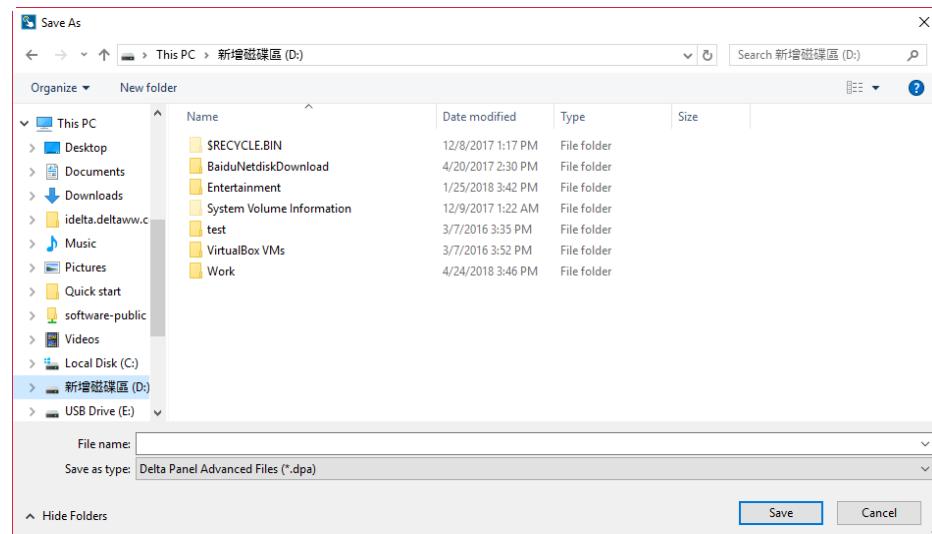
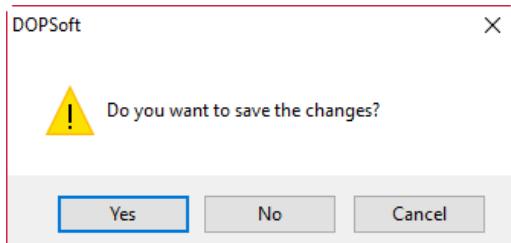


Figure 2.2.1.8.2 Save screen data file

### 2.2.1.9 Create Download Screen Exe. File...

This function is mainly for generating the execution file, which allows you to download the screen projects to the HMI without the DOPSoft. Click [Create Download Screen Exe. File...], and the software will prompt a directory for you to save the download screen execution file, as shown in Figure 2.2.1.9.1.

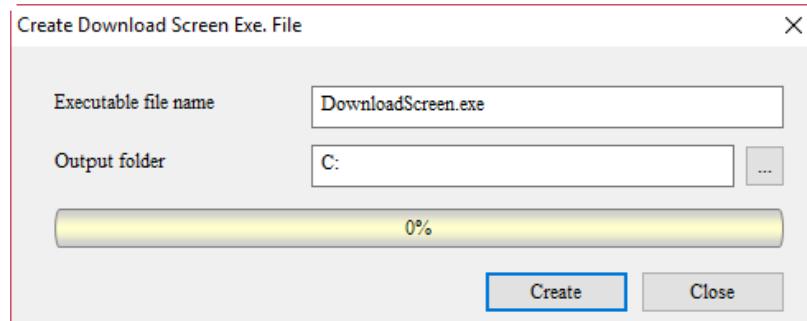


Figure 2.2.1.9.1 Select the output folder

Select the output folder and execution filename. You can also change the output folder, as shown in Figure 2.2.1.9.2.

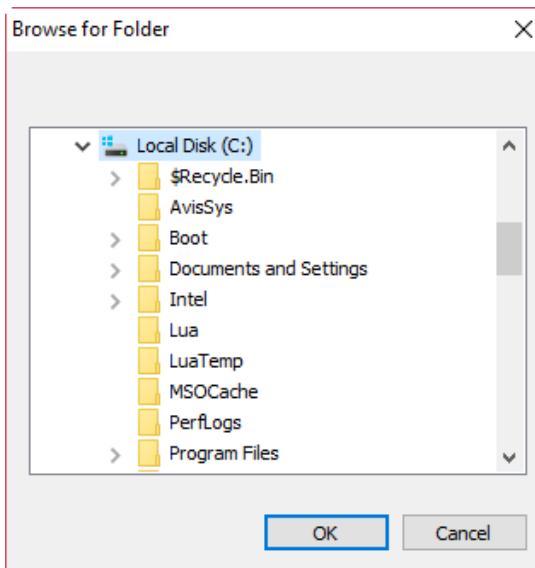


Figure 2.2.1.9.2 Directory for saving the created download screen execution file

2

Click **Create** to start creating the download execution file.

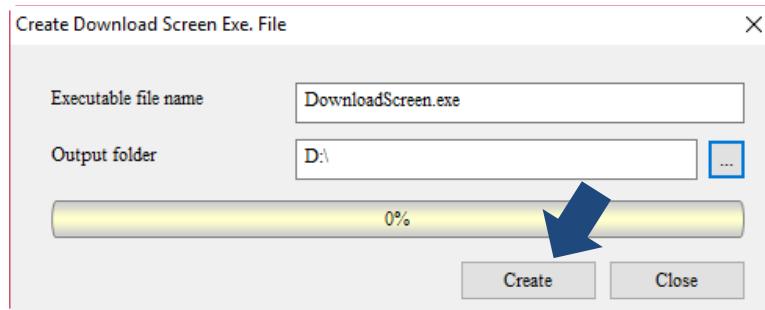


Figure 2.2.1.9.3 Start creating the download execution file

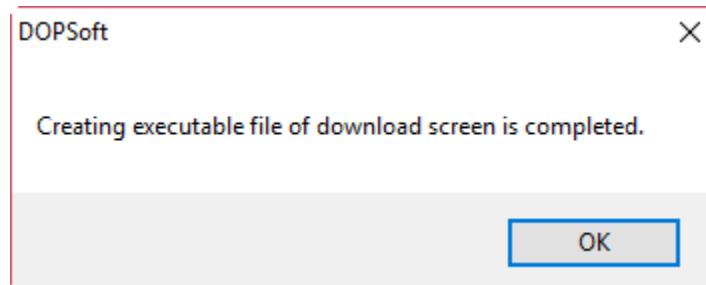


Figure 2.2.1.9.4 Creating the download execution file is complete

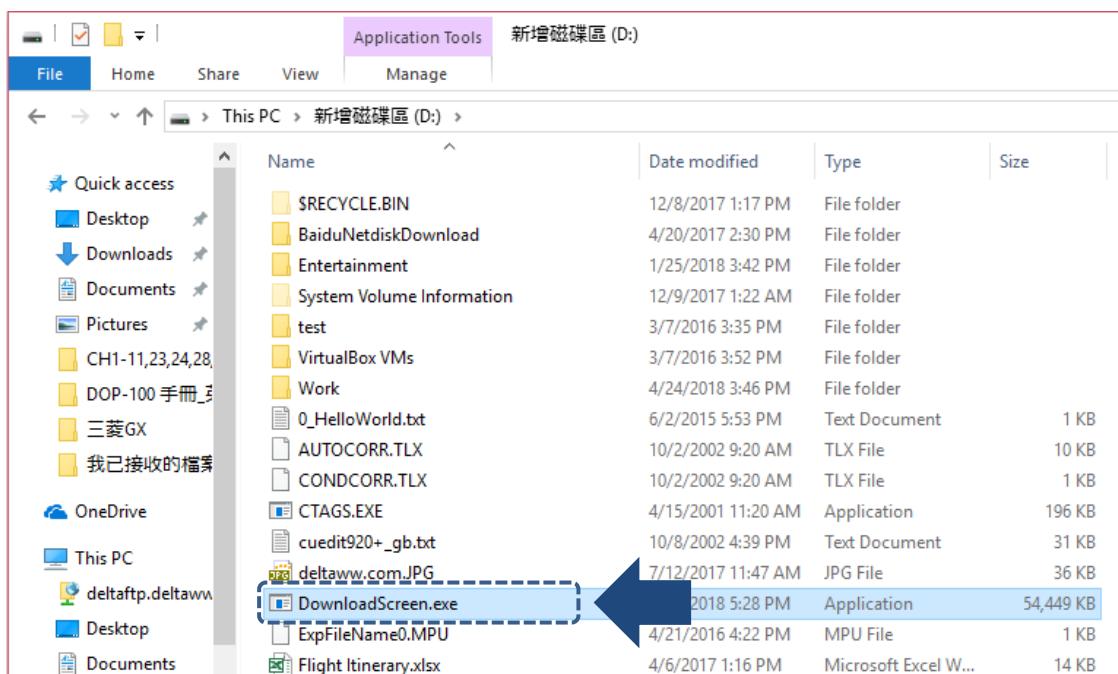


Figure 2.2.1.9.5 Execution file icon

The output folder will display the DownloadScreen.exe. file, and you can double-click the mouse left button to execute it and download the screen project to the HMI without the DOPSoft installed on your PC.

Click the DownloadScreen.exe file and the screen is shown as follows.

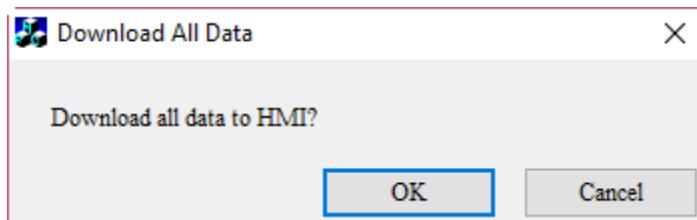


Figure 2.2.1.9.6 Execute download

Click **OK** and you can download the screen project to the HMI.

### 2.2.1.10 Password Protect

To execute password protection, you can go to [File] > [Password Protect] to enable this function. After you click [Password Protect], the software prompts a message to notify that the password protection is enabled.

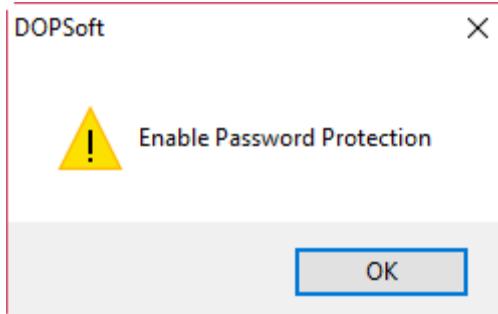


Figure 2.2.1.10.1 Password protection enabled

You can again click [File] > [Password Protect] to check if password protection is enabled for this project file. If enabled, the function list is shown as Figure 2.2.1.10.2.

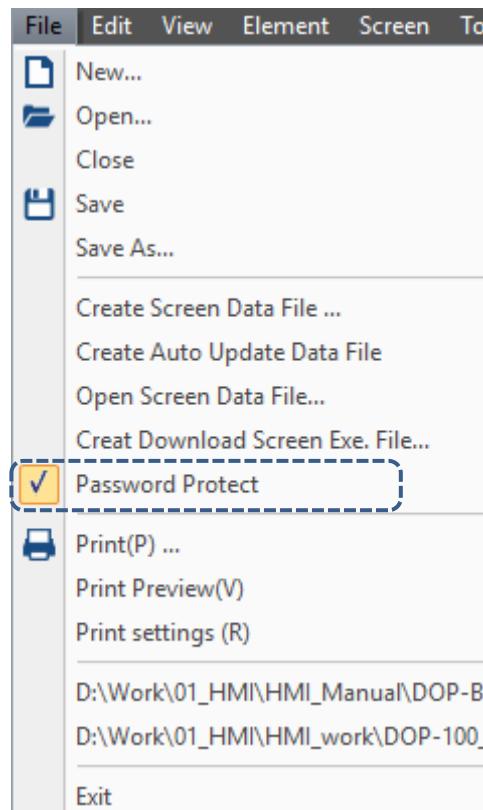


Figure 2.2.1.10.2 Password Protect enabled successfully

After Password Protect is enabled, you can change the password by going to [Options] > [Configuration] to change to a new set of password from the default Highest security password "12345678".

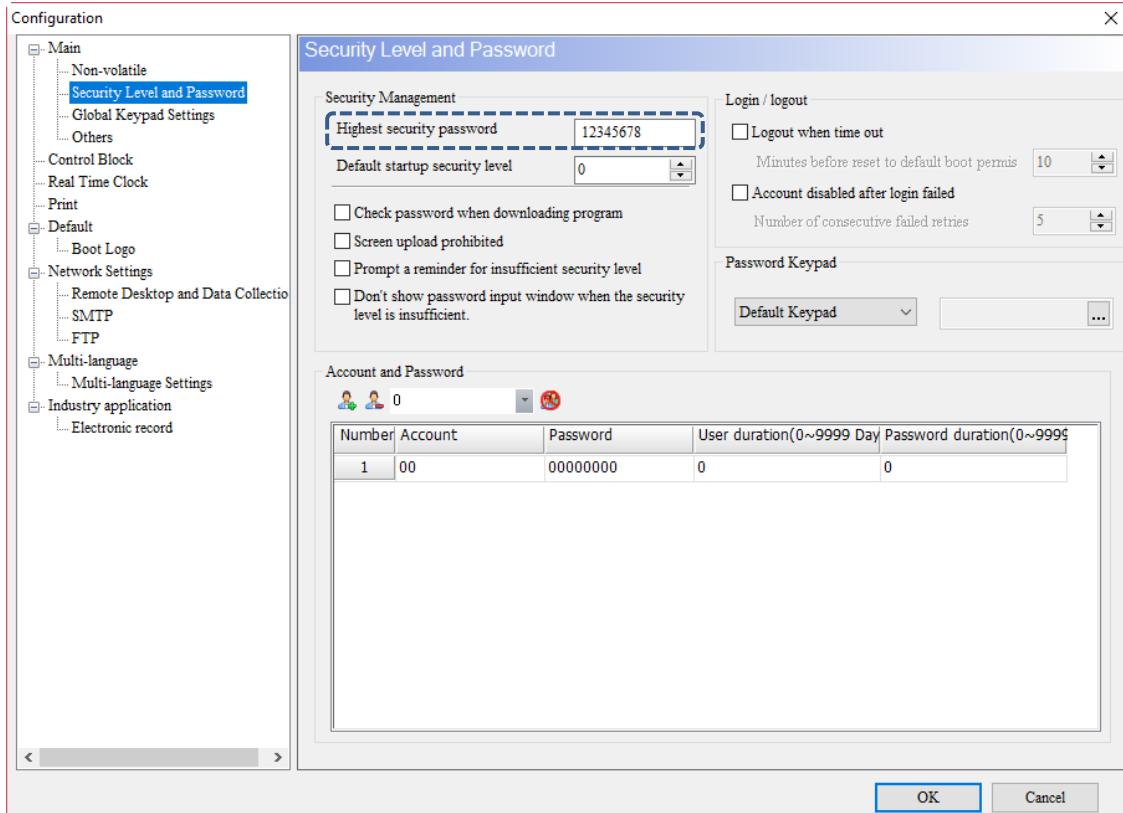


Figure 2.2.1.10.3 Security Level and Password settings

Once you complete the setting for the Highest security password, exit and save the project. And the next time you try to open the project, you will be asked to enter the password for opening this protected file.

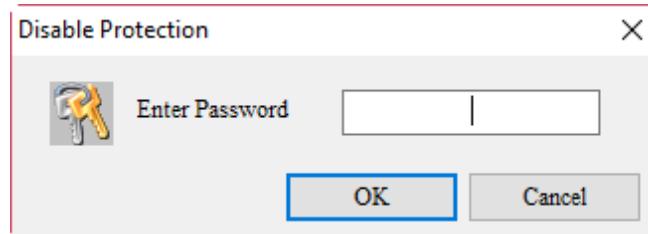


Figure 2.2.1.10.4 Request for entering the Highest security password

If you enter the wrong password, the software prompts a message window of incorrect password.

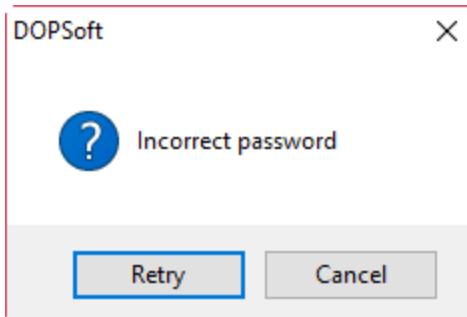


Figure 2.2.1.10.5 Enter the wrong password for the Highest security password

You can click **Retry** to re-enter the password or click **Cancel** to exit the password input window. If the password is correct, you can open the password-protected project file.

To disable the password protection, you need to go to [File] > [Password Protect] to disable this function. And the software will also prompt you that the Password Protect is disabled.

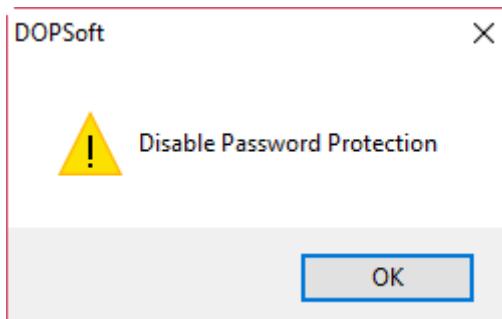


Figure 2.2.1.10.6 Password protection disabled

In the same way, you can go to [File] > [Password Protect] to check if this password protection is disabled for this project file. If it is disabled successfully, the Password Protect selection is canceled as shown in Figure 2.2.1.10.7.

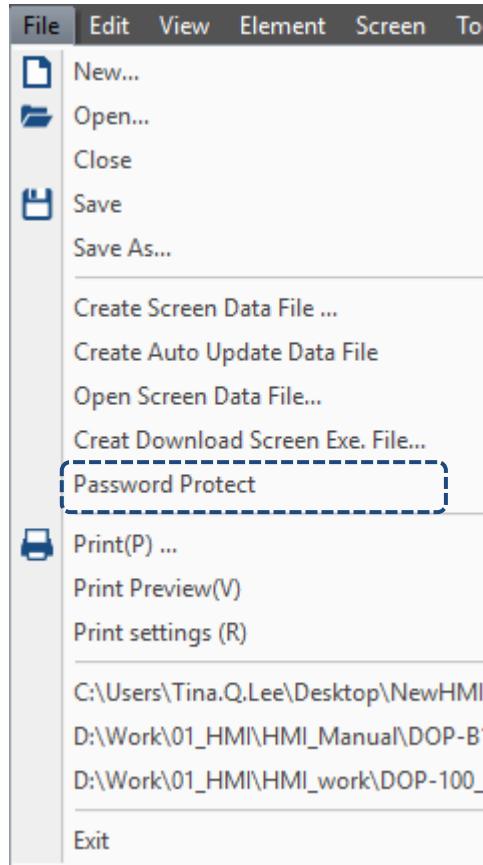
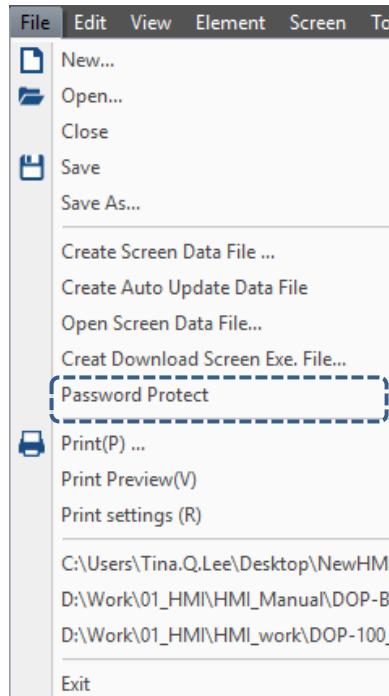
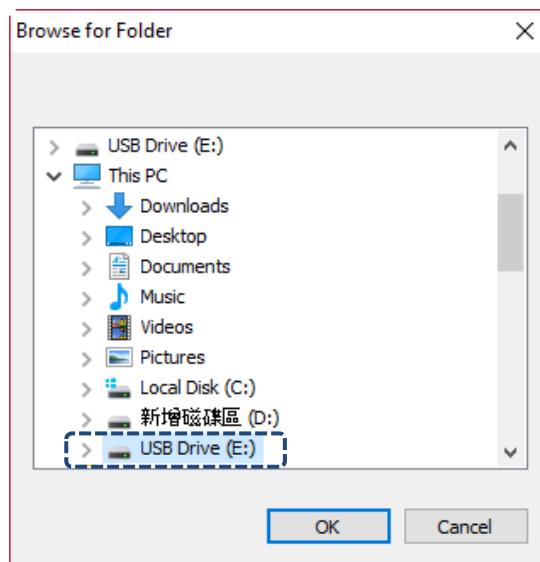
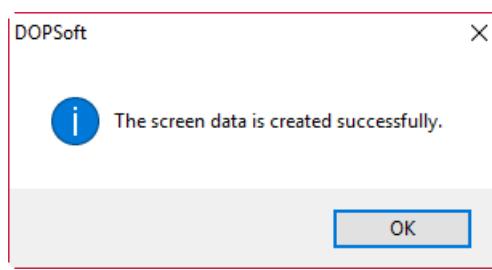


Figure 2.2.1.10.7 Password Protect disabled successfully

Once the Password Protect is disabled, exit and save the project. You do not need password verification the next time you open the project.

The Password Protect function can work with the Create Screen Data File function. This allows you to set whether a password is required for verification when you copy files from an external device to the HMI. Example descriptions for this function are as follows.

Table 2.2.1.10.1 Password Protect example

<b>Password Protect</b>	
Select Password Protect	<p>Click [File] &gt; [Password Protect].</p> 
Create Screen Data File	<p>Select the option of [Create Screen Data File] and select an external device for storage. Once the screen data file creation is complete, go to the HMI system screen.</p> 
Execution results	<p>Insert the external storage device to the HMI. Go to [System Setting] &gt; [File Manager], and you can copy files from the external device to the HMI without password verification.</p> 

## 2.2.2 Edit

There is an Edit function list with the following functions for you to use.

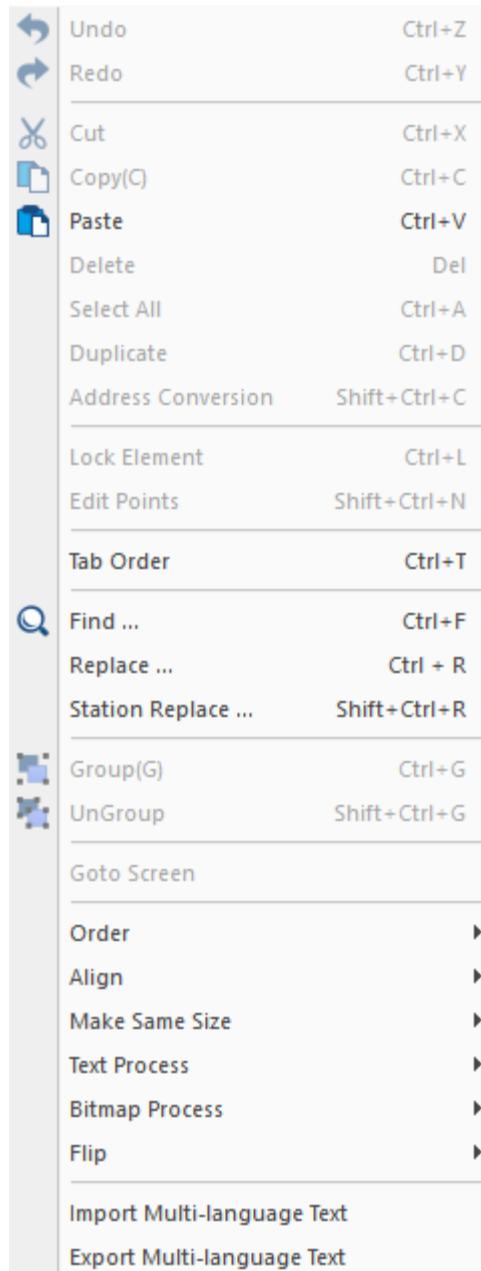


Figure 2.2.2.1 Edit function list

### 2.2.2.1 Duplicate

The Duplicate function allows you to select one element and then right-click the mouse button to execute multiple duplicate actions. With this function, you can select one element and duplicate the element based on the addresses in descending or ascending order, which saves the time for manually setting the element addresses. You can also go to [File] > [Duplicate] to execute this function. Click [Duplicate] and the window is shown as Figure 2.2.2.1.1.

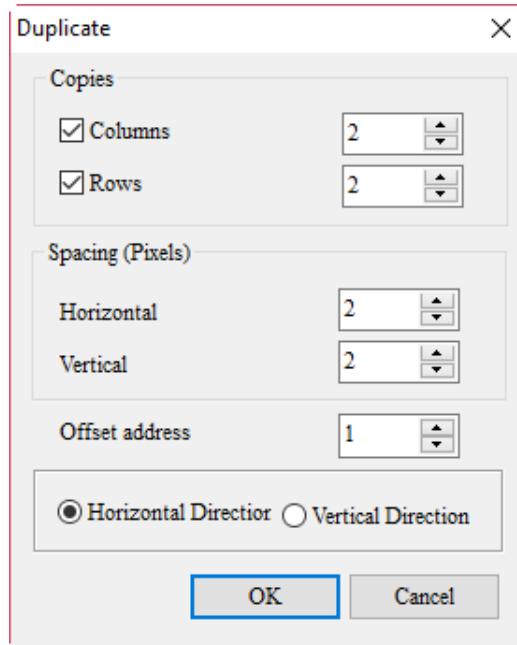


Figure 2.2.2.1.1 Duplicate

The following table is the detailed description for Duplicate, including Copies, Spacing, and Offset address.

Table 2.2.2.1.1 Duplicate

<b>Copies</b>	Columns	In the Copies section, select the number of columns (X) and number of rows (Y) to get a total number of X * Y elements. To duplicate the element in single direction, select Horizontal Direction or Vertical Direction to enable this function.			
	Rows				
<b>Spacing (Pixels)</b>	Horizontal	The spacing between each element. After you set the spacing value, the new elements will automatically be separated based on the spacing you set after the duplication is complete.			
	Vertical				
<b>Offset address</b>	Horizontal Direction	You can first determine the address to be set in ascending order (positive value) or descending order (negative value), and then execute Duplicate based on the settings of Horizontal Direction and Vertical Direction. If the element data type is Word, the address value increases / decreases in Word as the unit; on the other hand, if the element data type is Bit, then the address increases / decreases in Bit as the unit.			
	Vertical Direction	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="width: 50%;">Horizontal Direction</th> <th style="width: 50%;">Vertical Direction</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Horizontal Direction	Vertical Direction	
Horizontal Direction	Vertical Direction				

For the Duplicate function example settings, refer to the following table.

Table 2.2.2.1.2 Duplicate example

Duplicate												
Element address	Word	Bit										
	\$0	\$0.0										
Copies	<div style="border: 1px solid #ccc; padding: 10px;"> <p>Duplicate</p> <p>Copies</p> <p><input checked="" type="checkbox"/> Columns <input type="button" value="2"/></p> <p><input checked="" type="checkbox"/> Rows <input type="button" value="2"/></p> <p>Spacing (Pixels)</p> <p>Horizontal <input type="button" value="2"/></p> <p>Vertical <input type="button" value="2"/></p> <p>Offset address <input type="button" value="1"/></p> <p><input checked="" type="radio"/> Horizontal Direction <input type="radio"/> Vertical Direction</p> <p style="text-align: center;"><span style="border: 1px solid blue; padding: 2px;">OK</span> <span>Cancel</span></p> </div>											
Spacing (Pixels)												
Offset address												
Execution results	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Word</th> <th>Bit</th> </tr> </thead> <tbody> <tr> <td>W:\$0 \$0</td> <td>W:\$1 \$1</td> </tr> <tr> <td>W:\$2 \$2</td> <td>W:\$3 \$3</td> </tr> <tr> <td>W:\$0.0 \$0.0</td> <td>W:\$0.1 \$0.1</td> </tr> <tr> <td>W:\$0.2 \$0.2</td> <td>W:\$0.3 \$0.3</td> </tr> </tbody> </table>	Word	Bit	W:\$0 \$0	W:\$1 \$1	W:\$2 \$2	W:\$3 \$3	W:\$0.0 \$0.0	W:\$0.1 \$0.1	W:\$0.2 \$0.2	W:\$0.3 \$0.3	
Word	Bit											
W:\$0 \$0	W:\$1 \$1											
W:\$2 \$2	W:\$3 \$3											
W:\$0.0 \$0.0	W:\$0.1 \$0.1											
W:\$0.2 \$0.2	W:\$0.3 \$0.3											

### 2.2.2.2 Address Conversion

This function converts the address of the element which address has been set. You must set the address of the element before selecting the element for address conversion. With this function, you can easily manage and set the addresses when you add or modify communication connections.

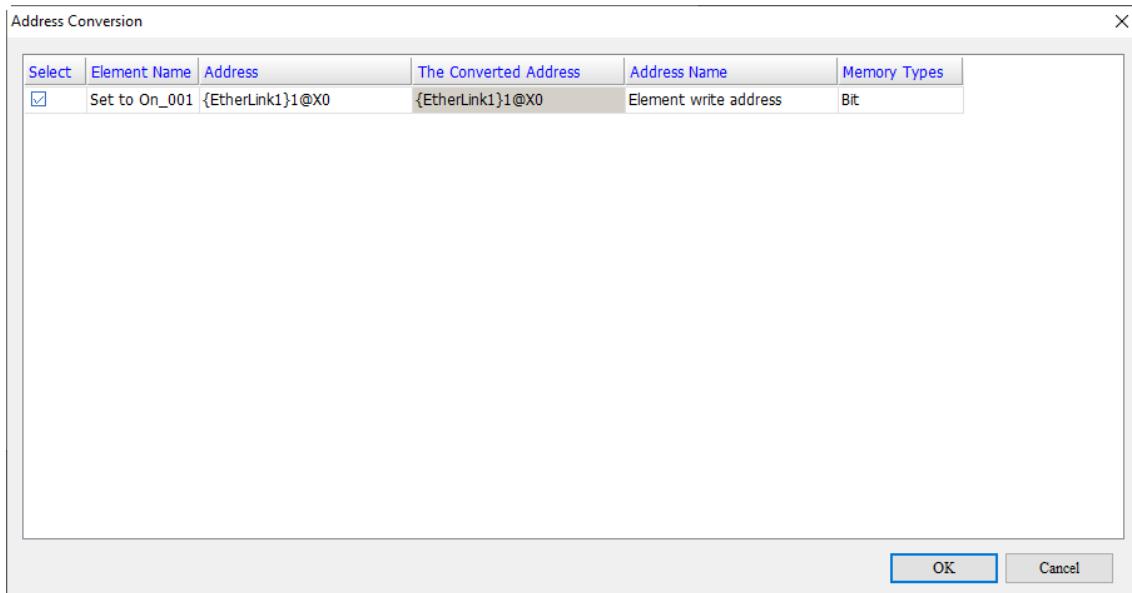
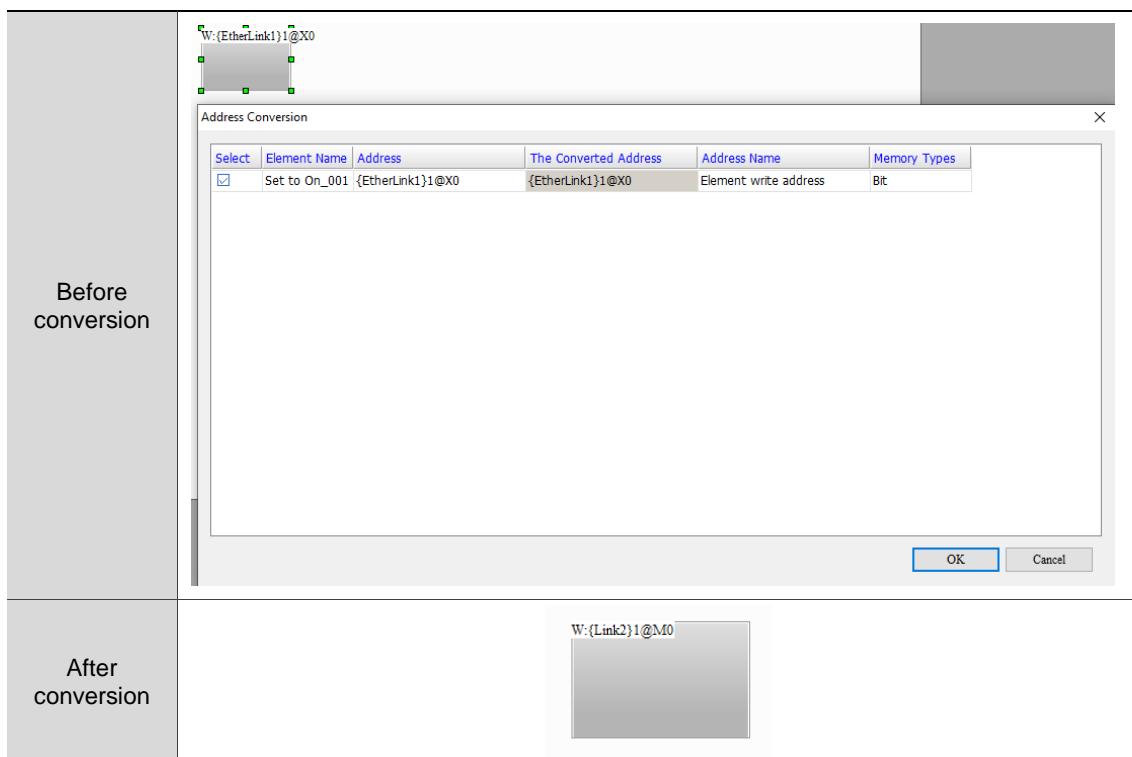


Figure 2.2.2.2.1 Address conversion

To convert the address, simply enter the modified or added address to The Converted Address column, and click **OK**.

Table 2.2.2.2.1 Address conversion example



### 2.2.2.3 Lock Element

When there are multiple overlapped elements, it could be difficult to select or drag the element at the bottom layer and you might accidentally move the other elements. With this function, you can lock the element by right-clicking on the element you finished editing. As shown in the following figure, a pin icon appears on the top-right corner.



Figure 2.2.2.3.1 Lock Element

The locked element will not be selected or clicked, so you can edit complicated screens more easily.

To unlock the element, simply click the pin icon. Then, the pin icon disappears and the features of this element are recovered.

### 2.2.2.4 Edit Points

The DOPSoft also provides another function, Edit Points. This function allows you to edit the polygon, hollow circle, stop circle, arc, and pie chart elements. To use this function, create one of the elements mentioned above before clicking [Edit] > [Edit Points].

After you create the element and click [Edit] > [Edit Points], the editing points on the polygon, hollow circle, stop circle, arc, and pie chart elements are shown in Table 2.2.2.4.1.

Table 2.2.2.4.1 Before using Edit Points

Before using Edit Points				
Polygon	Hollow Circle	Stop Circle	Arc	Pie Chart

You can adjust the shape as required as shown in Table 2.2.2.4.2.

Table 2.2.2.4.2 After using Edit Points

After using Edit Points				
Polygon	Hollow Circle	Stop Circle	Arc	Pie Chart

### 2.2.2.5 Tab Order

With the Tab Order function, you can use the **Tab** key on the keypad to select the elements of the HMI. To use this function, create at least two elements and execute them, and the sequence numbers appear on the elements. Then, you can change the sequence numbers by clicking the number in blue at the bottom-left corner.

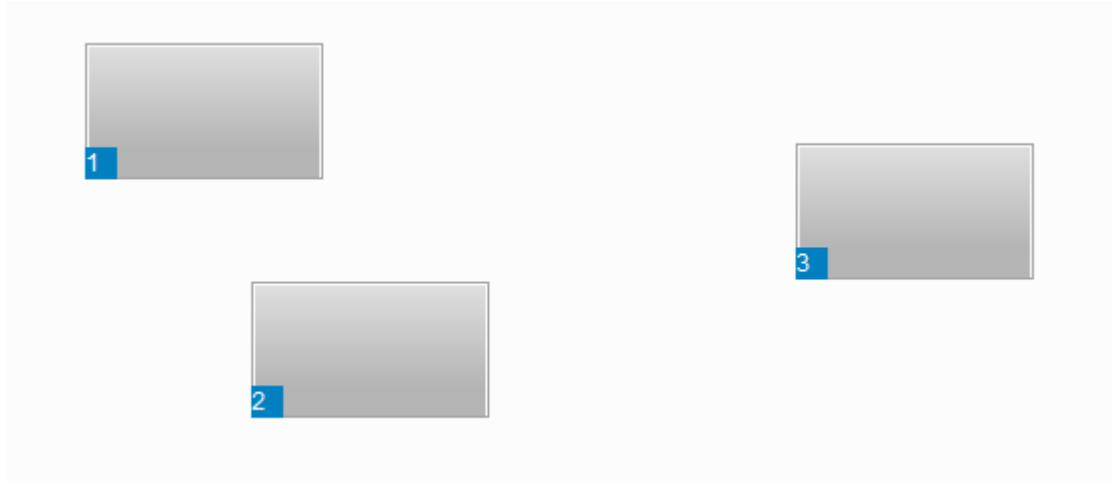


Figure 2.2.2.5.1 Tab Order

After downloading the elements to the HMI, use the **Tab** key on the keypad to select the element to be executed. The border of the selected element is in light blue.

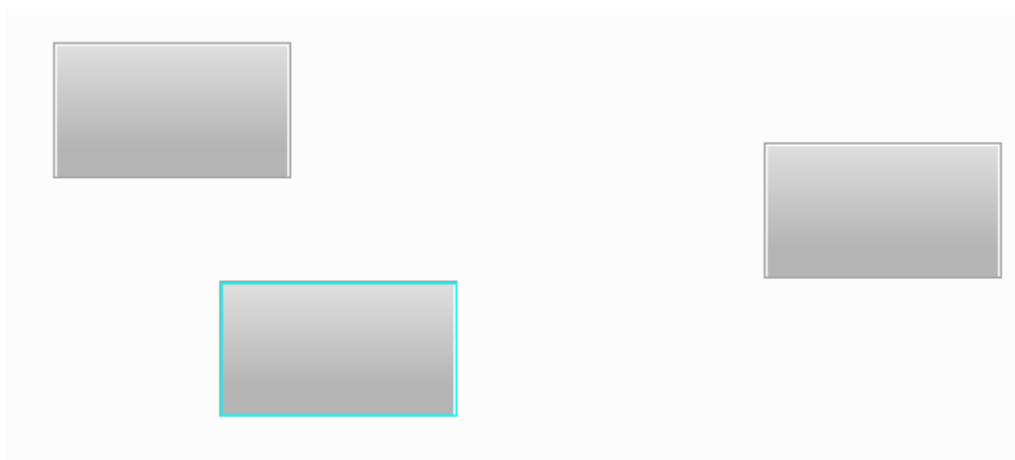


Figure 2.2.2.5.2 Execute **Tab** key action

### 2.2.2.6 Find

To find the specified text and address, you can go to [Edit] > [Find] or use the system keyboard shortcut **CTRL + F** provided by the system. This function allows you to quickly find the result.

The Find function also adds the Data Type option so the results are more accurate and can be categorized in the displaying result window. After you click the Find function, enter the content to be found and then go to Options to select Current Screen or All Screens. The Type search options includes Text, Element read address, Element write address, and All Addresses. The available search options for Data Type are Bit, WORD, or DWORD, as shown in Figure 2.2.2.6.1.

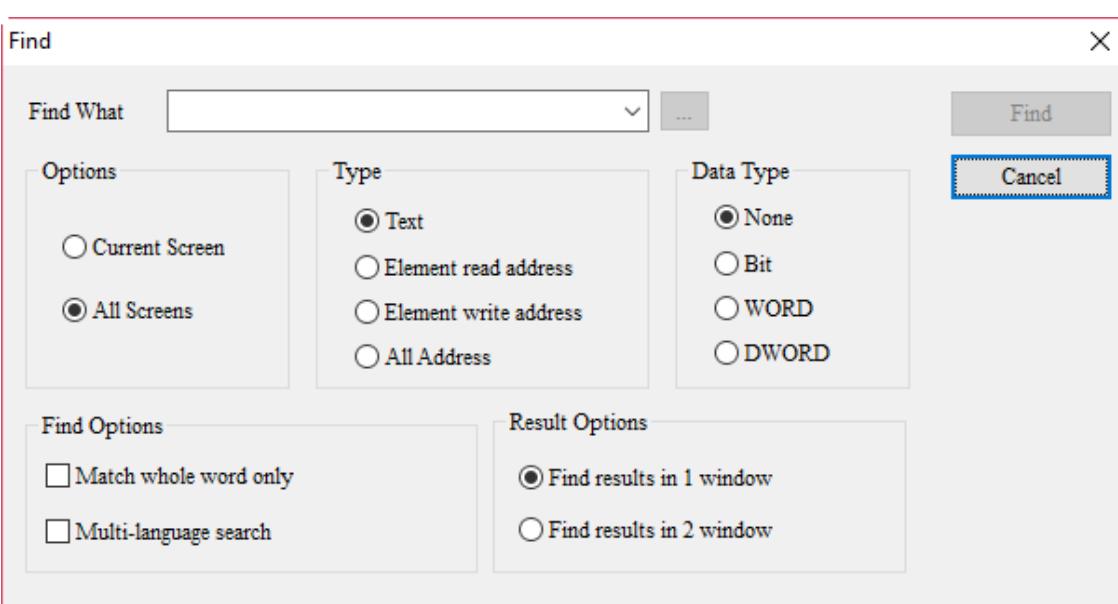


Figure 2.2.2.6.1 Find

Set the Type and Data Type to search and show the results in Search Results 1 or Search Results 2. Then, click **Find** and the system finds the matched contents for you. When the contents are found, the found elements are output to the specified result window. If you click the items in the output window, the cursor automatically specifies the corresponding element as shown in Figure 2.2.2.6.2.

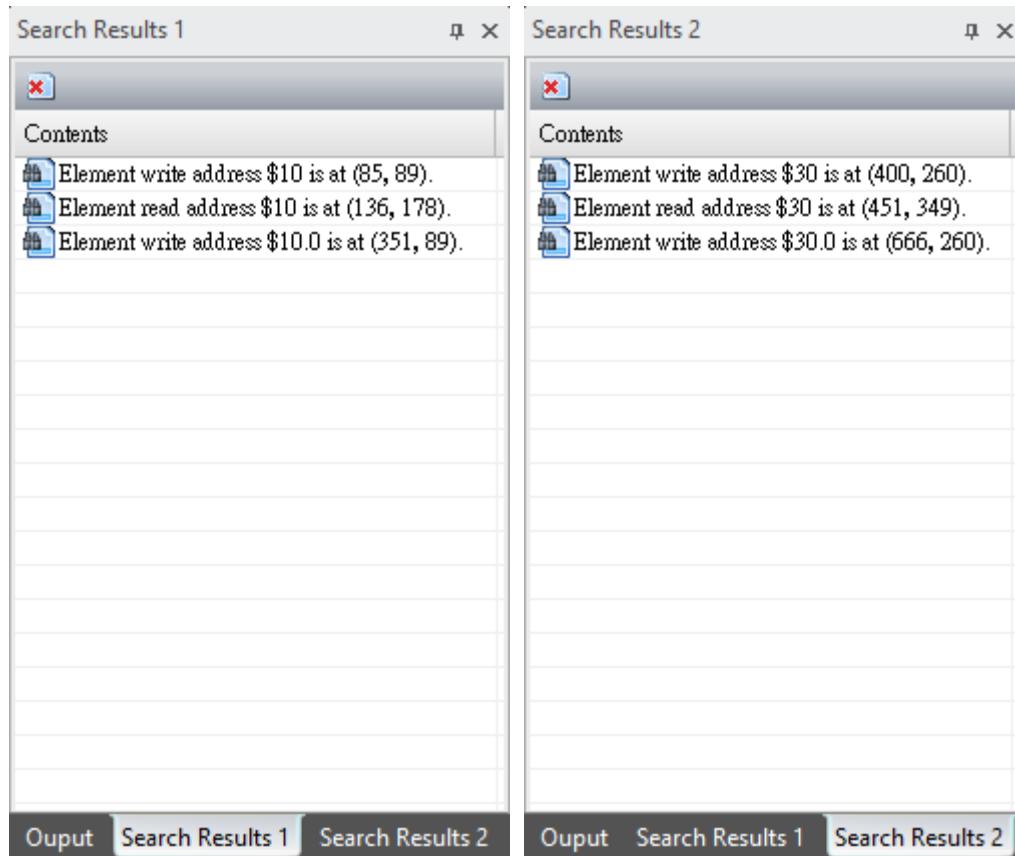


Figure 2.2.2.6.2 Output results

The following provides the setting screens for the Find function.

Table 2.2.2.6.1 Description for Find function

Find		
Find What	Enter the content to be found.	
Options	Current Screen	The system scans the current screens to compare each element in the current screen, and then displays the matched results in the output window. You can double-click the items in the output window to find the searched elements.
	All Screens	The system scans all screens to compare every element in each screen, and then displays the matched results in the output window. You can also double-click the items in the output window to find the searched elements.
Type	Text	Compare the element text.
	Element read address	Compare the element read address.
	Element write address	Compare the element write address.
	All Address	Compare the read and write addresses of the element.
Data Type	None	Search the register address without specifying the data type.
	Bit	Search for the address in Bit.
	WORD	Search for the address in WORD.
	DWORD	Search for the address in DWORD.
Find Options	Match whole word only	Compare all input contents when searching. If this check box is not selected, it means the HMI searches the contents that are both partly and fully matched; if this box is selected, the HMI only searches the content that is fully matched.
	Multi-language search	This is only available for searching texts. If this box is not selected, the HMI only searches for the contents based on the currently used language; if the box is selected, the HMI searches for the contents for all languages.
Result Options	Find results in 1 window	Output the search results to Search Results 1.
	Find results in 2 window	Output the search results to Search Results 2.

### 2.2.2.7 Replace

To replace the specified text or address, click [Edit] > [Replace] or use the system keyboard shortcut **CTRL + R**. Input the contents to find and replace, and select Current Screen or All Screens. The Type for Replace can be Text, Read Address, or Write Address. The Data Type becomes selectable only when you select Read Address or Write Address for Type. The available options are Bit, WORD, and DWORD, as shown in Figure 2.2.2.7.1.

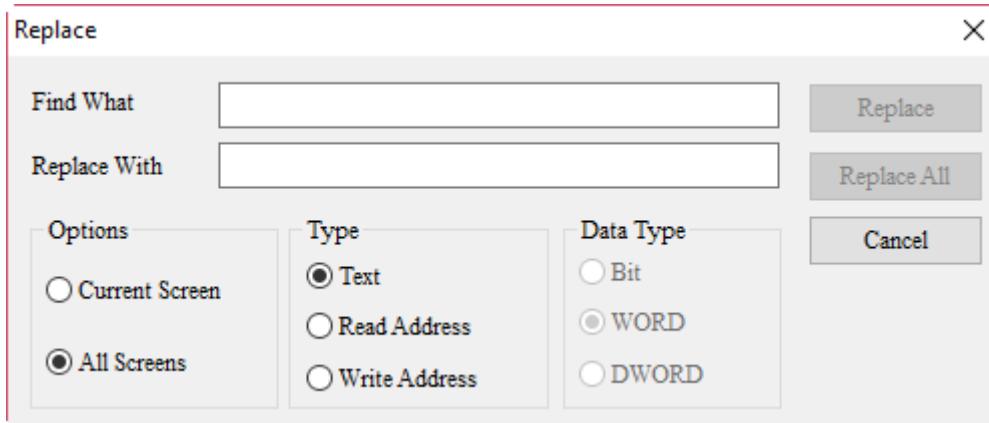


Figure 2.2.2.7.1 Replace

The following introduces the setting screens of the Replace function.

Table 2.2.2.7.1 Description for the Replace function

Replace		
<b>Find What</b>	Enter the content to be found.	
<b>Replace With</b>	Enter the content to be replaced.	
<b>Options</b>	Current Screen	The system scans the current screens to compare each element in the current screen, and then replaces the matched items.
	All Screens	The system scans all screens to compare every element in each screen, and then replaces the matched items.
<b>Type</b>	Text	Replace the matched text.
	Read Address	Replace the matched read address.
	Write Address	Replace the matched write address.
<b>Data Type</b>	Bit	This is enabled only when the target to be replaced is a read address or a write address; the available data types are Bit, WORD, and DWORD.
	WORD	The Data Type you select is determined by the element data type you search.
	DWORD	
<b>Filter</b>	It is enabled when the target to be replaced is a read address or a write address. The available options are Element, Macro, Control/Status Block, History Buffer, Alarm, Recipe, Sound, Screen Print Setup, Real Time Clock, Screen, Operation Log Setup, and Event trigger.	
<b>Example</b>	<p>(1) Set \$555 for the write addresses of the Increment and Decrement buttons.</p> <p>(2) Execute the Replace function. Input \$555 for Find What and \$999 for Replace With. Since the addresses of the Increment and Decrement buttons are write addresses, you must select Write Address for Type of the replacement. And you need to select Word because the Data Type set for the Increment and Decrement buttons is Word.</p> <p>(3) After you click <b>Replace All</b>, the addresses \$555 of the Increment and Decrement buttons are replaced with \$999.</p>	

### 2.2.2.8 Replace PLC Address

To replace the station number, click [Edit] > [Replace PLC Address]. This function allows you to quickly find the station number and replace it with a new station number, and select its Link Name and Options. If the project file has multiple links, you can specify the link name for replacement.

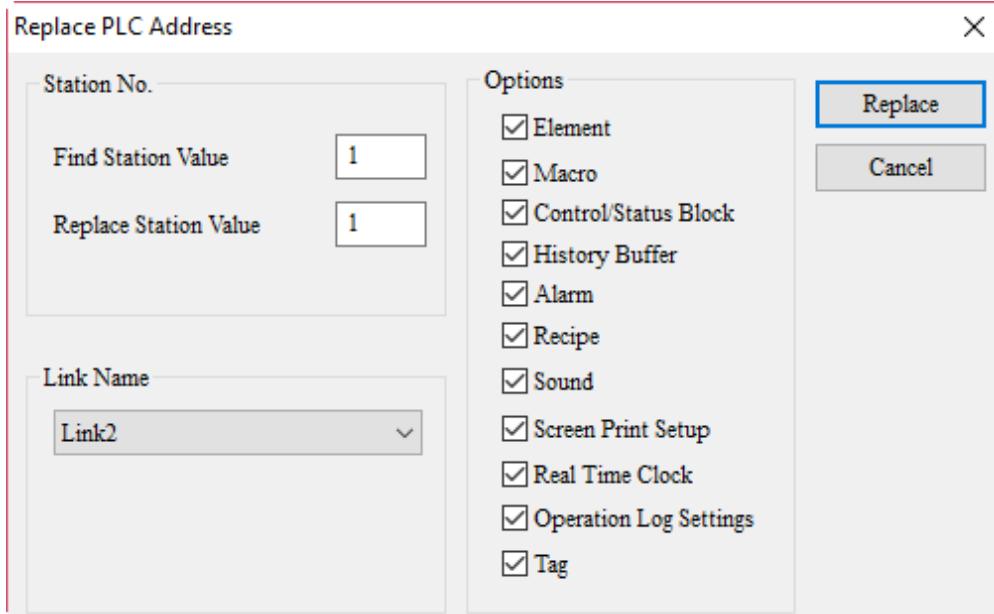
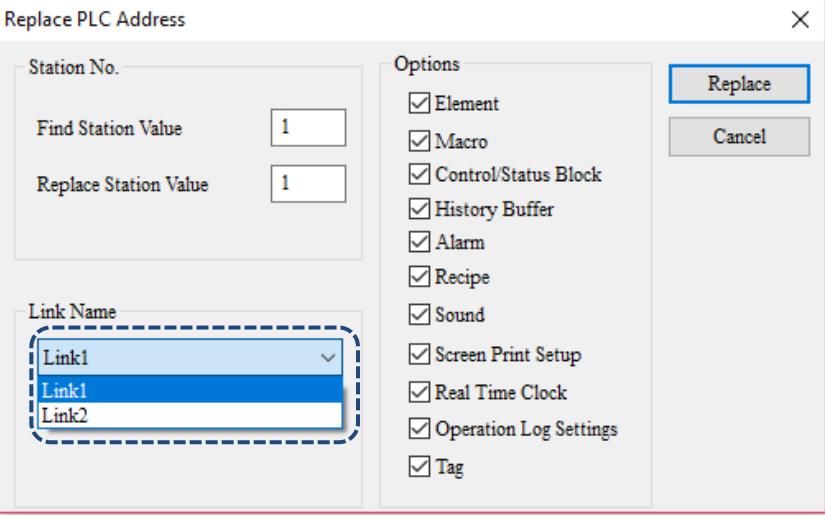


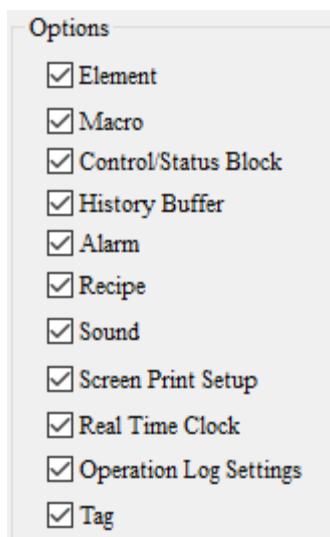
Figure 2.2.2.8.1 Replace PLC Address

Table 2.2.2.8.1 Replace PLC Address example

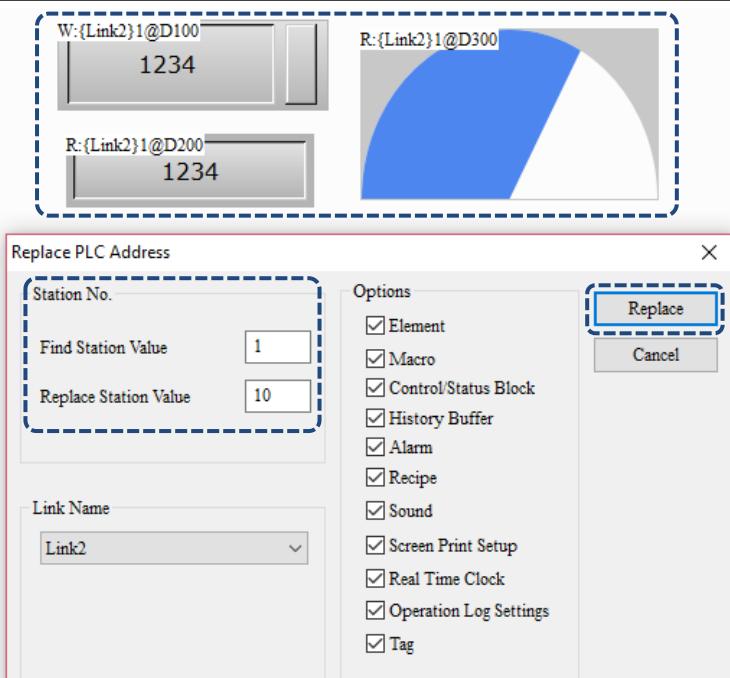
Replace PLC Address	
<b>Find Station Value</b>	Enter the content to be found.
<b>Replace Station Value</b>	Enter the content to be replaced.
<b>Link Name</b>	You can determine the Link Name to be replaced based on the base port you created, as shown in the following figure. 

**Options**

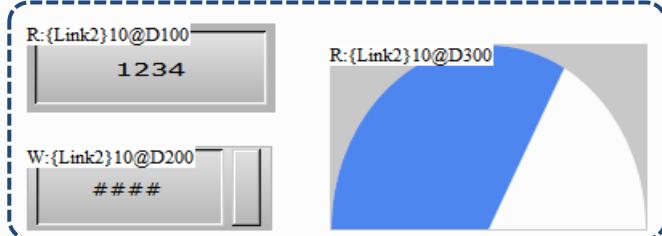
There are eleven categories for you to select for replacement, as shown in the following figure.

**Example**

Before replacing station No.



After replacing station No.



Click **Replace** and {Link2}1 is replaced with {Link2}10.

### 2.2.2.9 Group

To use the Group function, select two or more elements before grouping the elements.

You can go to [Edit] > [Group], click  on the Layout toolbar

, or go to the right-click

menu to select Group.

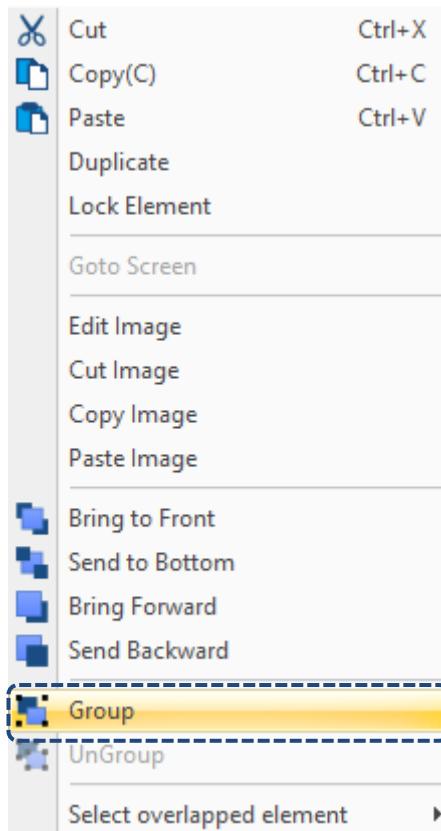
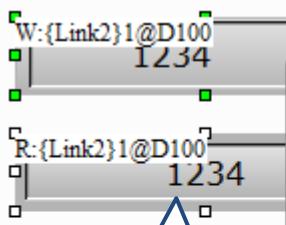
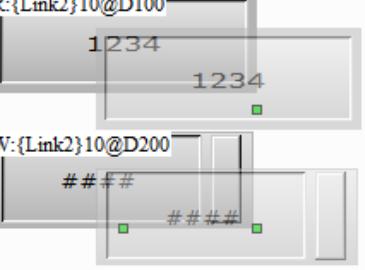
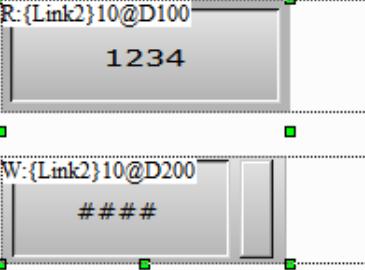
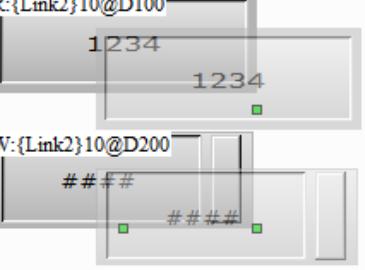
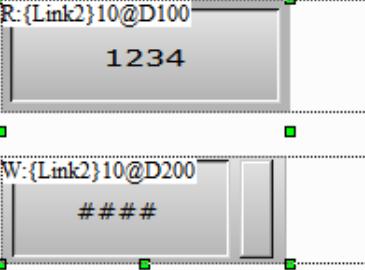
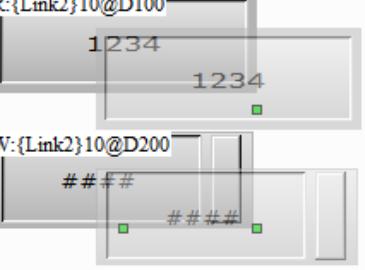
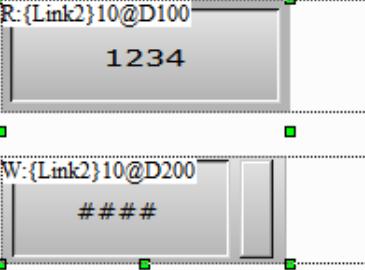


Figure 2.2.2.9.1 Group

To edit a single element in the grouped elements, you can simply click on the group, and select and double-click the element to be edited.

Note: regardless of how many elements you select, once these elements are grouped, the software treats this group of elements as one element. When you move the elements, all the grouped elements are moved all at once; when you resize the elements, the grouped elements are resized all at once.

Table 2.2.2.9.1 Group function example

Group					
Before grouping	 <p>Select two or more elements before executing the Group function.</p> <p>Context menu options include: Cut (Ctrl+X), Copy(C) (Ctrl+C), Paste (Ctrl+V), Duplicate, Lock Element, Goto Screen, Edit Image, Cut Image, Copy Image, Paste Image, Bring to Front, Send to Bottom, Bring Forward, Send Backward, Group (highlighted), Ungroup, and Select overlapped element.</p>				
After grouping	<table border="1"> <thead> <tr> <th>Move</th> <th>Resize</th> </tr> </thead> <tbody> <tr> <td>  <p>Move the grouped elements at once.</p> </td> <td>  <p>Resize the grouped elements at once.</p> </td> </tr> </tbody> </table>	Move	Resize	 <p>Move the grouped elements at once.</p>	 <p>Resize the grouped elements at once.</p>
Move	Resize				
 <p>Move the grouped elements at once.</p>	 <p>Resize the grouped elements at once.</p>				

### 2.2.2.10 UnGroup

To use the UnGroup function, you must first select the grouped elements. Then, you can go to [Edit] > [UnGroup], click  in the Layout toolbar

, or use the right-click

2

menu to select UnGroup. The software treats the ungrouped elements as independent elements, so you can only operate them individually.

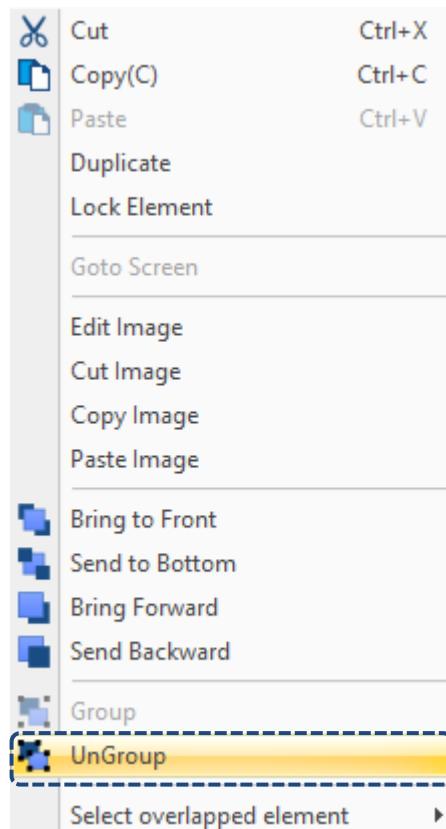


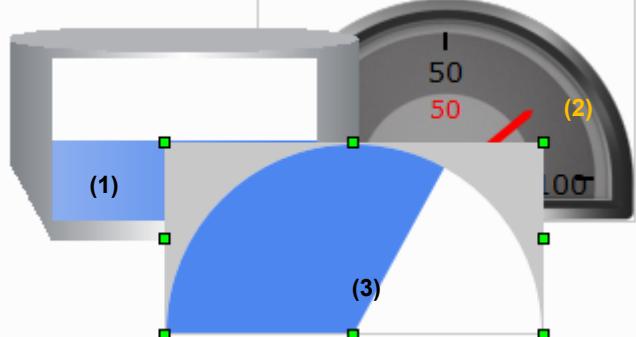
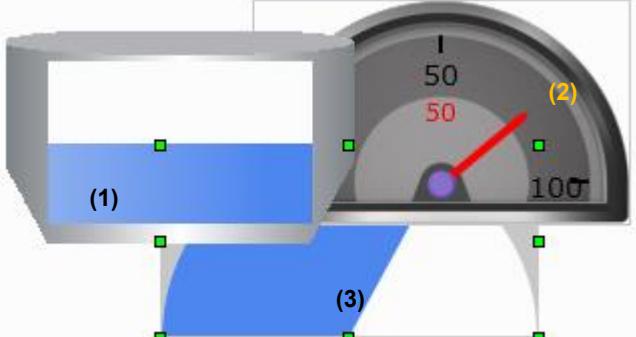
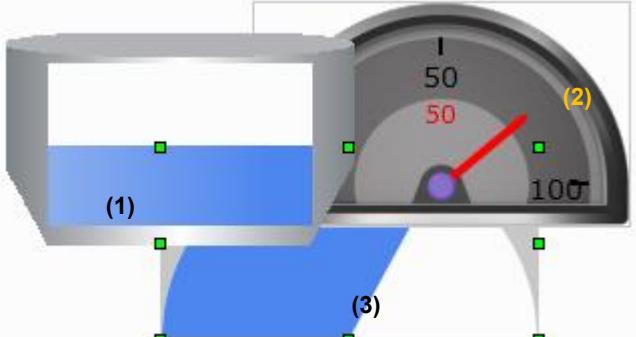
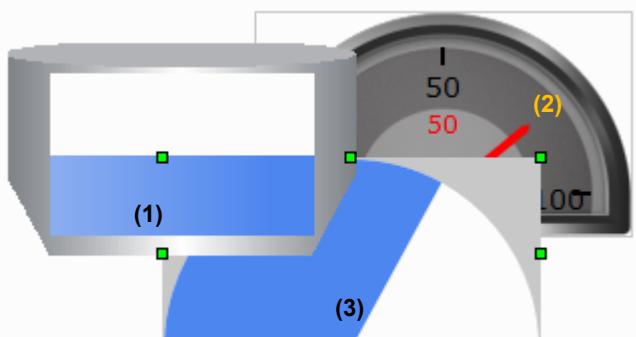
Figure 2.2.2.10.1 UnGroup

### 2.2.2.11 Order

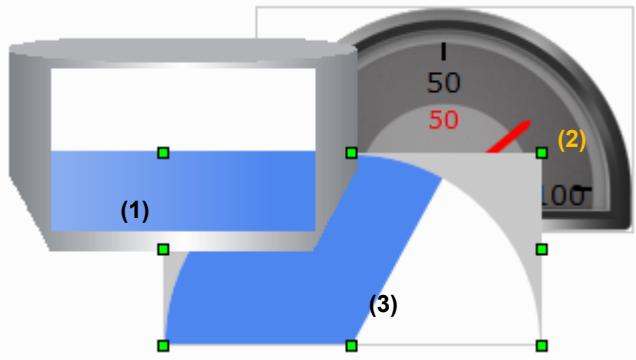
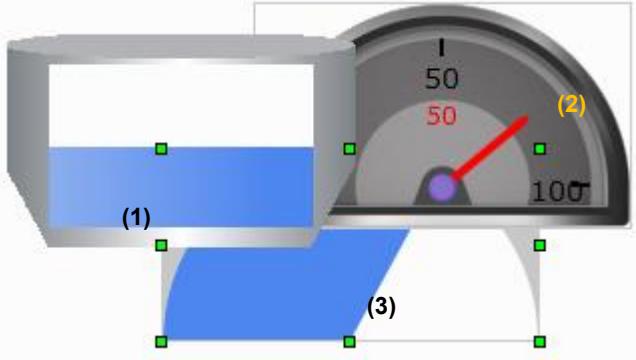
The Order function includes options of Bring to Front, Sent to Bottom, Bring Forward, and Bring Backward. After you set the order for the elements, the element layer order changes depending on the element creation order. To use this function, go to [Edit] > [Order] or click  on the layout toolbar.

Table 2.2.2.11.1 Order function example

Order		
Icon	Item	Content
	Before	<p>There are three elements in the following figure; in this example, it executes Bring to Front for element (3).</p>
	After	<p>After the execution, element (3) is brought to the top of the three elements.</p>

Icon	Item	Order	
			Content
	Send to Bottom	Before	Select element (3) to execute Send to Bottom. 
		After	After the execution, element (3) is sent to the bottom of the three elements. 
	Bring Forward	Before	Select element (3) to execute Bring Forward. 
		After	After the execution, element (3) is moved up one layer, becoming the second layer of the three elements. 

2

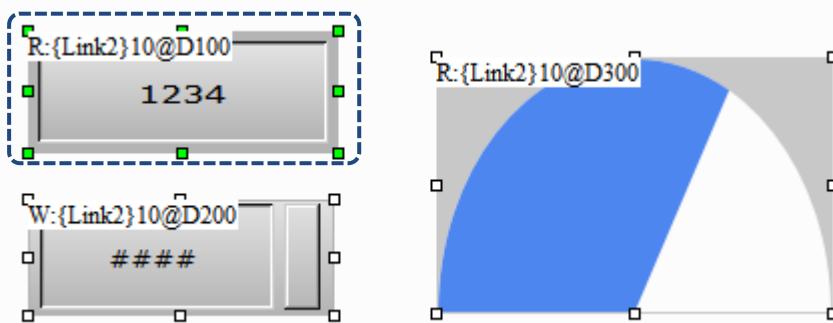
Order		
Icon	Item	Content
	Before	Select element (3) to execute Send Backward. 
	After	After the execution, element (3) is moved down one layer, becoming the bottom layer of the elements. 

### 2.2.2.12 Align

The Align function includes options of Align left, Align Right, Align Top, Align Bottom, Vertical Centering, Horizontal Centering, Horizontal Equal Space, and Vertical Equal Space. This function allows you to align the element coordinates. To use this function, go to [Edit] > [Align] or click  on the Layout toolbar.

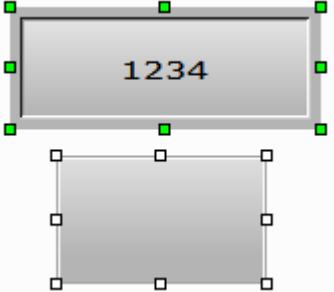
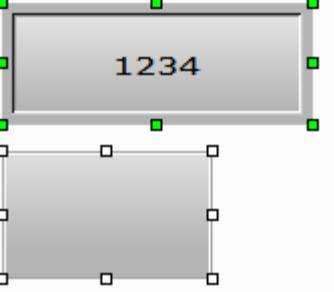
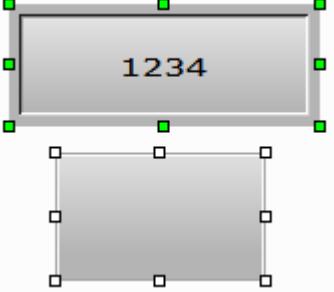
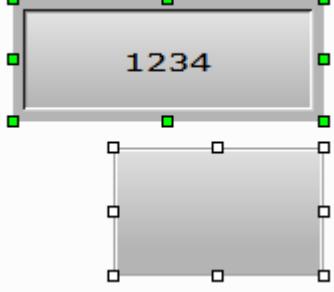
Note:

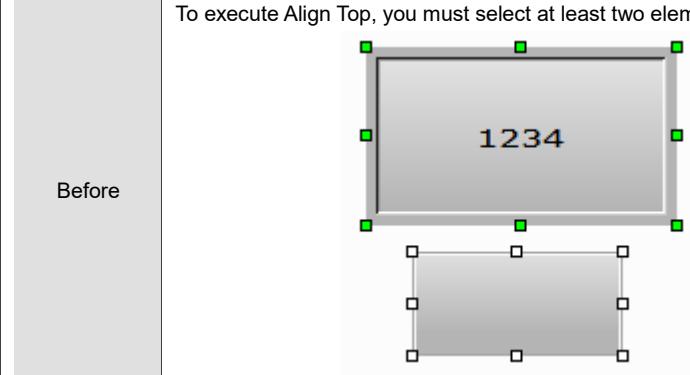
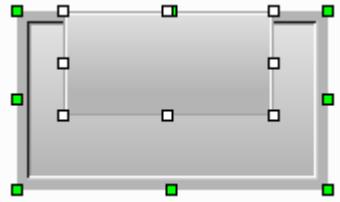
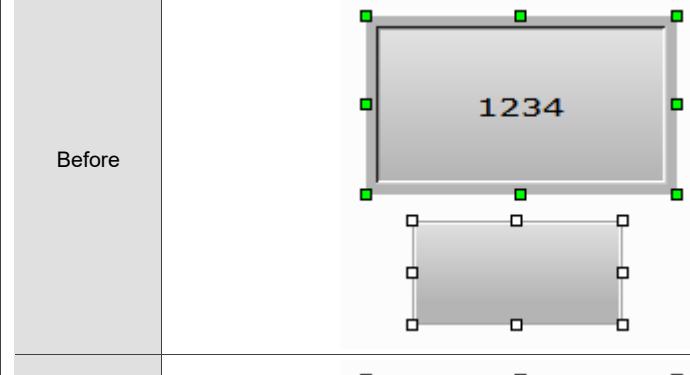
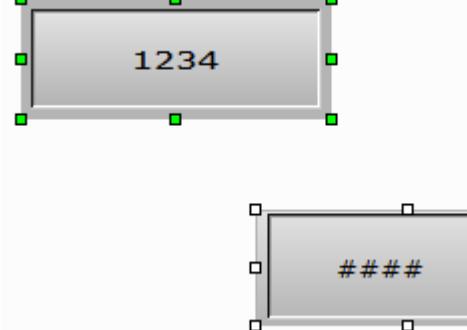
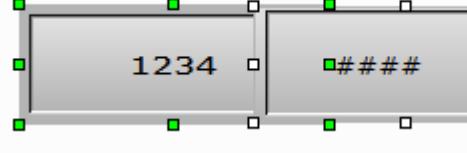
1. The reference element is the element first selected. The reference element is displayed with green squares when you select multiple elements.



2. To execute Align Left, Align Right, Align Top, and Align Bottom, you must select at least two elements. It is because the alignment function uses the coordinates of the selected reference element's very left, right, top, and bottom as the new coordinates for all elements.
3. You can use Vertical Centering and Horizontal Centering independently. When used, these functions automatically align the element center based on the setting.
4. To execute Horizontal Equal Space and Vertical Equal Space, you must select at least three elements. When you execute Horizontal Equal Space, the software calculates the equal spaces between each element in horizontal direction and realign the elements. When you execute Vertical Equal Space, the software calculates the equal spaces between each element in vertical direction and realign the elements.

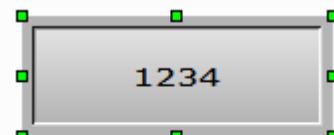
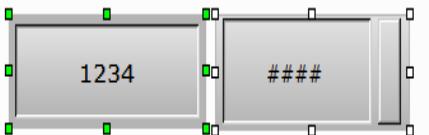
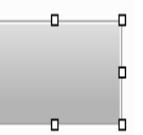
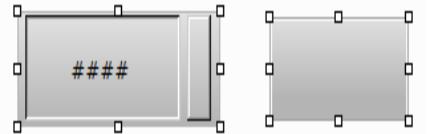
Table 2.2.2.12.1 Align function example

Align		
Icon	Item	Content
	Before	To execute Align Left, you must select at least two elements. 
	After	
	Before	To execute Align Right, you must select at least two elements. 
	After	

Align		
Icon	Item	Content
	Align Top	<p>Before</p> 
		<p>After</p> 
	Align Bottom	<p>Before</p> 
		<p>After</p> 
	Vertical Centering	<p>Before</p> 
		<p>After</p> 

2

2

		Align	
Icon	Item	Content	
	Horizontal Centering	Before	 
		After	 
	Horizontal Equal Space	Before	<p>To execute Horizontal Equal Space, you must select at least three elements.</p>  
		After	<p>The software calculates the equal spaces between the three elements in horizontal direction and realign them to make equal spaces between the three in horizontal direction.</p> 

Align		
Icon	Item	Content
	Before	<p>To execute Vertical Equal Space, you must select at least three elements.</p>  
	After	<p>The software calculates the equal spaces between the three elements in vertical direction and realign them to make equal spaces between the three in vertical direction.</p>   

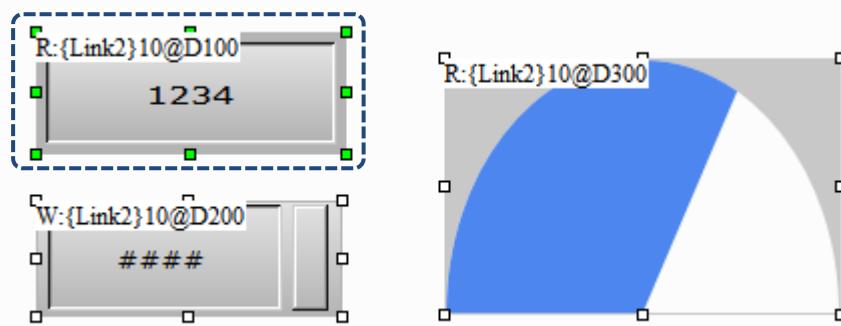
2

### 2.2.2.13 Make Same Size

This function includes Make Same Width, Make Same Height, and Make Same Size. It allows you to make same size of the elements. You can go to [Edit] > [Make Same Size] or click  on the Layout toolbar.

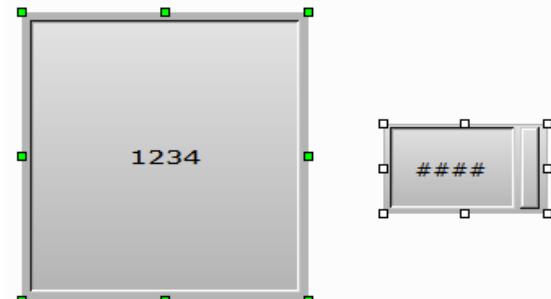
Note:

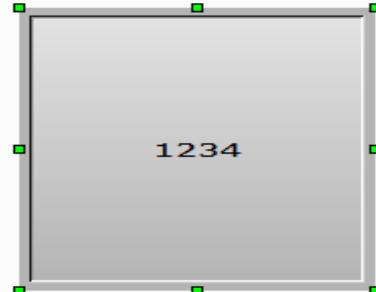
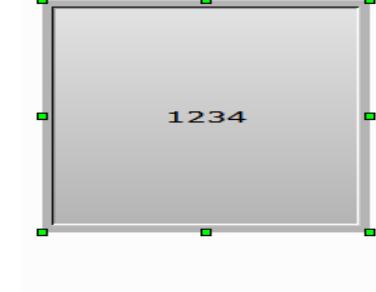
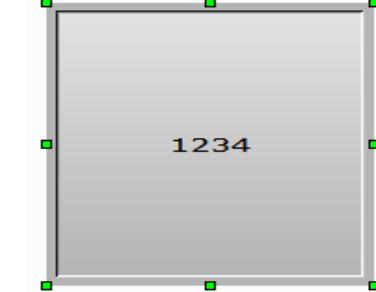
1. The reference element is the element first selected. The reference element is displayed with green squares when you select multiple elements.



2. To execute Make Same Size, select at least two elements. The software takes the selected reference element as the standard to make the elements the same width, height, or size.

Table 2.2.2.13.1 Make Same Size example

Make Same Size		
Icon	Item	Content
	Width	<p>Before</p> <p>Use the element on the left as the reference element to make the elements the same width.</p> 
		<p>After</p> <p>The element on the right is made as the same width referring to the reference element on the left.</p> 

Make Same Size			
	Before	Use the element on the left as the reference element to make the elements the same height.	
	Before		
	After		
	Before	Use the element on the left as the reference element to make the elements the same height.	
	After		

### 2.2.2.14 Text Process

This function processes the state of the element text, such as aligning the text to the left, to the right, and to the center. To use this function, you can go to [Edit] > [Text Process] or select



on the Text toolbar.

Table 2.2.2.14.1 Text Process function example

Text Process			
Icon	Item	Content	
	Align Left	Before	
		After	
	Horiz. Centering	Before	
		After	
	Align Right	Before	
		After	
	Align Top	Before	
		After	
	Vert. Centering	Before	
		After	

Text Process		
Icon	Item	Content
	Align Bottom	Before
		
		After
		

2

The Text Process function allows you to link with the Text Bank and import the edited texts into the selected element, as shown in the following figure.

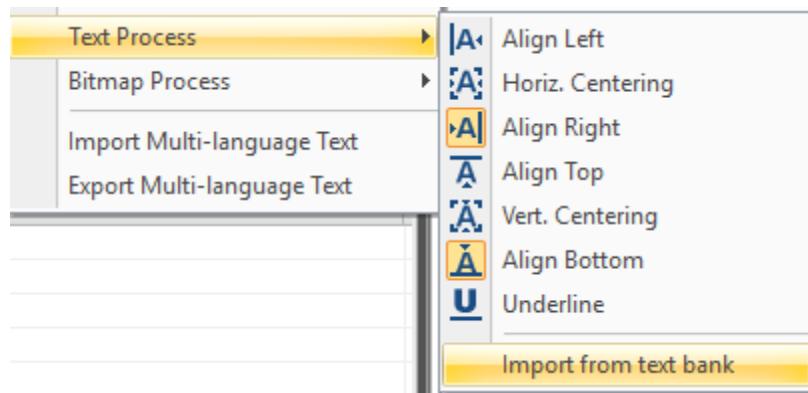


Figure 2.2.2.14.1 Import texts from Text Bank

If you have set the multi-language data, you can edit the text data in the Text Bank in advance, as shown in Figure 2.2.2.14.2.

No.	Chinese	English
1	台達電子	Delta TW
2	中達電通	Delta CN

Figure 2.2.2.14.2 Edit multi-language text in the Text Bank

2

Go to [Text Process] > [Import from text bank] and select [Import all selected languages] to import the multi-language data from the Text Bank to the specified element.

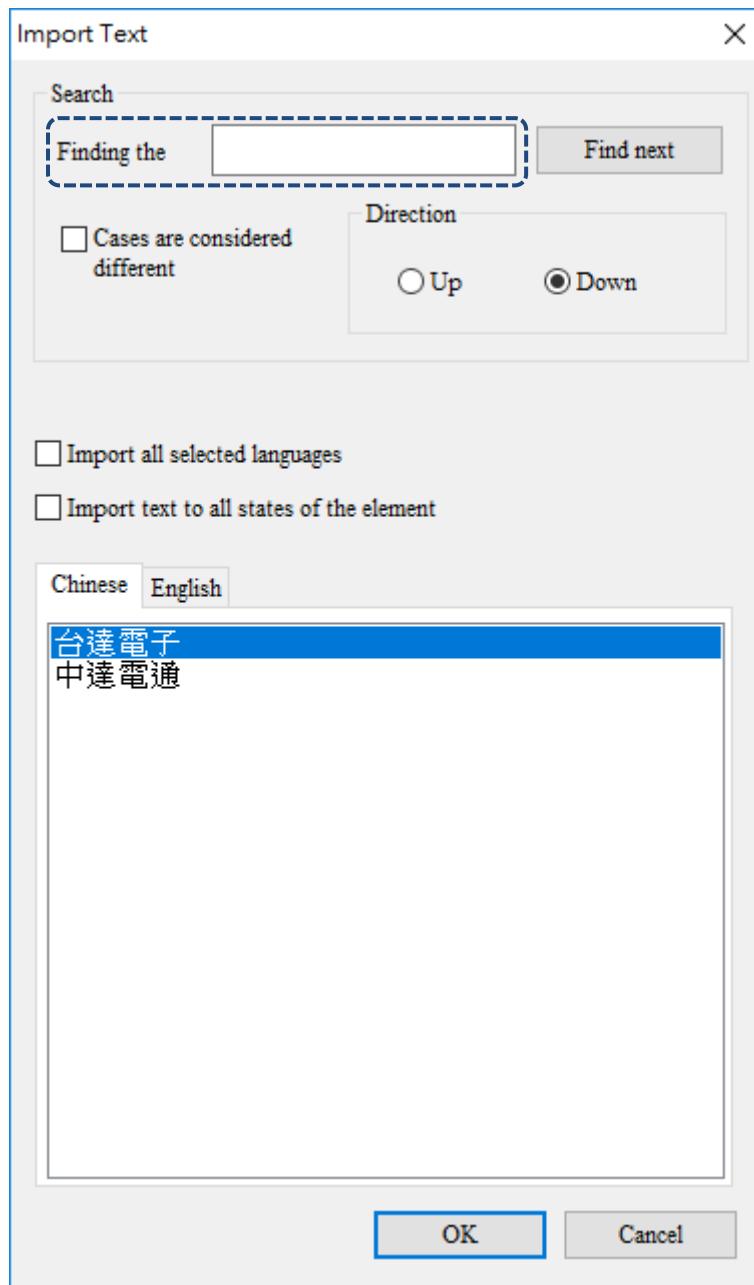
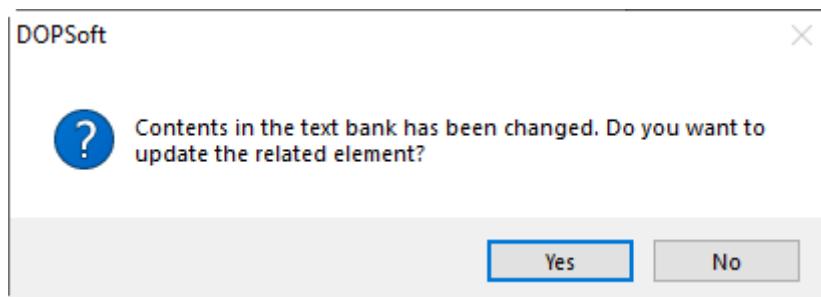


Figure 2.2.2.14.3 After importing the multi-language text data from the Text Bank

After importing the text from the Text Bank, you can go to the Text Bank to change the imported text messages. Click **Close** and you will be asked whether to update the messages. Select **Yes** to update the text message; select **No**, the text message remains unchanged.



2

Figure 2.2.2.14.4 Synchronize the contents in Text Bank and element displaying texts

For the details on creating and using the Text Bank, refer to the introduction of Text Bank.

### 2.2.2.15 Bitmap Process

This function processes the states of the element pictures such as execute Align Left, Align Right, and Align Center for the picture. You can go to [Edit] > [Bitmap Process] or use the

Picture toolbar

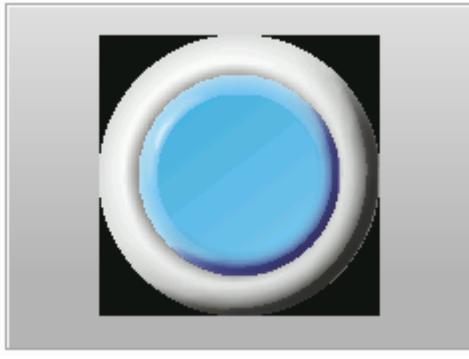
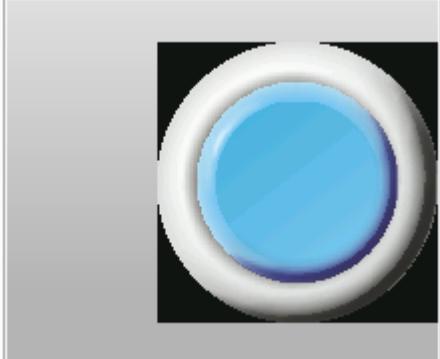


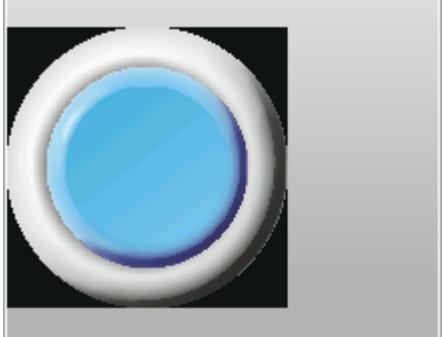
Table 2.2.2.15.1 Bitmap Process function example

Bitmap Process						
Icon	Item	Content				
	Transparent Color	<p>You can specify a color in the picture and turn this color into transparent with this function. As shown in the following figure, create one element and set the Foreground Color to blue. Next, import one picture and click the  icon to select the orange part of the broom, and the software turns this part into transparent, which becomes the element foreground color blue.</p> <p>Foreground Color: </p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Before</td> <td style="width: 50%; text-align: center;"> </td> </tr> <tr> <td>After</td> <td style="text-align: center;"> </td> </tr> </table>	Before		After	
Before						
After						
	Process pictures of all states	If you click the icon of Process pictures of all states, assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.				

Bitmap Process			
Icon	Item	Content	
		Stretch All	Stretch 1:1
	Stretch to fit the element	If you select Stretch to fit the element, the picture fills the full element display area.	If you select Picture Stretch 1:1, the picture displays in 1:1 size without referring to the element width and length.
	Picture Stretch 1:1		
	Actual Size		
	Left	<p>Before</p>	

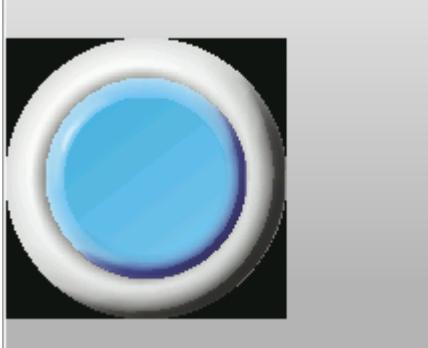
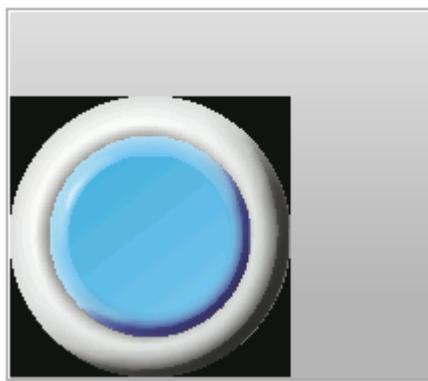
2

Bitmap Process			
Icon	Item	Content	
	Horizontal Centering	Before	
		After	
	Right	Before	
		After	

Bitmap Process			
Icon	Item	Content	
	Top	Before	
		After	
	Vertical Centering	Before	
		After	

2

2

Bitmap Process			
Icon	Item	Content	
	Bottom	Before	
		After	

### 2.2.2.16 Import Multi-language Text / Export Multi-language Text

These two functions allow you to import or export the text more easily when you edit multi-language texts. They are useful especially when you have multi-language texts or multiple states to edit. In addition, the import and export formats are both .xls which you can use in Excel. Contents in the import or export files are the text language data of all elements in the displaying screen.

#### ■ Export Multi-language Text

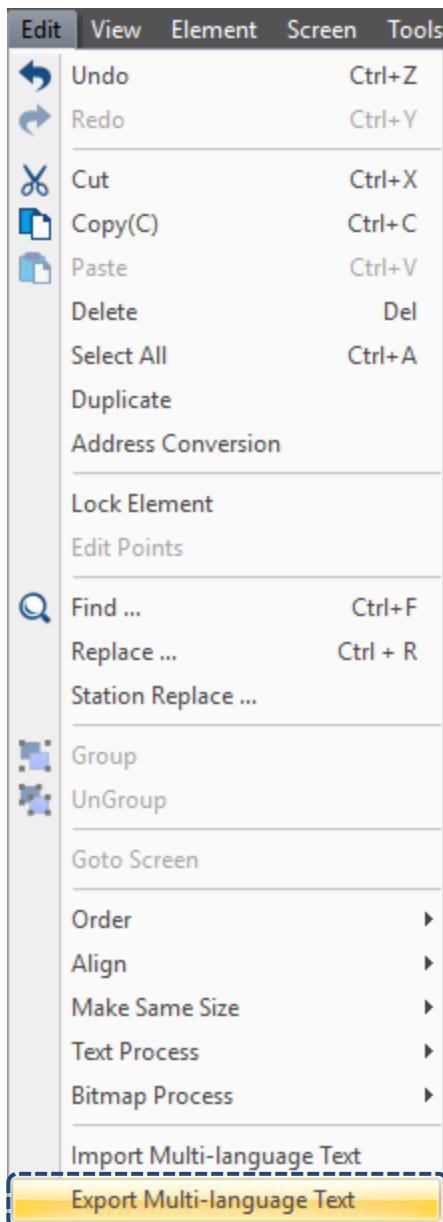


Figure 2.2.2.16.1 Export Multi-language Text

2

After you export the multi-language text, the software will ask you to save the file to be exported.

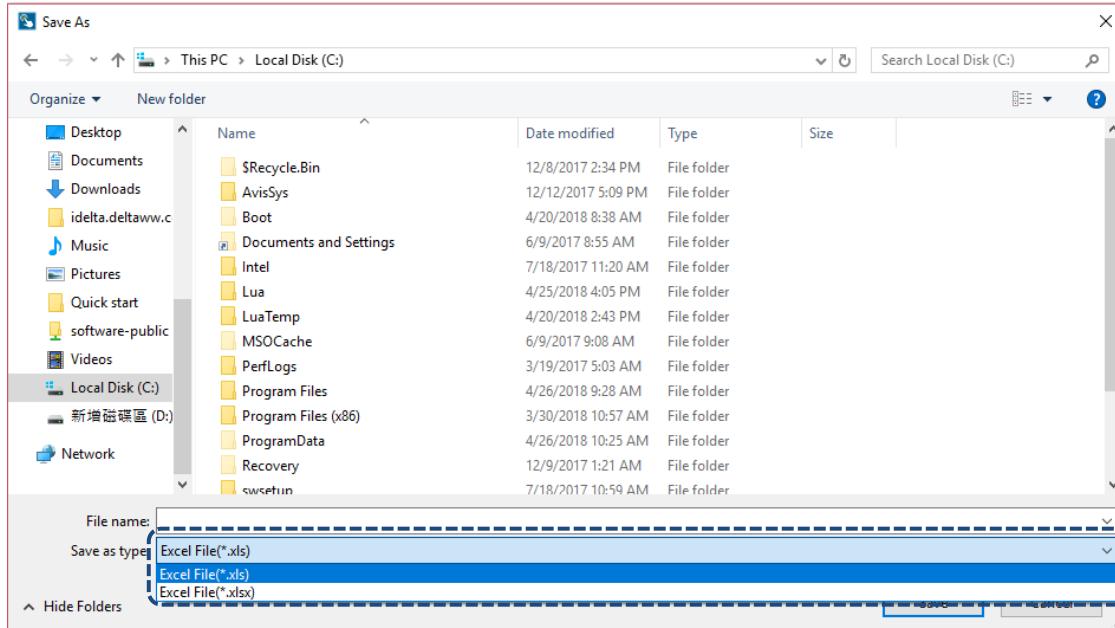


Figure 2.2.2.16.2 Save the multi-language text export file

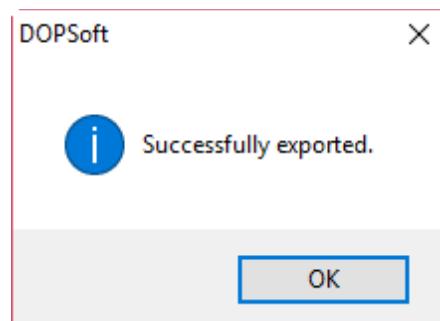
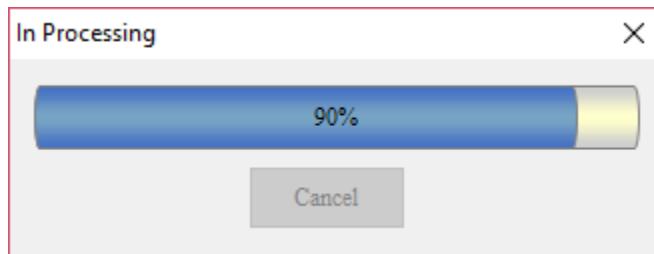


Figure 2.2.2.16.3 Saving complete for the multi-language text export file

When saving is complete, follow the path to open this file. You can see this file contains the multi-language text data of all the elements in the current project file, as shown in the following figure.

	D	E
1	Chinese	English
2		
3		
4		
5	\$0.0	
6		
7		
8	換畫面	change screen
9		
10	回前頁	go back
11		
12	系統時間日期	system time and date
13		
14	系統目錄	system menu
15		
16	設定密碼表	set password table
17		
18	調整對比亮度	contrass
19		
20	設為最低權限	level 0
21		
22	輸出報表	report list
23		
24	擷取畫面	capture
25		
26	移除儲存媒體	remove storage
27		
28	匯出配方	Export Recipe
29		
30	匯入配方	Import Recipe
31		
32	觸碰校正	Calibrate
33		
34	語系切換至英文	change language to EN
35		

Figure 2.2.2.16.4 Contents of the multi-language text export file

- Import Multi-language Text

You can first edit the exported multi-language text before importing the data. See the following example. Change the Chinese text of the 5<sup>th</sup> line \$0.0 to "設 ON 按鈕" and add the English text "ON Button".

	D	E
1	Chinese	English
2		
3		
4		
5	設ON按鈕	ON Button
6		
7		
8	換畫面	change screen
9		
10	回前頁	go back
11		
12	系統時間日期	system time and date
13		
14	系統目錄	system menu
15		
16	設定密碼表	set password table
17		
18	調整對比亮度	contrass
19		
20	設為最低權限	level 0
21		
22	輸出報表	report list
23		
24	擷取畫面	capture
25		
26	移除儲存媒體	remove storage
27		
28	匯出配方	Export Recipe
29		
30	匯入配方	Import Recipe
31		
32	觸碰校正	Calibrate
33		
34	語系切換至英文	change language to EN
35		

Figure 2.2.2.16.5 Contents of the multi-language text import file

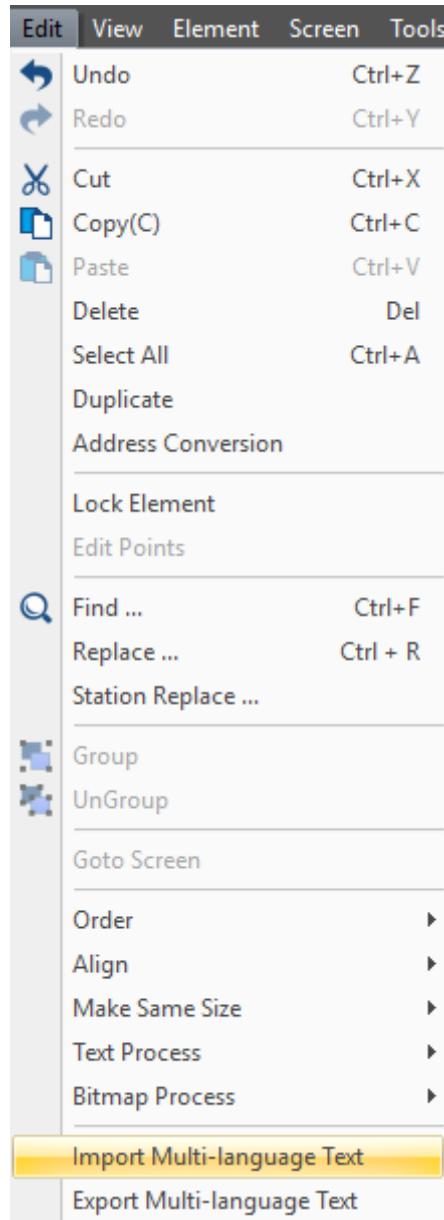


Figure 2.2.2.16.6 Import Multi-language Text

2

When you execute Import Multi-language Text, the software will ask you to select the file to be imported.

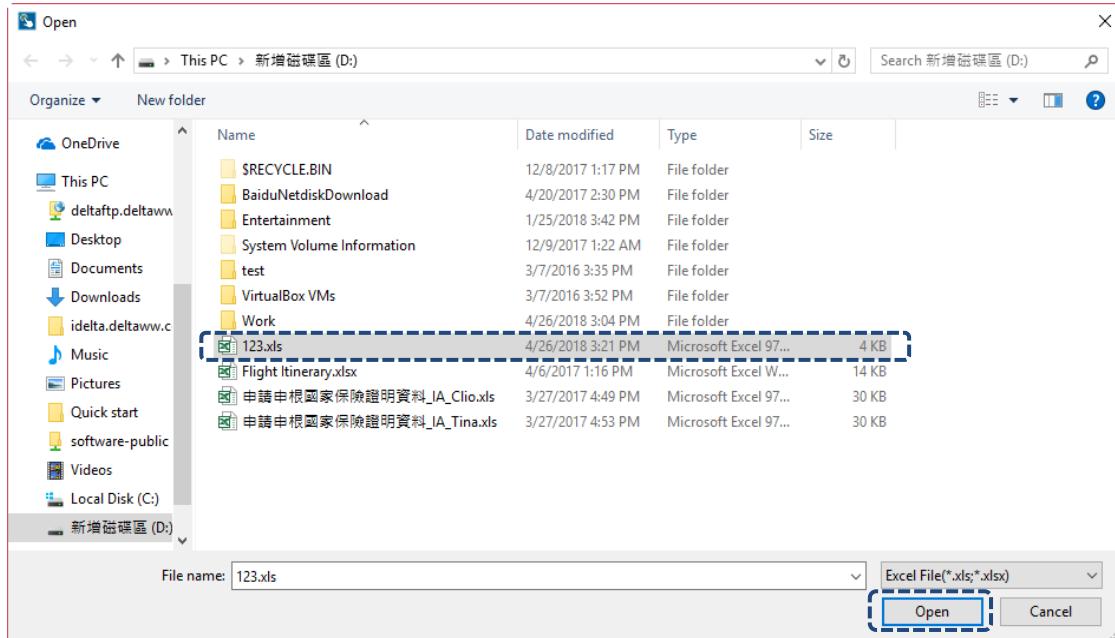


Figure 2.2.2.16.7 Select the Multi-language Text file to be imported

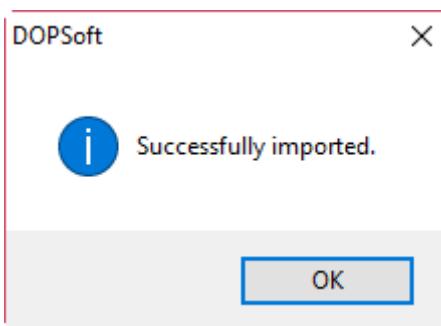
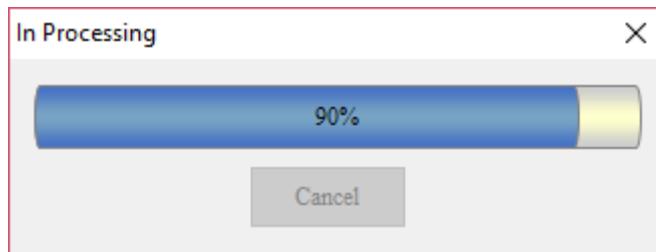


Figure 2.2.2.16.8 Import complete for the Multi-language Text file

After you import the multi-language text, you can check whether the edited data is completely imported.

	Chinese	English
Not imported	\$0.0	
Imported	設ON按鈕	ON Button

2

Refer to Chapter 25 for the usage of Multi-language.

### 2.2.3 View

The View option on the function list provides the following functions.

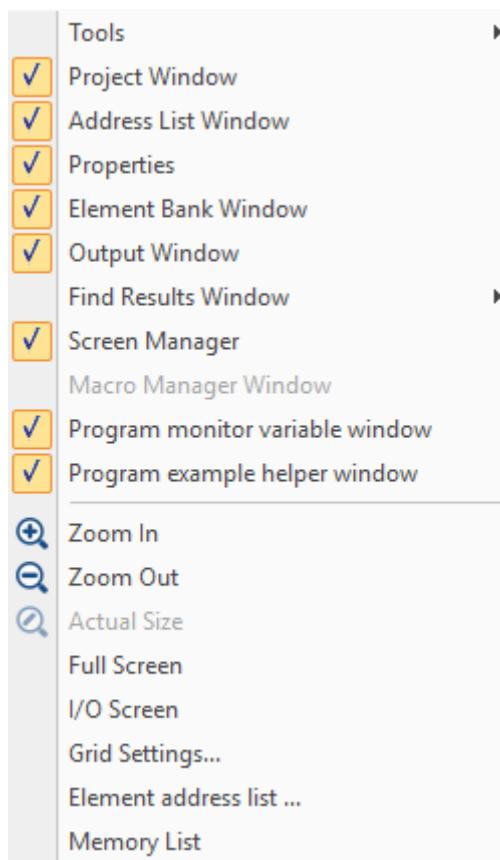


Figure 2.2.3.1 View function list

The following is the introduction of Screen Management (Manager), Zoom In, Zoom Out, Actual Size, Full Screen, I/O Screen, Grid Settings, Address Cross Reference Table, Element Address List, and Memory List.

### 2.2.3.1 Screen Management

The Screen Management window provided by DOPSoft allows you to easily view the elements in all screens. You can go to [View] > [Screen Manager] to determine whether to display its screen.

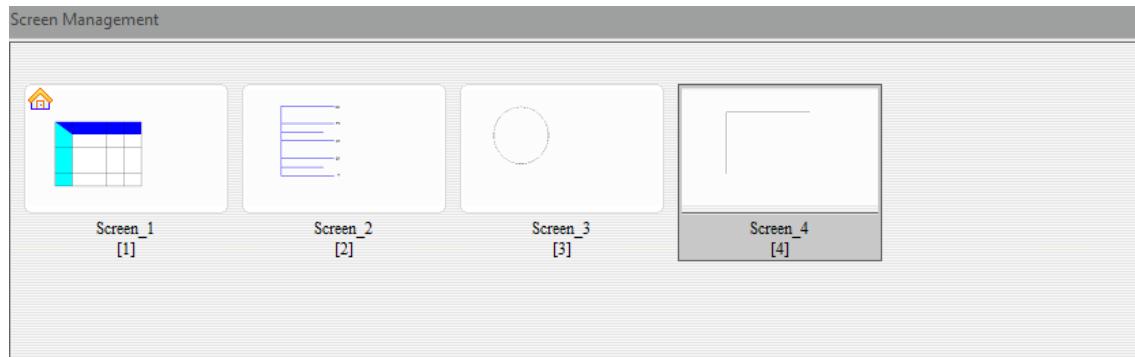


Figure 2.2.3.1.1 Screen Management window

You can right-click the Screen Management window and execute the actions relevant to the screens.

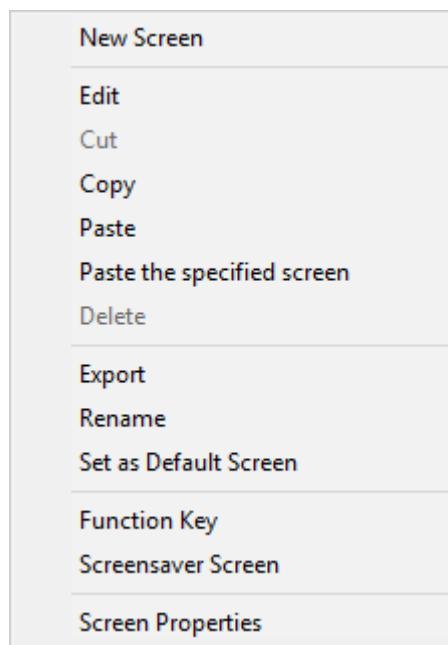
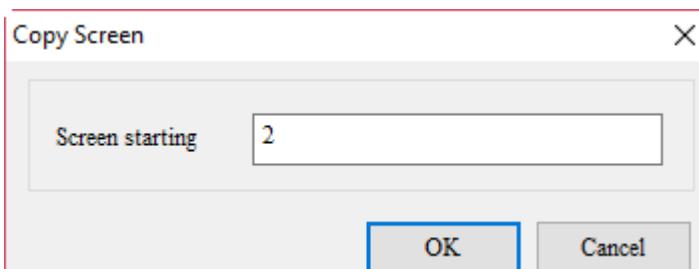
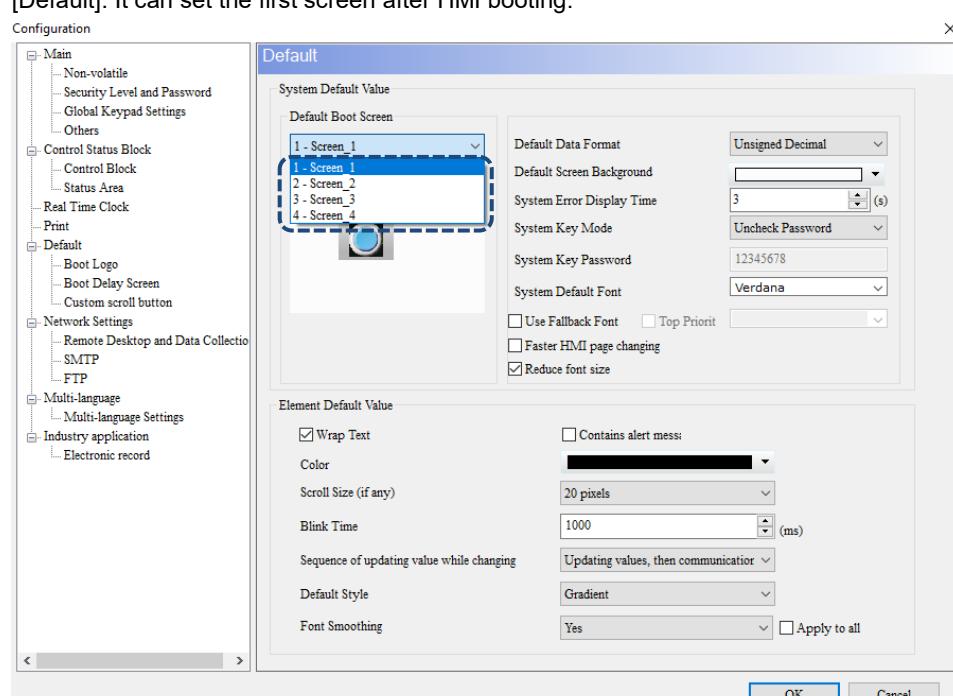


Figure 2.2.3.1.2 Screen Management window settings

Table 2.2.3.1.1 Screen Management window description

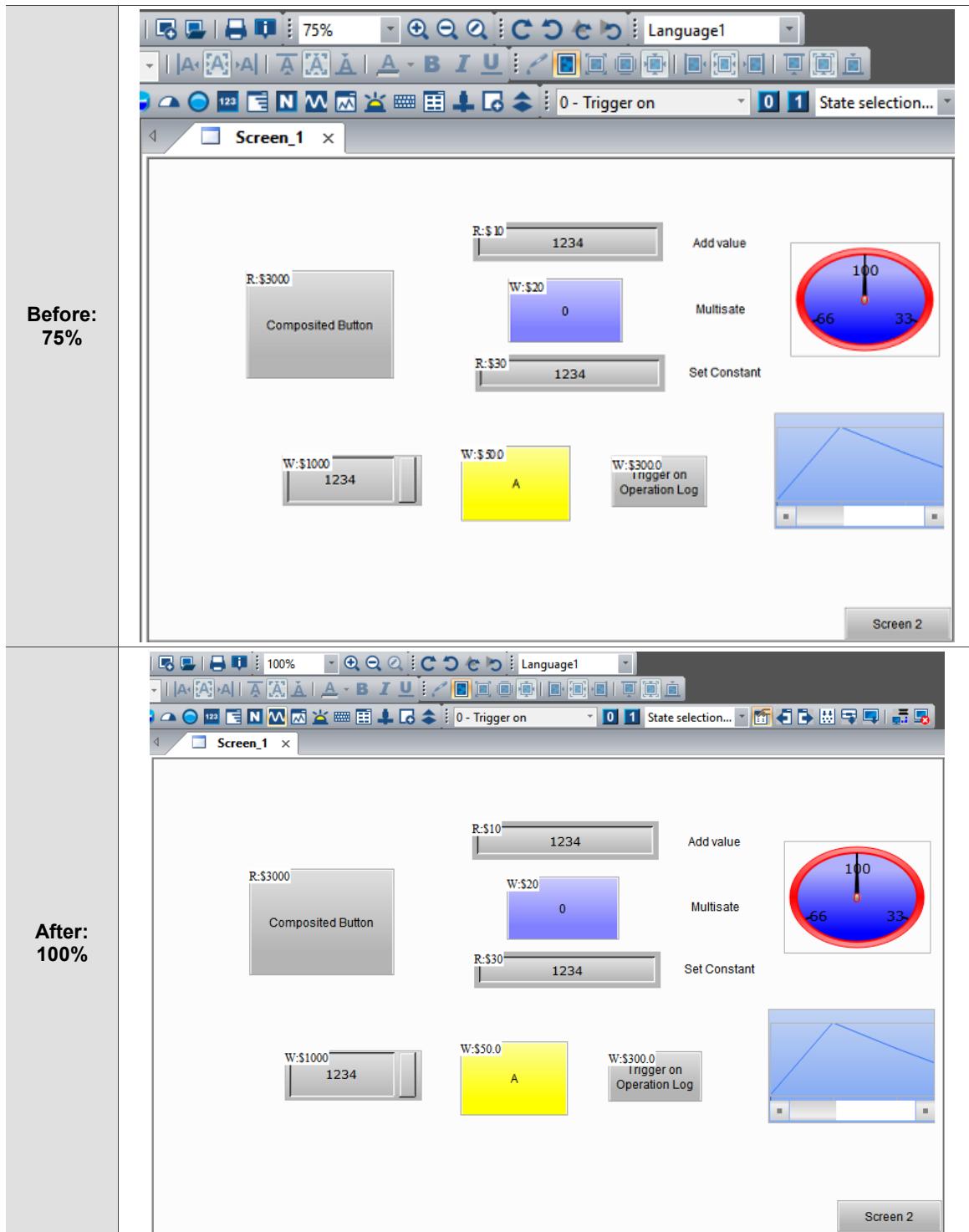
Screen Management window	
<b>New Screen</b>	Like the case of going to [Screen] > [New Screen], you can create a new screen after executing New Screen. Refer to Section 2.2.4.1 New Screen for the detailed settings.
<b>Edit</b>	In the Screen Management window, you can select one screen and click <b>Edit</b> to go to the editing window for this screen.
<b>Cut</b>	The actions of Cut, Copy, Paste, and Delete are identical to the actions you execute by going to [Screen] > [Cut Screen] / [Copy Screen] / [Paste Screen] / [Delete Screen]. For the detailed settings, refer to Section 2.2.4.4 Cut Screen, 2.2.4.5 Copy Screen, 2.2.4.6 Paste Screen, and 2.2.4.7 Delete Screen.
<b>Copy</b>	
<b>Paste</b>	
<b>Delete</b>	
<b>Paste the specified screen</b>	<p>After you copy the screen in the Screen Management window, you can use this function to paste this screen to the screen with the number you specified. This function also supports batch copy, with which you can copy multiple screens at once and specify the screen start number, and the system automatically numbers them in sequence.</p>  <p>Note: if the specified screen number already exists, the system automatically sets the screen number plus 1.</p>
<b>Export</b>	Like the case of executing the function by going to [Screen] > [Export], the Export function can export the selected screens and determine whether to display the border. Refer to Section 2.2.4.8 Export for detailed settings.
<b>Rename</b>	Rename the screen name that has previously been set.
<b>Set as Default Screen</b>	This is the same as setting the default screen by going to [Options] > [Configuration] > [Default]. It can set the first screen after HMI booting.
	

Screen Management window	
<b>Function Key</b>	The function keys are supported on models of B07S201, B07S211, B07S401K, B07S411K, and DOP-H series. If the HMI has no function keys, this function is disabled. Refer to Section 2.2.4.11 Function Keys for details.
<b>Screensaver Screen</b>	It is the same as setting the screensaver screen by going to [Screen] > [Screensaver]. Refer to Section 2.2.4.3 Screensaver for detailed settings.
<b>Screen Properties</b>	Click Screen Properties and you can set the relevant properties for the screen. You can also set the screen as the subscreen, and specify the screen name, screen height and width, and the X-Y coordinates. Refer to Section 2.2.4.12 Screen Properties for detailed settings.

### 2.2.3.2 Zoom In

Use this function to zoom in the screen for editing. You can also use the icon  in the zoom toolbar to zoom in the image as shown in Table 2.2.3.2.1.

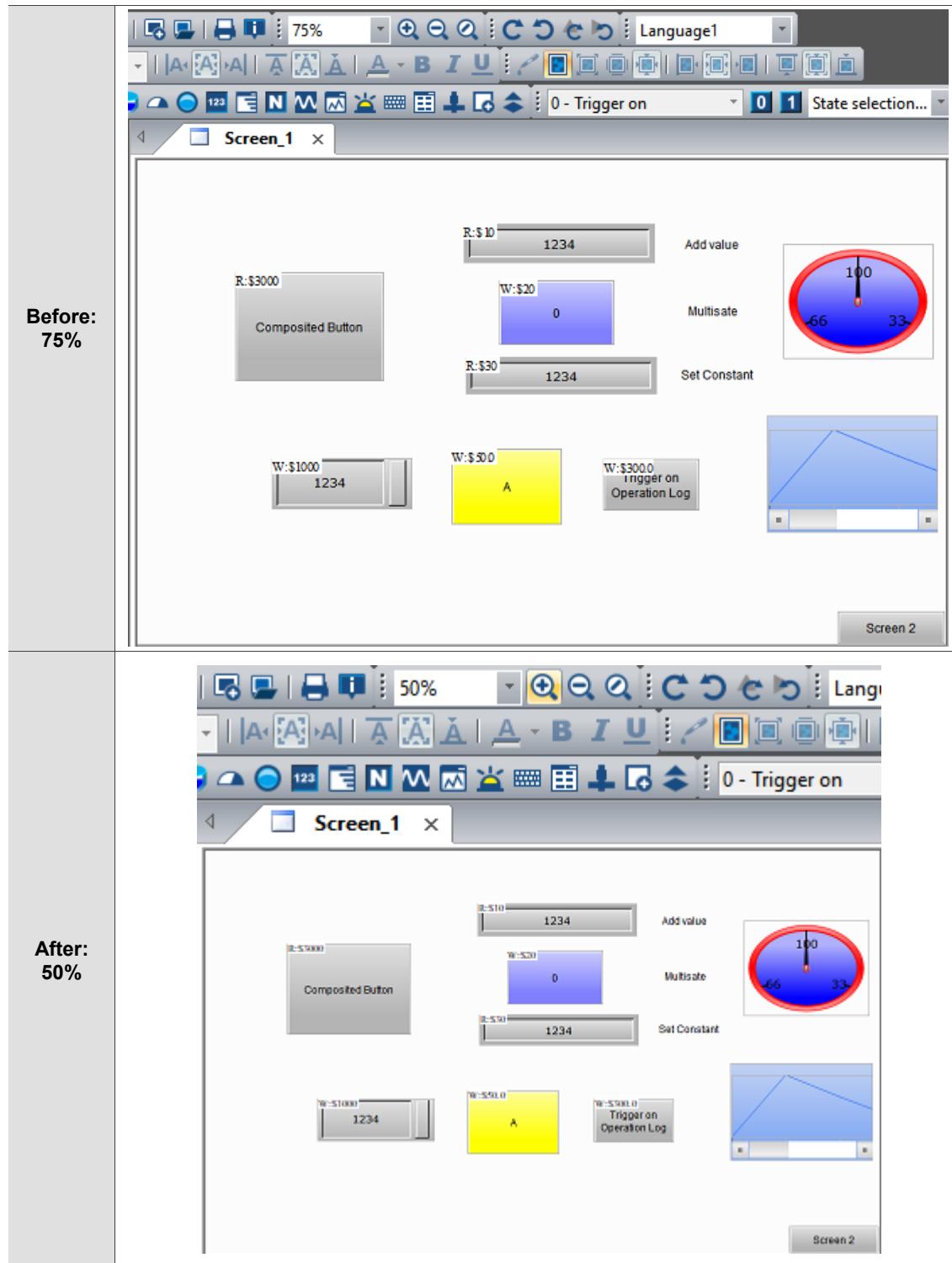
Table 2.2.3.2.1 Zoom In function example



### 2.2.3.3 Zoom Out

Use this function to zoom out the editing screen. You can also click the  icon in the zoom toolbar to zoom out the screen as shown in Table 2.2.3.3.1.

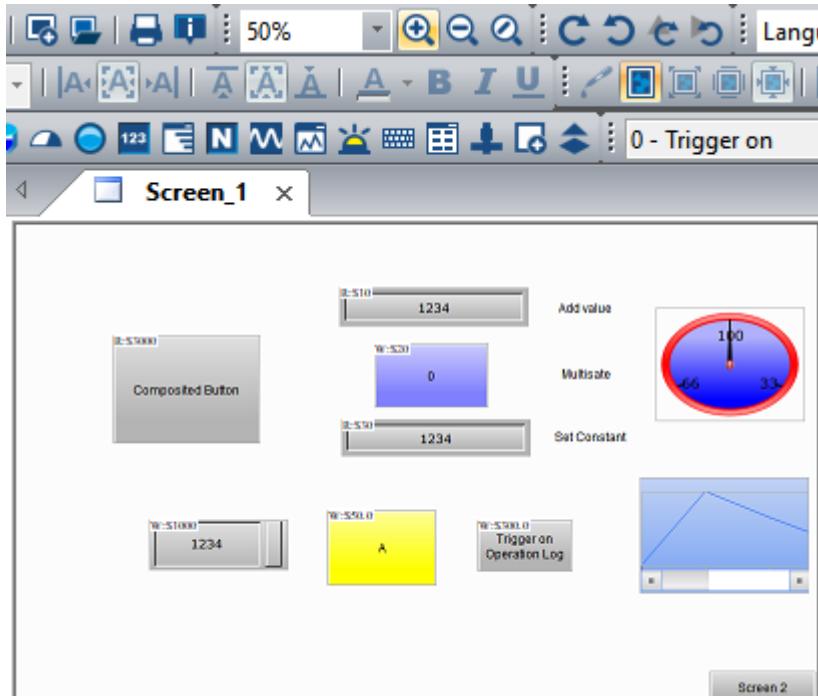
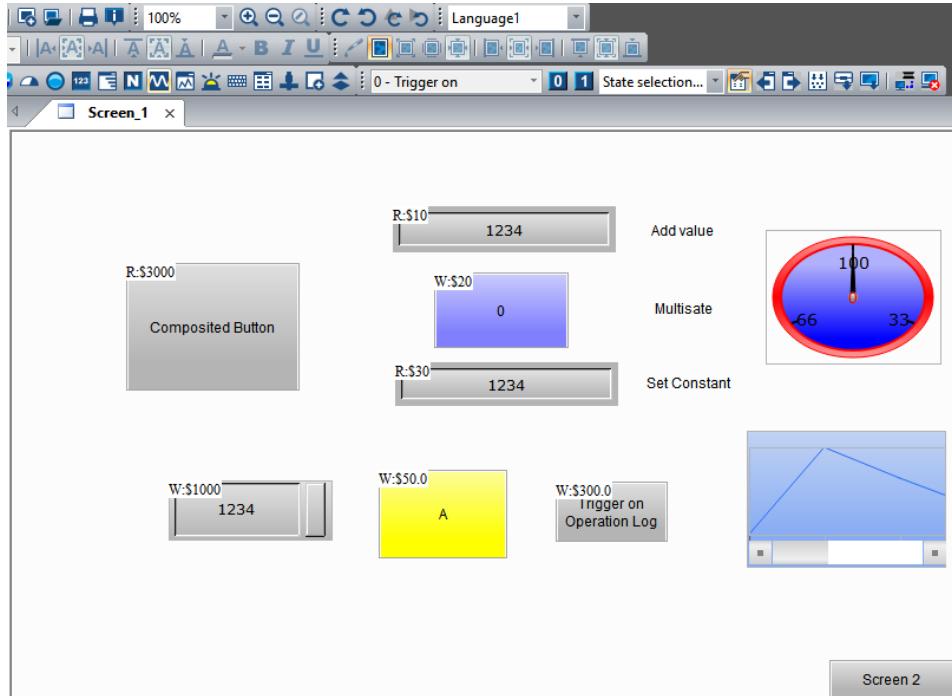
Table 2.2.3.3.1 Zoom Out function example



### 2.2.3.4 Actual Size

The Actual Size is to reset the screen display to ratio 100%; this ratio is adjusted based on the HMI screen. You can also click  in the zoom toolbar to reset the display to 100% as shown in Table 2.2.3.4.1.

Table 2.2.3.4.1 Actual Size function example

<b>Before: 50%</b>	
<b>After: 100%</b>	

### 2.2.3.5 Full Screen

This function enables the editing screen to display in full screen and have the set macro line number displayed in the lower left corner of the screen. You can use **ESC** or left-click the mouse to cancel the display in full screen.



Figure 2.2.3.5.1 Full Screen

### 2.2.3.6 I/O Screen

It is very similar to the Full Screen function, and the only difference is that the I/O Screen displays the memory addresses on the elements. Similarly, the macro line number set in the editing screen is also displayed and you can click **ESC** or left-click the mouse to exit the display in full screen.



Figure 2.2.3.6.1 I/O Screen

### 2.2.3.7 Grid Settings

The Grid Settings has two options, Show Grid and Snap to Grid. When you select the check box of **Show Grid**, the grid is displayed on the editing screen; **Snap to Grid** helps you to better align the elements while moving them. Apart from that, you can set the spacing for the alignment grid in the range of integers 4 - 50. The default spacing of Height and Width is 4.

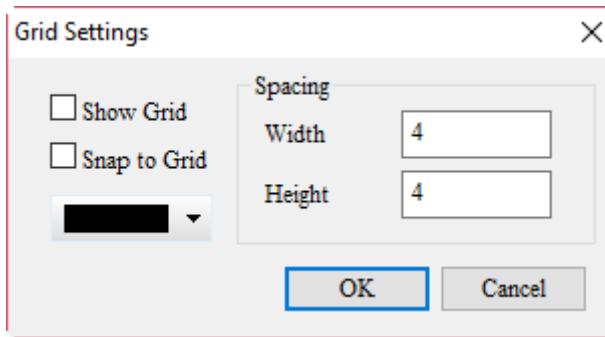
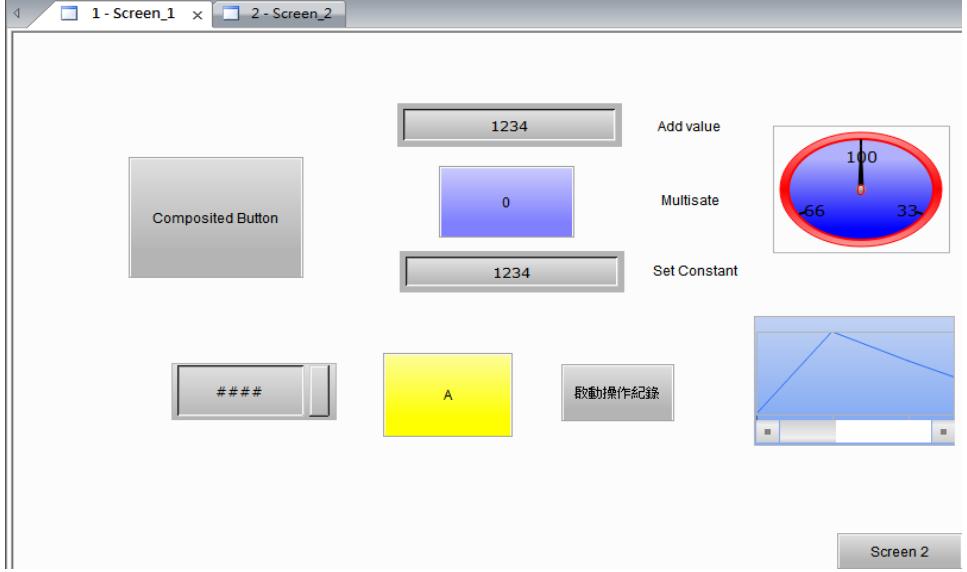
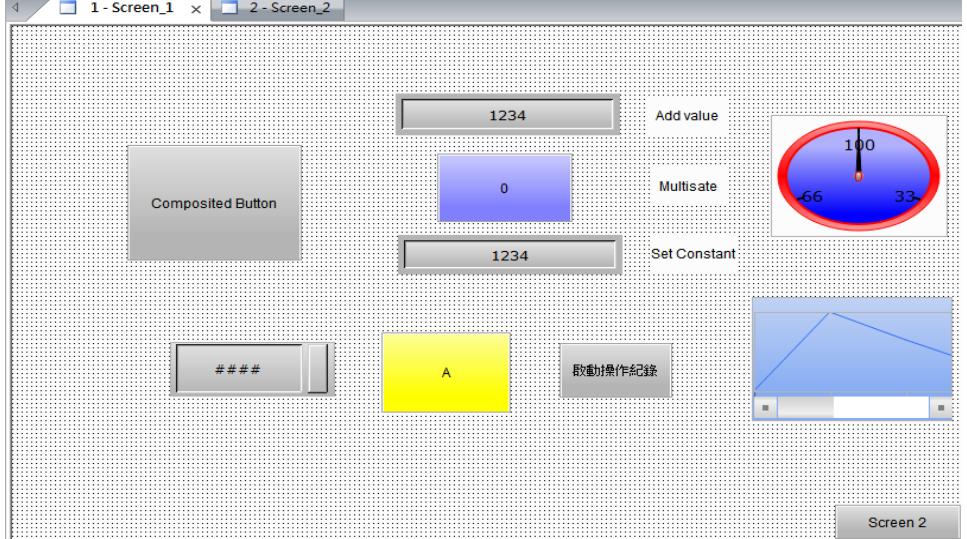
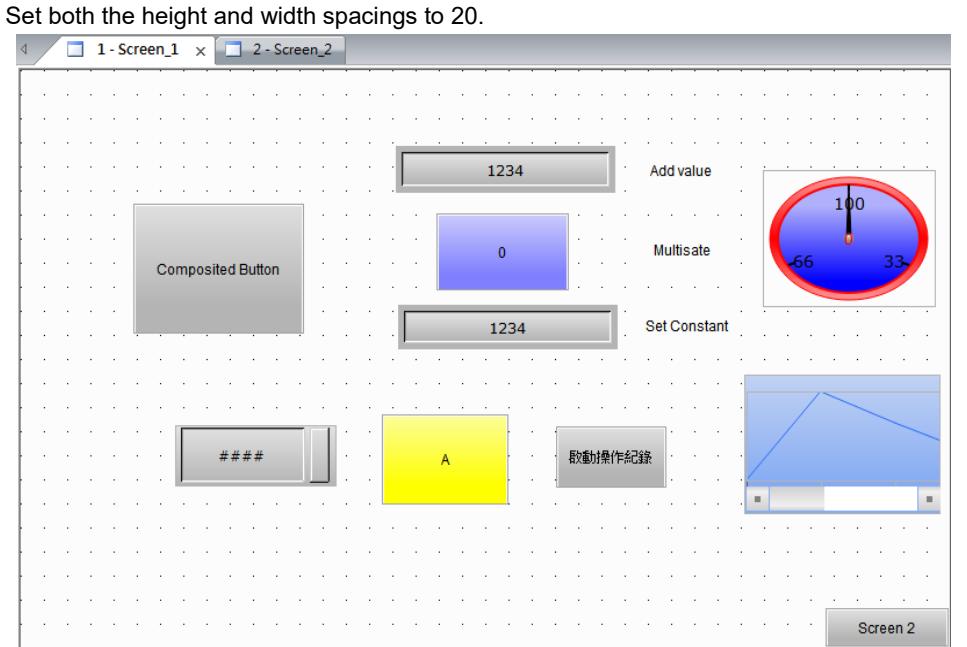


Figure 2.2.3.7.1 Grid Settings

Table 2.2.3.7.1 Grid Settings example

<b>Not Select the check box of Show Grid</b>	
<b>Select the check box of Show Grid</b>	
<b>Spacing</b>	<p>Set both the height and width spacings to 20.</p> 

### 2.2.3.8 Element Address List

You can use this function to sort all elements in the screen by the screen number and by element type or address. All properties of the element are listed on the list by their sorting types, including Element Name, Write Address, Read Address, Trigger Address, Trigger Mode, Interlock Address, Interlock State, Data Type, Data Format, and Coordinates, and Height and Width of the element.

#### ■ By Element

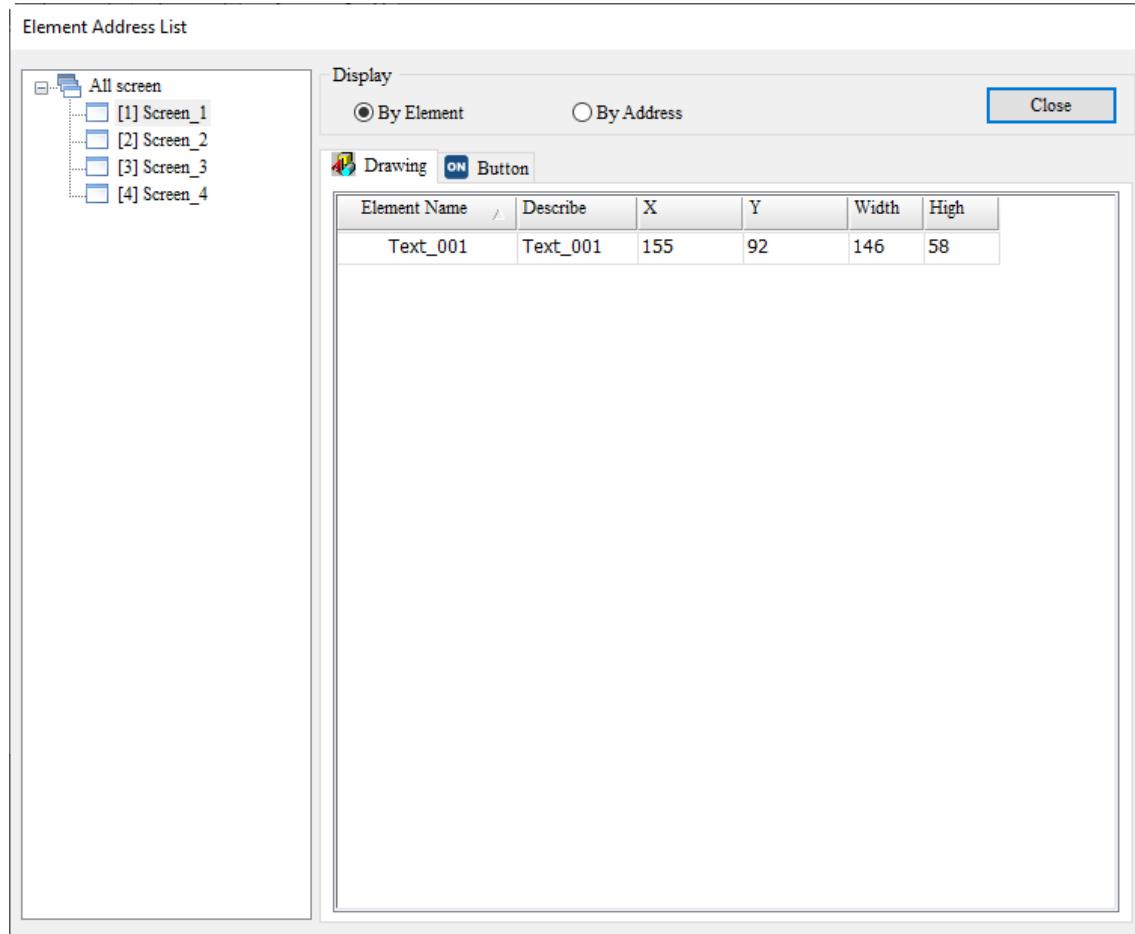


Figure 2.2.3.8.1 Element Address List - By Element

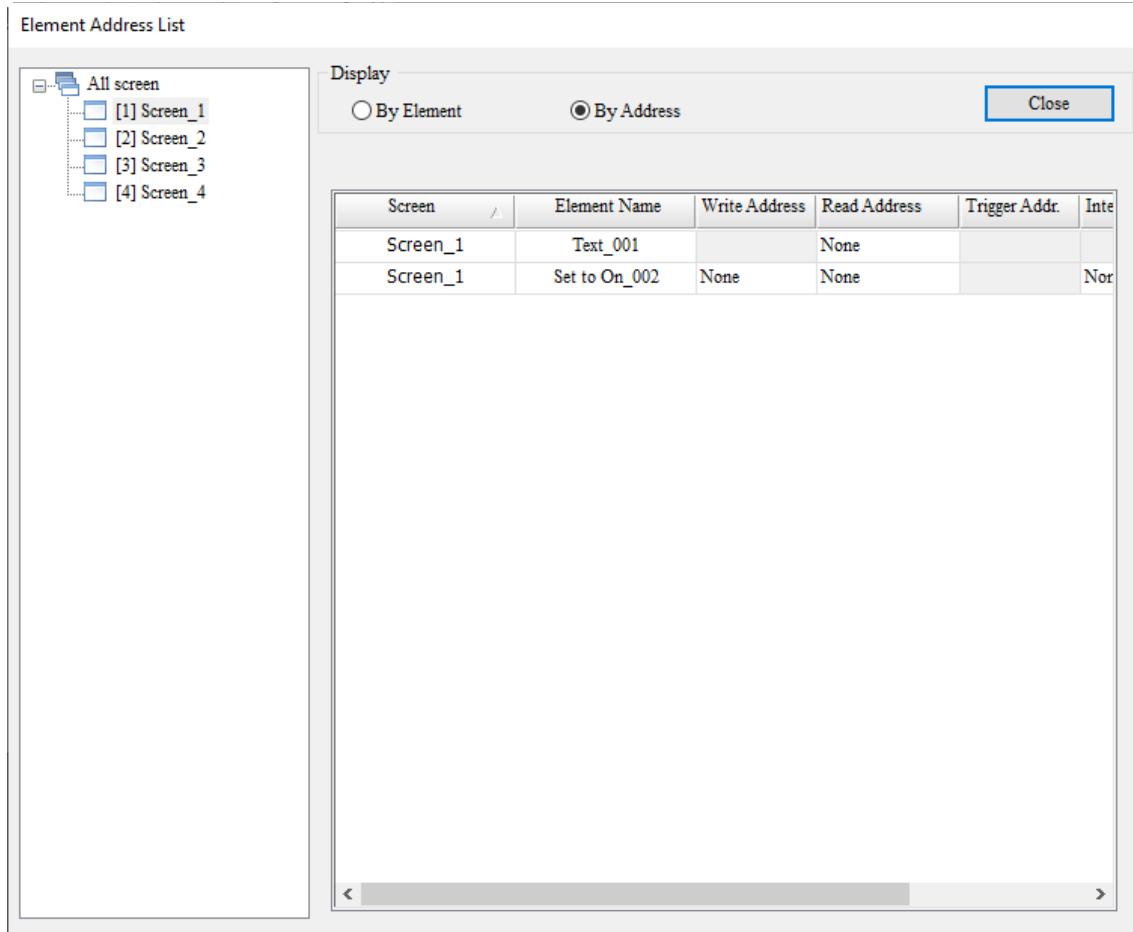
**■ By Address**

Figure 2.2.3.8.2 Element Address List - By Address

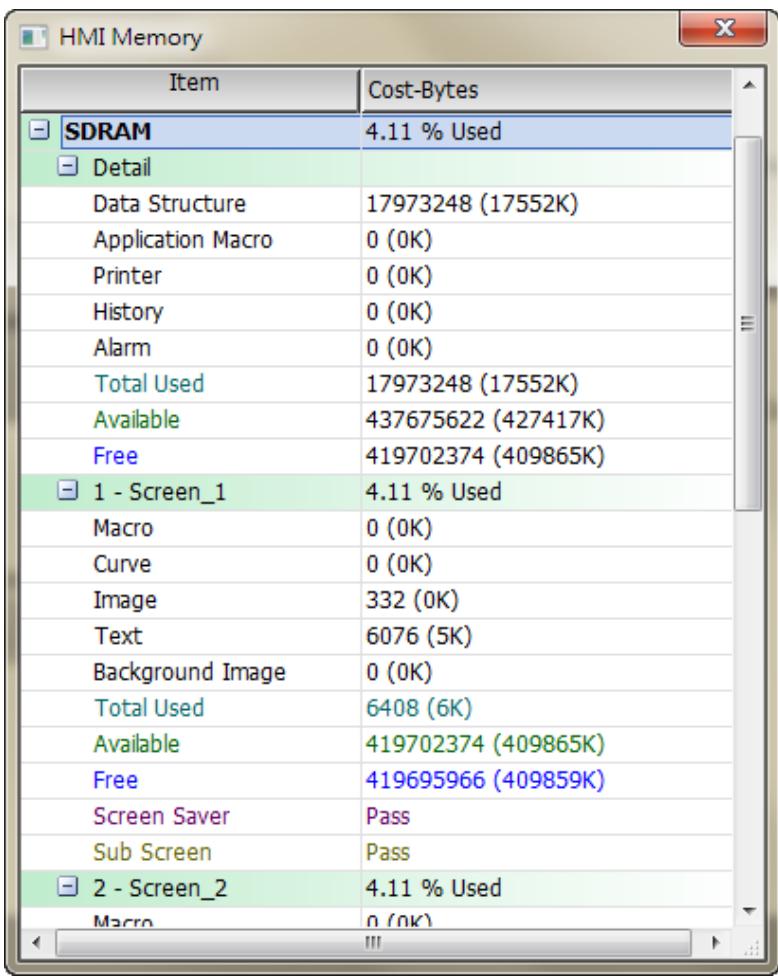
### 2.2.3.9 Memory List

This list enables you to check the memory used by the HMI screen and the remaining memory.

You must create the project and compile the data to get this information. The list includes four parts, ROM, Non-Volatile Area, SDRAM, and External Storage.

Table 2.2.3.9.1 Memory List

<b>ROM</b>	<p>The memory used after you download the screen data to the HMI (including the recipe, screen data, and printer data)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Item</th><th style="text-align: left;">Cost-Bytes</th></tr> </thead> <tbody> <tr> <td><b>ROM</b></td><td>0.05 % Used</td></tr> <tr> <td>Total Used</td><td>40960 (40K)</td></tr> <tr> <td>Available</td><td>85983232 (83968K)</td></tr> <tr> <td>Free</td><td>85942272 (83928K)</td></tr> <tr> <td colspan="2"><b>Detail</b></td></tr> <tr> <td>Controller</td><td>20480 (20K)</td></tr> <tr> <td>Printer</td><td>0 (0K)</td></tr> <tr> <td>Screen Data</td><td>16384 (16K)</td></tr> <tr> <td>Recipe 32</td><td>0 (0K)</td></tr> <tr> <td>Enhanced Recipe</td><td>4096 (4K)</td></tr> </tbody> </table>	Item	Cost-Bytes	<b>ROM</b>	0.05 % Used	Total Used	40960 (40K)	Available	85983232 (83968K)	Free	85942272 (83928K)	<b>Detail</b>		Controller	20480 (20K)	Printer	0 (0K)	Screen Data	16384 (16K)	Recipe 32	0 (0K)	Enhanced Recipe	4096 (4K)
Item	Cost-Bytes																						
<b>ROM</b>	0.05 % Used																						
Total Used	40960 (40K)																						
Available	85983232 (83968K)																						
Free	85942272 (83928K)																						
<b>Detail</b>																							
Controller	20480 (20K)																						
Printer	0 (0K)																						
Screen Data	16384 (16K)																						
Recipe 32	0 (0K)																						
Enhanced Recipe	4096 (4K)																						
<b>Non-Volatile Area</b>	<p>The default storage location of the non-volatile data is the Non-Volatile Area. When there are data such as the history records and alarms in the project file you edited, you can use this section to check the memory usage.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Item</th><th style="text-align: left;">Cost-Bytes</th></tr> </thead> <tbody> <tr> <td><b>ROM</b></td><td>0.05 % Used</td></tr> <tr> <td><b>Non-Volatile Area</b></td><td>0.00 % Used</td></tr> <tr> <td colspan="2"><b>History</b></td></tr> <tr> <td>Total Used</td><td>0 (0K)</td></tr> <tr> <td colspan="2"><b>Alarm</b></td></tr> <tr> <td>Total Used</td><td>0 (0K)</td></tr> <tr> <td>Available</td><td>16777216 (16384K)</td></tr> <tr> <td>Free</td><td>16777216 (16384K)</td></tr> </tbody> </table>	Item	Cost-Bytes	<b>ROM</b>	0.05 % Used	<b>Non-Volatile Area</b>	0.00 % Used	<b>History</b>		Total Used	0 (0K)	<b>Alarm</b>		Total Used	0 (0K)	Available	16777216 (16384K)	Free	16777216 (16384K)				
Item	Cost-Bytes																						
<b>ROM</b>	0.05 % Used																						
<b>Non-Volatile Area</b>	0.00 % Used																						
<b>History</b>																							
Total Used	0 (0K)																						
<b>Alarm</b>																							
Total Used	0 (0K)																						
Available	16777216 (16384K)																						
Free	16777216 (16384K)																						

<b>SDRAM</b>	<p>Displays the SDRAM space required for the operation of each screen. The calculation of SDRAM is by page. If the project has two pages, the SDRAM displays the data for the two pages.</p>  <table border="1"> <thead> <tr> <th>Item</th><th>Cost-Bytes</th></tr> </thead> <tbody> <tr> <td><b>SDRAM</b></td><td>4.11 % Used</td></tr> <tr> <td><b>Detail</b></td><td></td></tr> <tr> <td>Data Structure</td><td>17973248 (17552K)</td></tr> <tr> <td>Application Macro</td><td>0 (0K)</td></tr> <tr> <td>Printer</td><td>0 (0K)</td></tr> <tr> <td>History</td><td>0 (0K)</td></tr> <tr> <td>Alarm</td><td>0 (0K)</td></tr> <tr> <td>Total Used</td><td>17973248 (17552K)</td></tr> <tr> <td>Available</td><td>437675622 (427417K)</td></tr> <tr> <td>Free</td><td>419702374 (409865K)</td></tr> <tr> <td><b>1 - Screen_1</b></td><td>4.11 % Used</td></tr> <tr> <td>Macro</td><td>0 (0K)</td></tr> <tr> <td>Curve</td><td>0 (0K)</td></tr> <tr> <td>Image</td><td>332 (0K)</td></tr> <tr> <td>Text</td><td>6076 (5K)</td></tr> <tr> <td>Background Image</td><td>0 (0K)</td></tr> <tr> <td>Total Used</td><td>6408 (6K)</td></tr> <tr> <td>Available</td><td>419702374 (409865K)</td></tr> <tr> <td>Free</td><td>419695966 (409859K)</td></tr> <tr> <td>Screen Saver</td><td>Pass</td></tr> <tr> <td>Sub Screen</td><td>Pass</td></tr> <tr> <td><b>2 - Screen_2</b></td><td>4.11 % Used</td></tr> <tr> <td>Macro</td><td>0 (0K)</td></tr> </tbody> </table>	Item	Cost-Bytes	<b>SDRAM</b>	4.11 % Used	<b>Detail</b>		Data Structure	17973248 (17552K)	Application Macro	0 (0K)	Printer	0 (0K)	History	0 (0K)	Alarm	0 (0K)	Total Used	17973248 (17552K)	Available	437675622 (427417K)	Free	419702374 (409865K)	<b>1 - Screen_1</b>	4.11 % Used	Macro	0 (0K)	Curve	0 (0K)	Image	332 (0K)	Text	6076 (5K)	Background Image	0 (0K)	Total Used	6408 (6K)	Available	419702374 (409865K)	Free	419695966 (409859K)	Screen Saver	Pass	Sub Screen	Pass	<b>2 - Screen_2</b>	4.11 % Used	Macro	0 (0K)
Item	Cost-Bytes																																																
<b>SDRAM</b>	4.11 % Used																																																
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Printer	0 (0K)																																																
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Free	419702374 (409865K)																																																
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Macro	0 (0K)																																																
Curve	0 (0K)																																																
Image	332 (0K)																																																
Text	6076 (5K)																																																
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Available	419702374 (409865K)																																																
Free	419695966 (409859K)																																																
Screen Saver	Pass																																																
Sub Screen	Pass																																																
<b>2 - Screen_2</b>	4.11 % Used																																																
Macro	0 (0K)																																																
<b>External Storage</b>	This refers to the memory space of the external storage. When you set the location of the non-volatile area as an external storage device, such as the USB Disk or SD Card, the data blocks originally stored in the non-volatile area (SRAM) are moved to the external storage device.																																																

## 2.2.4 Screen

The Screen option on the function list provides the following functions.

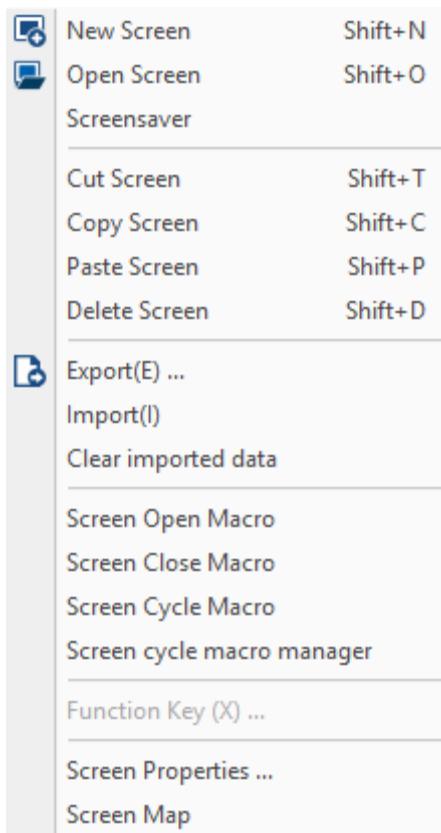


Figure 2.2.4.1 Screen function list

### 2.2.4.1 New Screen

To create a new editing screen, you can go to [Screen] > [New Screen], use  in the General toolbar, or use the system keyboard shortcut **Shift + N**. After creating a new screen, you can set the Screen Name, Screen No., and Screen Type to create. The Screen Type includes Screen, Subscreen, Keypad Screen, Print Screen, and Template Screen.

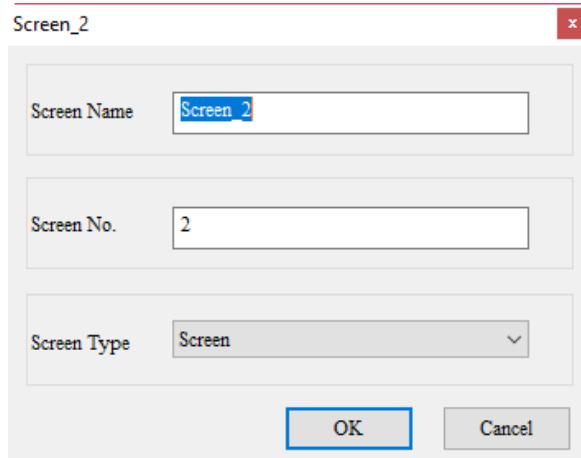


Figure 2.2.4.1.1 Create a new Screen

### 2.2.4.2 Open Screen

To open a previously created screen, you can go to [Screen] > [Open Screen], use  in the General toolbar, or use the system keyboard shortcut **Shift + O**. When you select the screen to open, you can view all the elements in the screen from the Preview section on the right.

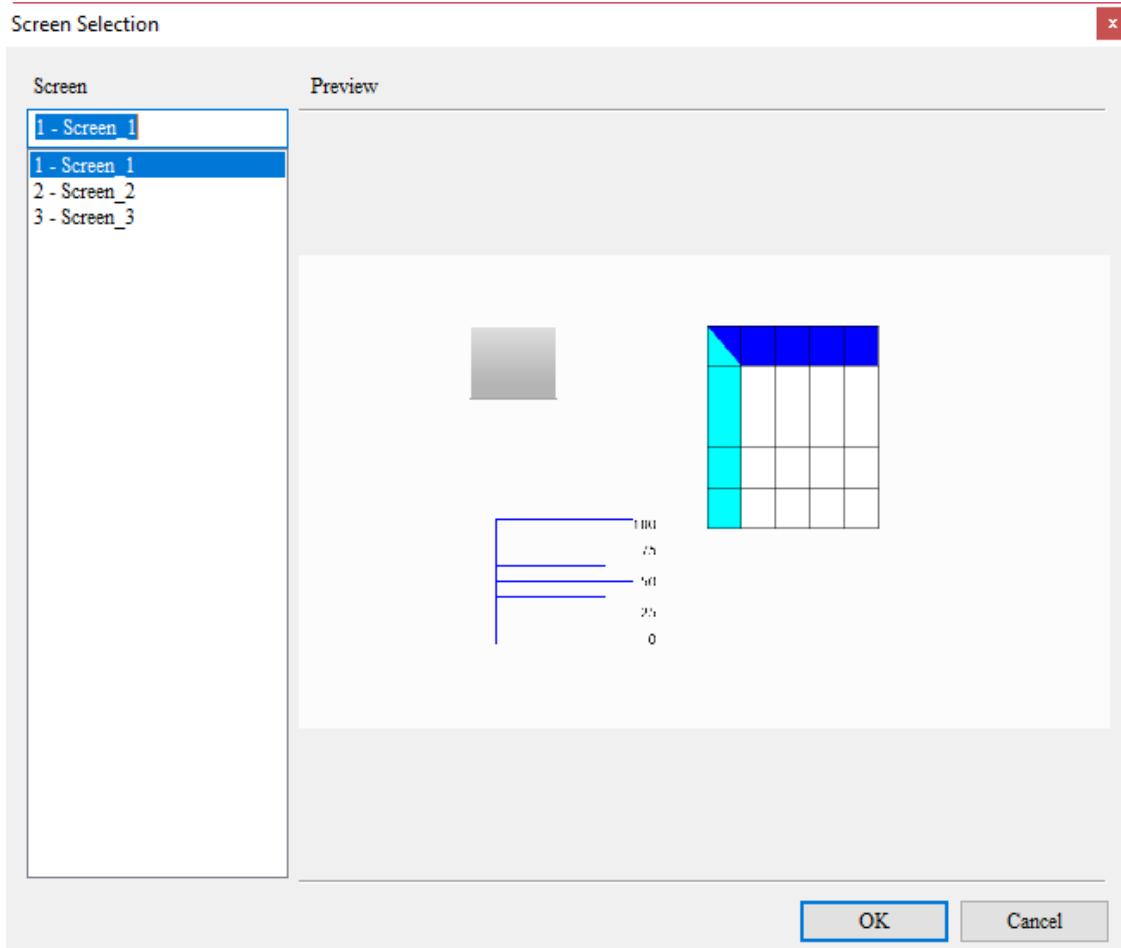
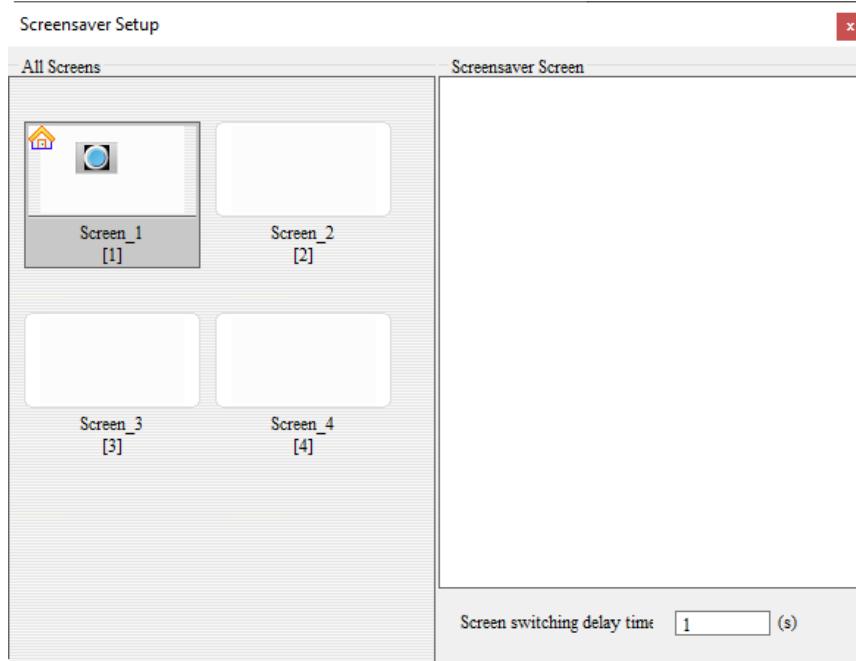


Figure 2.2.4.2.1 Open Screen

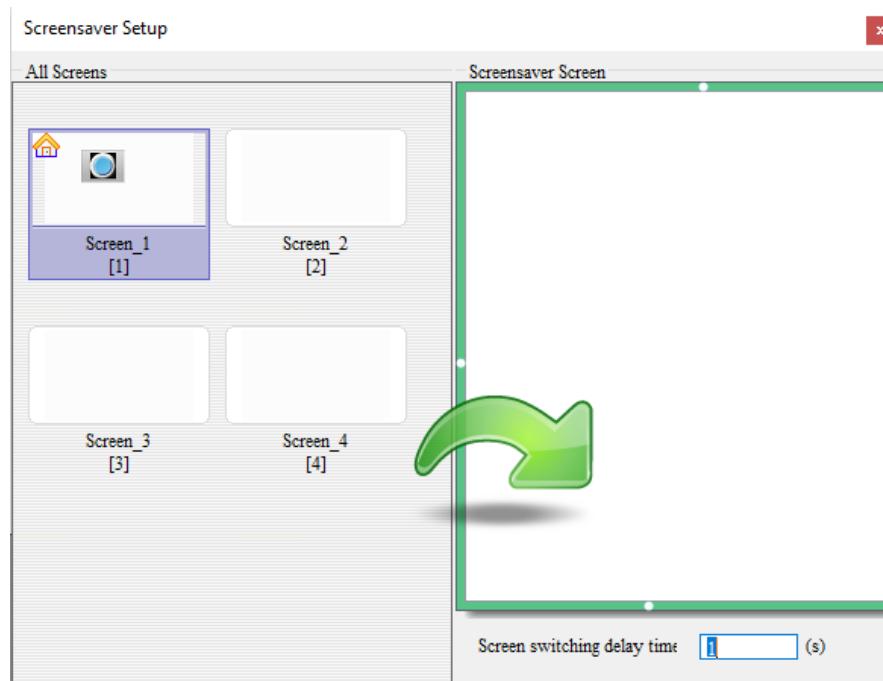
### 2.2.4.3 Screensaver

The setting of the DOPSoft Screensaver is the same as that of Windows. To set the screen for the screensaver, drag the screen to the Screensaver Screen section on the right. The steps are as follows:

1. Go to [Screen] > [Screensaver] to go to the Screensaver Setup page.

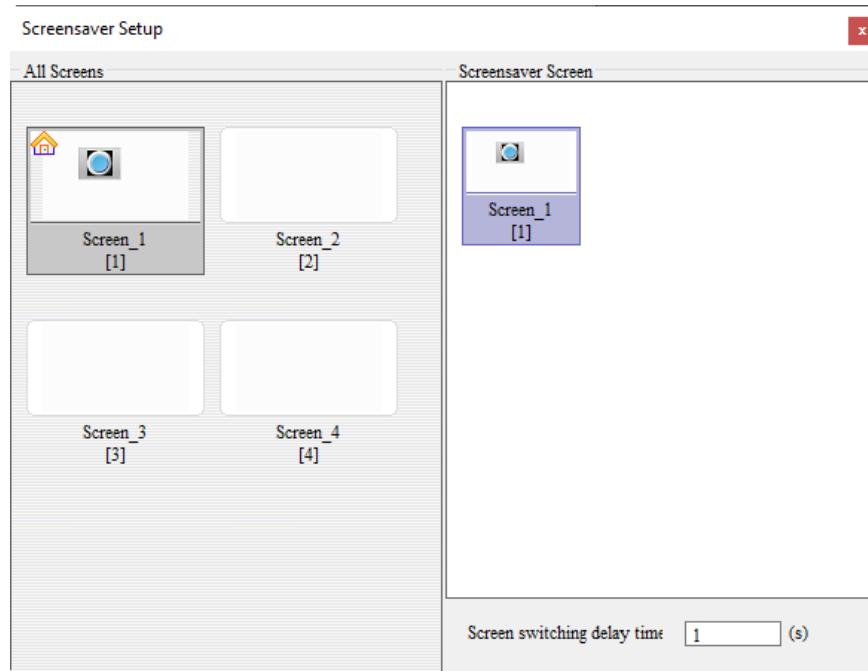


2. Select the screen for the screensaver from the left section. Left-click the mouse and hold, and a green arrow appears to direct you to drag the selected screen.

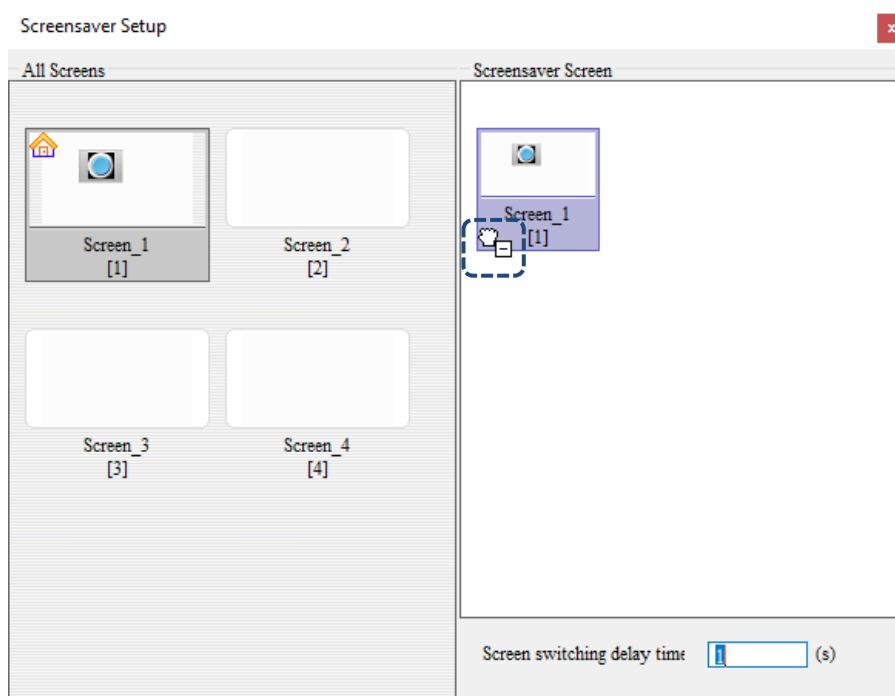


2

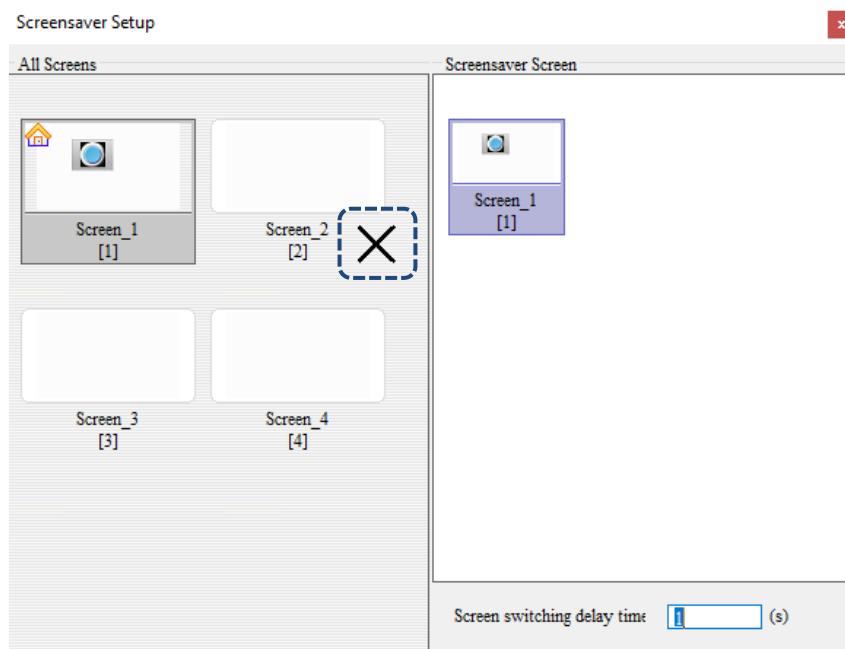
3. Once the green arrow appears, you can start dragging the screen. In the following figure, Screen\_1 is dragged to the Screensaver Screen.



4. To delete the screensaver screen, click and hold the screen to be deleted, and the screen with the mark is as shown as follows.



5. Next, left-click the screen to be deleted and hold the mouse button, drag the screen to the All Screens section on the left, and a black X sign appears, and then you can release the mouse left button to delete the screen for the Screensaver.



2

If you select **Enable screensaver**, you can set the Screen switching delay time. It is the interval time when screens are switched. The time range is 1- 255 s and the default time is 1 second.

#### 2.2.4.4 Cut Screen

To cut the screen, you can go to [Screen] > [Cut Screen], or use the system keyboard shortcut

**Shift + T**. Cut Screen is the same as the cut action for editing general texts. You can cut the screen and paste the screen.

Note: you cannot undo the action after you cut the screen.

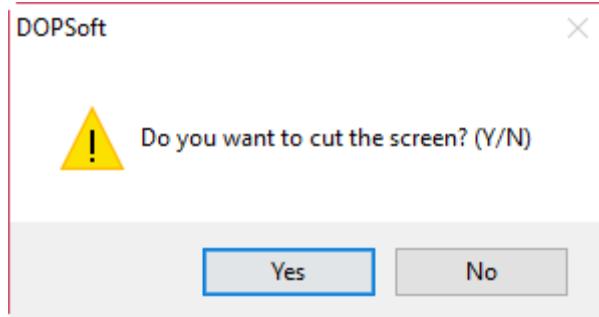


Figure 2.2.4.4.1 Cut Screen

#### 2.2.4.5 Copy Screen

To copy the screen, you can go to [Screen] > [Copy Screen], or use the system keyboard shortcut **Shift + C**. You can first copy the screen, click Paste Screen, and then the screen you copied will be pasted, which is similar to the copy action for text editing.

#### 2.2.4.6 Paste Screen

To paste the screen, you can go to [Screen] > [Paste Screen], or use the system keyboard shortcut **Shift + P**. Paste Screen is operable after you cut or copy the screen. After you paste the screen, the software automatically assigns the screen number.

### 2.2.4.7 Delete Screen

To delete the screen, you can go to [Screen] > [Delete Screen], or use the system keyboard shortcut **Shift + D**.

Note: you cannot undo the action after you delete the screen.

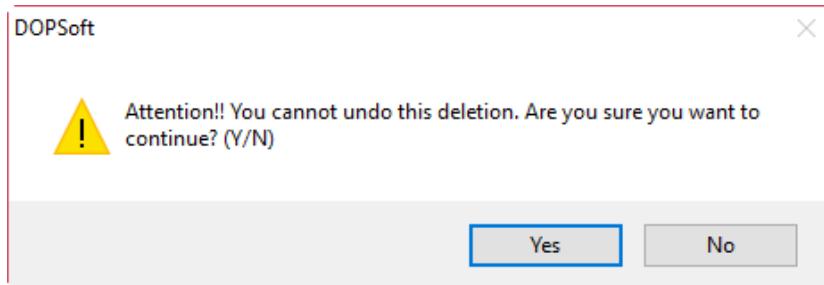


Figure 2.2.4.7.1 Delete Screen

### 2.2.4.8 Export

Save the current screen data as a .bmp image file in the disk. You can go to [Screen] > [Export], use  in the General toolbar, or use the system keyboard shortcut **Shift + E**. After you execute Export, you will be asked whether to show the border on the exported screen.

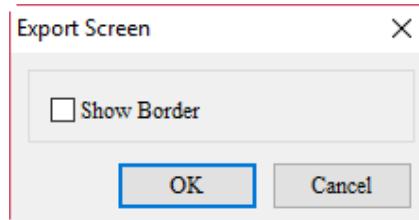


Figure 2.2.4.8.1 Export

Click **OK** and the default file name is “NewHMI” and the file format is .bmp.

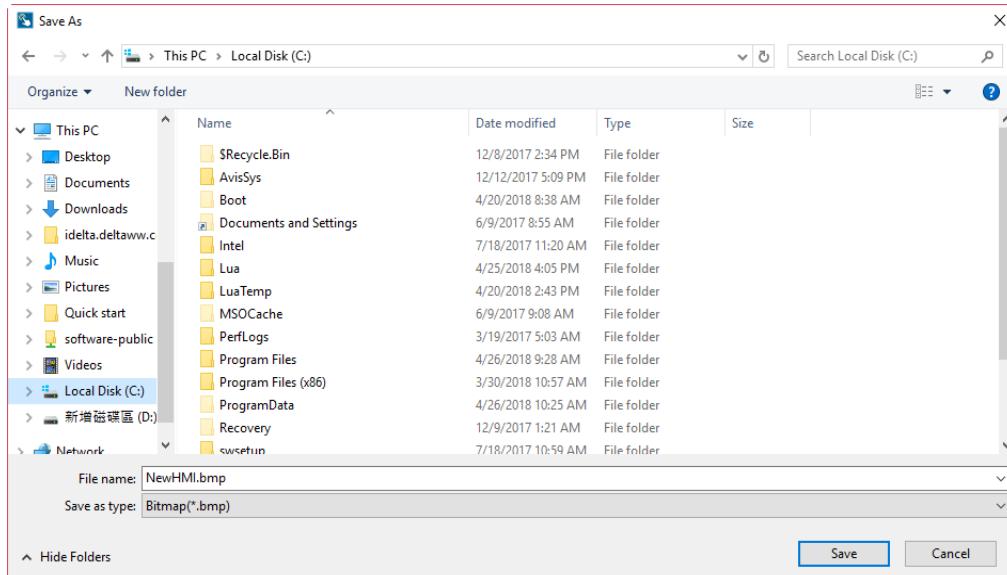


Figure 2.2.4.8.2 Export and save file



Figure 2.2.4.8.3 Image format after exported

If you have select the check box of **Show Border**, the image is presented with a bold black border line.



Figure 2.2.4.8.4 Image with black border

## 2.2.4.9 Import

Import any of the images from the file and set it as the background image for this editing screen.

Supported image file formats for Import include BMP, JPG, GIF, ICO, and PNG. You can go to [Screen] > [Import] or use the system keyboard shortcut **Shift + I**.

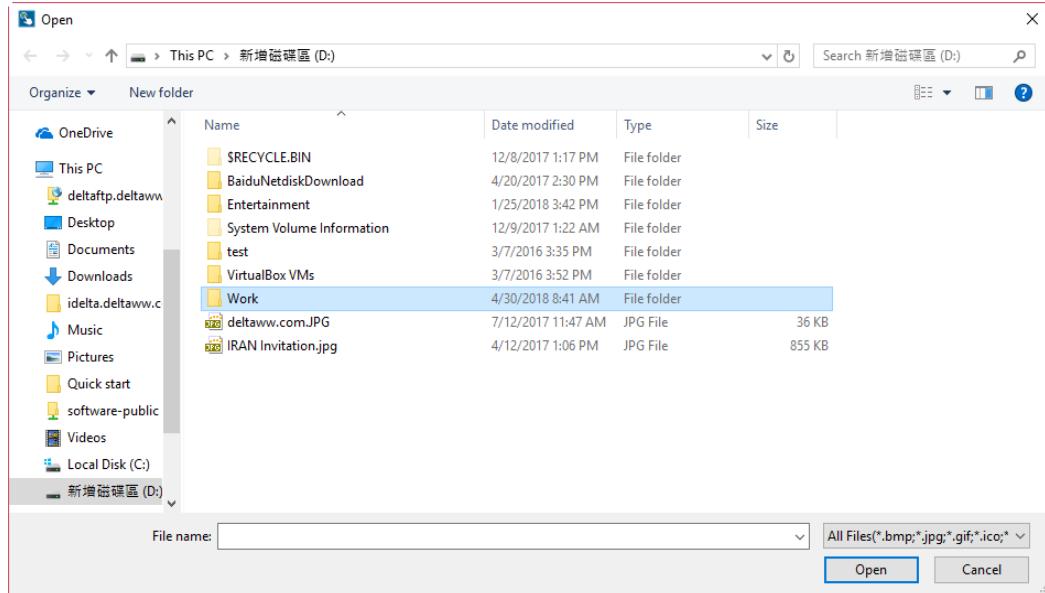


Figure 2.2.4.9.1 Supported file format for Import

Note:

1. The imported background image is different from the base screen. The imported image data is not treated as an element whereas the base screen is saved as an element in the editing screen after it is compiled.
2. For the definition and usage of the base screen, refer to 2.2.4.12 Screen Properties.

## 2.2.4.10 Clear imported data

To clear the imported background image, you can simply go to [Screen] > [Clear imported data] to clear the external background image in the current editing screen.

### 2.2.4.11 Function Key

The Function Key is enabled based on the HMI model types. The Function Key function is supported on DOP-B07S201, DOP-B07S211, DOP-B07S401K, DOP-B07S411K, DOP-H, and HMC07 series models. If you use models not mentioned above, when you go to [Screen] > [Function Key], the Function Key function is not available. On the other hand, if you select the models mentioned above, the **Function Key** is available.



Figure 2.2.4.11.1 DOP-B Function Key option

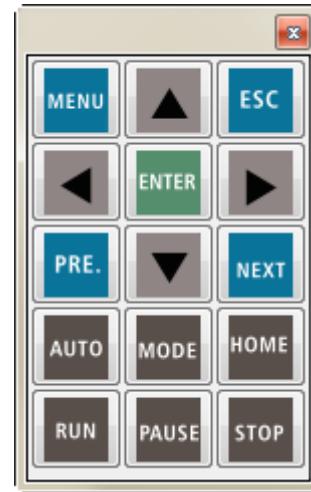


Figure 2.2.4.11.2 DOP-H Function Key option

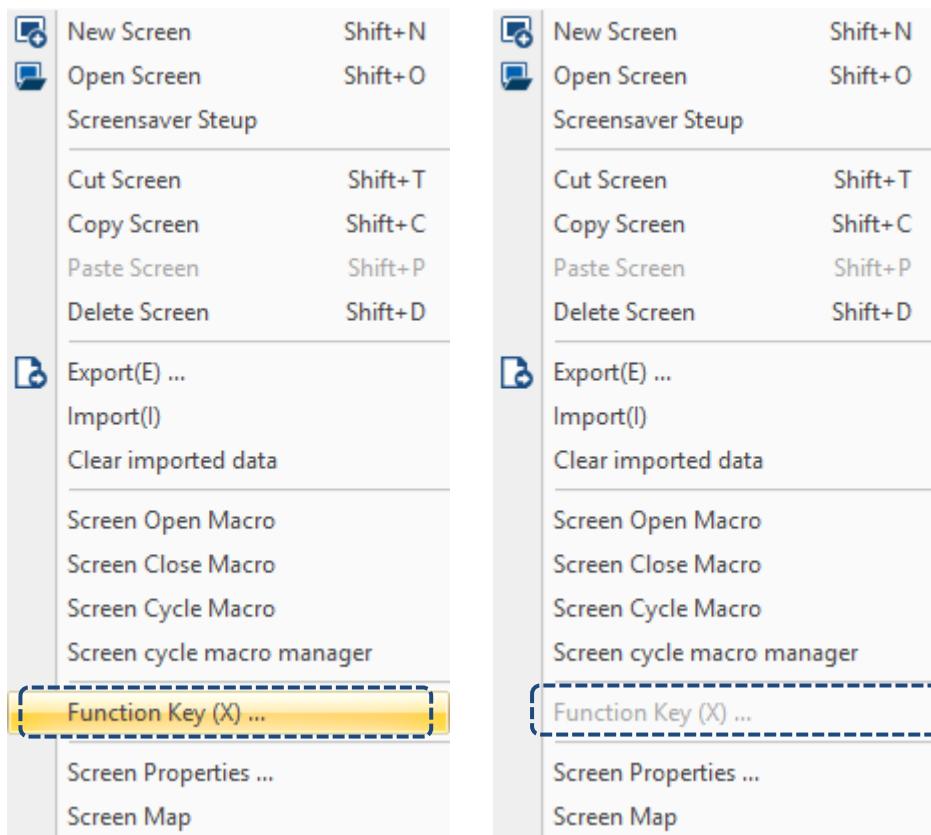


Figure 2.2.4.11.3 Function Key options

There are two types of settings for the Function Key, Local and Global. After you execute **Function Key**, the options of Local and Global are available.

Note: if you set both Local and Global, the software refers to the Global setting.



Figure 2.2.4.11.4 Local and Global

- Global

When you set F1 as the **System Directory** and set **Global** for the Function Key, it means when there are 10 screens, whenever you execute F1 and regardless of the screen you switch to, the system executes the action for **System Directory**.

- Local

When you set F1 as the **System Directory** and set **Local** for the Function Key in the first screen, it means the system executes the action for **System Directory** only when you execute F1 in the first screen.

#### 2.2.4.12 Screen Properties

The Screen Properties is for setting the properties of the screen. It allows you to set the screen as a subscreen, Display Title Bar, Width and Height, and X-Y coordinates of the subscreen. You can go to [Screen] > [Screen Properties] or click the screen and then select the Screen Properties of the Properties table, as shown in Figure 2.2.4.12.1 and 2.2.4.12.2.

Properties	
Screen_1	0
Screen Name	Screen_1
Screen Properties	Detail...
Background Color	<input type="color"/> RGB(252, 252, 252)
Screen Lock Bit	None
Screen Macro	
Screen Open Mac	0
Screen Close Mac	0
Screen Cycle Mac	0
Width	800
Height	480

Figure 2.2.4.12.1 Screen Properties

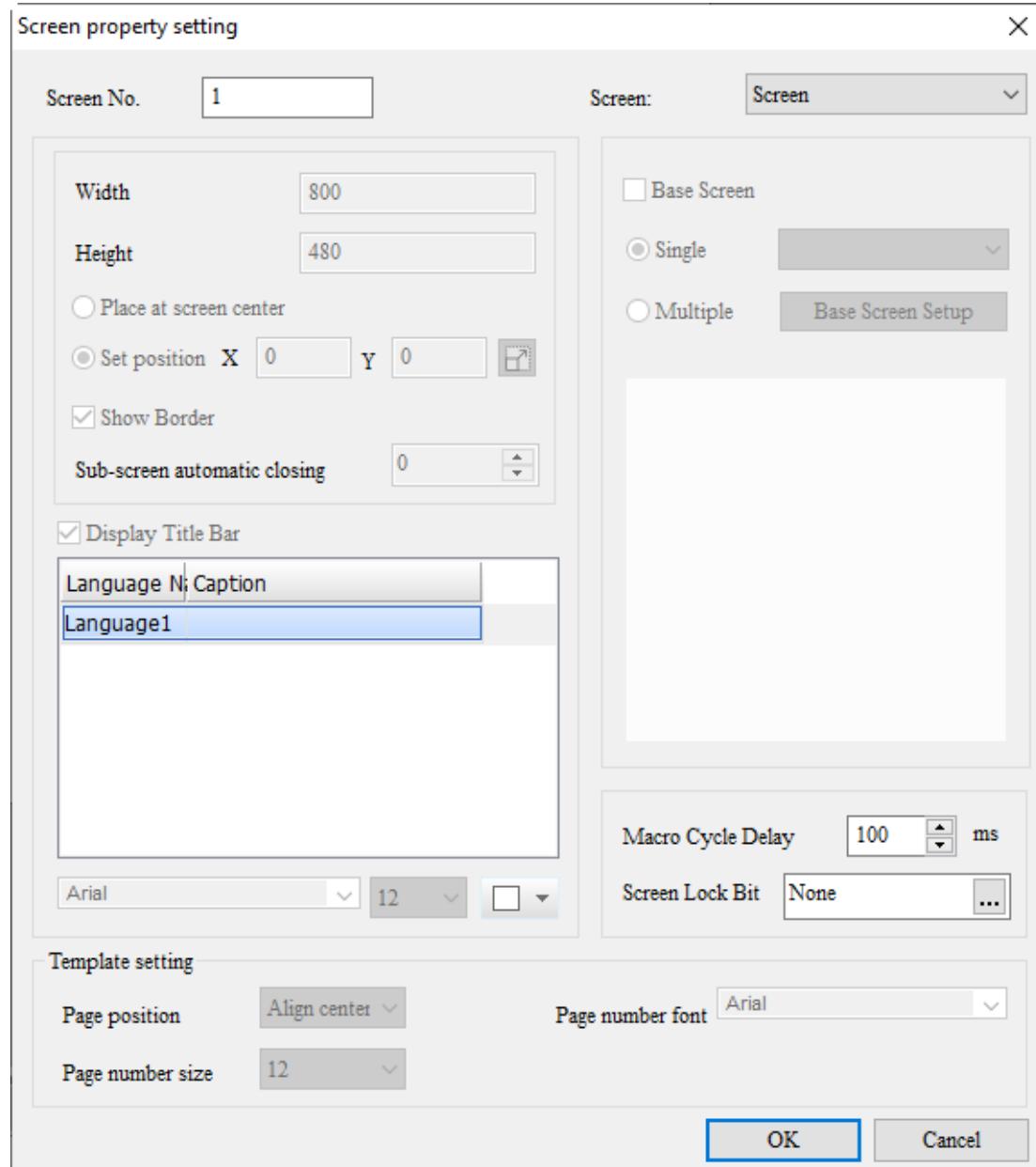
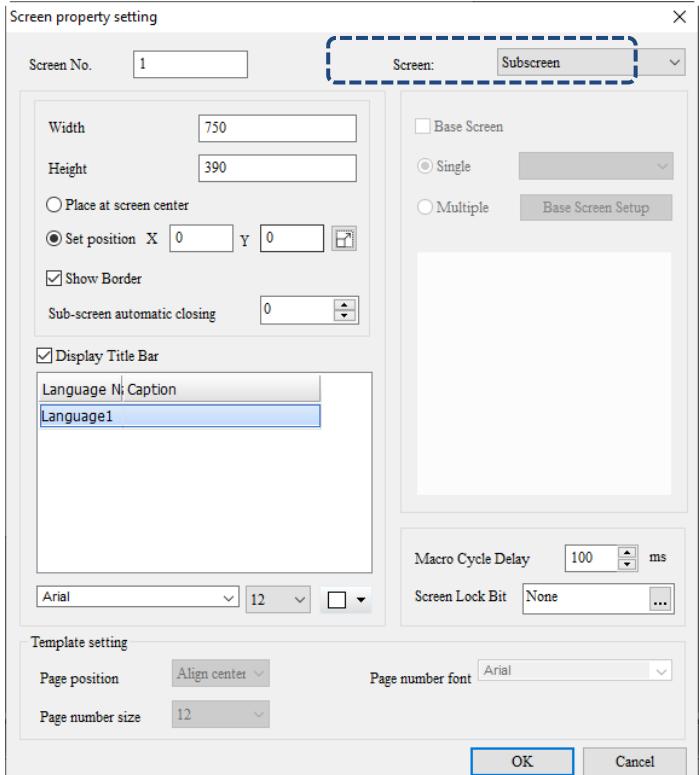
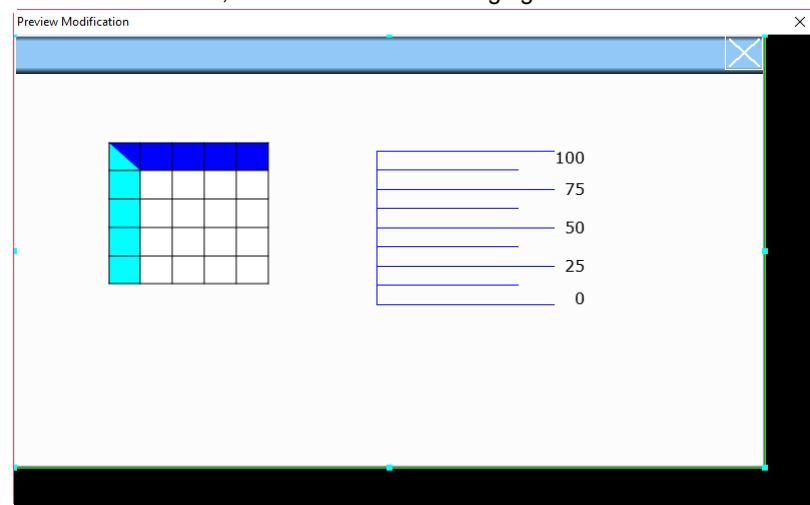
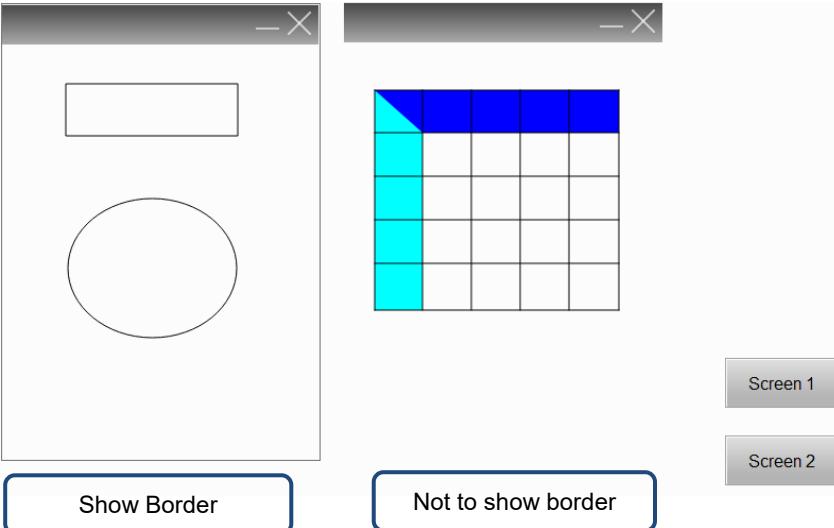


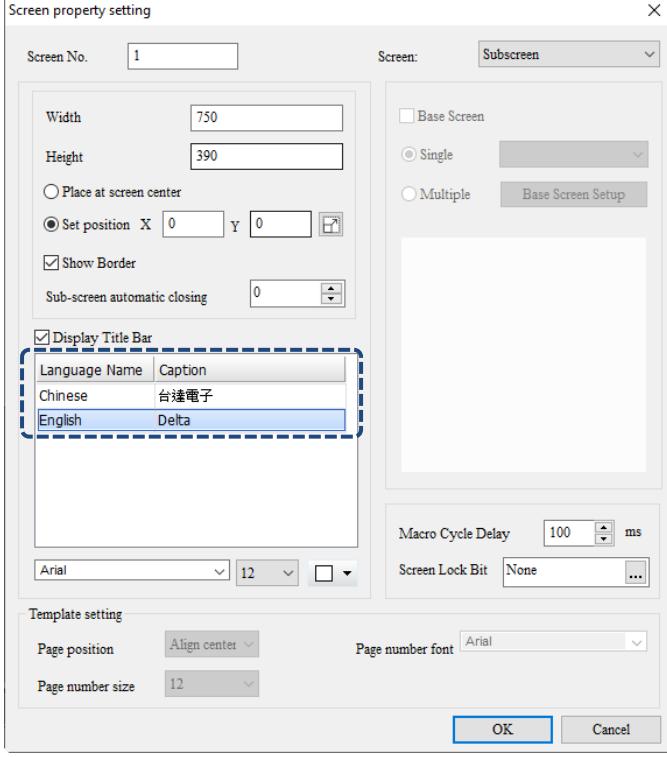
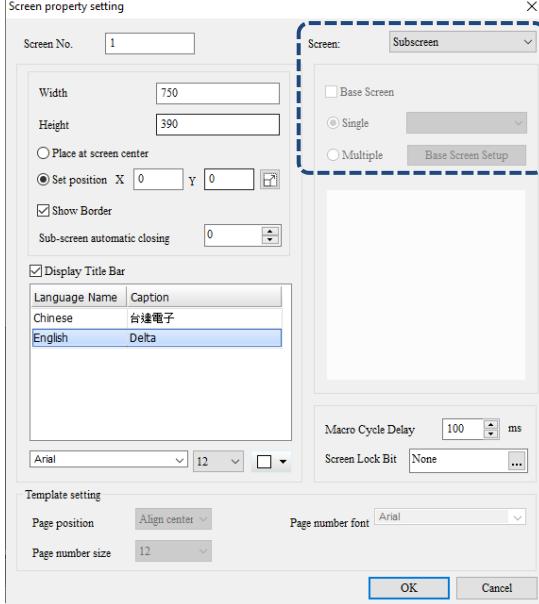
Figure 2.2.4.12.2 Screen Properties settings

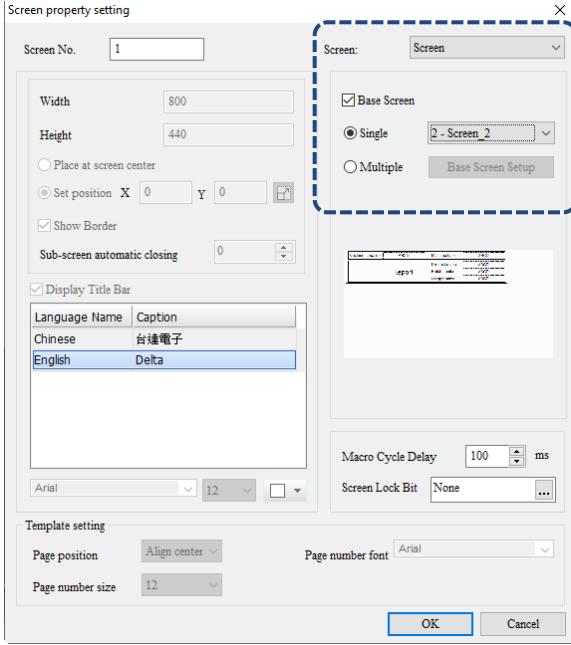
2

Refer to the following table for the parameter settings of Screen Properties.

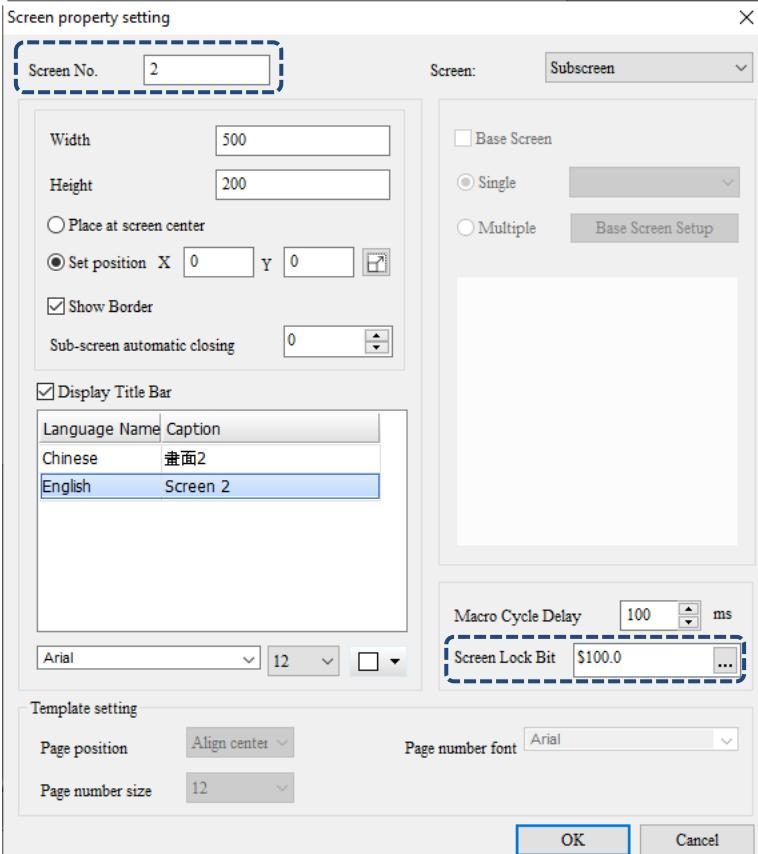
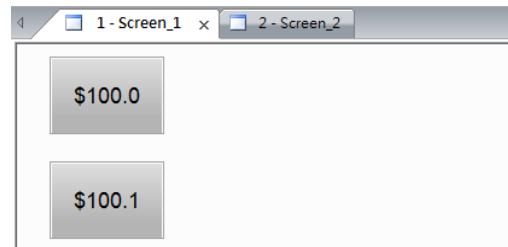
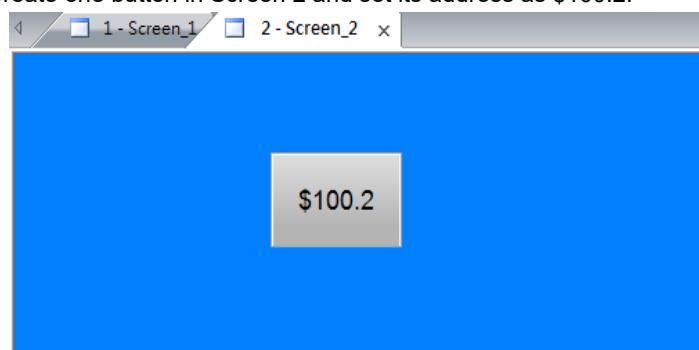
Item	Description
Screen No.	The Screen No. is from 1 to 65535 and repeating number for different screens is not allowed.
Screen	It can set the screen as Screen, Subscreen, Keypad Screen, or Print Screen. 
Select screen	To set the subscreen, you must select Subscreen for Screen.  <p>Note: the subscreen of DOP-100 series models supports simultaneously opening maximum 15 subscreens.</p>
Width	Set the width of the subscreen. The unit is pixel.
Height	Set the height of the subscreen. The unit is pixel.

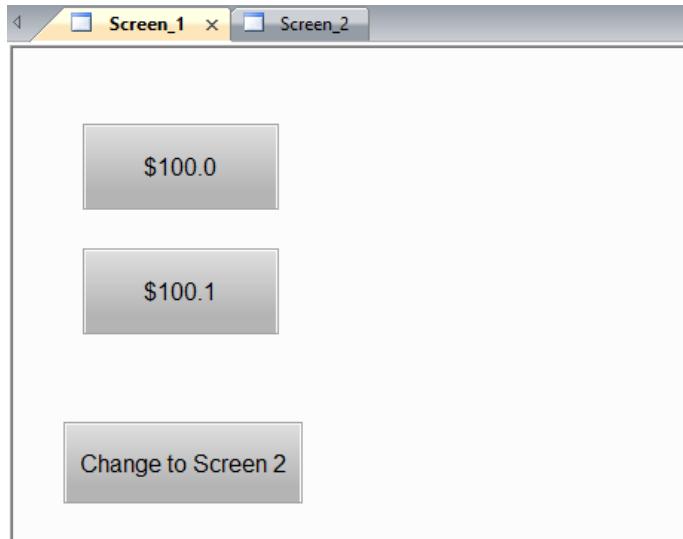
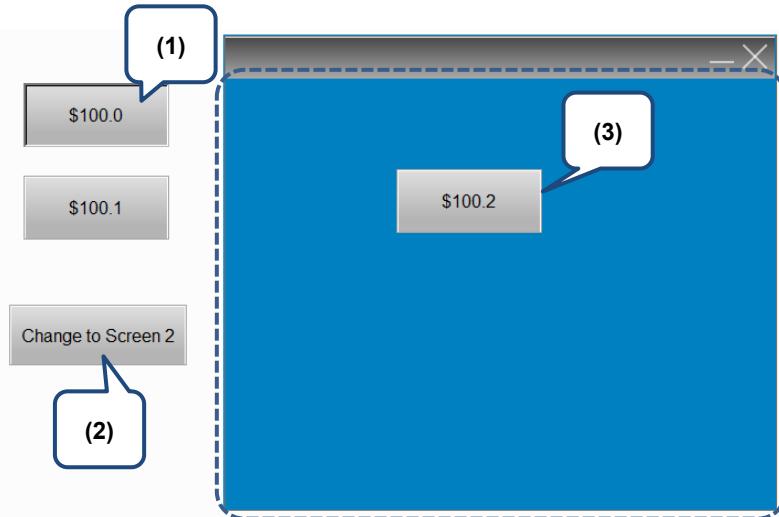
Item	Description
Position of subscreen display	<p>In the subscreen settings, you can select the option of <b>Place at screen center</b> or select <b>Set position</b> to specify its position when screen opened. Directly input the coordinates or click  to go to the Preview Modification screen to adjust the size or position of the screen, as shown in the following figure.</p> 
Subscreen settings	<p>Selecting the check box of <b>Show Border</b> means the subscreen displays with a border; leaving <b>Show Border</b> unselected means the subscreen displays without a border, as shown in the following figure.</p>  <p style="text-align: right;">Screen 1      Screen 2</p>

Item	Description
Sub-screen automatic closing	Sets the time for the Subscreen to automatically go off. Unit: second.
Display Title Bar	You can set whether to display the title bar and set the corresponding text title based on the set language. In addition, you can set the text size, font, and color. 
Macro Cycle Delay	The interval for executing the Screen Cycle Macro. The range is 100 ms - 5000 ms with the default of 100 ms.
Base Screen	If you set the Screen as Subscreen, the base screen options are not available. 

Item	Description											
<b>Base Screen</b>	<p>If you set the Screen as Screen, then you can set any of the editing screens as the base screen in all screens. The base screen is placed at the bottom layer as the background image in the editing section.</p> <p>Select the <b>Base Screen</b> check box</p> 											
	<p><b>Single</b> You can go to any of the screens (except for the current screen) and set it as the base screen. The Single option indicates the base screen has only one screen.</p> <p><b>Multiple</b> The Multiple option indicates all screens except for the current one can be set as the base screen. The main difference between options of Single and Multiple is that you can use multiple screens as base screens when selecting Multiple.</p>											
<b>Screen Lock Bit</b>	<p>You can use this bit to lock the screen. When the setting value is 1, the screen is locked and you can only select the elements on the current screen; when the setting value is 0, the screen is unlocked and you can select all elements of the HMI. You can set a constant or memory address for the Screen Lock Bit.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center; width: 33%;">Variables</th> <th colspan="3" style="text-align: center;">Type</th> </tr> <tr> <th style="text-align: center;">Internal memory</th> <th style="text-align: center;">PLC register</th> <th style="text-align: center;">Constant</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Screen Lock Bit</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> </tbody> </table> <p>The example of Screen Lock Bit is as follows.</p>	Variables	Type			Internal memory	PLC register	Constant	Screen Lock Bit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Variables	Type											
	Internal memory	PLC register	Constant									
Screen Lock Bit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>									

2

Item	Description
Screen Lock Bit	<p>Create two screens. Set Screen 2 as the subscreen and set the Screen Lock Bit as \$100.0.</p> 
Create Maintained buttons	<ul style="list-style-type: none"> <li>■ Create two buttons in Screen 1 and set their addresses as \$100.0 and \$100.1.</li>  </ul> <ul style="list-style-type: none"> <li>■ Create one button in Screen 2 and set its address as \$100.2.</li>  </ul>

Item	Description
Create a Goto Screen button	<p>Create a Goto Screen button in Screen 1 and set it to switch to Screen 2.</p> 
Screen Lock Bit	<p>After creating the elements, compile and download the elements to the HMI. Next, press <b>\$100.0</b> and then press <b>Change to Screen 2</b>. In this case, Screen 2 is locked and you can only press <b>\$100.2</b> on Screen 2. You can press <b>\$100.1</b> on Screen 1 only after closing Screen 2.</p> <p>Execution results</p>  <ul style="list-style-type: none"> <li>(1) Press <b>\$100.0</b> to lock Screen 2.</li> <li>(2) Open Screen 2.</li> <li>(3) After you lock Screen 2, only the element on Screen 2 is operable.</li> </ul>

2

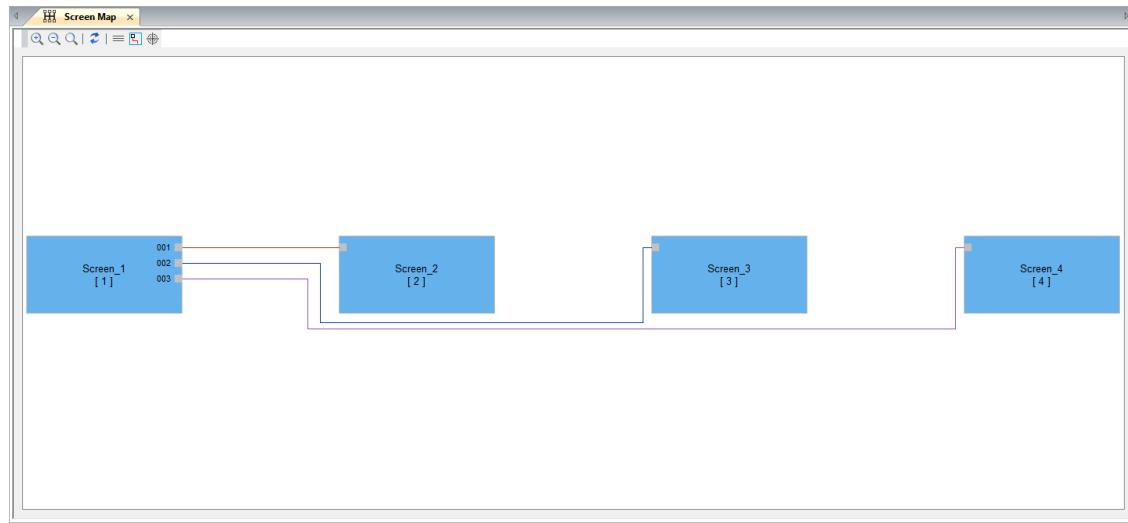
Item	Description
<b>Execution results</b>	<p>On the other hand, if you switch to Screen 2 without pressing <b>\$100.0</b>, as Screen 2 is unlocked, all buttons in Screen 1 and Screen 2 are operable.</p> <p>If you do not execute <b>\$100.0</b> to lock Screen 2, all buttons in the HMI are operable.</p>
<b>Screen Lock Bit</b>	<p>When multiple screens use the Screen Lock Bit, the operable range is determined by the screen opening sequence. The screens opened following the lock screen are all operable; for example, if you switch from Screen 1, Screen 2, Screen 3, and then to Screen 4, when you lock Screen 3, then the selectable range will be Screens 3 and 4, so all elements in Screens 3 and 4 are operable.</p> <p><b>After Screen 3 is locked, the operable range is Screen 3 and Screen 4.</b></p>

**Note:**

1. The embedded subscreen does not support Screen Lock Bit.
2. The subscreen remains locked even when you minimize the screen.
3. You can lock the subscreen even when it has no title setting. Make sure you created the Goto Screen button in case the subscreen cannot be closed.
4. For models without the System Key (refer to Appendix A), when the screen is locked, you can press and hold the background image to go the system directory.

### 2.2.4.13 Screen Map

The Screen Map allows you to view the linkage between each screen and change the screen number as required.

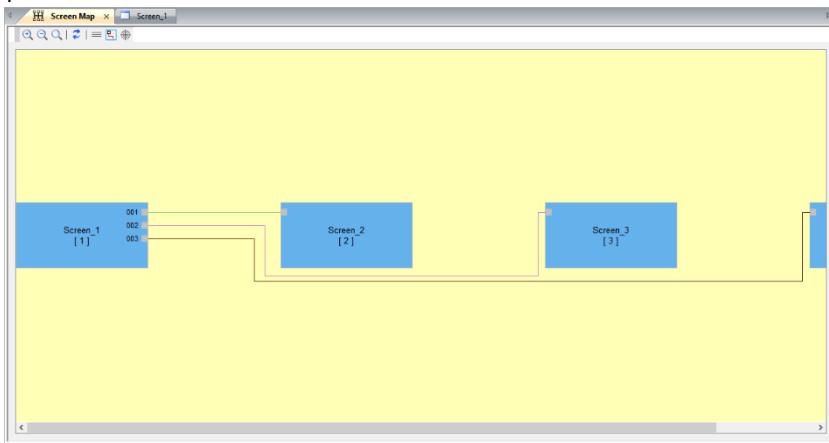


2

The toolbar for Screen Map:



Icon	Function name	Function description
	Zoom In	Zoom in to make the screen map appear larger.
	Zoom Out	Zoom out to make the screen map appear smaller.
	1:1	Show the screen map in the original size.
	Update	If you add, modify, or delete the Goto screen button, the background color shows in pale yellow when you open the screen map, meaning the linkage between screens have been changed; meanwhile, you can click this button to update all screen numbers.



Icon	Function name	Function description
	Multiple Selection	<p>It is for selecting the relation lines of multiple screens. The selected screens are linked with red lines.</p>
	Display nodes on the screen after selection	<p>When the Screen Map is zoomed in and becomes too large so the screen number cannot be identified, you can use this button to select the node and switch to the linked screen number.</p> <p>1. Zoom in the Screen Map</p> <p>2. Click  to select the yellow node of Screen_1.</p>

Icon	Function name	Function description
	Display nodes on the screen after selection	<p>3. You will be directed to the screen number linking the yellow node of Screen_1.</p>
	Select Target Screen	<p>This function directly changes the original linked screen number to another number on the Screen Map.</p> <ol style="list-style-type: none"> <li>1. Select node 001 of Screen_1.</li> </ol> <ol style="list-style-type: none"> <li>2. After you click  and select Screen_2, the software prompts a message window showing the original linkage cannot be restored after this change if you want to continue. Click Yes and node 001 of Screen_1 that is originally linked to Screen_3 is changed to link to Screen_2.</li> </ol> <ol style="list-style-type: none"> <li>3. The screen number linking to node 001 is changed to Screen_2.</li> </ol>

## 2.2.5 Tools

The Tools option on the function list provides the following functions.

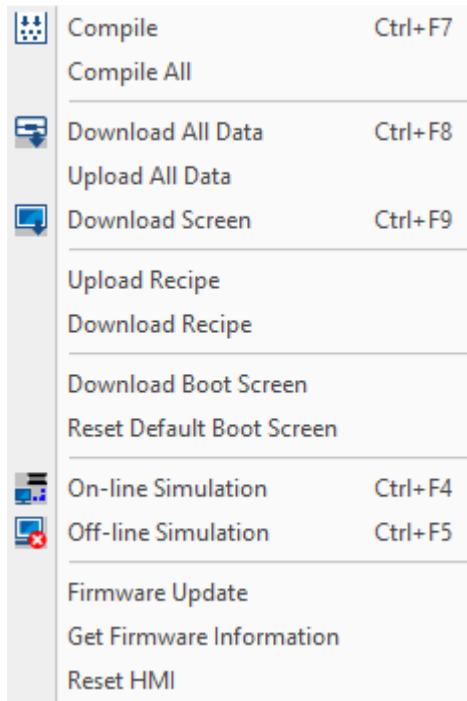


Figure 2.2.5.1 Toolbar function list

Note:

1. Editing Logic Data and downloading Logic Data are only supported by the HMC models.
2. If you select a non-HMC model, then these two options are not available.

### 2.2.5.1 Compile

For more user-friendly operation and usage, the DOPSoft provides the Compile function for individual pages. When you create multiple screens but modify only one of them, you can use Compile instead of Compile All to save the time for compiling all the screens.

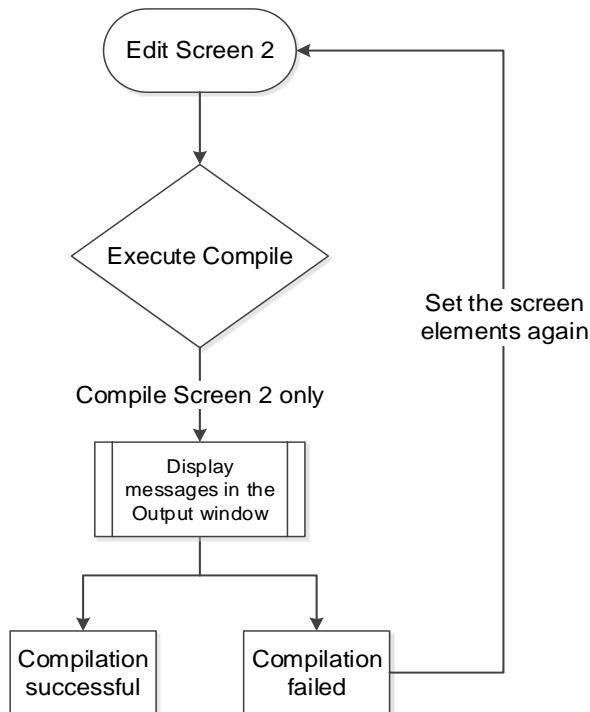


Figure 2.2.5.1.1 Flowchart of Compile

You can go to [Tools] > [Compile], use  on the Layout toolbar, or use the system keyboard shortcut **Ctrl+ F7**.

### 2.2.5.2 Compile All

This function is the same as Compile but Compile All is for compiling all screens. In the compiling process, the output column will display the related message. If an error occurs after you execute Compile, the output column also displays the error message to remind you. You can click on this message to check the element in error.

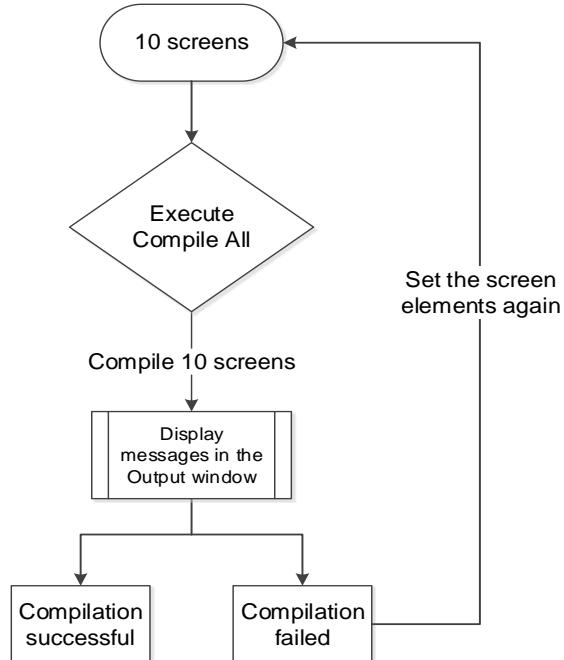


Figure 2.2.5.1.1 Flowchart of Compile All

### 2.2.5.3 Download All Data

The Download All Data function is for downloading both the screen data and recipes to the HMI.

You can go to [Tools] > [Download All Data], use  on the Layout toolbar, or use the system keyboard shortcut **Ctrl+ F8**. When you execute Download All Data, the software detects whether the HMI is connected with the PC, and if the transmission interface is not enabled, then an error message appears for warning.

■ Normal transmission

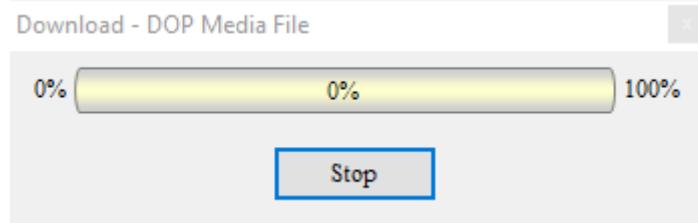
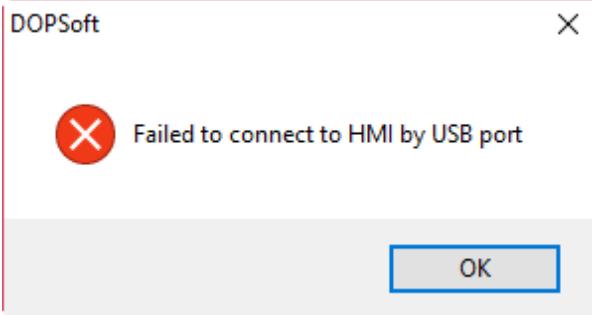
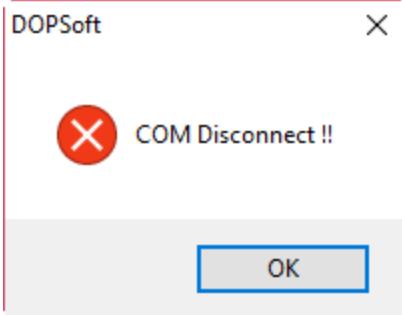
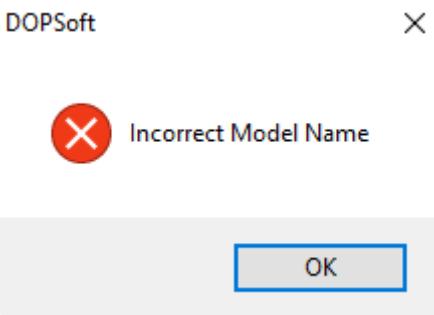


Figure 2.2.5.3.1 Download all data

■ Abnormal transmission

	<p>The error message appears when the software fails to access the USB channel.</p> 
USB channel check	<p>The error message appears when the transmission cable is removed or the communication is disconnected during data download.</p> 
Model check	<p>The HMI model name is incorrect.</p> 

### 2.2.5.4 Upload All Data

When you use this function to upload all data, the software will prompt you to enter the password, as shown in Figure 2.2.5.4.2. Enter the system default password “12345678” here. You can go to [Options] > [Configuration] to set its password.

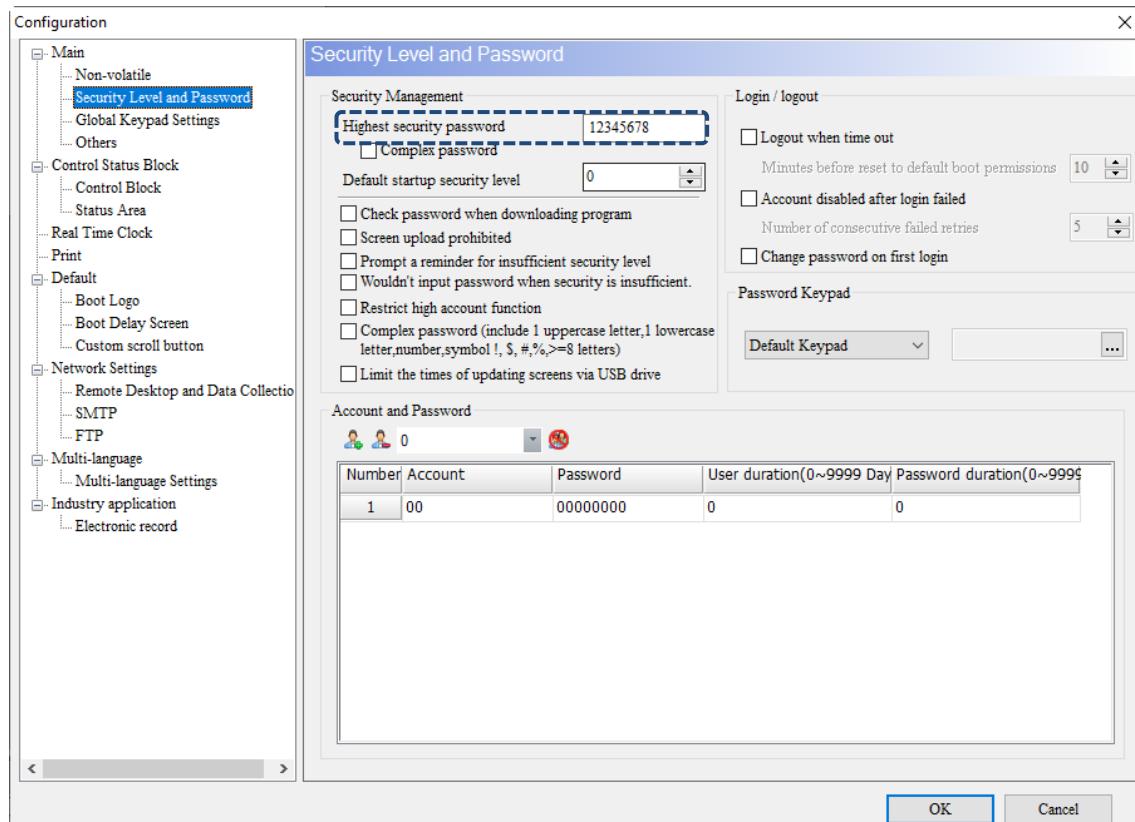


Figure 2.2.5.4.1 Set the security password

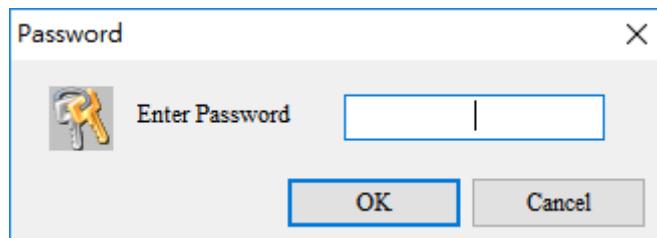


Figure 2.2.5.4.2 Upload All Data

After you enter the password, the software will ask you to save the screen file to be uploaded, as shown in Figure 2.2.5.4.3.

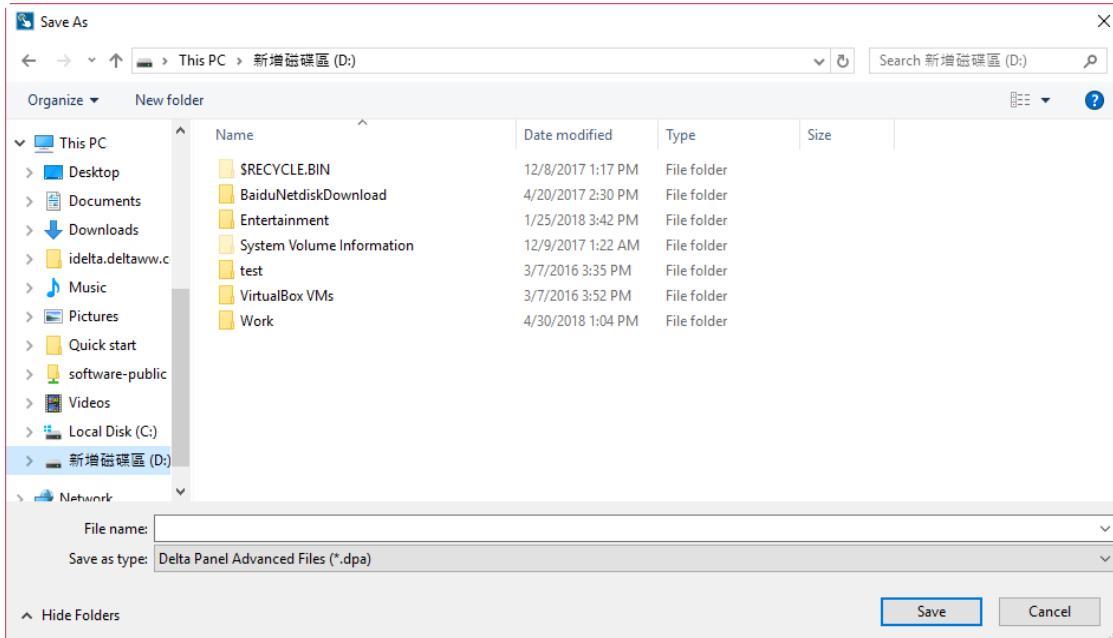


Figure 2.2.5.4.3 Save the data to be uploaded as another file

After you set the file and path to be saved, the screen data starts uploading until it reaches 100%. You can also click **Stop** to stop the data upload.

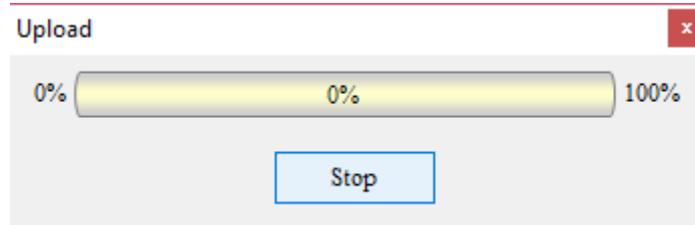


Figure 2.2.5.4.4 Data uploading

In addition to uploading the screen data to the PC, you can also go to [Options] > [Environment] to set whether to include the picture data when uploading.

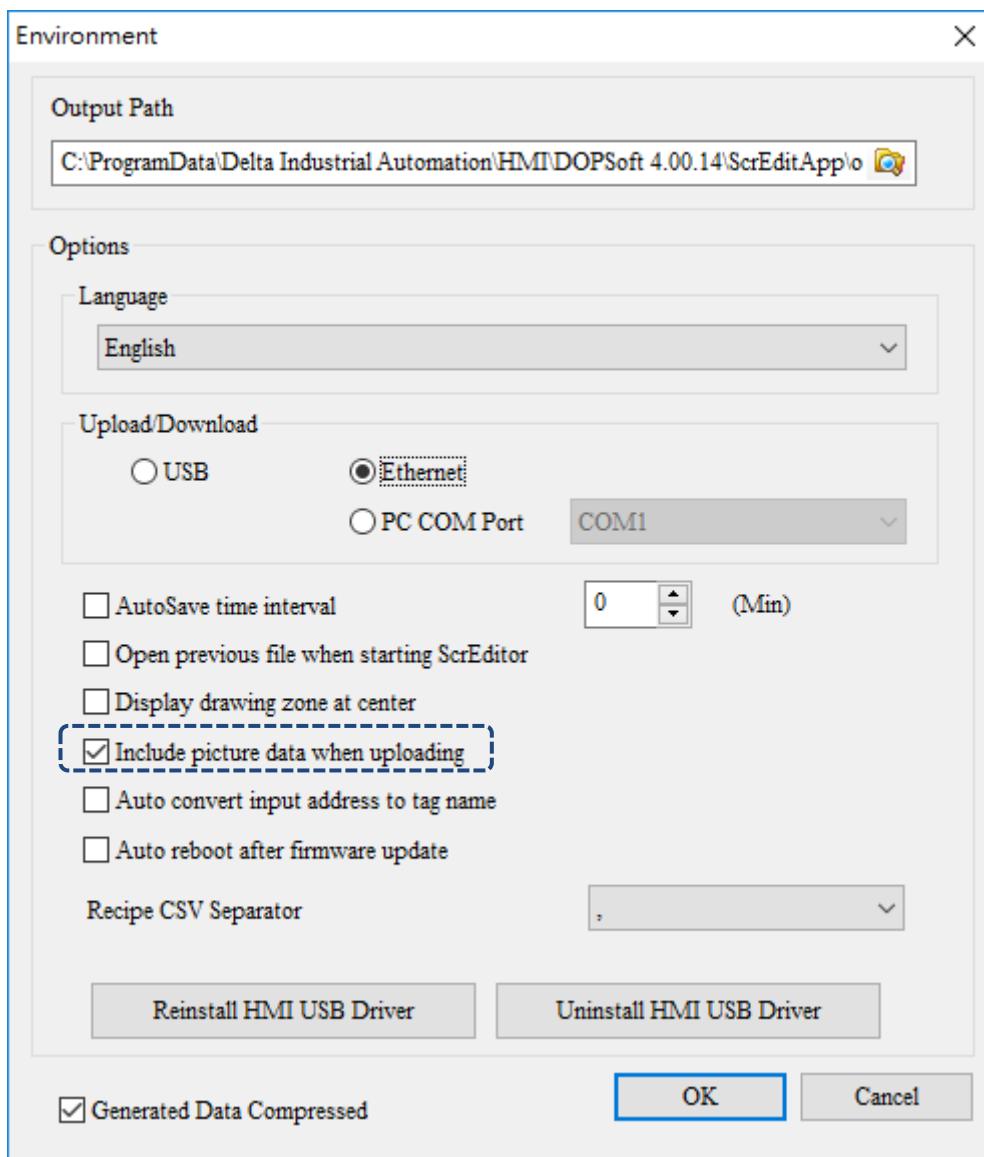


Figure 2.2.5.4.5 Include picture data when uploading

## 2.2.5.5 Download Screen

This function is to download the screen data without any recipe. Its download method is the same as that of Download All Data (refer to Section 2.2.5.3 Download All Data). You can go to

[Tools] > [Download Screen], use  on the Layout toolbar, or use the system keyboard shortcut **Ctrl+ F9**.

## 2.2.5.6 Upload Recipe

The method of uploading the recipe and uploading all data is the same; you must enter the password before uploading the recipe. The steps to set the password is identical to the description in Section 2.2.5.4 Upload All Data and you can refer to it if needed.

## 2.2.5.7 Download Recipe

To download the recipe only, you can simply execute Download Recipe. This function allows you to save the time for downloading the screens when you need to change the recipe without changing other screen data. After you execute the function, the software will ask you to select the recipe file (.rcp) to download. Once selected, you can start downloading this recipe file to the HMI.

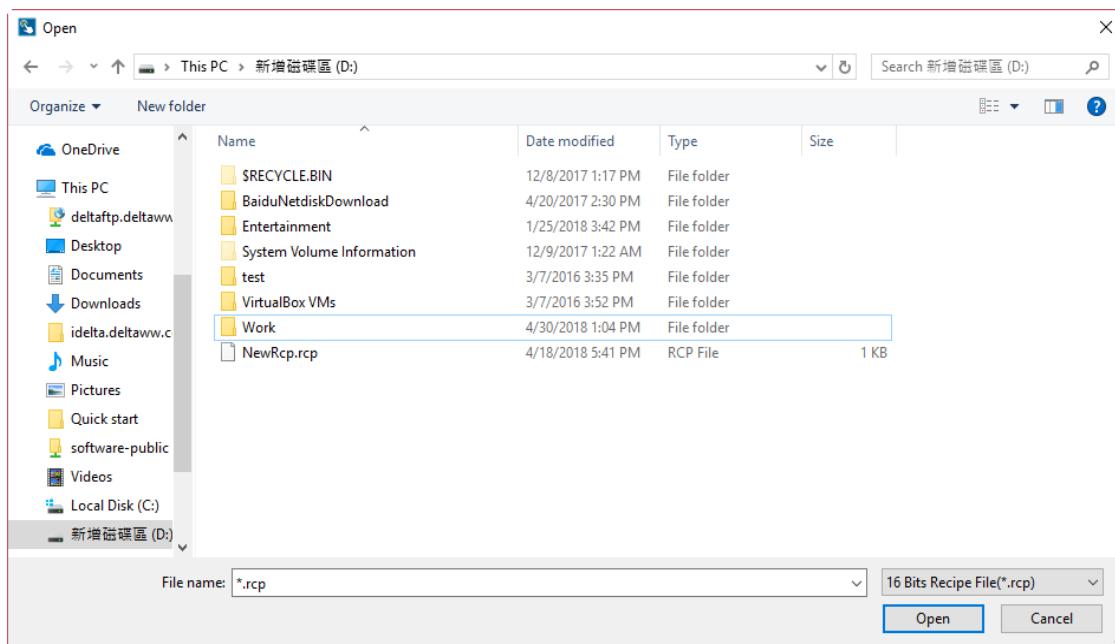


Figure 2.2.5.7.1 Download Recipe - select the recipe file

### 2.2.5.8 Download Boot Screen

To download the boot screen only, you can simply execute **Download Boot Screen** and then the [Download Logo...] window appears.

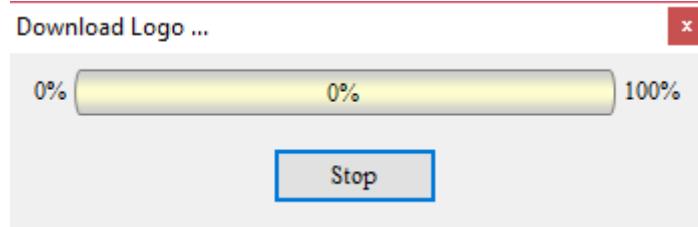


Figure 2.2.5.8.1 Download Boot Screen

When the boot screen function is disabled and you execute Download Boot Screen, an error occurs as follows.

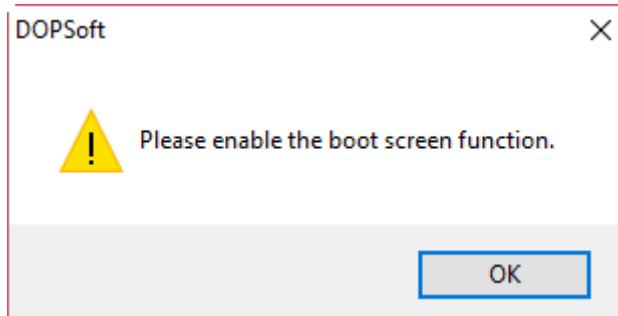


Figure 2.2.5.8.2 Enable Download Boot Screen

When you execute Download Boot Screen without selecting any of the boot screens, an error occurs as follows.

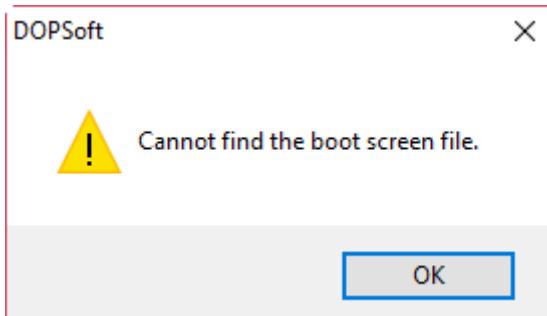


Figure 2.2.5.8.3 Cannot find the boot screen file

Note:

1. After downloading the boot screen or executing Reset Default Boot Screen, cycle power on the HMI.
2. The following models do not support boot screens: B04S211, B05S100, B05S101, B07S201, and B07S211.
3. Supported image file formats include BMP, JPG, GIF, ICO, and PNG.

### 2.2.5.9 Reset Default Boot Screen

To use the Delta HMI default boot screen, you can simply execute Reset Default Boot Screen.

### 2.2.5.10 On-line Simulation

The On-line simulation is to simulate the PC as the HMI to communicate with the PLC. Its way of communication is to use the PC's COM port as the communication interface to communicate with the PLC. If the communication of the On-line Simulation is OK, the PC is able to simulate the HMI operation. After executing the On-line Simulation, the software first compiles the data and checks if the screens are correct. You can go to [Tools] > [On-line Simulation], use  on the Layout toolbar, or use the system keyboard shortcut **Ctrl+F4**.

#### ■ Procedure of On-line Simulation

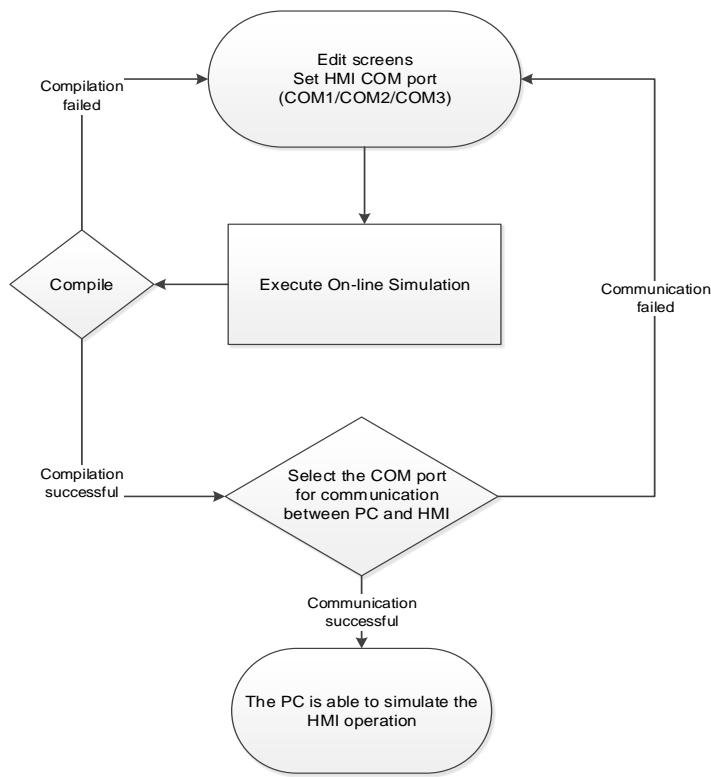


Figure 2.2.5.10.1 Flowchart of On-line Simulation

After you execute the On-line Simulation, the software will ask you to set the PC port number for communicating with the HMI, as shown in the following figure.

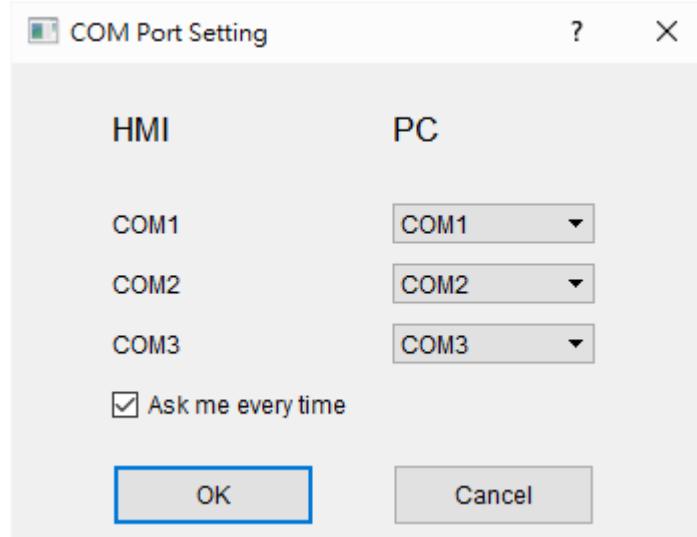


Figure 2.2.5.10.2 COM Port Setting

When all settings are correct, the On-line Simulation can start the communication with the PLC on behalf of the HMI.

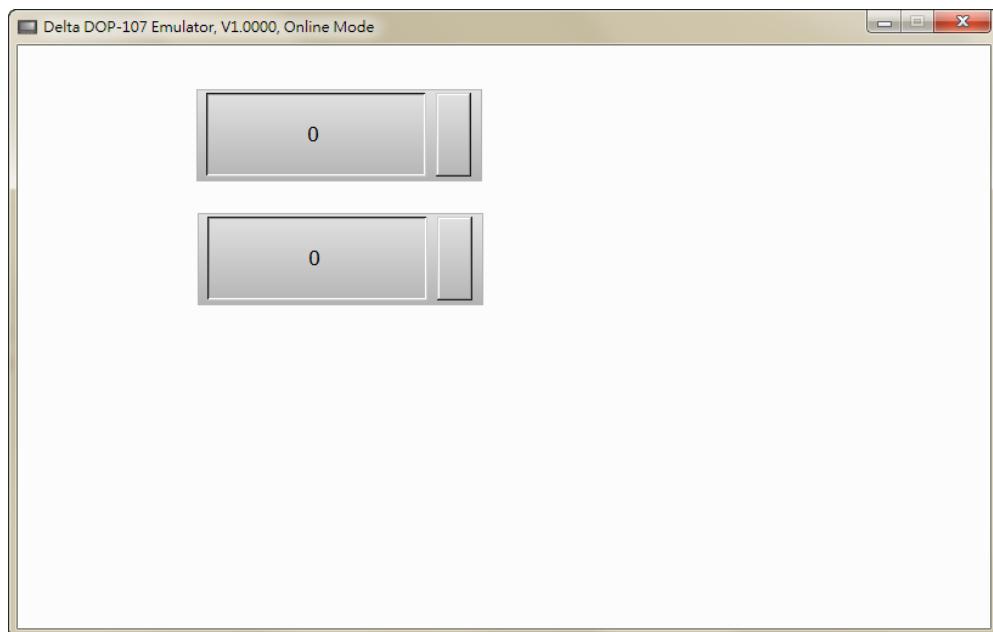


Figure 2.2.5.10.3 On-line simulation result

There is an option [Ask me every time] in the COM Port Setting which allows you to determine whether to prompt the Port Setting window each time you execute the On-line Simulation. If [Ask me every time] is cleared, you can right-click the mouse on the On-line Simulation screen and select COM Setting to display the window shown in Figure 2.2.5.10.2.



Figure 2.2.5.10.4 Right-click to enter COM Setting

The Monitoring IO function allows you to monitor values of the I/O devices.

Right-click the On-line Simulation screen and select Monitor IO, and a window appears (shown in Figure 2.2.5.10.6) and you can start setting and monitoring the I/O devices.

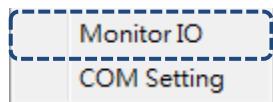


Figure 2.2.5.10.5 Right-click to go to Monitor IO screen

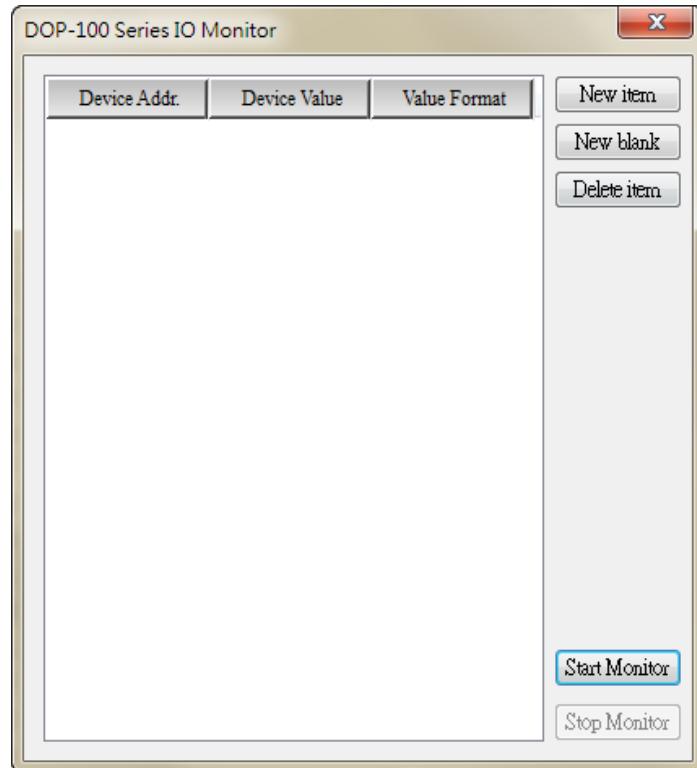


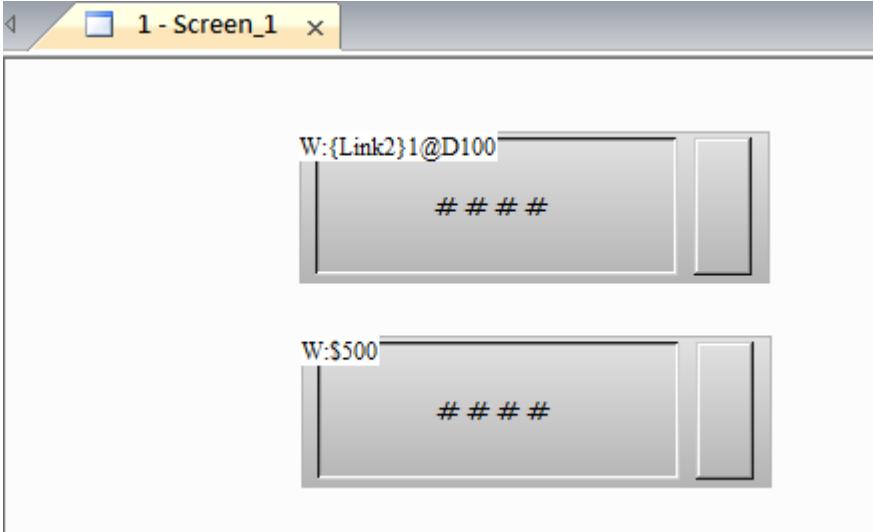
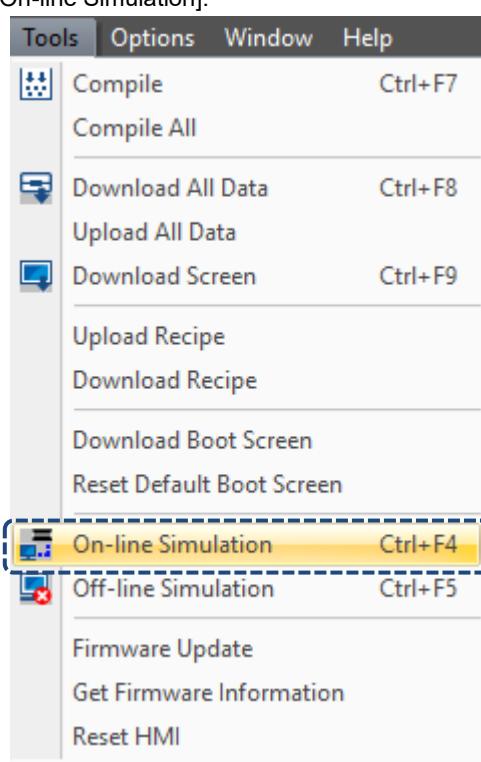
Figure 2.2.5.10.6 Monitoring IO function

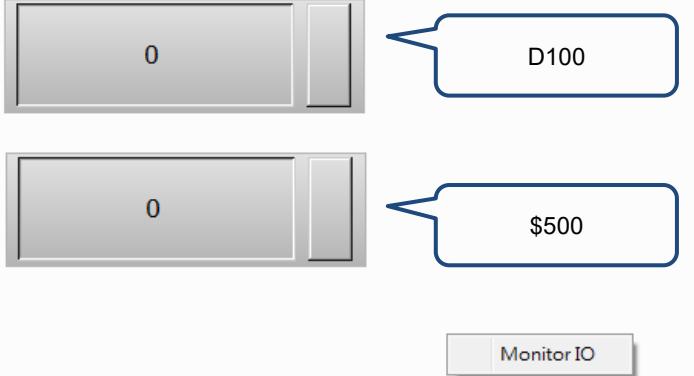
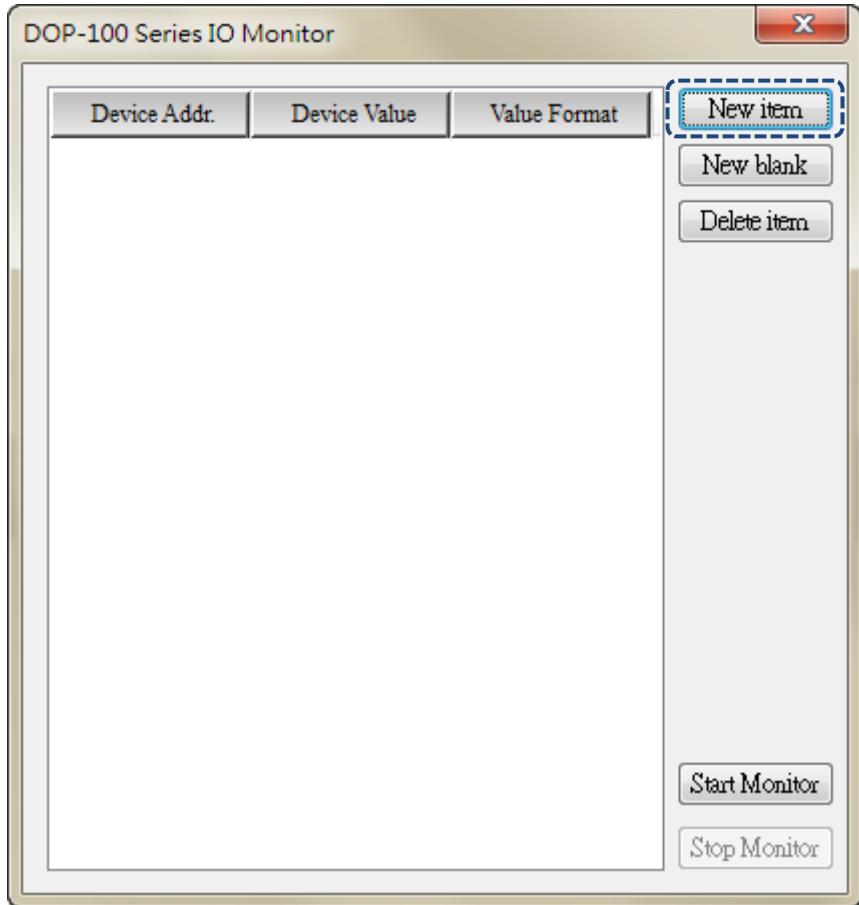
Table 2.2.5.10.1 Properties of Monitor IO

Properties of Monitor IO	
New item	Create a new monitoring address with an input box.
New blank	Add a new monitoring column. Different from the <b>New item</b> , you can directly copy and paste the monitoring address instead of using an input box to enter the address.
Delete item	Delete the selected monitoring address.
Start Monitor	Click this button to start monitoring.
Stop Monitor	Click this button to stop monitoring.
Device Addr.	You can select the internal memory or the controller register address.
Device Value	Displays the values of the monitored internal memory or controller register and promptly changes the values. If you are using Delta PLCs, setting the length is not required.
Value Format	There are four selectable formats: Signed Decimal, Unsigned Decimal, Hexadecimal, and Bit.

The following section is the example of Monitor IO.

Table 2.2.5.10.2 Monitor IO example

Monitor IO example	
Create Numeric Entry elements	<p>Create two Numeric Entry elements, and set the Write Addresses to \$500 and {Link2}1@D100.</p> 
Enter the [Monitor IO] window	<p>Step1: click [Tools] &gt; [On-line Simulation].</p>  <ul style="list-style-type: none"> <li>Tools Options Window Help</li> <li>Compile Ctrl+F7</li> <li>Compile All</li> <li>Download All Data Ctrl+F8</li> <li>Upload All Data</li> <li>Download Screen Ctrl+F9</li> <li>Upload Recipe</li> <li>Download Recipe</li> <li>Download Boot Screen</li> <li>Reset Default Boot Screen</li> <li>On-line Simulation Ctrl+F4</li> <li>Off-line Simulation Ctrl+F5</li> <li>Firmware Update</li> <li>Get Firmware Information</li> <li>Reset HMI</li> </ul>

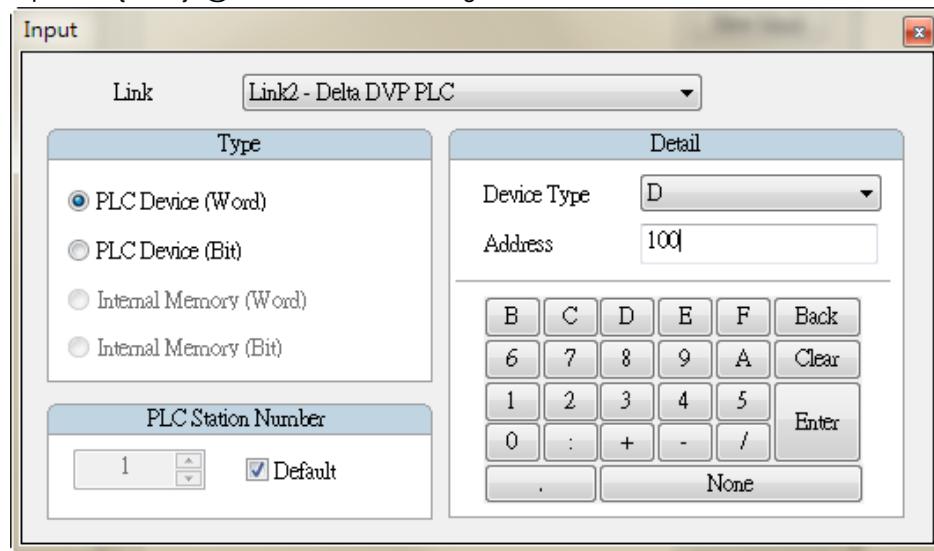
Monitor IO example	
Enter the [Monitor IO] window	Step 2: right-click the simulation screen and select Monitor IO. 
Set the monitoring address	Step1: click <b>New item</b> to create a new monitoring address. 

2

2

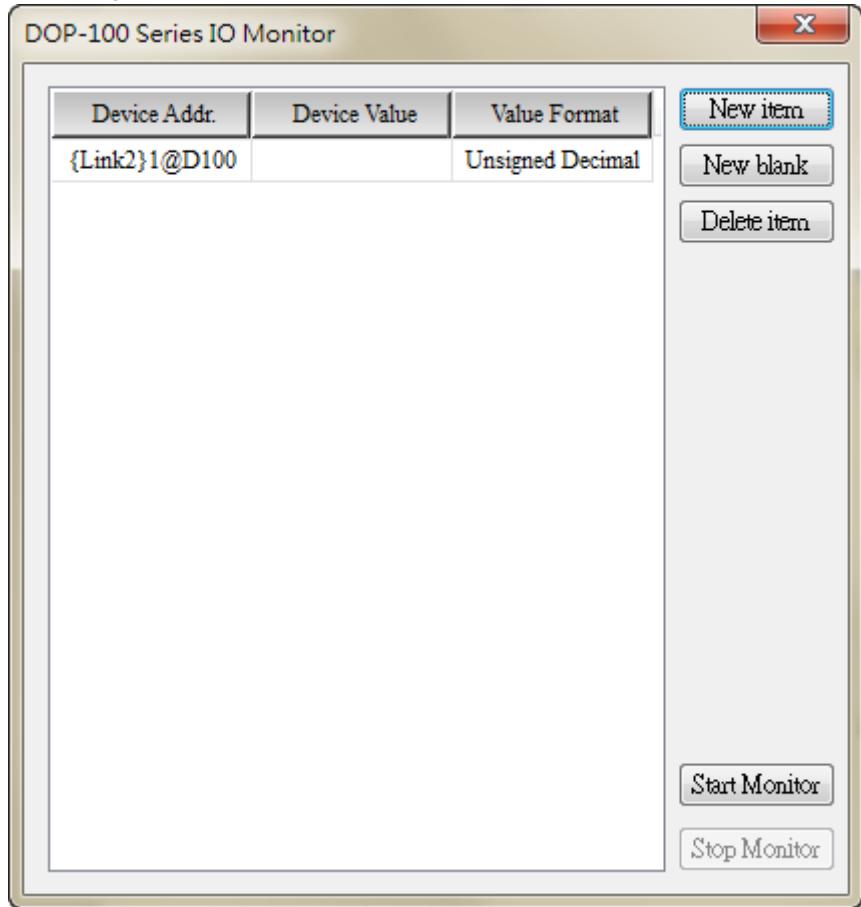
**Monitor IO example**

Step 2: set {Link2}1@D100 as the monitoring address.



After the setting is complete, the screen is as follows:

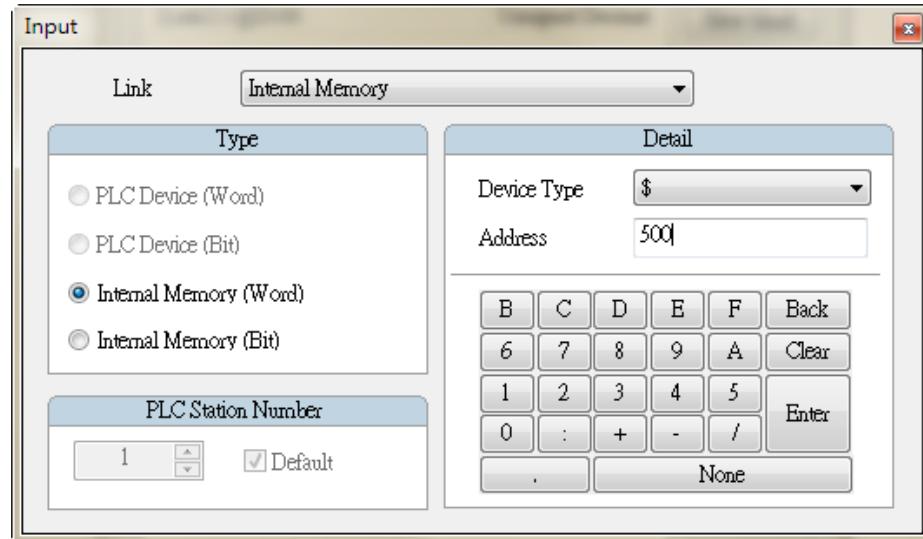
Set the monitoring address



**Monitor IO example**

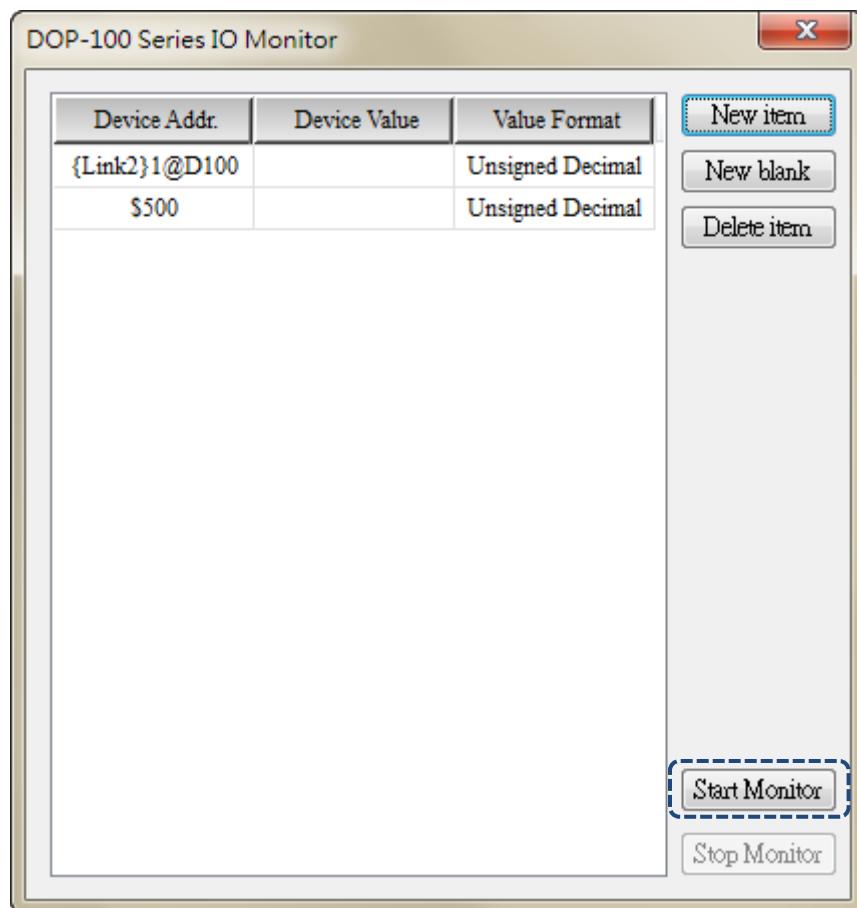
Repeat Steps 1 and 2 to set the other monitoring address \$500.

Set the monitoring address



Press **Start Monitor** to start monitoring.

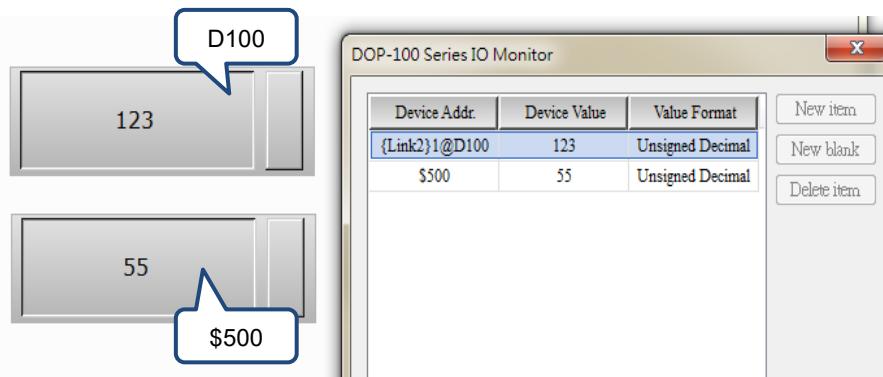
Start monitoring the address



## Execution results

**Monitor IO example**

The Monitor IO window enables you to promptly monitor the set addresses. You can monitor the values of {Link2}1@D100 and \$500 in the Device Value column as well as modifying the device values in this window.



### 2.2.5.11 Off-line Simulation

The main difference between the Off-line Simulation and On-line Simulation is that the Off-line Simulation does not require PLC communication. In this case, the off-line mode is mainly for checking the correctness of the edited screens, read/write memory addresses, and macros. You can use [Tools] > [Off-line Simulation], the  icon on the Layout toolbar, or the system keyboard shortcut **Ctrl+F5**.

After you execute the Off-line Simulation, the software first compiles the data and then goes to the Off-line Simulation screen.

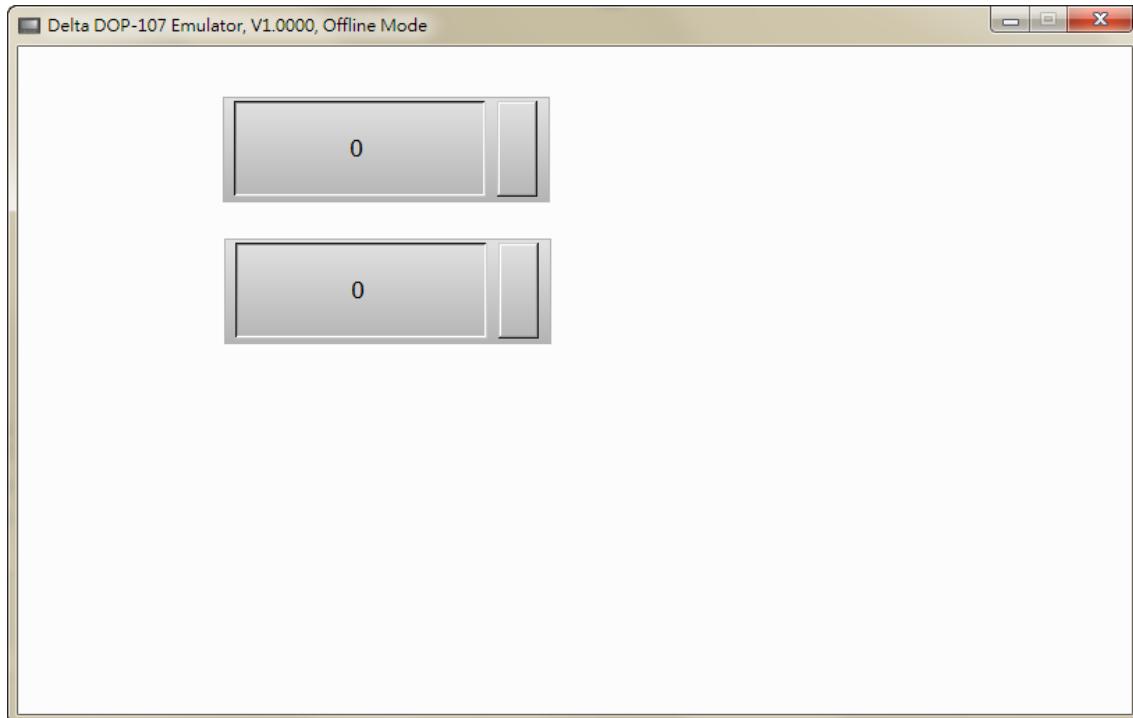


Figure 2.2.5.11.1 Off-line Simulation screen

### 2.2.5.12 Firmware Update

The Firmware Update function is to update the HMI firmware. This is to ensure the HMI firmware is the latest version and enables the HMI become more stable. Therefore, make sure your software version and HMI firmware version are consistent before using the DOPSoft.

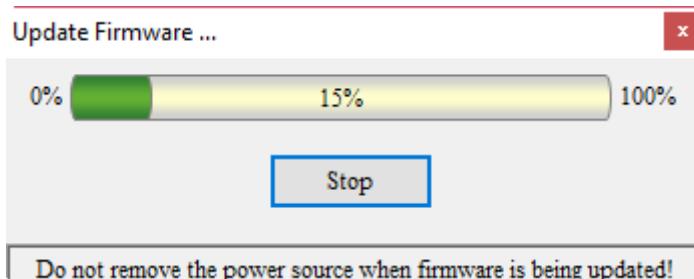


Figure 2.2.5.12.1 Firmware Update

### 2.2.5.13 Get Firmware Information

You can get the firmware version and related information of the HMI by using the option of Get Firmware Information.

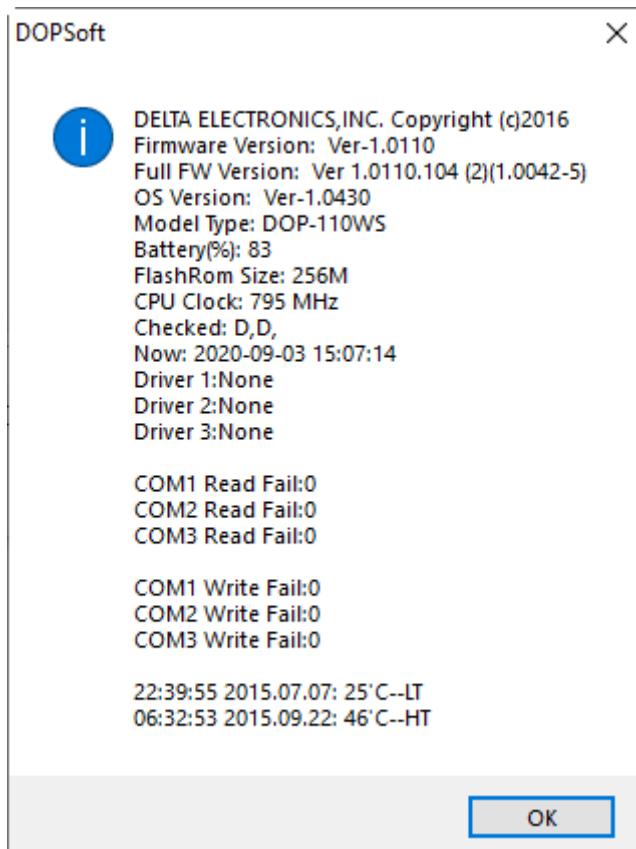


Figure 2.2.5.13.1 Get Firmware Information

### 2.2.5.14 Reset HMI

If you forget the Highest security password and you have selected the option of **Check password when downloading program**, you need to enter the password after uploading data to the PC. If you need to go to the system screen to format the screen, password verification is also required. In these conditions, HMI data download/upload or screen formatting cannot be done. Therefore, the DOPSoft provides the Reset HMI option for you to restore your HMI to the factory setting, which includes formatting files, deleting all screen data, and clearing passwords.

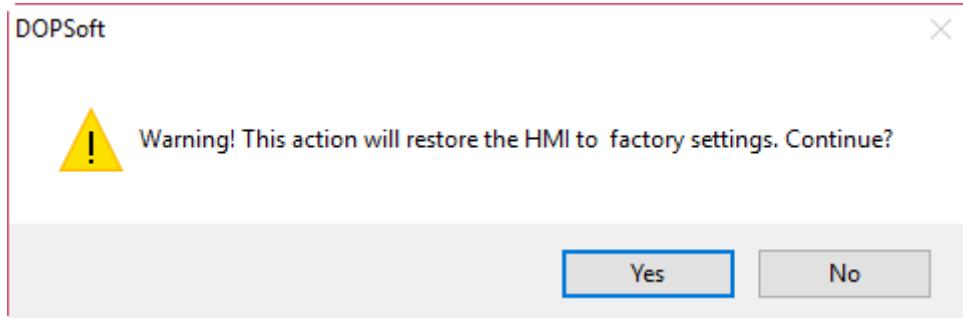


Figure 2.2.5.14.1 Reset HMI

Select **Yes** to reset the HMI.

Note:

1. After you execute this function, the HMI is reset to the default values.
2. After you execute this function, the screen data is completely cleared and you are unable to recover the file of which you forgot the password.

## 2.2.6 Window

The Window function enables you to efficiently arrange the window layout and display.

2

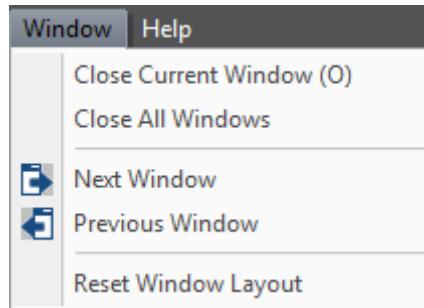


Figure 2.2.6.1 Window function list

### 2.2.6.1 Close Current Window

Current editing screen displayed in the software is closed after you execute this function.

### 2.2.6.2 Close All Windows

When you execute this function, all windows in the project are closed and no editing window is displayed.

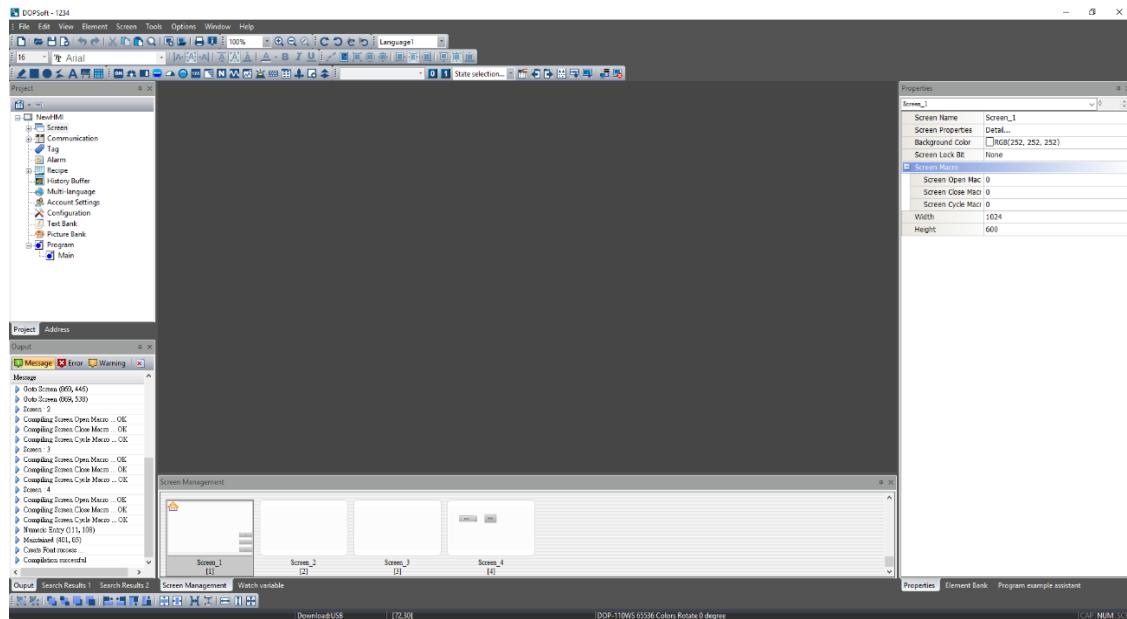
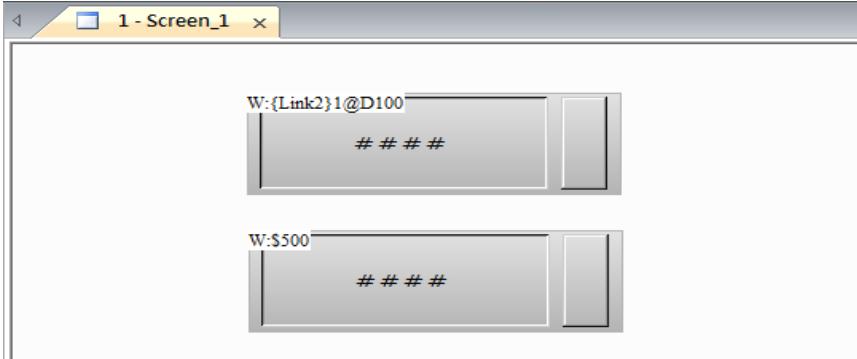
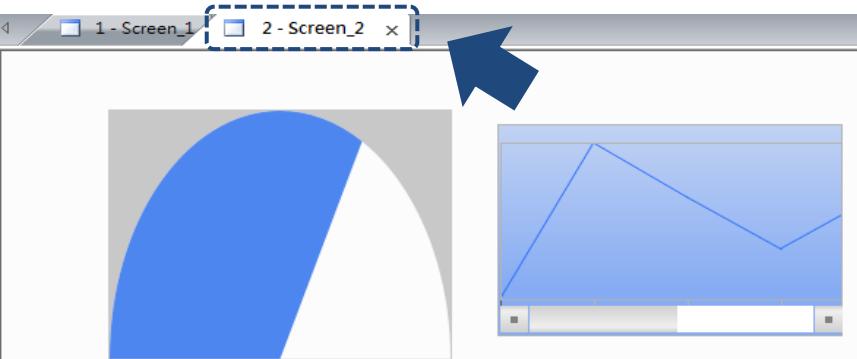


Figure 2.2.6.2.1 Close All Windows

### 2.2.6.3 Next Window

Use this function to go to the next window with the screen number in ascending order.

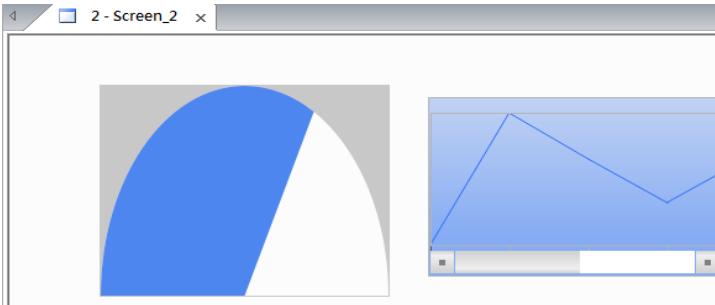
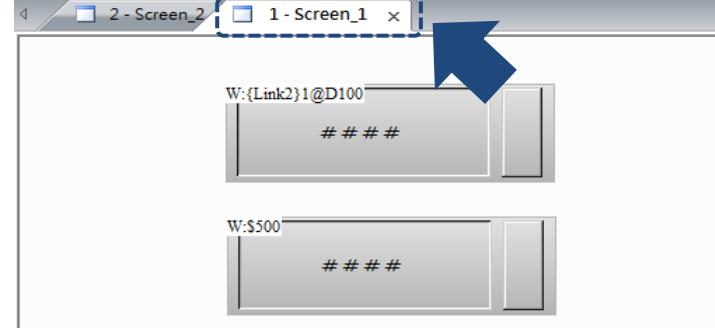
Table 2.2.6.3.1 Next Window

Before	
After	

### 2.2.6.4 Previous Window

Use this function to go to the previous window with the screen number in descending order.

Table 2.2.6.4.1 Previous Window

Before	
After	

### 2.2.7 Help

This is for you to acquire the information about the current software version and firmware version.



Figure 2.2.7.1 Help function list

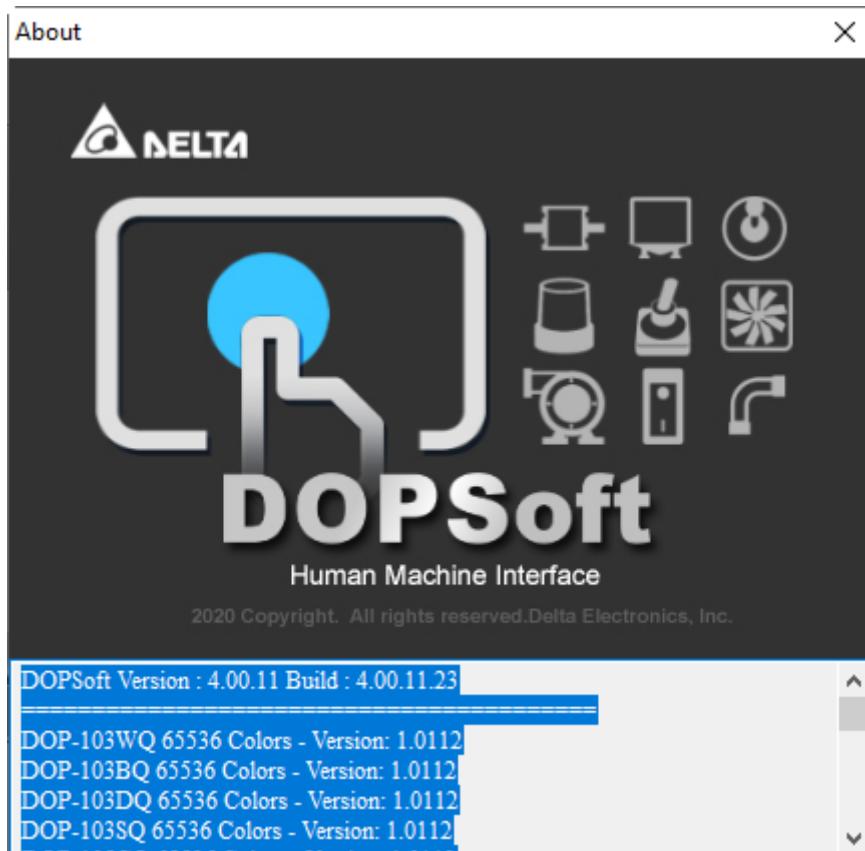


Figure 2.2.7.2 Software / firmware version information

## 2.3 How to create a project?

The following section provides a simple example of how to create a project.

### 2.3.1 Flowchart of creating a project

Refer to the following flowchart. This includes the basic steps to create a project.

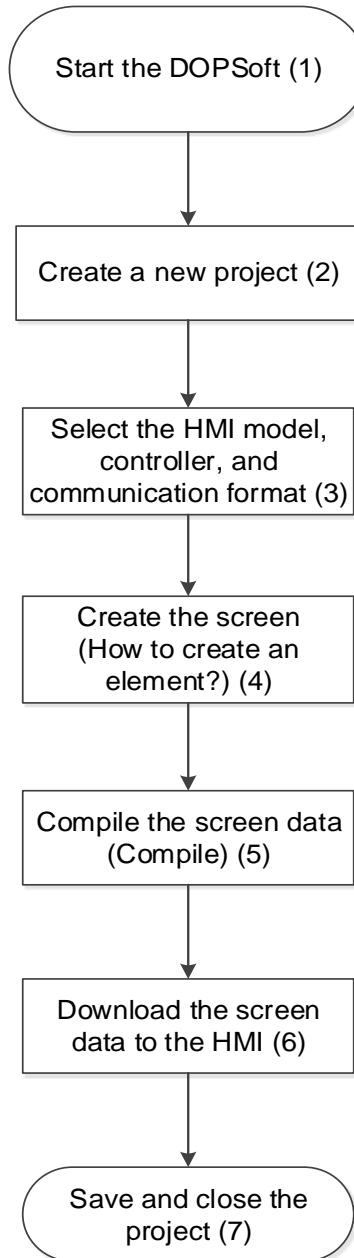


Figure 2.3.1.1 Flowchart of creating a project

Next, each step in the procedure is described as follows.

1. Start the DOPSoft

2

- a. Double-click  or go to [Start] > [All Programs] > [Delta Industrial Automation] > [DOPSoft 4.00.xx] and execute the DOPSoft 4.00.xx application.

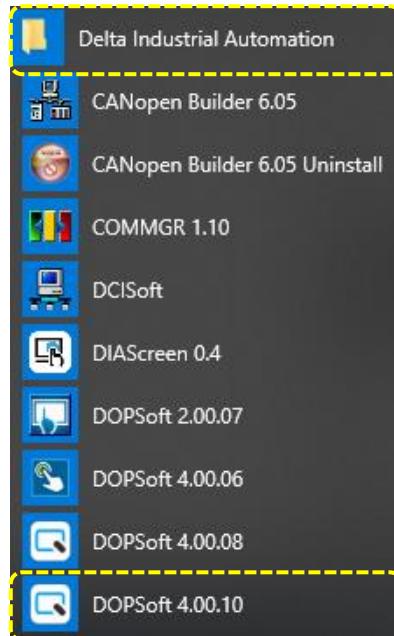


Figure 2.3.1.2 Start the DOPSoft software

- b. Execute the DOPSoft 4.00.xx application, and the screen is shown as follows.

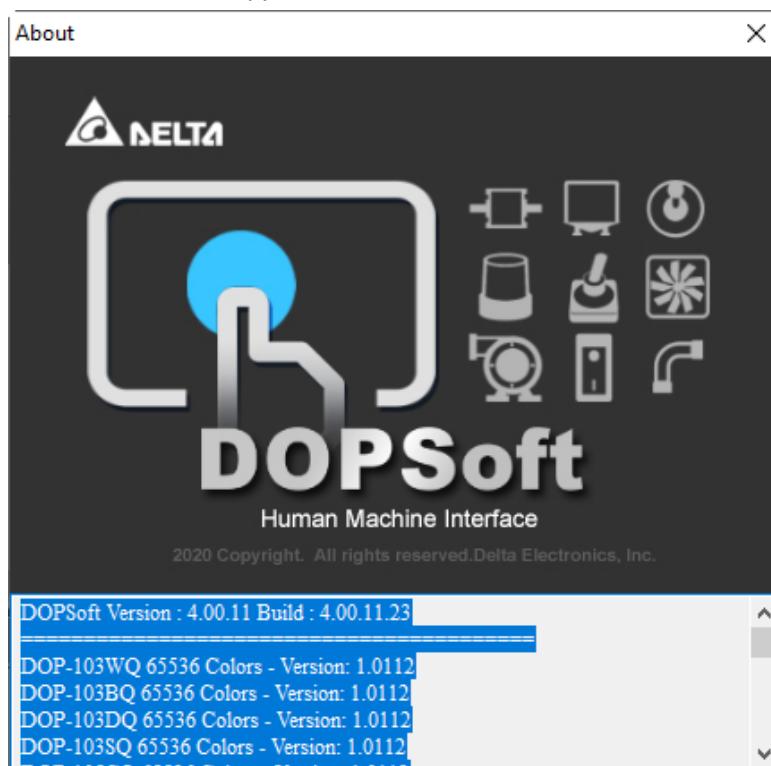


Figure 2.3.1.3 DOPSoft displaying screen

2. Create a new project
  - a. When you successfully start the DOPSoft, the following window appears. Click the Create Project icon  or go to [File] > [New] to create a new project.



2

Figure 2.3.1.4 Click the icon to create a new project

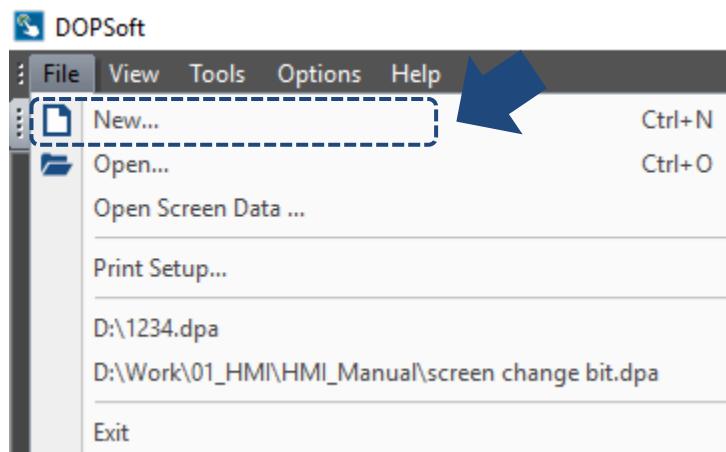


Figure 2.3.1.5 Click **New...** to create a new project

3. Select the HMI model, controller, and communication format
- a. After the project is created, the Project Wizard will guide you to select the HMI model, controller, and communication format. In the following example, it selects DOP-107WV as the model and name this project as “NewHMI”.

The steps are as follows:

- (1) Select the HMI model.
- (2) Input the project name.
- (3) Click **Next**.

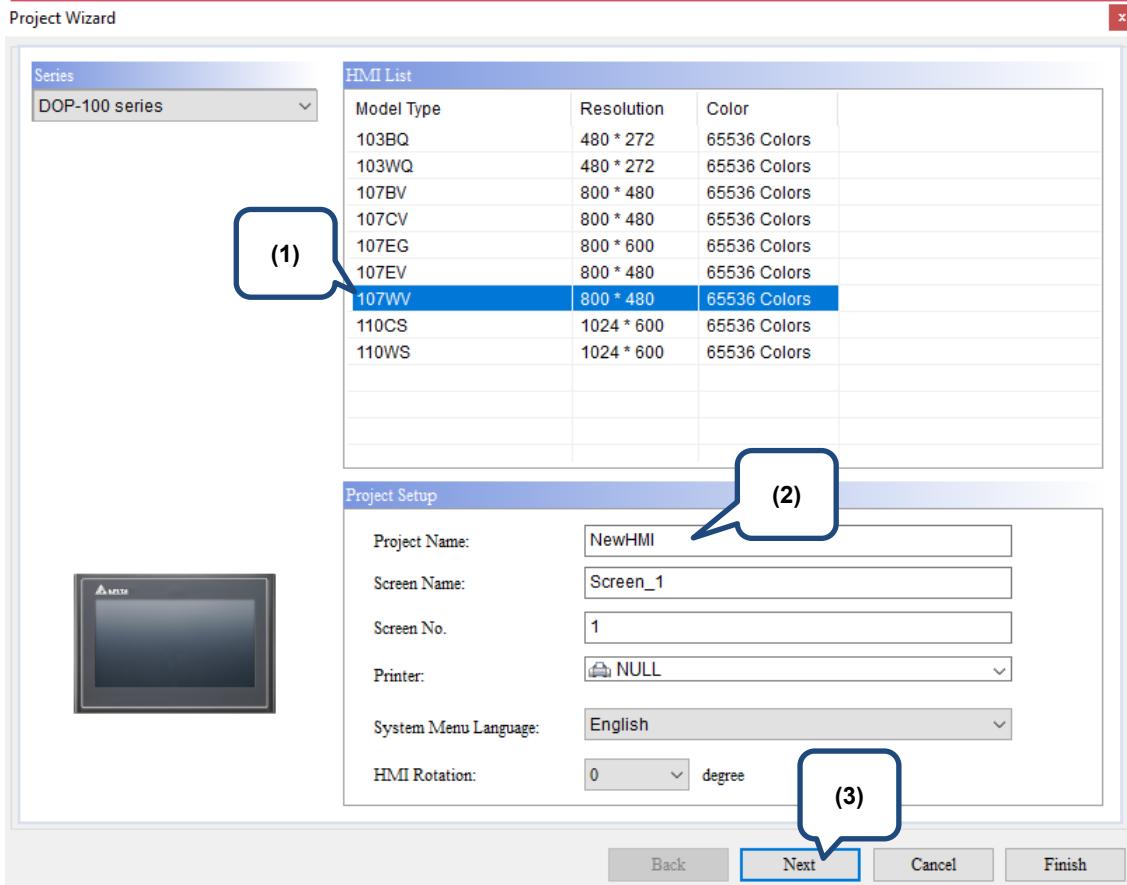


Figure 2.3.1.6 Select the HMI model and input the project name

- b. Next, select the communication port, controller, and communication format. You can use the up and down arrows at the upper left corner to select COM1, COM2, or COM3 to use. Refer to Section 27.2 Communication Settings for more details. In the following example, COM2 and Delta DVP PLC are selected.

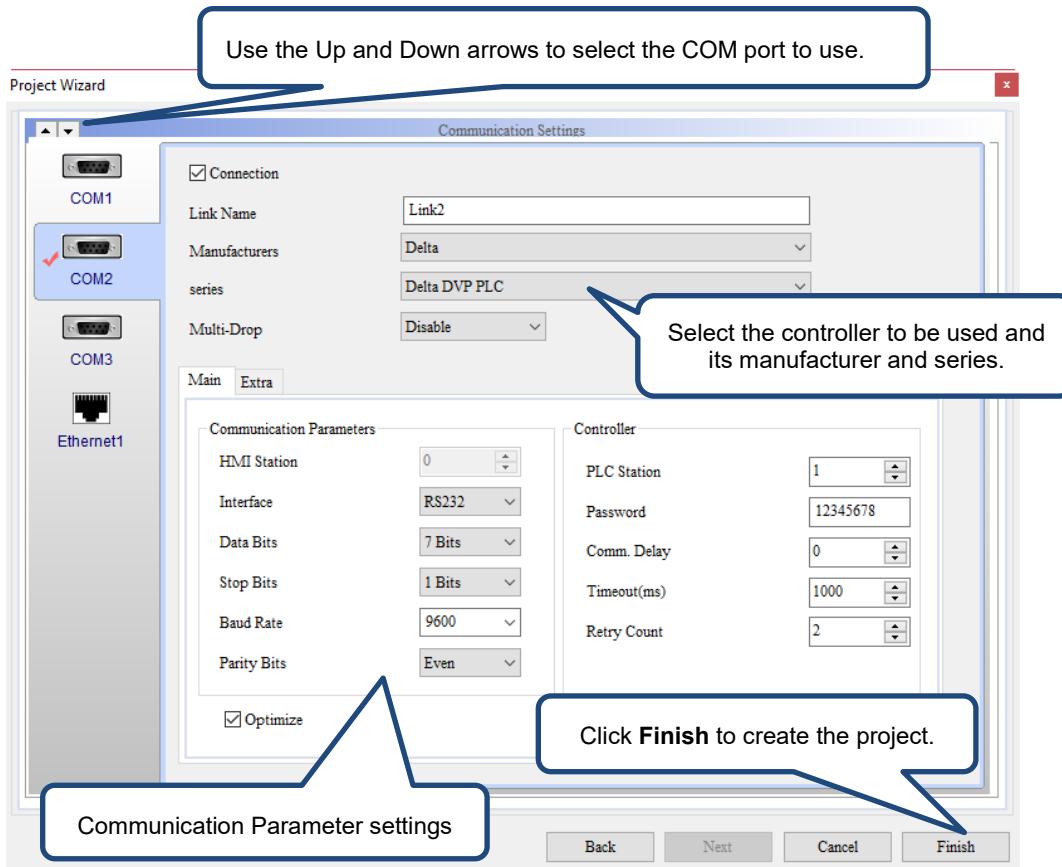


Figure 2.3.1.7 Select the communication port, controller, and communication format

4. Create the screen (How to create an element)
- a. After following the Project Wizard and completing creating a new project, you can start editing the screen and creating elements.

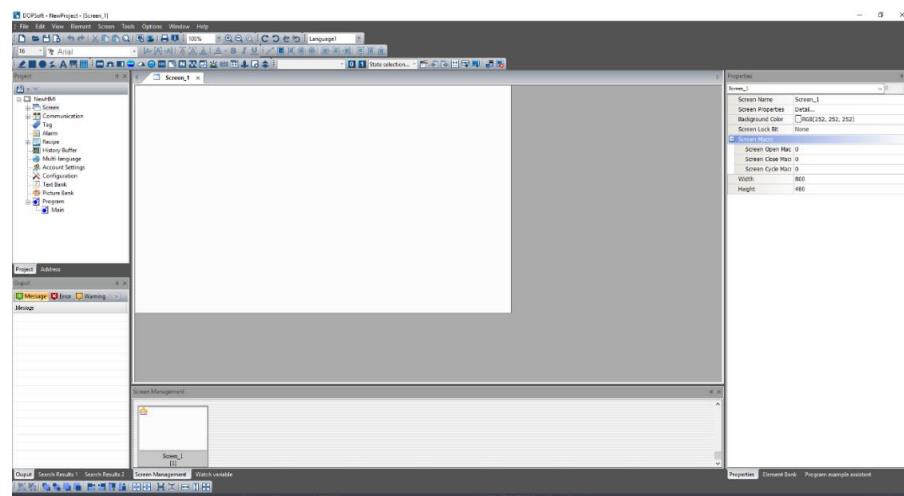
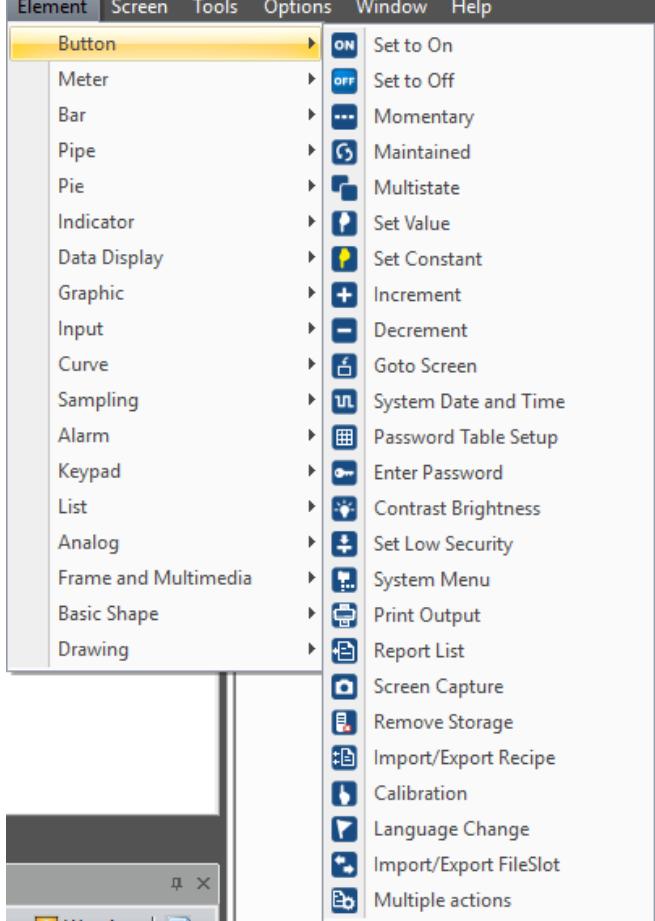
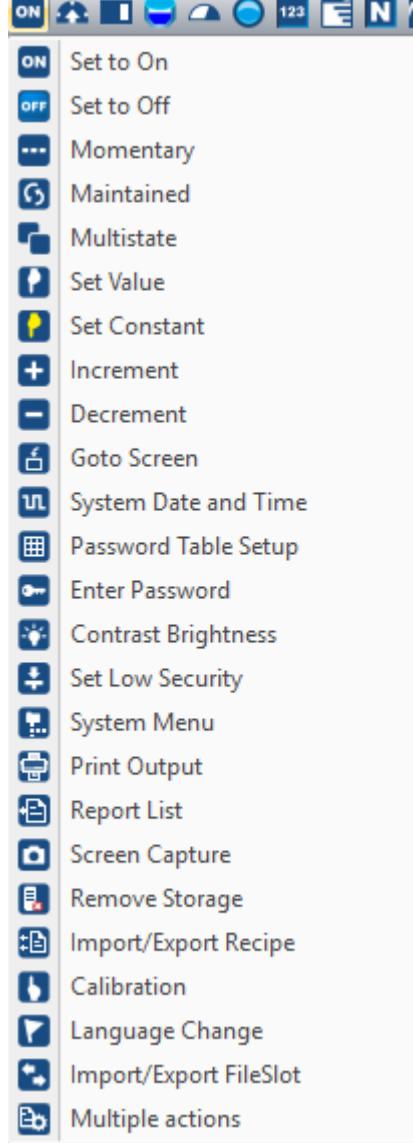
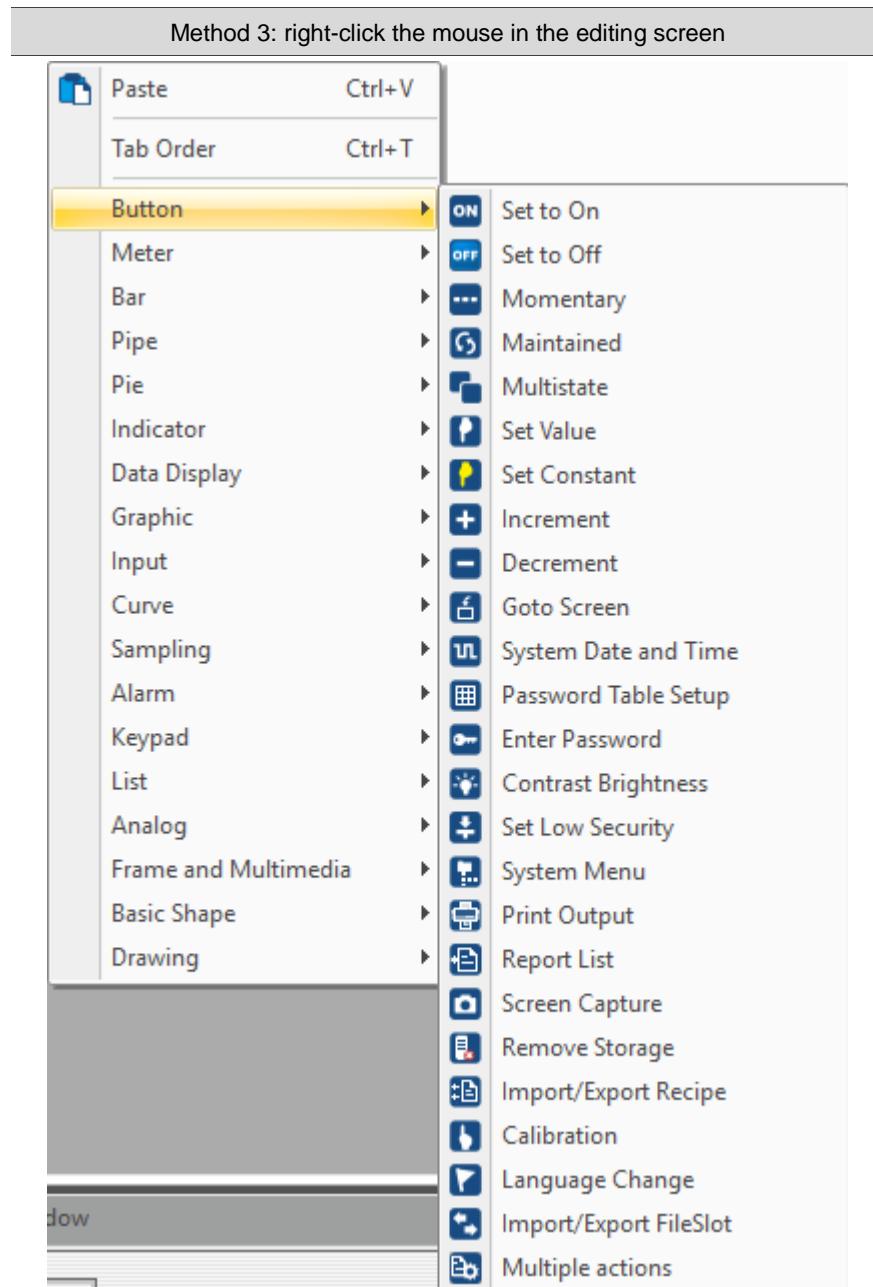


Figure 2.3.1.8 Editing screen

The following is the demonstration for using the Set to On, Set to Off, Momentary, and Maintained buttons (go to [Element] > [Button]) with the Multistate Indicator (go to [Element] > [Indicator]).

The software provides three methods for you to create the element and you can choose the method based on the preference. Refer to the table for the available methods.

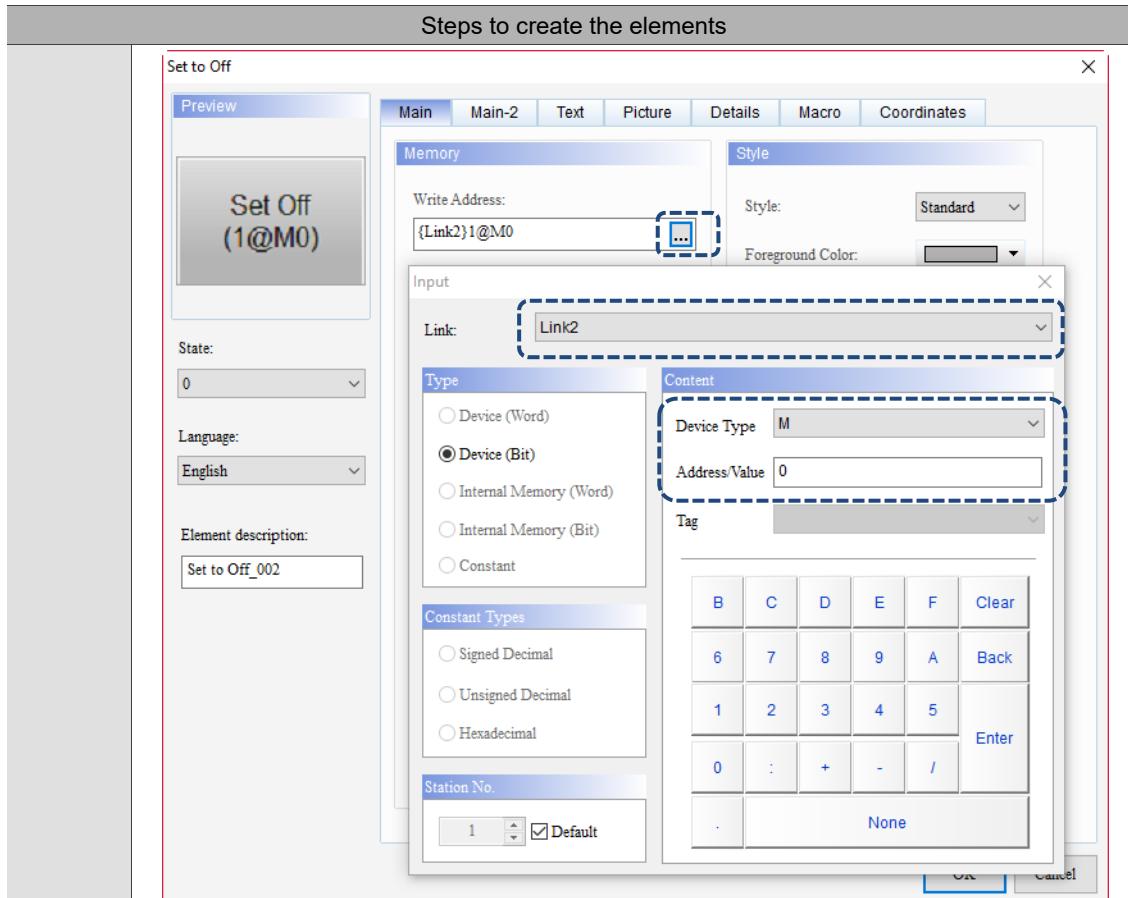
Method 1: Function list		Method 2: Element toolbar	
			



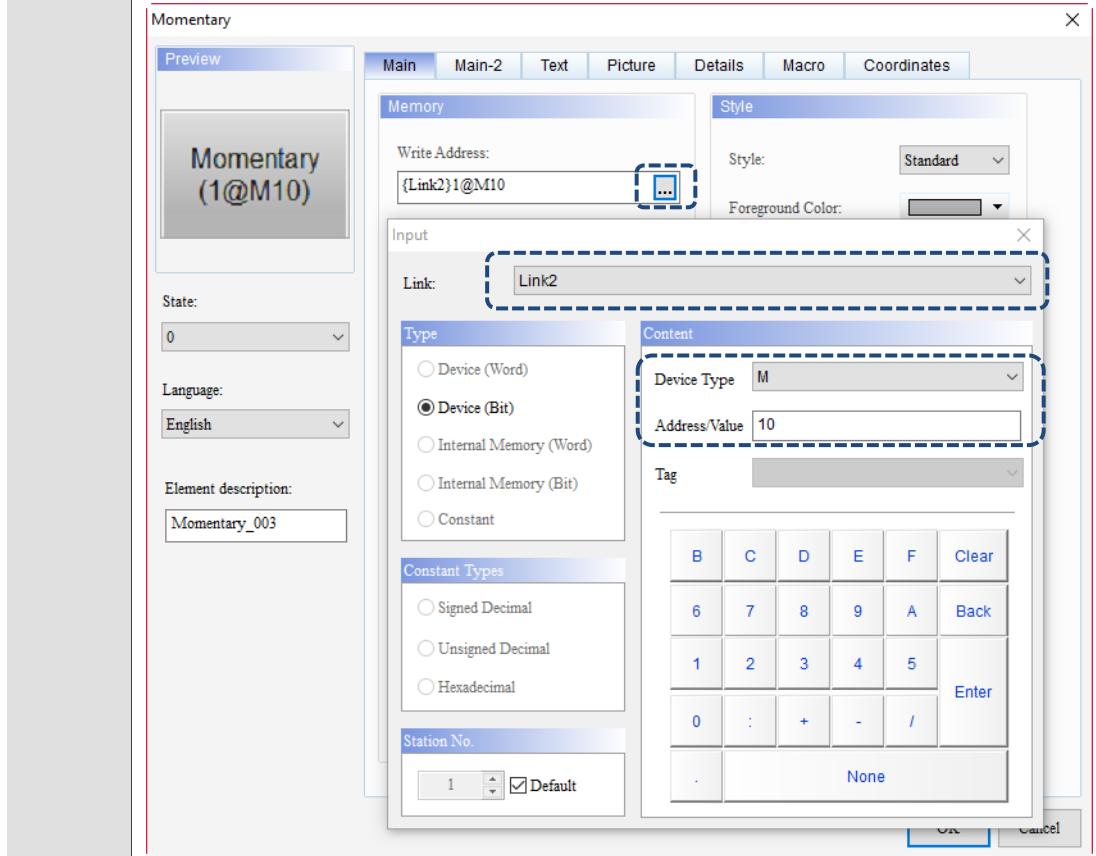
- b. If you use the Function list to create the Set to On, Set to Off, Momentary, and Maintained buttons from the Button option and the Multistate Indicator element from the Indicator option, you must input the memory addresses to have these elements work.

For better understanding of the element functions, the text descriptions and memory addresses are input to all the created elements for illustration. Refer to the following steps to create the elements.

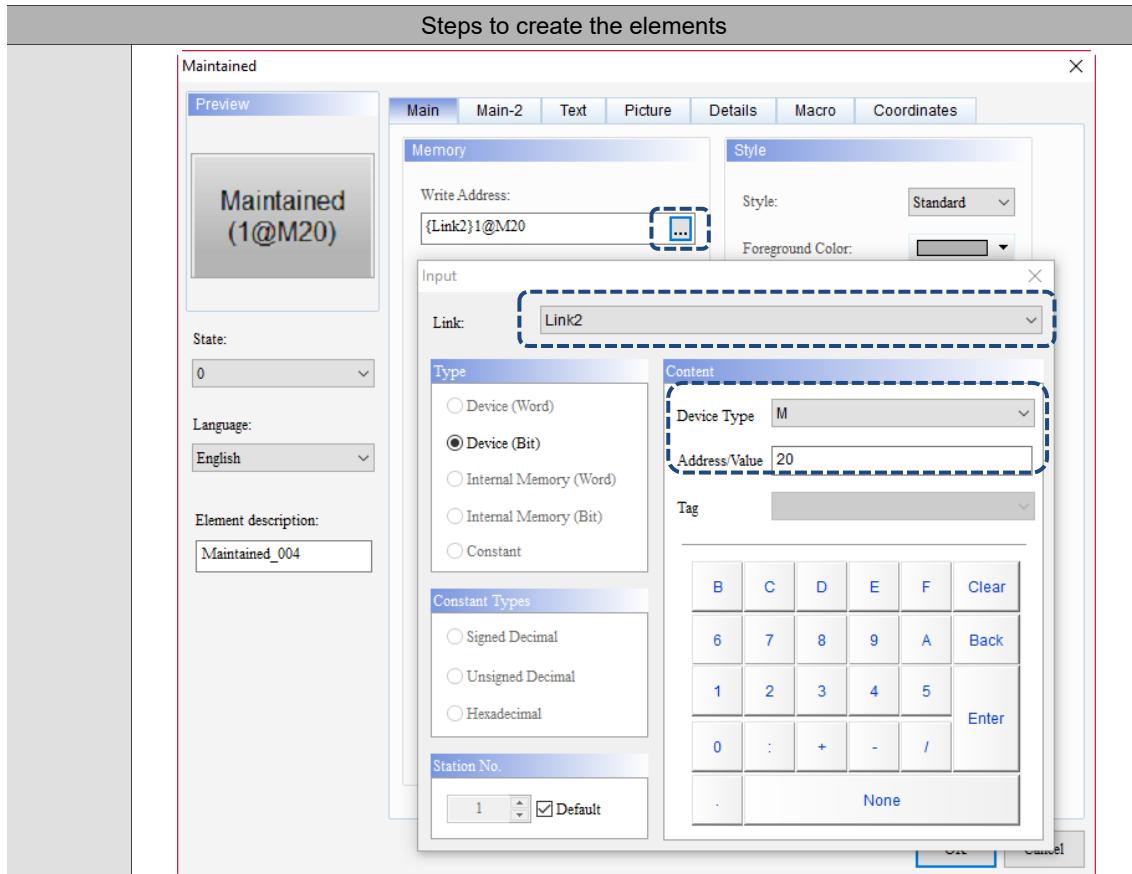
Steps to create the elements	
Step 1	<ul style="list-style-type: none"> <li>■ Go to [Element] &gt; [Button], and select the Set to On, Set to Off, Momentary, and Maintained elements.</li> <li>■ Set the memory address by double-clicking the element to enter the property page or selecting the element and using the Properties window on the right. Set M0 as the Write Address for Set to On and Set to Off buttons; set M10 as the Write Address for the Momentary button; set M20 as the Write Address for the Maintained button.</li> </ul>



Step 1

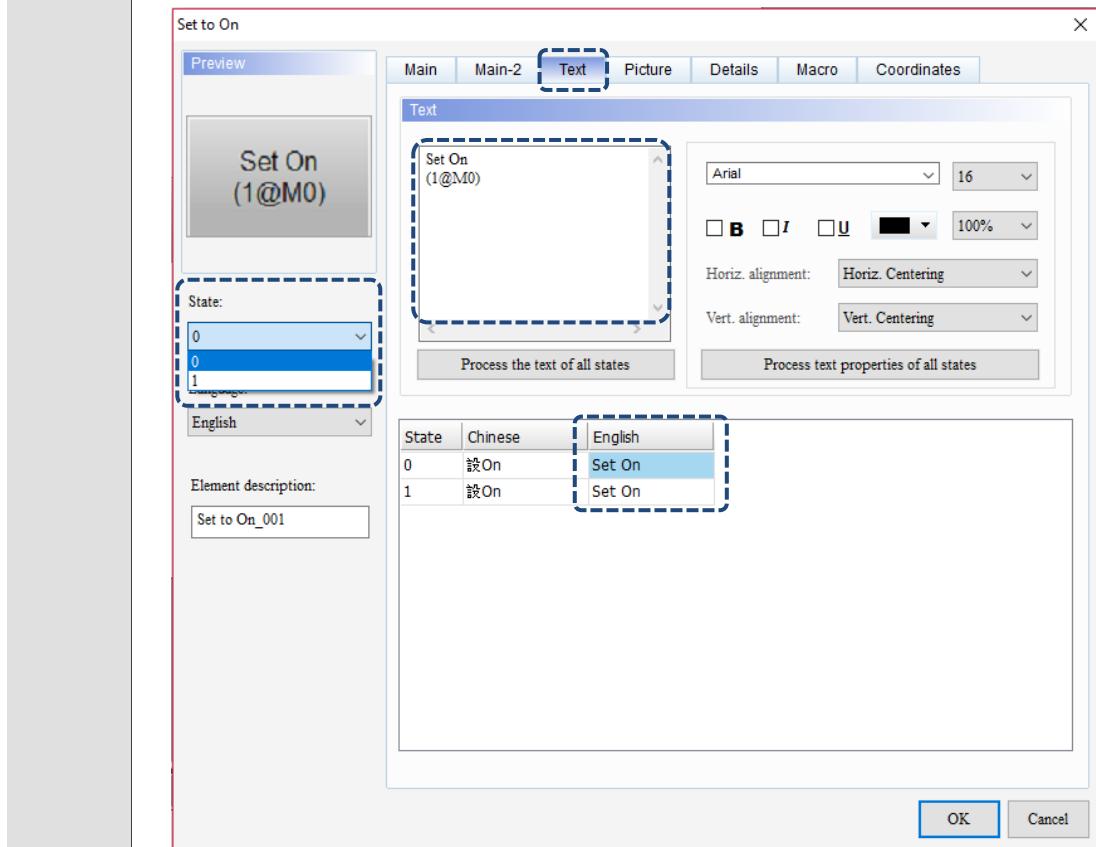


2



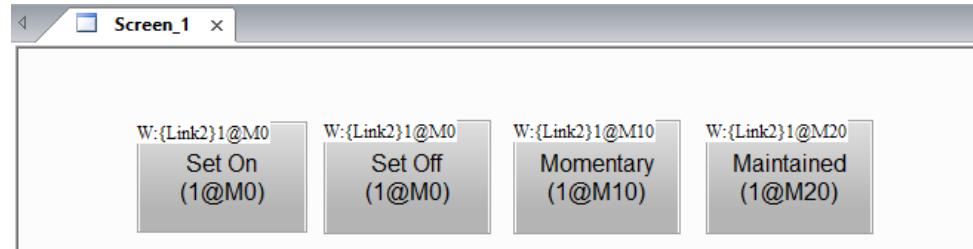
## Step 1

- Double-click the element and go to the Text page to input the corresponding text. Input "Set On (1@M0)" for both State 0 and State 1 of the Set to On button. Input "Set Off (1@M0)" for State 0 and State 1 of the Set to Off button. Input "Momentary (1@M10)" for State 0 and State 1 of the Momentary button. Input "Maintained (1@M20)" for State 0 and State 1 of the Maintained button.



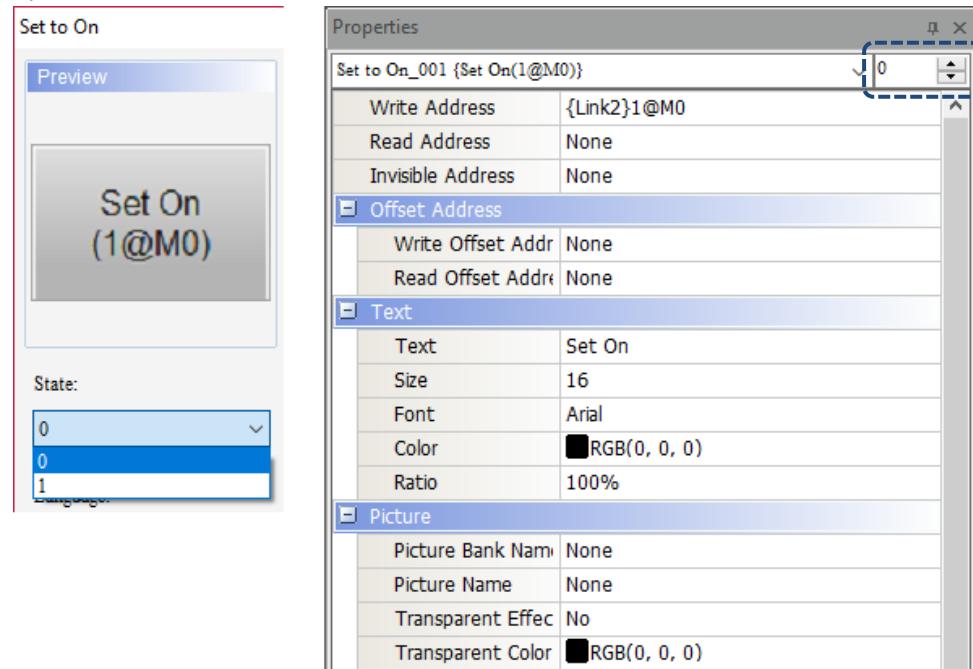
## Steps to create the elements:

- After you created the Set to On, Set to Off, Momentary, and Maintained elements, the screen is shown as follows.



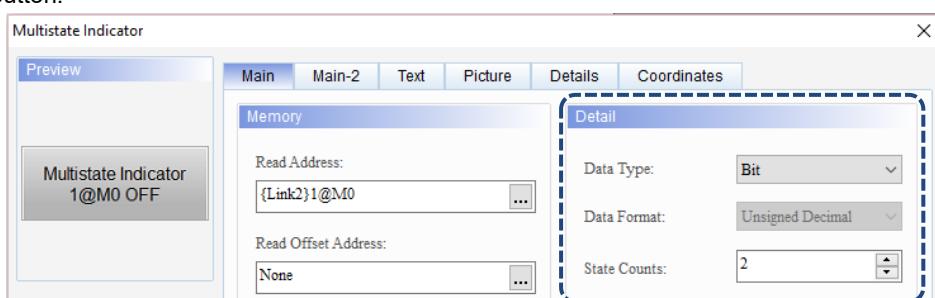
Note: Set to On, Set to Off, Momentary, and Maintained elements all have actions for State 0 and State 1. You can double-click the elements to set State 0 and State 1 or use the upper right corner of the Properties window to view State 0 and State 1.

## Step 1



## Step 2

- Click [Elements] > [Indicator] > [Multistate Indicator]. Create three Multistate Indicator elements corresponding to Write Addresses of the Set to On / Set to Off, Momentary, and Maintained elements respectively.
- Set the memory address by double-clicking the element to enter the property page or selecting the element and using the Properties window on the right. The setting method of memory address is the same as that of button elements; you can set Data Type to Bit and set State Counts to 2.
  - Set the Read Address of the Multistate Indicator as M0 to correspond to the Set to On and Set to Off buttons.
  - Set the Read Address of the Multistate Indicator as M10 to correspond to the Momentary button.
  - Set the Read Address of the Multistate Indicator as M20 to correspond to the Maintained button.



2

Steps to create the elements:

	R:{Link2}1@M0	R:{Link2}1@M10	R:{Link2}1@M20
■ Double-click the element and go to the [Text] page to input the corresponding text.			
1. Input "Multistate Indicator 1@M0 OFF" for State 0; input "Multistate Indicator 1@M0 ON" for State 1.			
Step 2	<p>Multistate Indicator</p> <p>Preview</p> <p>Multistate Indicator 1@M0 OFF</p> <p>State:</p> <p>0</p>	Main Main-2 Text Picture	<p>Text</p> <p>Multistate Indicator 1@M0 OFF</p> <p>Process the text of all states</p>
	<p>Multistate Indicator</p> <p>Preview</p> <p>Multistate Indicator 1@M0 ON</p> <p>State:</p> <p>1</p>	Main Main-2 Text Picture	<p>Text</p> <p>Multistate Indicator 1@M0 ON</p> <p>Process the text of all states</p>

Steps to create the elements		
	2. Input "Multistate Indicator 1@M10 OFF" for State 0; input "Multistate Indicator 1@M10 ON" for State 1.	
Step 2	State 0	<p>Multistate Indicator</p> <p>Preview</p> <p>Multistate Indicator 1@M10 OFF</p> <p>State:</p> <p>0</p> <p>Main Main-2 Text Picture</p> <p>Text</p> <p>Multistate Indicator 1@M10 OFF</p> <p>Process the text of all states</p>
	State 1	<p>Multistate Indicator</p> <p>Preview</p> <p>Multistate Indicator 1@M10 ON</p> <p>State:</p> <p>1</p> <p>Main Main-2 Text Picture</p> <p>Text</p> <p>Multistate Indicator 1@M10 ON</p> <p>Process the text of all states</p>

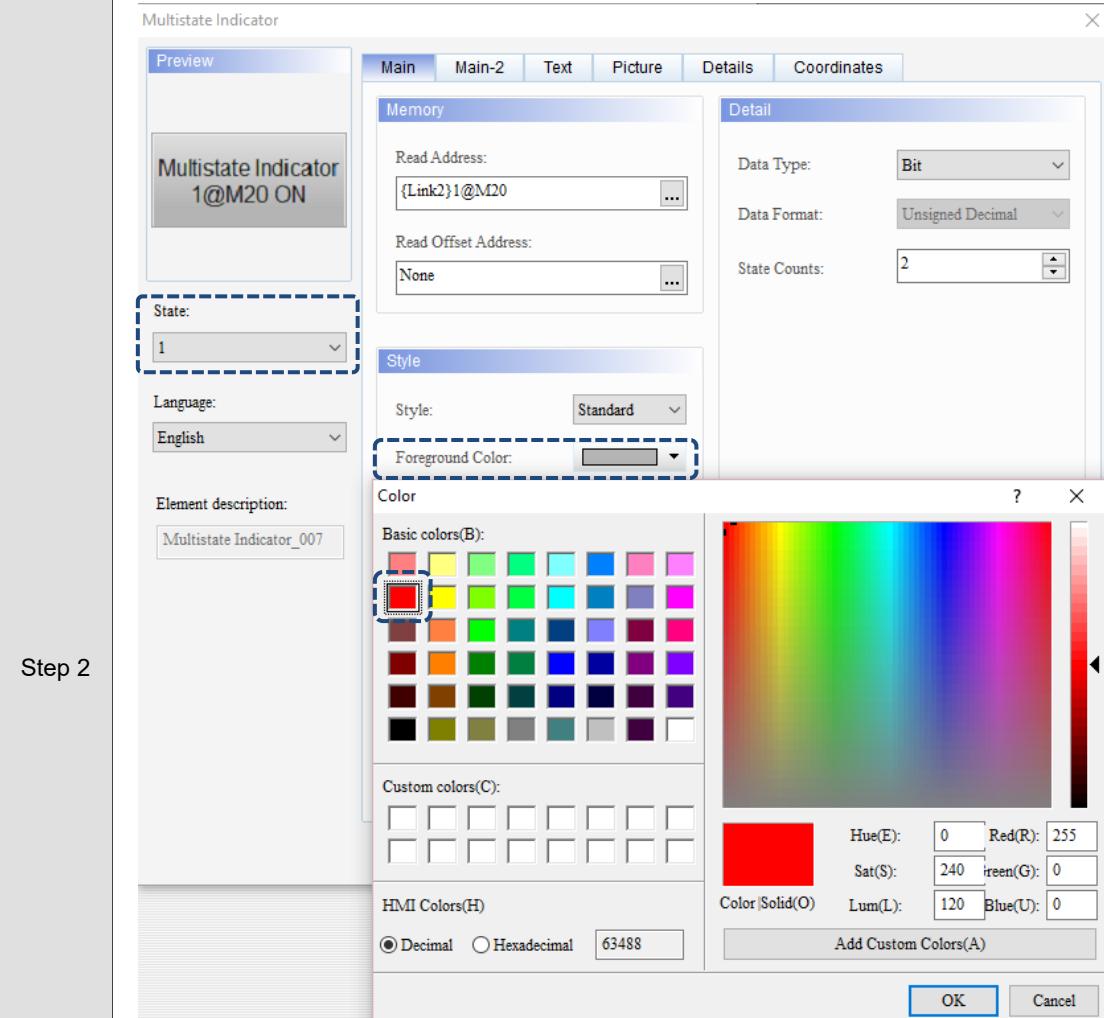
2

2

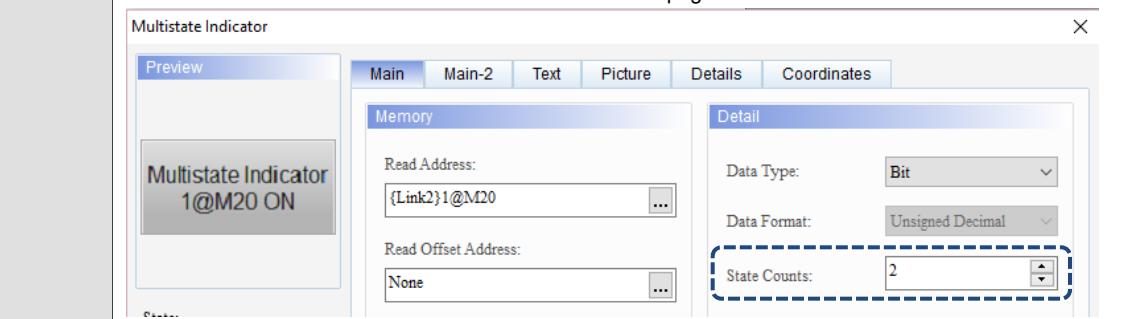
Steps to create the elements	
3. Input "Multistate Indicator 1@M20 OFF" for State 0; input "Multistate Indicator 1@M20 ON" for State 1.	
Step 2	<p>Multistate Indicator</p> <p>Preview</p> <p>Multistate Indicator 1@M20 OFF</p> <p>State:</p> <p>0</p> <p>Main Main-2 Text Picture</p> <p>Text</p> <p>Multistate Indicator 1@M20 OFF</p> <p>&lt; &gt;</p> <p>Process the text of all states</p>
	<p>Multistate Indicator</p> <p>Preview</p> <p>Multistate Indicator 1@M20 ON</p> <p>State:</p> <p>1</p> <p>Main Main-2 Text Picture</p> <p>Text</p> <p>Multistate Indicator 1@M20 ON</p> <p>&lt; &gt;</p> <p>Process the text of all states</p>

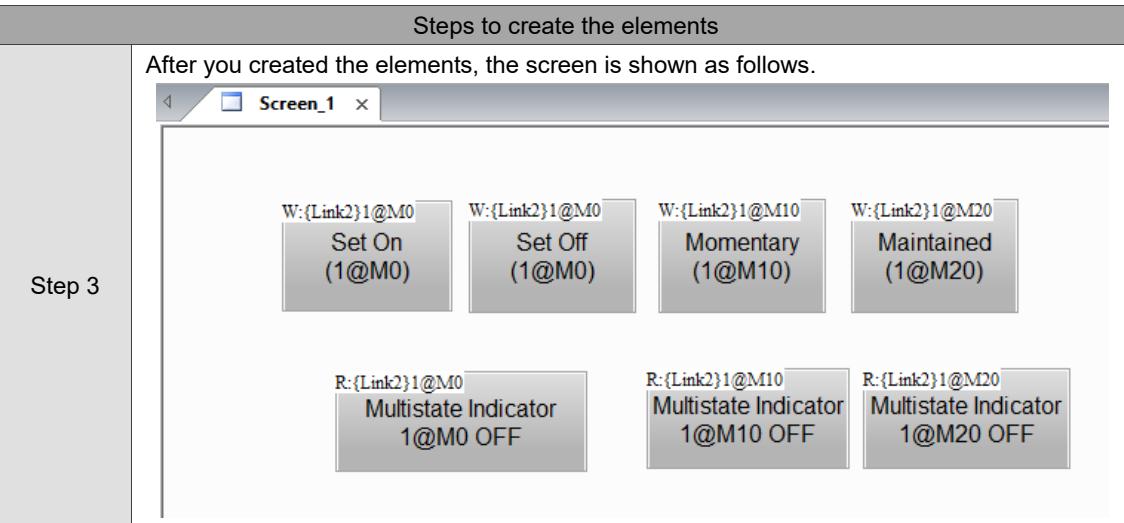
### Steps to create the elements

- Double-click the three Multistate Indicator elements you just created and go to the Main page. Change the Foreground Color of State 1 to red for differentiating State 0 from State 1.



Note: the Multistate Indicator changes its state value depending on the State Counts. Since the Set to On, Set to Off, Momentary, and Maintained buttons all have two states (States 0 and 1), you can double-click the element to set the State Counts to 2 in the Main page.





## 5. Compile

When you finish creating all the elements, compile the elements on the editing screen and make sure no error occurs. The purpose of compiling the screens is to check if you have input the memory address and ensure the memory address format you use is correct. There are two compiling methods. The first is to go to [Tools] > [Compile All] in the function list.

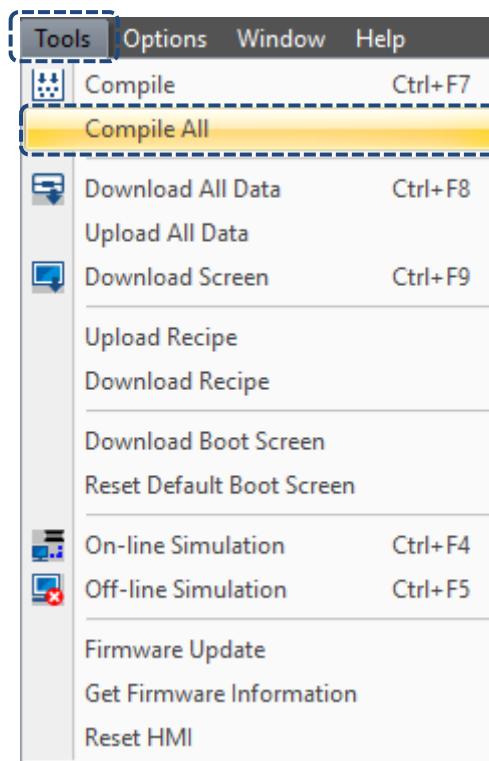
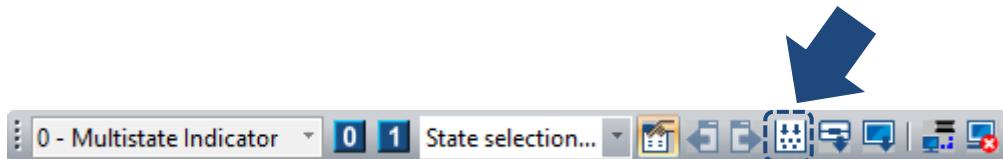


Figure 2.3.1.9 Compile All

The second method is using the Compile All icon  on the Layout toolbar.



2

After the compilation, the output messages are shown as Figure 2.3.1.10.

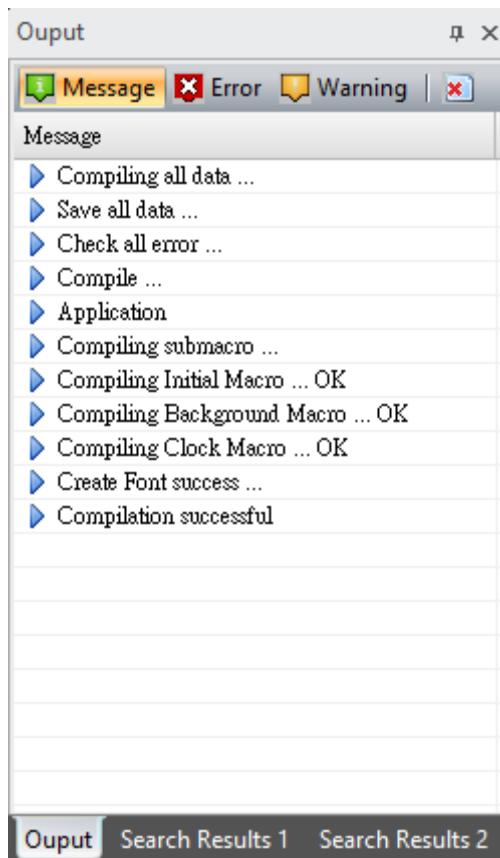


Figure 2.3.1.10 Output window for data compilation

## 6. Download screen data to the HMI

When compilation is successful, it means the screen you configure is correct and you can start downloading the screen data to the HMI. The following is the three methods of downloading screen data.

Method 1: go to [Tools] > [Download All Data].

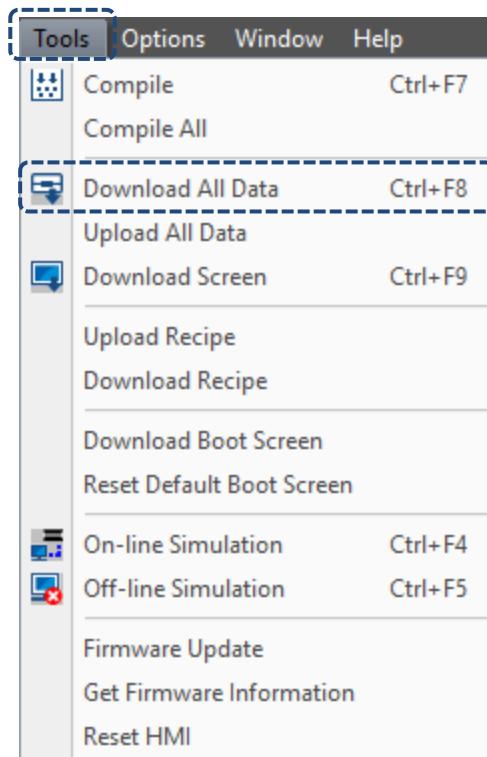
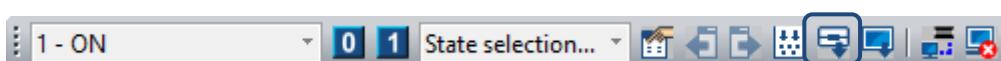


Figure 2.3.1.11 Tools function list - Download All Data

Method 2: use the download screen data icon on the Layout toolbar.



Method 3: use the system keyboard shortcut **Ctrl + F8**.

Before downloading the screen data, make sure the USB cable is connected between the HMI and PC and the PLC communication cable is connected to COM 2.

Next, you can start downloading the screen data to the HMI. Then, the software displays the downloading progress as shown in the following figure.

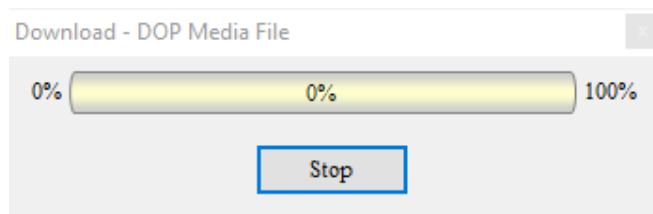
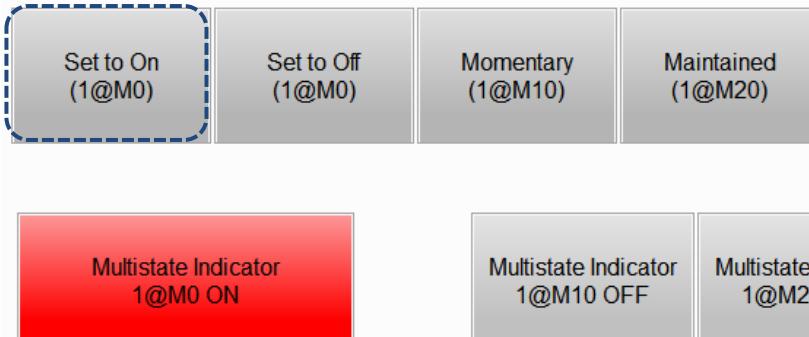
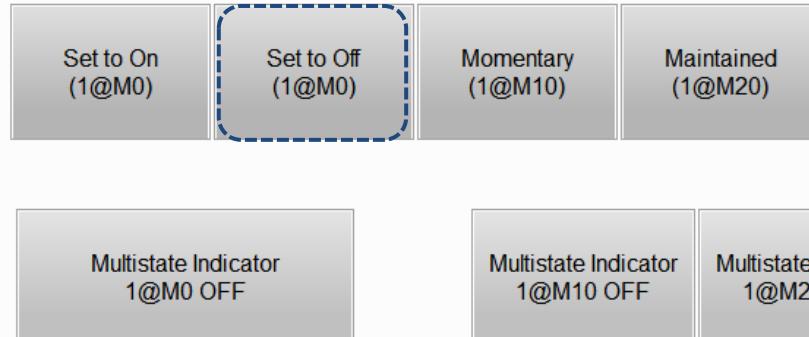
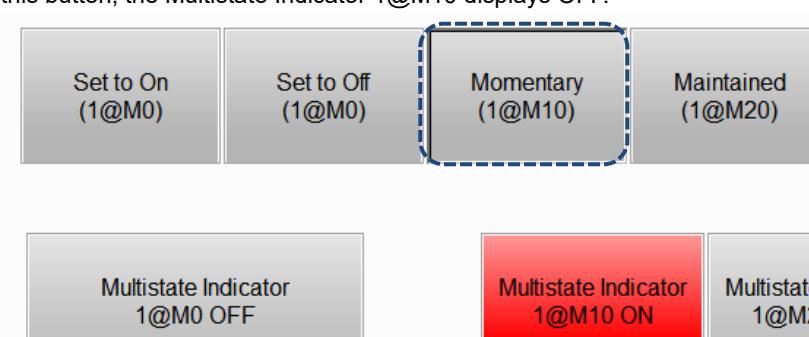


Figure 2.3.1.12 Downloading the screen data

- a. After downloading the screen data is complete, you can check the HMI to see if the screen is identical to the screen edited with the PC and check if an error occurs.
- b. The following is the button actions.

2

		Operation			
		Execution results			
Touch button					
Set to ON		Press <b>Set to On</b> and the Multistate Indicator 1@M0 displays ON. 			
Set to OFF		If you press the <b>Set to Off</b> , the Multistate Indicator 1@M0 displays OFF. 			
Momentary		If you press <b>Momentary</b> , the Multistate Indicator 1@M10 displays ON; once you release this button, the Multistate Indicator 1@M10 displays OFF. 			

2

Operation	
Touch button	Execution results
Maintained	<p>If you press <b>Maintained</b>, the Multistate Indicator 1@M20 continues to display ON. To cancel the ON state, re-press <b>Maintained</b>.</p> <div style="display: flex; justify-content: space-around;"> <span>Set to On (1@M0)</span> <span>Set to Off (1@M0)</span> <span>Momentary (1@M10)</span> <span>Maintained (1@M20)</span> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <span>Multistate Indicator 1@M0 OFF</span> <span>Multistate Indicator 1@M10 OFF</span> <span>Multistate Indicator 1@M20 ON</span> </div>

#### 7. Save and close the project.

Save the screen you just edited before closing the project. You can save the project with three methods:

Method 1: go to [File] > [Save] in the function list.

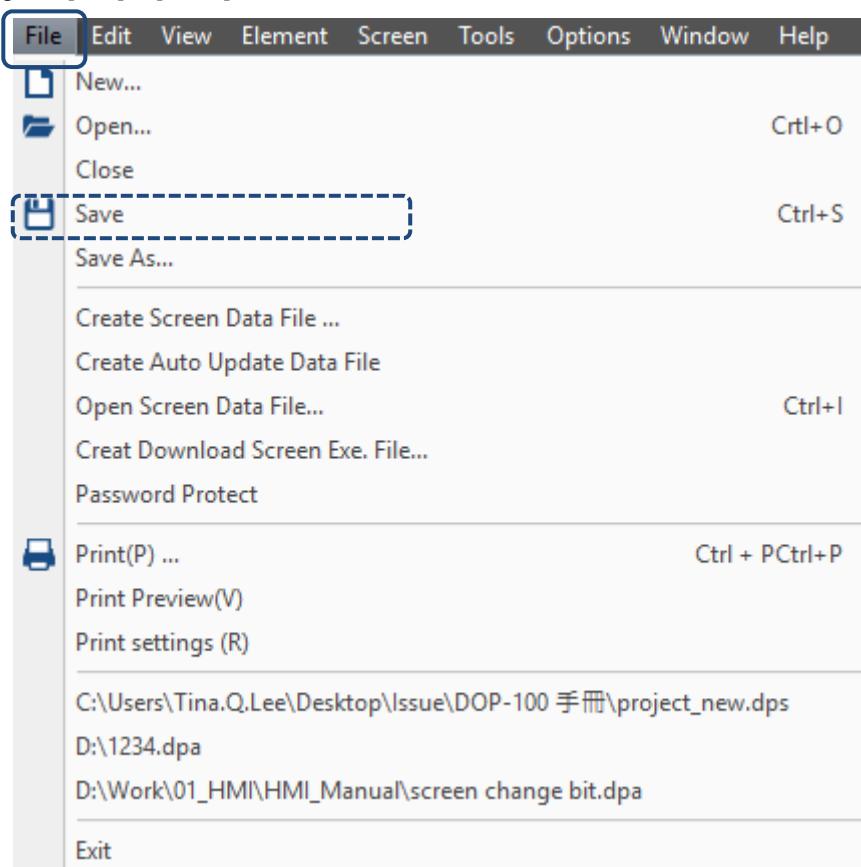


Figure 2.3.1.13 File function list - Save file

Method 2: use the save icon  in the General toolbar.



Method 3: use the system keyboard shortcut **Ctrl + S**.

Once you saved the project, the software prompts a window to ask for the file saving destination and filename. If you follow the Project Wizard to create a project, the default project name is “test”, so the filename remains “test” after you click **Save**. You can change the filename and this action will not change the project operation.

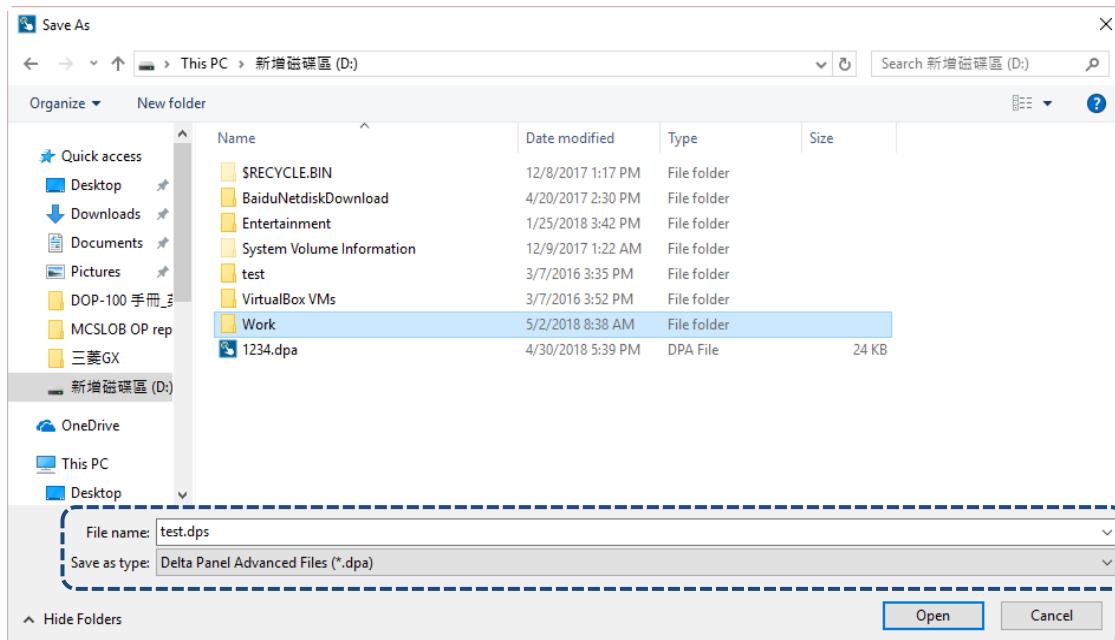


Figure 2.2.1.1 Save as file window

After saving the project, you can go to the destination folder to check if the project file is saved. To re-open the project, double-click the file or directly execute the DOPSoft and go to [File] > [Open...], as shown in the following figure.

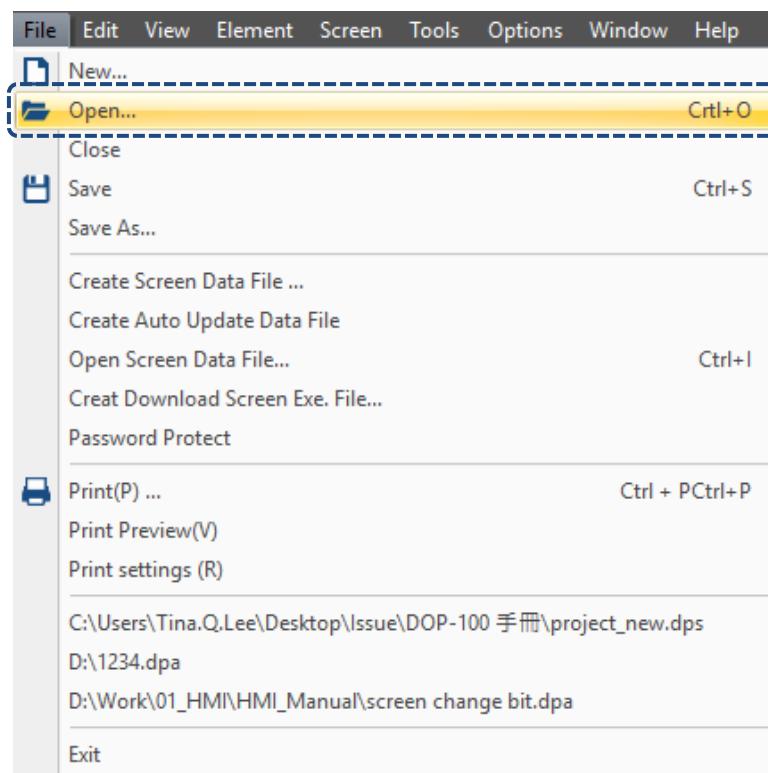


Figure 2.2.1.15 File function list - Open...

You can also click the open file icon in the General toolbar to open the existing file.



# 3

## Internal Memory

This chapter introduces the internal memory addresses and storage range of the HMI.

3.1	Internal Register (\$)	3-3
3.2	Non-volatile Internal Register (\$M)	3-3
3.3	Indirect Address Register (*\$)	3-4
3.4	Internal Parameter	3-6

Delta's HMI has registers of twelve different functions, including:

1. Internal register (\$)
2. Non-volatile internal register (\$M)
3. Indirect address register (\*\$)
4. Recipe register (RCP)
5. Recipe number register (RCPNO)
6. Recipe group register (RCPG)
7. Recipe indirect address register (\*RCP)
8. Enhanced recipe register (ENRCP)
9. Enhanced recipe number register (ENRCPNO)
10. Enhanced recipe group register (ENRCGP)
11. Enhanced recipe group name register (ENRCGPNAME)
12. Enhanced recipe indirect address register (\*ENRCP)

The fourth to twelfth registers are introduced and explained along with the 16-bit, 32-bit, and enhanced recipes in Chapter 23.

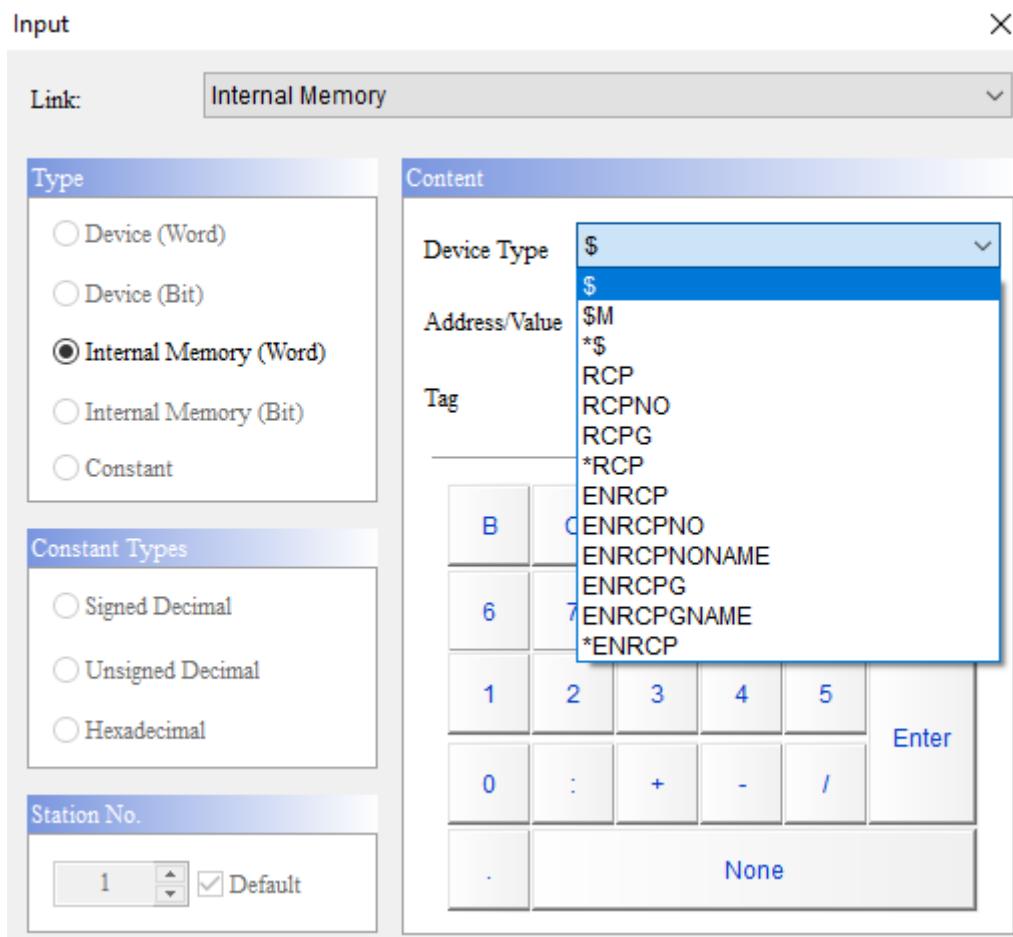


Figure 3.1 HMI Internal Memory

### 3.1 Internal Register (\$)

The internal register is the HMI internal memory that freely reads data and supports all kinds of configurations, such as the element communication address. The internal register is volatile, so the data in the register is not maintained when the power is off. The HMI provides 65536 sets of 16-bit internal registers.

Access type	Device type	Storage range
Word	\$n	\$0 - \$65535
Bit	\$n.b	\$0.0 - \$65535.15

Note: n = Word (0 - 65535); b = Bit (0 - 15)

The DOP-112 and DOP-115 HMI models support a wider range of internal registers of up to 200000 sets. However, the expanded internal memory is only used to set the screen elements. The internal registers used in the macro remain as 65536 sets (\$0 - \$65535).

Access type	Device type	Storage range
Word	\$n	\$0 - \$199999
Bit	\$n.b	\$0.0 - \$199999.15

Note: n = Word (0 - 199999); b = Bit (0 - 15)

### 3.2 Non-volatile Internal Register (\$M)

The register is a non-volatile register. The data in the register is maintained when the power is off so that you can record important data in this register. The HMI provides 1024 sets of 16-bit non-volatile internal registers (\$M0.0 - \$M1023.15).

Access type	Device type	Storage range
Word	\$Mn	\$0 - \$1023
Bit	\$Mn.b	\$0.0 - \$1023.15

Note: n = Word (0 - 1023); b = Bit (0 - 15)

### 3.3 Indirect Address Register (\*\$)

The indirect address register is volatile, so the data in the register is not maintained when the power is off.

Access type	Device type	Storage range
Word	*\$n	\$0 - \$65535

Note: n = Word (0 - 65535)

The indirect address register (\*\$n) obtains the value from \$n, sets the value as a new address, and then accesses the value from the new address. For instance, \$10 = 101, and \$101 = 55, so \*\$10 = 55. See Figure 3.3.1.

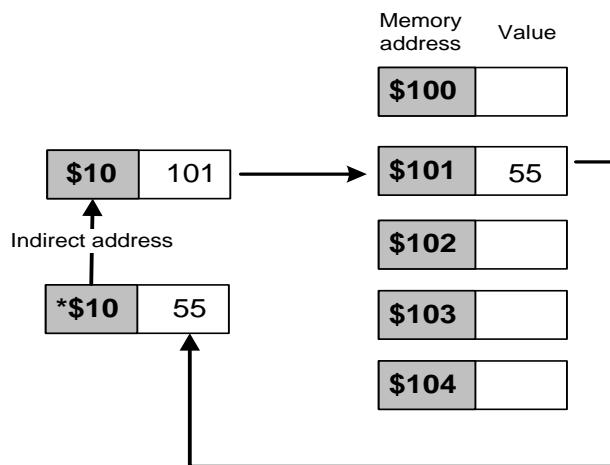


Figure 3.3.1 Diagram of indirect address

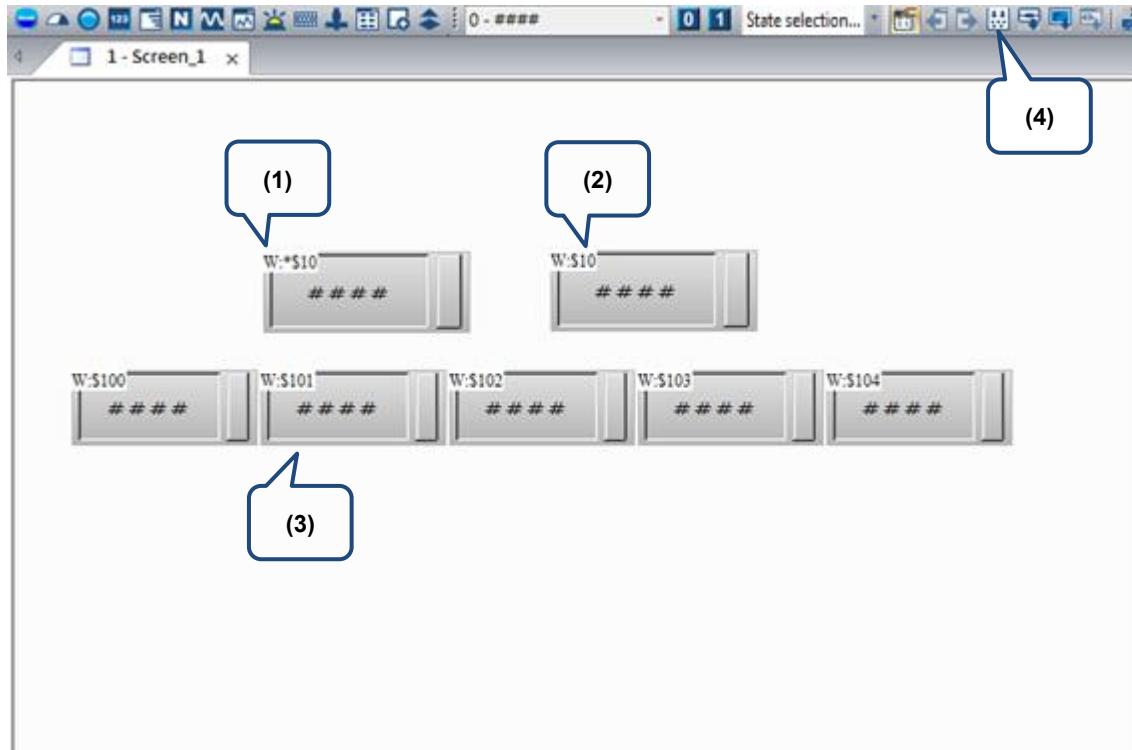
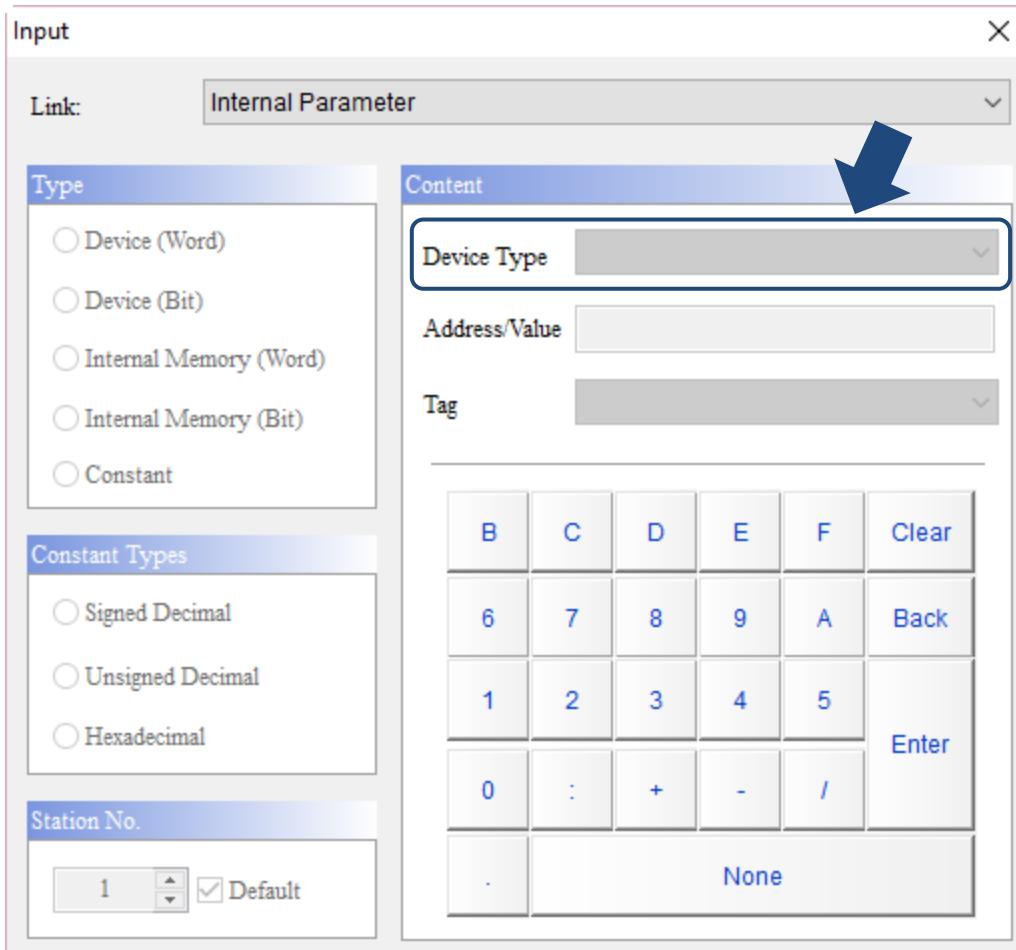


Figure 3.3.2 Example of indirect address register

Function element	Step	Executing content
Indirect address register	1	Create a Numeric Entry element and set the Write Address to *\$10.
	2	Create a Numeric Entry element and set the Write Address to \$10.
	3	Create a Numeric Entry element and set the Write Address to \$101.
	4	Use the button  to compile the data and download the data to the HMI. Firstly, input 101 to the element \$10; next, input any value to the element \$101; and then you can find that *\$10 automatically generates the value input to \$101.

### 3.4 Internal Parameter

The HMI provides the Internal Parameter aside from the twelve kinds of internal memory. The Internal Parameter enables you to check the HMI internal state values through these parameters, including system time value (such as TIME\_YEAR and TIME\_MONTH), external storage device status (SD\_STATUS and USB\_STATUS), touch X / Y coordinate (TP\_X and TP\_Y), touch status (TP\_STATUS), remaining battery voltage in percentage (BATTERY\_VOLTAGE), network parameter (such as NET1\_IP1 and SUBMASK\_IP1), firmware version (FW\_VERSION1 and FW\_VERSION2), and so on.



Note: the Internal Parameter function is available only for Word elements. You are unable to select this function if you create Bit elements.

When using Word elements, to set the memory address, you can select Internal Parameter in the **Link** list to select a variety of internal parameters available on the HMI.

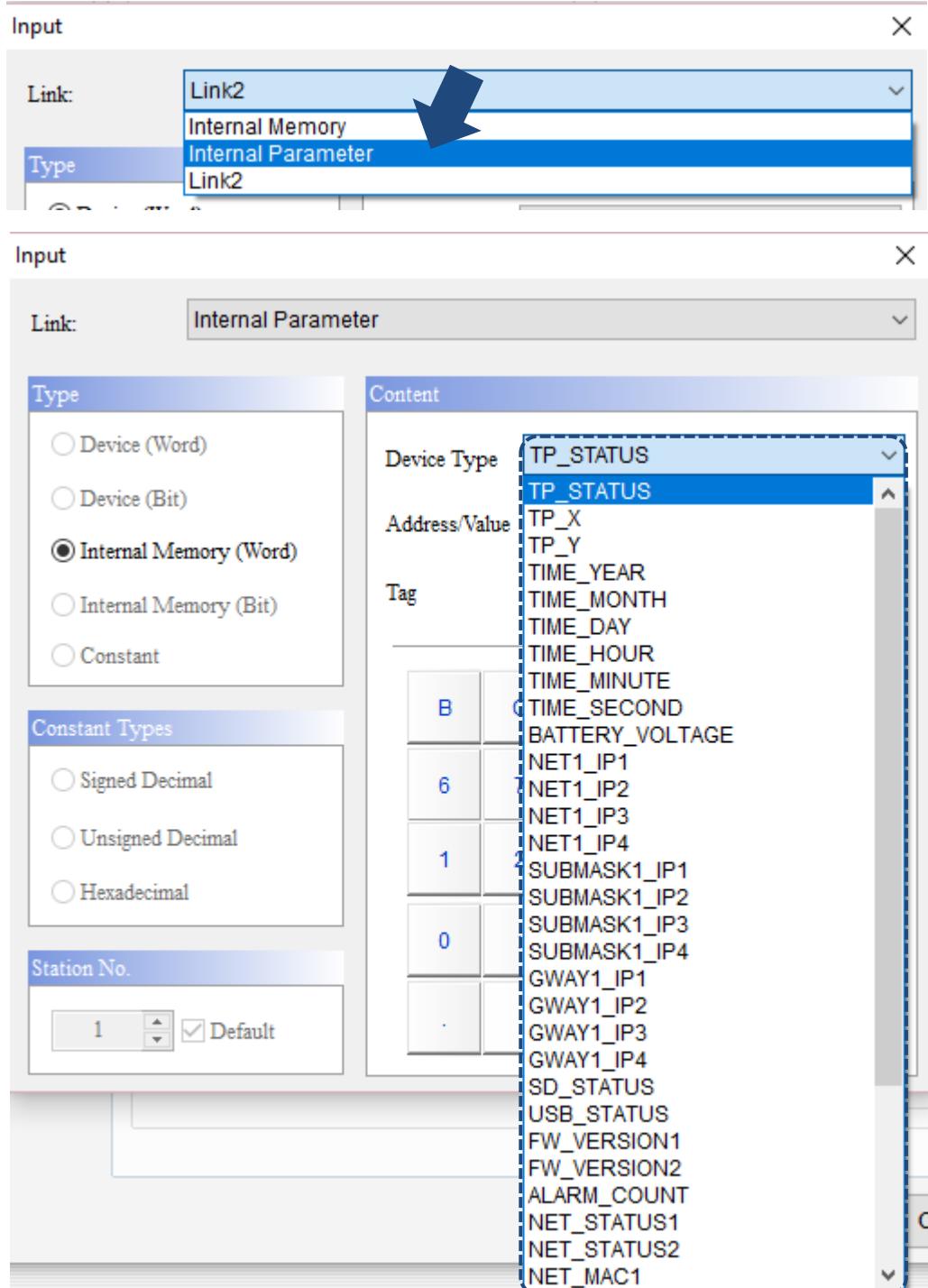
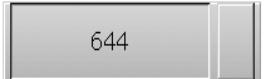
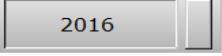
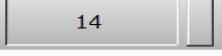
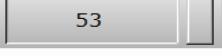
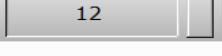
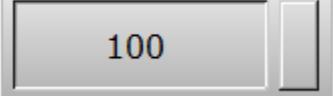


Figure 3.4.1 Internal Parameter

Table 3.4.1 Internal Parameter

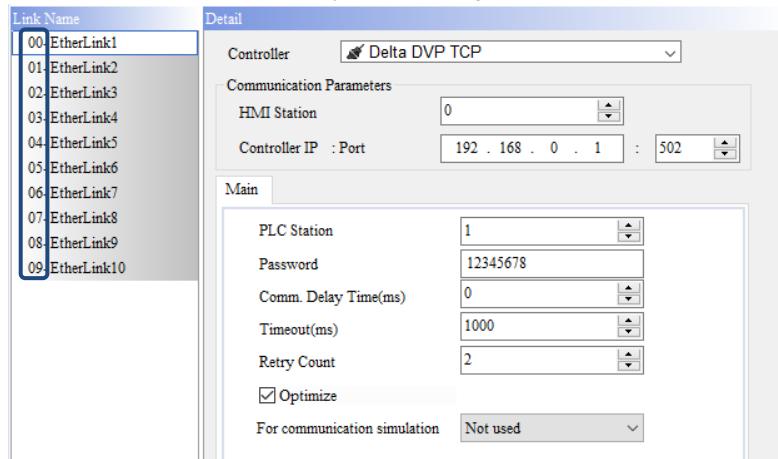
Internal Parameter		
TP_STATUS	Displays the HMI panel state value.	
	State value	Result
TP_X	0 Panel not touched, 0.	
	1	Panel touched, 1.
TP_Y	Displays the X and Y coordinates when the panel is touched.	
	Coordinate	Result
TIME_YEAR	X	
	Y	
TIME_MONTH	Displays the HMI system time, including year / month / day / hour / minute / second.	
	Time / Date	Result
	TIME_YEAR (yyyy)	
	TIME_MONTH (mm)	
	TIME_DAY (dd)	
	TIME_HOUR (hr)	
	TIME_MINUTE (mi)	
TIME_SECOND	TIME_SECOND (se)	
BATTERY_VOLTAGE	Displays the remaining battery voltage in percentage (%).	
		

### Internal Parameters

Some DOP-100 series HMI models have two Ethernet ports, so the network parameters are named as NET1\_IP1 to NET1\_IP4, SUBMASK1\_IP1 to SUBMASK1\_IP4, GWAY1\_IP1 to GWAY1\_IP4, and NET2\_IP1 to NET2\_IP4, SUBMASK2\_IP1 to SUBMASK2\_IP4, GWAY2\_IP1 to GWAY2\_IP4. For the DOP-100 models to be compatible with the DOP-B projects, the network parameters NET\_IP1 to NET\_IP4, SUBMASK\_IP1 to SUBMASK\_IP4, and GWAY\_IP1 to GWAY\_IP4 are added.

		Internal Parameters																							
NET_IP1 NET1_IP1		Displays the HMI IP address. See the following example of 192.168.123.62.																							
NET_IP2 NET1_IP2		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">NET_IP</th><th style="width: 25%;">Result</th><th style="width: 25%;"></th><th style="width: 25%;"></th></tr> </thead> <tbody> <tr> <td>NET_IP1 NET1_IP1</td><td></td><td></td><td></td></tr> <tr> <td>NET_IP2 NET1_IP2</td><td></td><td></td><td></td></tr> <tr> <td>NET_IP3 NET1_IP3</td><td></td><td></td><td></td></tr> <tr> <td>NET_IP4 NET1_IP4</td><td></td><td></td><td></td></tr> </tbody> </table>				NET_IP	Result			NET_IP1 NET1_IP1				NET_IP2 NET1_IP2				NET_IP3 NET1_IP3				NET_IP4 NET1_IP4			
NET_IP	Result																								
NET_IP1 NET1_IP1																									
NET_IP2 NET1_IP2																									
NET_IP3 NET1_IP3																									
NET_IP4 NET1_IP4																									
SUBMASK_IP1 SUBMASK1_IP1		Displays the HMI SUBMASK_IP address. See the following example of 255.255.255.0.																							
SUBMASK_IP2 SUBMASK1_IP2		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">SUBMASK_IP</th><th style="width: 25%;">Result</th><th style="width: 25%;"></th><th style="width: 25%;"></th></tr> </thead> <tbody> <tr> <td>SUBMASK_IP1 SUBMASK1_IP1</td><td></td><td></td><td></td></tr> <tr> <td>SUBMASK_IP2 SUBMASK1_IP2</td><td></td><td></td><td></td></tr> <tr> <td>SUBMASK_IP3 SUBMASK1_IP3</td><td></td><td></td><td></td></tr> <tr> <td>SUBMASK_IP4 SUBMASK1_IP4</td><td></td><td></td><td></td></tr> </tbody> </table>				SUBMASK_IP	Result			SUBMASK_IP1 SUBMASK1_IP1				SUBMASK_IP2 SUBMASK1_IP2				SUBMASK_IP3 SUBMASK1_IP3				SUBMASK_IP4 SUBMASK1_IP4			
SUBMASK_IP	Result																								
SUBMASK_IP1 SUBMASK1_IP1																									
SUBMASK_IP2 SUBMASK1_IP2																									
SUBMASK_IP3 SUBMASK1_IP3																									
SUBMASK_IP4 SUBMASK1_IP4																									
GWAY_IP1 GWAY1_IP1		Displays the HMI GATEWAY_IP address. See the following example of 192.168.123.254.																							
GWAY_IP2 GWAY1_IP2		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">GWAY_IP</th><th style="width: 25%;">Result</th><th style="width: 25%;"></th><th style="width: 25%;"></th></tr> </thead> <tbody> <tr> <td>GWAY_IP1 GWAY1_IP1</td><td></td><td></td><td></td></tr> <tr> <td>GWAY_IP2 GWAY1_IP2</td><td></td><td></td><td></td></tr> <tr> <td>GWAY_IP3 GWAY1_IP3</td><td></td><td></td><td></td></tr> <tr> <td>GWAY_IP4 GWAY1_IP4</td><td></td><td></td><td></td></tr> </tbody> </table>				GWAY_IP	Result			GWAY_IP1 GWAY1_IP1				GWAY_IP2 GWAY1_IP2				GWAY_IP3 GWAY1_IP3				GWAY_IP4 GWAY1_IP4			
GWAY_IP	Result																								
GWAY_IP1 GWAY1_IP1																									
GWAY_IP2 GWAY1_IP2																									
GWAY_IP3 GWAY1_IP3																									
GWAY_IP4 GWAY1_IP4																									
SD_STATUS		Displays the state value of whether an SD card is inserted.																							
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">State value</th><th style="width: 25%;">Result</th><th style="width: 25%;"></th><th style="width: 25%;"></th></tr> </thead> <tbody> <tr> <td>0</td><td>SD Card not inserted, 0.</td><td></td><td></td></tr> <tr> <td>1</td><td>SD Card inserted, 1.</td><td></td><td></td></tr> </tbody> </table>				State value	Result			0	SD Card not inserted, 0.			1	SD Card inserted, 1.										
State value	Result																								
0	SD Card not inserted, 0.																								
1	SD Card inserted, 1.																								
USB_STATUS		Displays the state value of whether a USB disk is inserted.																							
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">State value</th><th style="width: 25%;">Result</th><th style="width: 25%;"></th><th style="width: 25%;"></th></tr> </thead> <tbody> <tr> <td>0</td><td>USB Disk not inserted, 0.</td><td></td><td></td></tr> <tr> <td>1</td><td>USB Disk inserted, 1.</td><td></td><td></td></tr> </tbody> </table>				State value	Result			0	USB Disk not inserted, 0.			1	USB Disk inserted, 1.										
State value	Result																								
0	USB Disk not inserted, 0.																								
1	USB Disk inserted, 1.																								

NET\_STATUS1  
NET\_STATUS2



FW\_VERSION1

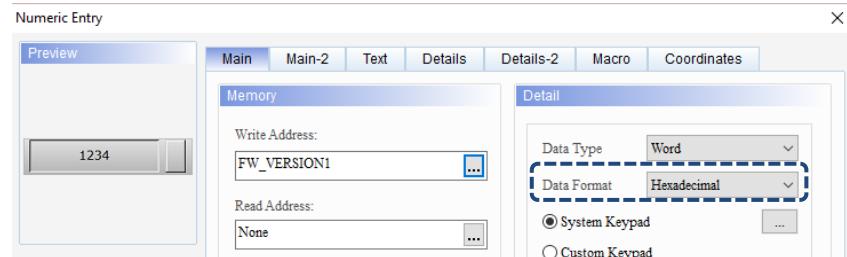


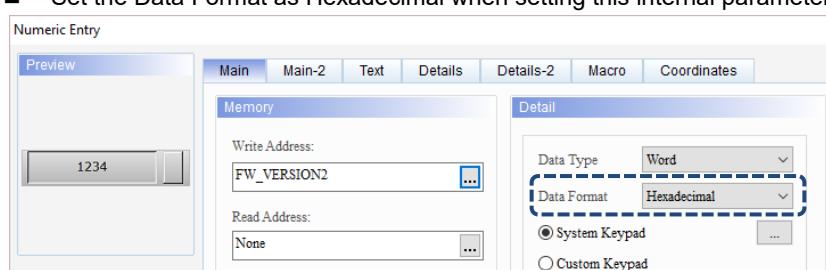
### DOP-107WV 65536 Colors – Version 1.0110

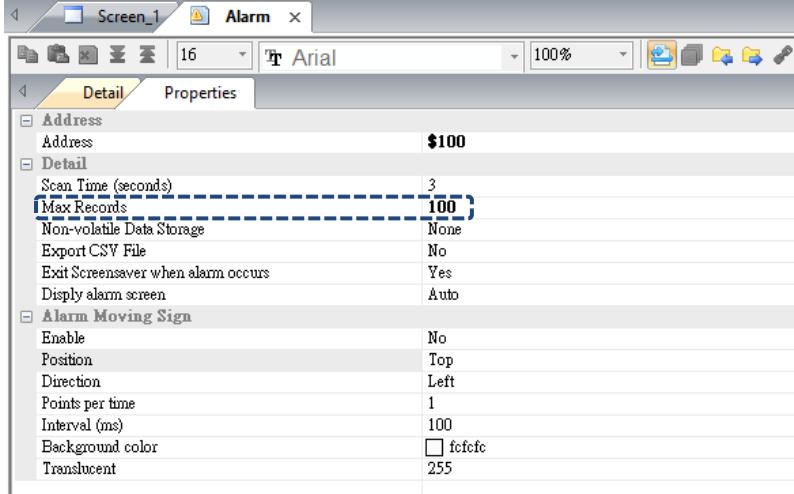
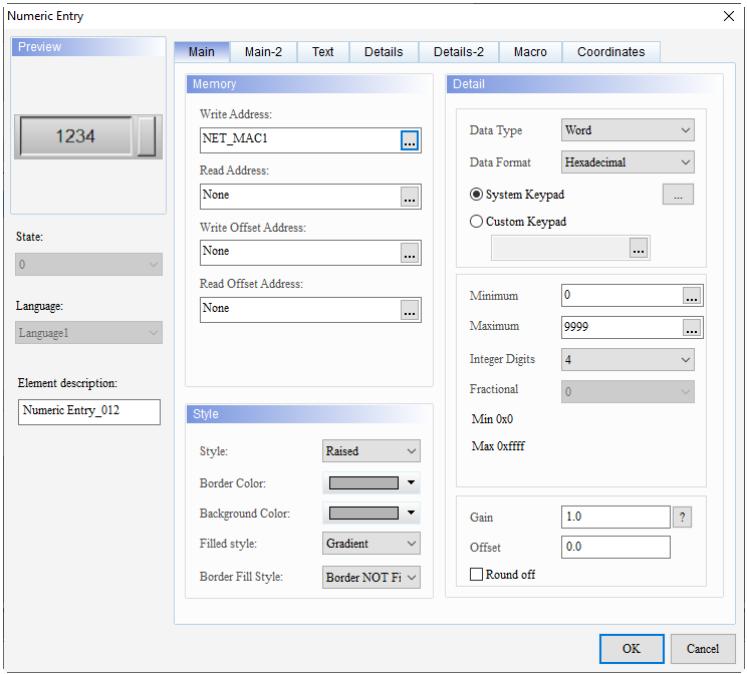
Main version 1 Sub-version 0110

FW\_VERSION1

- Displays the main version of the HMI firmware.
- Set the Data Format as Hexadecimal when setting this internal parameter.



<b>Internal Parameters</b>																																																			
<b>FW_VERSION2</b>	<ul style="list-style-type: none"> <li>■ Displays the sub-version of the HMI firmware.</li> <li>■ Set the Data Format as Hexadecimal when setting this internal parameter.</li> </ul> 																																																		
<b>ALARM_COUNT</b>	<ul style="list-style-type: none"> <li>■ Displays the total number of alarms triggered so far, including the triggered and canceled ones.</li> <li>■ The DOP-B, DOP-H, and HMC series models record the triggered and canceled alarms separately. As a result, Alarm_Count displays 20 when there are ten alarms.</li> </ul> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> </table> </div> <div style="flex: 1;"> <p style="text-align: center;">Alarm_Count</p>  </div> </div> <div style="margin-top: 20px;"> <pre> O 0006 10:05:19 05/04/2016 6 O 0007 10:05:19 05/04/2016 7 O 0008 10:05:19 05/04/2016 8 O 0009 10:05:20 05/04/2016 9 O 0010 10:05:20 05/04/2016 10 X 0001 10:05:21 05/04/2016 1 X 0002 10:05:21 05/04/2016 2 X 0003 10:05:22 05/04/2016 3 X 0004 10:05:22 05/04/2016 4 X 0005 10:05:22 05/04/2016 5 X 0009 10:05:23 05/04/2016 9 X 0008 10:05:24 05/04/2016 8 X 0007 10:05:24 05/04/2016 7 X 0006 10:05:25 05/04/2016 6 X 0010 10:05:26 05/04/2016 10 </pre> </div>	1	2	3	4	5	6	7	8	9	10																																								
1	2	3	4	5																																															
6	7	8	9	10																																															
	<ul style="list-style-type: none"> <li>■ The DOP-W and DOP-100 series models record the triggered and canceled alarms within one set of data. As a result, Alarm_Count displays 10 when there are ten alarms.</li> </ul> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> </table> </div> <div style="flex: 1;"> <p style="text-align: center;">Alarm Count</p>  </div> </div> <div style="margin-top: 20px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> <th>Recovery</th> </tr> </thead> <tbody> <tr><td>0001</td><td>1</td><td>11:12:50 08/24/2021</td><td>11:13:01 08/24/2021</td></tr> <tr><td>0002</td><td>2</td><td>11:12:51 08/24/2021</td><td>11:13:02 08/24/2021</td></tr> <tr><td>0003</td><td>3</td><td>11:12:52 08/24/2021</td><td>11:13:03 08/24/2021</td></tr> <tr><td>0004</td><td>4</td><td>11:12:54 08/24/2021</td><td>11:13:03 08/24/2021</td></tr> <tr><td>0005</td><td>5</td><td>11:12:55 08/24/2021</td><td>11:13:04 08/24/2021</td></tr> <tr><td>0006</td><td>6</td><td>11:12:55 08/24/2021</td><td>11:13:05 08/24/2021</td></tr> <tr><td>0007</td><td>7</td><td>11:12:56 08/24/2021</td><td>11:13:05 08/24/2021</td></tr> <tr><td>0008</td><td>8</td><td>11:12:57 08/24/2021</td><td>11:13:06 08/24/2021</td></tr> <tr><td>0009</td><td>9</td><td>11:12:58 08/24/2021</td><td>11:13:06 08/24/2021</td></tr> </tbody> </table> </div>	1	2	3	4	5	6	7	8	9	10	No	Message	Trigger	Recovery	0001	1	11:12:50 08/24/2021	11:13:01 08/24/2021	0002	2	11:12:51 08/24/2021	11:13:02 08/24/2021	0003	3	11:12:52 08/24/2021	11:13:03 08/24/2021	0004	4	11:12:54 08/24/2021	11:13:03 08/24/2021	0005	5	11:12:55 08/24/2021	11:13:04 08/24/2021	0006	6	11:12:55 08/24/2021	11:13:05 08/24/2021	0007	7	11:12:56 08/24/2021	11:13:05 08/24/2021	0008	8	11:12:57 08/24/2021	11:13:06 08/24/2021	0009	9	11:12:58 08/24/2021	11:13:06 08/24/2021
1	2	3	4	5																																															
6	7	8	9	10																																															
No	Message	Trigger	Recovery																																																
0001	1	11:12:50 08/24/2021	11:13:01 08/24/2021																																																
0002	2	11:12:51 08/24/2021	11:13:02 08/24/2021																																																
0003	3	11:12:52 08/24/2021	11:13:03 08/24/2021																																																
0004	4	11:12:54 08/24/2021	11:13:03 08/24/2021																																																
0005	5	11:12:55 08/24/2021	11:13:04 08/24/2021																																																
0006	6	11:12:55 08/24/2021	11:13:05 08/24/2021																																																
0007	7	11:12:56 08/24/2021	11:13:05 08/24/2021																																																
0008	8	11:12:57 08/24/2021	11:13:06 08/24/2021																																																
0009	9	11:12:58 08/24/2021	11:13:06 08/24/2021																																																

Internal Parameters	
ALARM_COUNT	<ul style="list-style-type: none"> <li>The function reminds you to export the alarm data in case the initial alarm message contents are removed when the data reach the set maximum.</li> </ul> 
NET_MAC1	<ul style="list-style-type: none"> <li>For representing the MAC number of the HMI network port.</li> <li>Set the Data Format as Hexadecimal.</li> </ul> 
NET_MAC2	
NET_MAC3	
REMO_COUNT	<ul style="list-style-type: none"> <li>The data is displayed with the high and low values swapped. If the value is 1800, it is displayed as 00:18.</li> </ul> <p>Displays the number of remote devices currently connected to the HMI. Remote devices include eServer, VNC, and LUA online debugging programs.</p>
ACCOUNT	<ul style="list-style-type: none"> <li>Displays the currently logged-in account.</li> <li>If your account contains English letters and numbers, use the Character Display element; if your account contains non-ASCII characters, use the Multi-language Input element.</li> </ul>

Internal Parameters		
PROGRAM_STATUS	Displays the current state value of LUA operations.	
	State value	State description
	0	Program stopped
	1	Program is running
	2	Program pauses at a breakpoint
	3	Program paused
PROGRAM_INFO	The current error message can be displayed through this system parameter if an error occurs during LUA operations.	
KEY_CHAR	<ul style="list-style-type: none"> <li>■ When a keyboard is connected to the HMI, characters can be directly input through the keyboard and displayed through this parameter.</li> <li>■ It is recommended to use Character Entry or Character Display elements.</li> </ul>	
DNS1_IP1	Displays the HMI DNS Server IP address.	
DNS1_IP2		
DNS1_IP3		
DNS1_IP4		
SMTP_STATUS	Displays the current SMTP connection status.	
	SMTP_STATUS status value	State description
	0	Status unknown
	1	Connection success
	-100	Connection failed
	-101	System disconnected
	The displayed message changes according to the system.	
SMTP_INFO		
	-102	Authentication required
	-103	Authentication failed
	-999	SMTP error
TP_FORCE	Displays the value of the pressing force applied to the HMI screen in percentage.	
TP_DELAY	Displays the delay time of pressing the HMI screen in percentage.	
EMS_STATUS	<ul style="list-style-type: none"> <li>■ This function is only available for the DOP-H series HMI.</li> <li>■ This parameter displays the current state of the emergency stop switch.</li> </ul>	
	State value	Result
	0	Emergency stop switch not pressed, 0.
	1	Emergency stop switch pressed, 1.
LSWITCH_STATUS	<ul style="list-style-type: none"> <li>■ This function is only available for the DOP-H series HMI.</li> <li>■ This parameter displays the current state of the enabling switch.</li> </ul>	
	State value	Result
	0	Enabling switch not pressed, 0.
	1	Enabling switch pressed, 1.
HANDWHEEL_COUNTER	<ul style="list-style-type: none"> <li>■ This function is only available for the DOP-H series HMI.</li> <li>■ This parameter displays the currently accumulated number of rotations of the handwheel.</li> <li>■ The value increases by 1 when the handwheel is rotated to the right, and the value decreases by 1 when the handwheel is rotated to the left.</li> </ul>	

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# Control Status Block

# 4

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This chapter illustrates how the HMI uses the Control Block and Status Area commands.

4.1	Control Block .....	4-8
4.2	Status Area .....	4-20

The DOPSoft provides the Control Block and Status Area functions for you to execute or monitor part of the system operation or status. You can define the memory start address of the Control Block and Status Area by going to [Options] > [Configuration] > [Control Status Block].

## 4

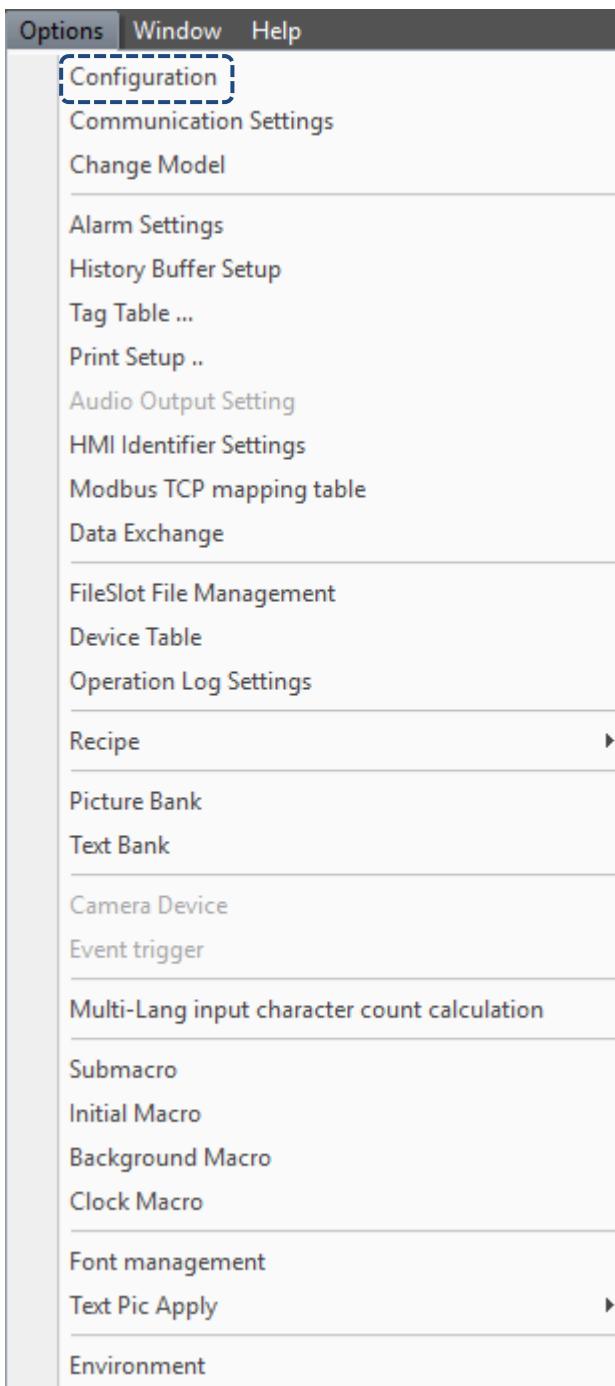


Figure 4.1 Configuration

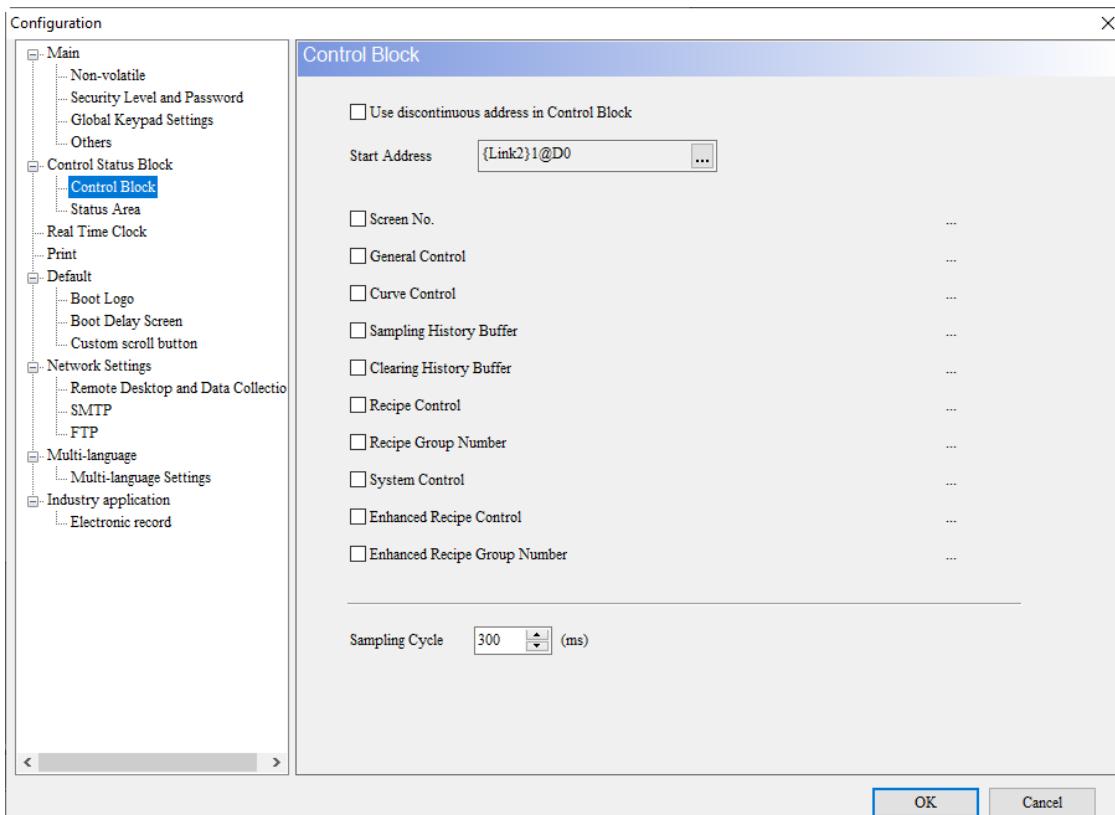


Figure 4.2 Control Block

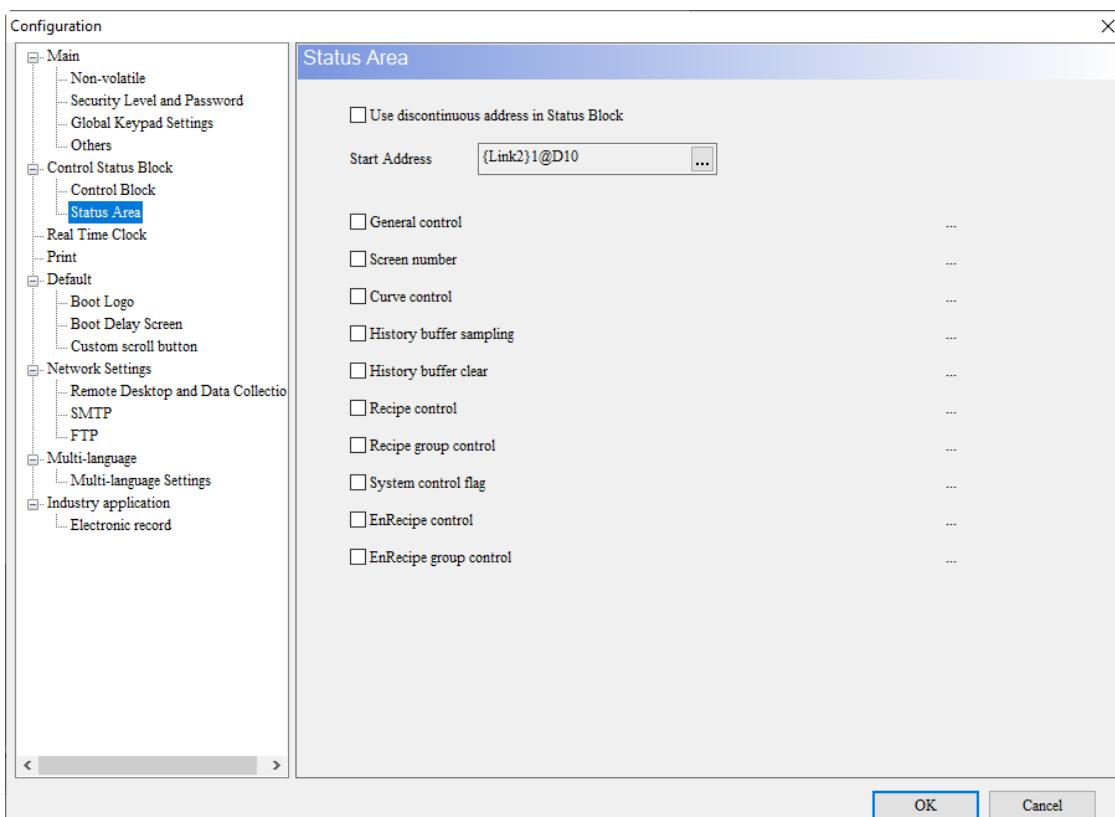


Figure 4.3 Status Area

The DOPSoft provides the Control Block and Status Area configurations for you to select the functions based on your needs, which is different from the previous Screen Editor. Take the Control Block for instance. As long as you select the check boxes of **Screen No.** and **Recipe Group Number**, the Control Block automatically configures the addresses in continuous form and enables the applications of screen switch and recipe number control, as shown in Figure 4.4.

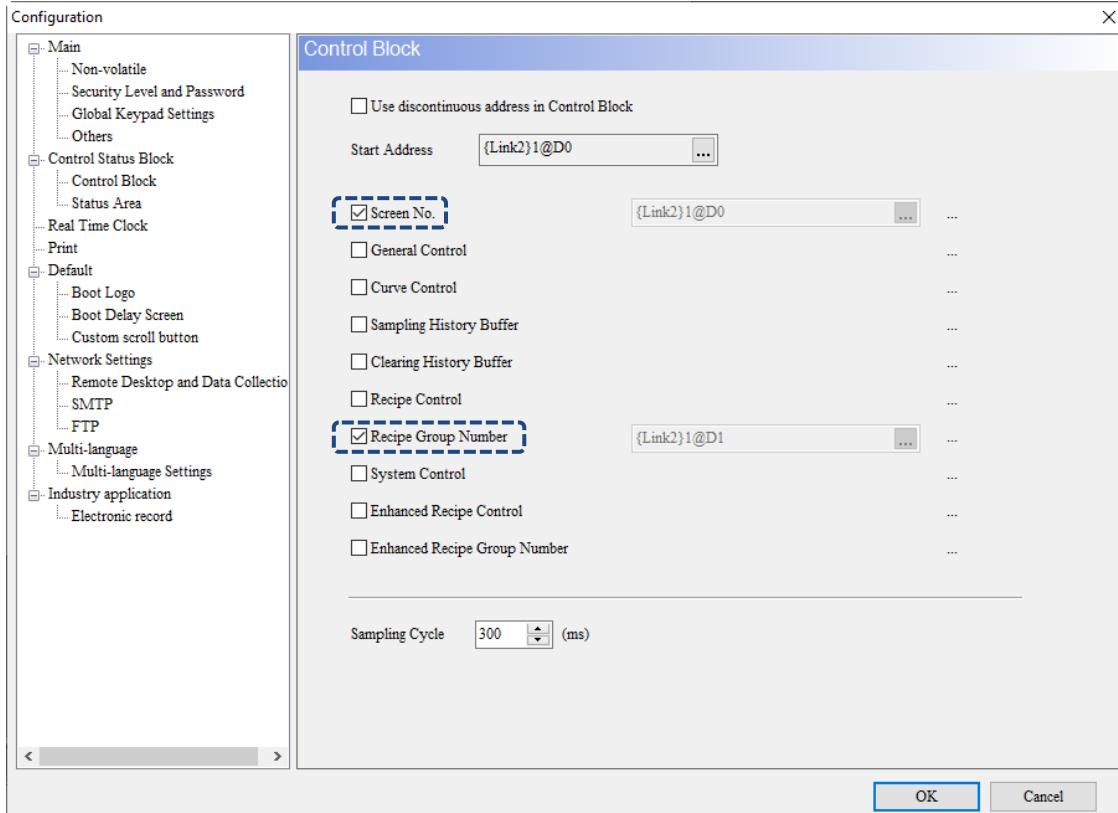


Figure 4.4 DOPSoft Control Block

If you select an additional function, such as General Control, the memory addresses are arranged in continuous sequence from top to bottom, as shown in Figure 4.5.

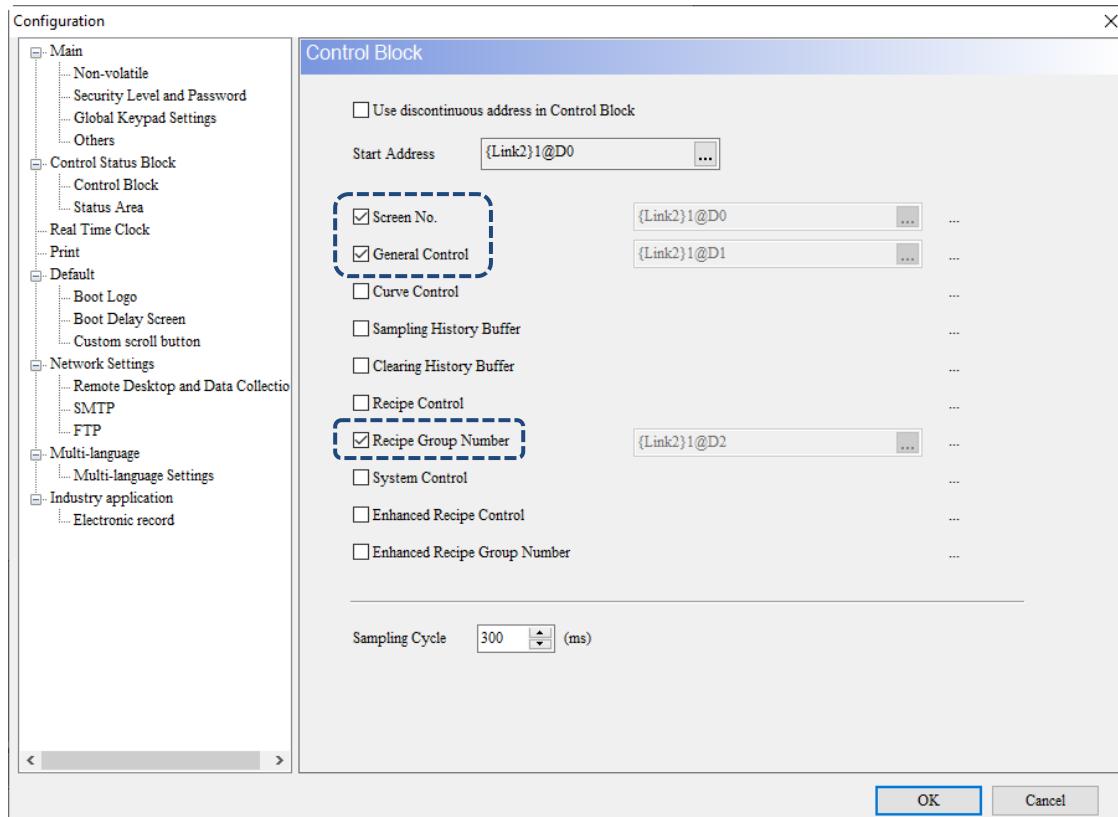
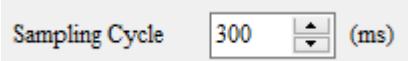


Figure 4.5 DOPSoft Control Block

#### ■ Sampling Cycle

The Sampling Cycle enables you to control the sampling time flexibly. The default sampling cycle time is 300 ms, denoting that the interval for executing sampling is 300 ms. The minimum sampling cycle is 200 ms; the maximum sampling cycle is 1000 ms.



#### ■ Action complete clear flag

To reactivate some of the functions in the Control Block, you must turn the corresponding flags OFF and then ON again. You can select the check box of **Action complete clear flag** and the HMI automatically resets the flags.

4

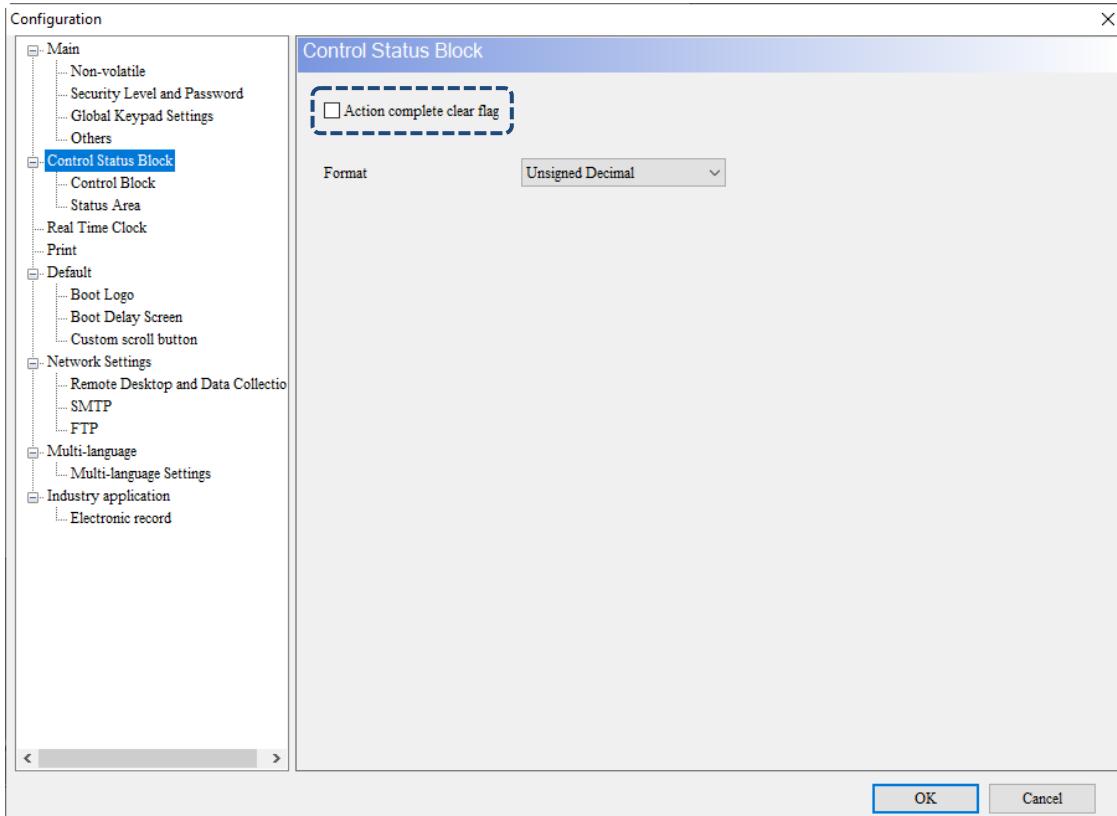


Figure 4.6 Action complete clear flag

## ■ Format

You can set the Format to either Unsigned Decimal or BCD.

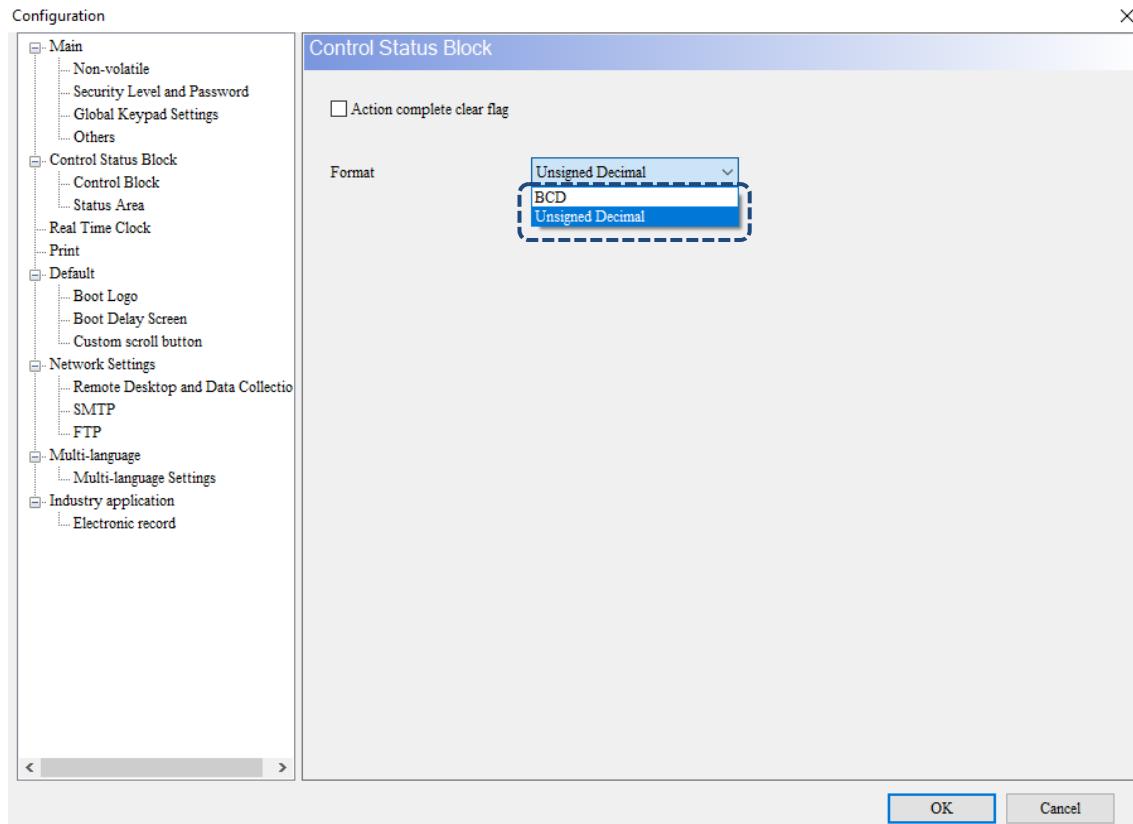


Figure 4.7 Control Status Block - Format

## 4.1 Control Block

You can define the register addresses of the Control Block in the controller or the HMI internal memory. The HMI operation behaviors can be configured with the Control Block settings, such as screen switch, backlight disabling, security settings, curve and history buffer sampling or clearing, recipe control, enhanced recipe control, multi-language settings, and printing. The Control Block is a continuous data block in units of words.

Table 4.1.1 Control Block - Register type

Control Block register type	Controller register		Internal memory	
	Register (D)	Example	Register (\$)	Example
Screen No.	Dn	D0	\$n	\$15
General control	Dn+1	D1	\$n+1	\$16
Curve control	Dn+2	D2	\$n+2	\$17
History buffer sampling	Dn+3	D3	\$n+3	\$18
History buffer clearing	Dn+4	D4	\$n+4	\$19
Recipe control	Dn+5	D5	\$n+5	\$20
Recipe number control	Dn+6	D6	\$n+6	\$21
System control flag	Dn+7	D7	\$n+7	\$22
Enhanced recipe control	Dn+8	D8	\$n+8	\$23
Enhanced recipe number control	Dn+9	D9	\$n+9	\$24

- Screen number register

Table 4.1.2 Control Block - Screen number register

Screen number register																																								
b0 - b15 – Screen number	<ul style="list-style-type: none"> <li>■ Write the designated screen number into the register, and the HMI switches to the designated screen.</li> <li>■ As shown in the following example, if you set the address of a Numeric Entry element as D0 and input the value of 1, the HMI switches to the first screen.</li> </ul> <div style="border: 1px dashed black; padding: 10px; margin-bottom: 10px;"> </div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> </div> <div style="flex: 1;"> <div style="background-color: #f0f0f0; padding: 5px;"> <b>Configuration</b> <ul style="list-style-type: none"> <li>&gt;Main               <ul style="list-style-type: none"> <li>Non-volatile</li> <li>Security Level and Password</li> <li>Global Keypad Settings</li> <li>Others</li> </ul> </li> <li>Control Block               <ul style="list-style-type: none"> <li>Real Time Clock</li> <li>Print</li> </ul> </li> <li>Default               <ul style="list-style-type: none"> <li>Boot Logo</li> </ul> </li> <li>Network Settings               <ul style="list-style-type: none"> <li>Remote Desktop and Data Collection</li> <li>SMTP</li> <li>FTP</li> </ul> </li> <li>Multi-language</li> <li>Industry application               <ul style="list-style-type: none"> <li>Electronic record</li> </ul> </li> </ul> </div> <div style="background-color: #f0f0f0; padding: 5px;"> <b>Control Block</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Start Address</td> <td style="padding: 2px;"><input type="text" value="([Link2])1@D0"/></td> <td style="padding: 2px;">...</td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input checked="" type="checkbox"/> Screen No.      D0      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> General Control      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> Curve Control      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> Sampling History Buffer      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> Clearing History Buffer      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> Recipe Control      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> Recipe Group Number      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> System Control      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> Enhanced Recipe Control      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> Enhanced Recipe Group Number      ...         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0; text-align: center;">           Sampling Cycle <input type="text" value="300"/> (ms)         </td> </tr> <tr> <td colspan="3" style="padding: 5px 0;"> <input type="checkbox"/> Auto Reset Flags         </td> </tr> </table> </div> </div> </div>	Start Address	<input type="text" value="([Link2])1@D0"/>	...	<input checked="" type="checkbox"/> Screen No.      D0      ...			<input type="checkbox"/> General Control      ...			<input type="checkbox"/> Curve Control      ...			<input type="checkbox"/> Sampling History Buffer      ...			<input type="checkbox"/> Clearing History Buffer      ...			<input type="checkbox"/> Recipe Control      ...			<input type="checkbox"/> Recipe Group Number      ...			<input type="checkbox"/> System Control      ...			<input type="checkbox"/> Enhanced Recipe Control      ...			<input type="checkbox"/> Enhanced Recipe Group Number      ...			Sampling Cycle <input type="text" value="300"/> (ms)			<input type="checkbox"/> Auto Reset Flags		
Start Address	<input type="text" value="([Link2])1@D0"/>	...																																						
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<input type="checkbox"/> Enhanced Recipe Group Number      ...																																								
Sampling Cycle <input type="text" value="300"/> (ms)																																								
<input type="checkbox"/> Auto Reset Flags																																								

■ General control register

Table 4.1.3 Control Block - General control register

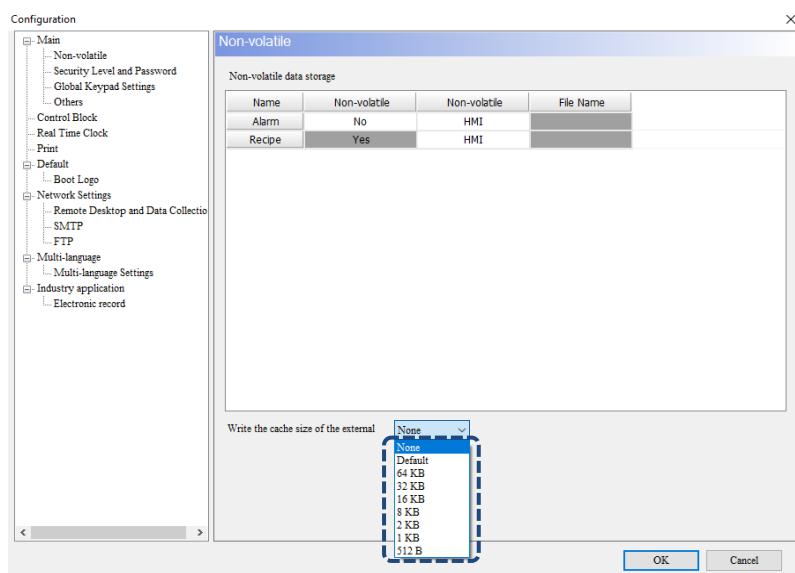
General control register																															
<table border="1"> <tr><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>b11</td><td>b10</td><td>b9</td><td>b8</td><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr> </table>																b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																
(10)					(9)			(8)	(7)	(6)	(5)	(4)	(3)	(2)	(1)																
(1)	b0 Communication enable / disable flag																														
(2)	b1 Backlight enable / disable flag																														
(3)	b2 Buzzer enable / disable flag																														
(4)	b3 Alarm buffer clear flag																														
(5)	b4 Alarm counter clear flag																														
(6)	b5 External storage device cache write flag																														
(7)	b6 Remote control lock																														
(8)	b7 Reserved																														
(9)	b8 - b11 Set user security level																														
(10)	b12 - b15 Reserved																														
b0 – Communication enable / disable flag		<p>■ Enable / disable the HMI communication. To use the communication enable / disable flag, click [Options] &gt; [Communication Settings], select the check box of <b>Disconnect after communication interrupt</b>, and set the retry times. See the following figure.</p>																													

General control register	
<p>b0 – Communication enable / disable flag</p>	<ul style="list-style-type: none"> <li>When the HMI communicates with the controller, the HMI automatically stops the communication with the controller and turns the flag ON after the number of interruption times reaches the set retry times without a communication error message appearing (this does not affect the communication between the HMI and other controllers). You can restore the communication between the HMI and the controller by turning the flag OFF.</li> </ul>
	<ul style="list-style-type: none"> <li>The flag is only for restoring the communication when the communication is automatically stopped. You cannot directly stop the communication between the HMI and any controller by turning the flag ON.</li> <li>The Action complete clear flag function is not applicable to this flag.</li> </ul>
<p>b1 – Backlight enable / disable flag</p>	<ul style="list-style-type: none"> <li>Enable / disable the HMI backlight. When the flag is ON, the HMI backlight is disabled. When the flag is OFF, the HMI backlight is enabled.</li> <li>The Action complete clear flag function is not applicable to this flag.</li> </ul>
<p>b2 – Buzzer enable / disable flag</p>	<ul style="list-style-type: none"> <li>Enable / disable the HMI buzzer. When the flag is ON, the HMI buzzer is enabled. When the flag is OFF, the HMI buzzer is disabled.</li> <li>The Action complete clear flag function is not applicable to this flag.</li> </ul>
<p>b3 – Alarm buffer clear flag</p>	<p>Clear the HMI alarm buffer. When the flag is turned ON, the HMI clears the alarm buffer. To reactivate the function, you must turn the flag OFF and then ON again.</p>
<p>b4 – Alarm counter clear flag</p>	<p>Clear the HMI Alarm Frequency Table. When the flag is turned ON, the data in the Alarm Frequency Table is cleared. To reactivate the function, you must turn the flag OFF and then ON again.</p>

### General control register

- Update the HMI cache data into a USB Disk or an SD Card in real time. If the alarm buffer, history buffer, or recipe function is activated, and the non-volatile storage location is set to a USB Disk or an SD Card, when the flag is turned ON, the HMI updates the data temporarily stored in the cache into a USB Disk or an SD Card in real time. To reactivate the function, you must turn the flag OFF and then ON again.
- The data written into a USB Disk or an SD Card by the HMI is temporarily stored in the cache first. Before the cache data size reaches the set limit (shown as follows), the data is not written into a USB Disk or an SD Card. This is to prevent the USB Disk or SD Card from being damaged by frequent overwriting. However, if the data volume you are accessing is less than the buffer capacity or the power is cut off unexpectedly, part of the data may be lost. To keep the data, you can have the flag turned ON in a cyclic pattern to write the data into the USB Disk or SD Card.

b5 –  
External  
storage device  
cache write flag



b6 –  
Remote control  
lock

- Enable / disable the operation of eRemote.  
When the flag is ON, eRemote can only be monitored rather than be operated.  
When the flag is OFF, eRemote can be operated properly.
- The Action complete clear flag function is not applicable to this flag.

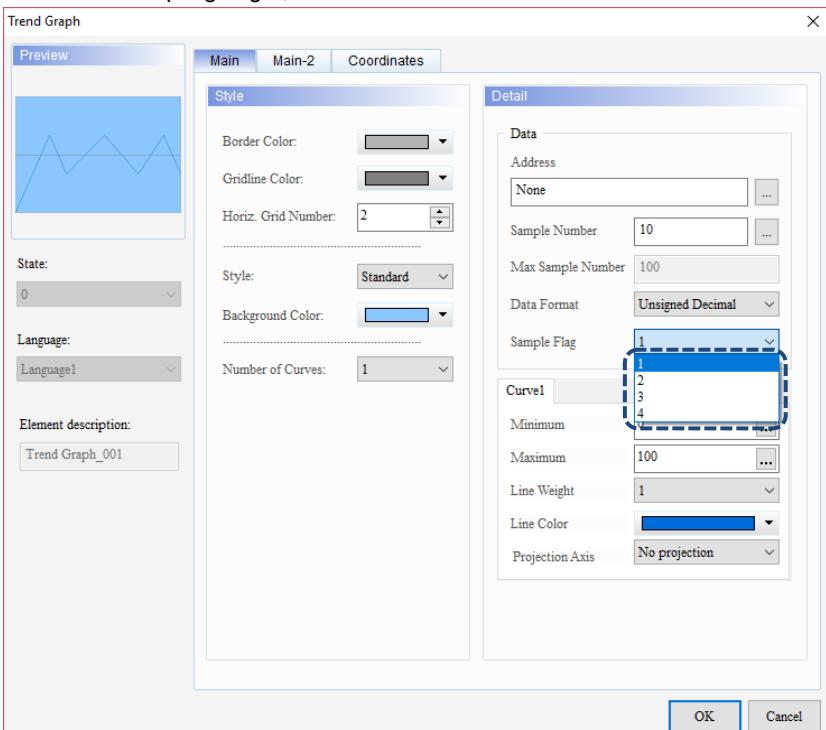
b8, b9, b10,  
b11 –  
Set user  
security level

- You can change the current HMI user security by activating the flags of Bit 8, Bit 9, Bit 10, and Bit 11 provided by the general control register. The HMI internal security level includes:
  - Security levels 0 - 7: 0 refers to the lowest security level. Levels 0 - 7 can be controlled by Bit 8, Bit 9, and Bit 10 flags.
  - Highest security level: can be controlled by Bit 11 flag.
- You can set security levels 0 to 7 with the Bit 8, Bit 9, and Bit 10 flags. Refer to the following table for more details on settings.

Security level	Flag control			
	Bit 11	Bit 10	Bit 9	Bit 8
Security level 0	0	0	0	0
Security level 1	0	0	0	1
Security level 2	0	0	1	0
Security level 3	0	0	1	1
Security level 4	0	1	0	0
Security level 5	0	1	0	1
Security level 6	0	1	1	0
Security level 7	0	1	1	1
Highest Security Level	1	0	0	0

■ Curve control register

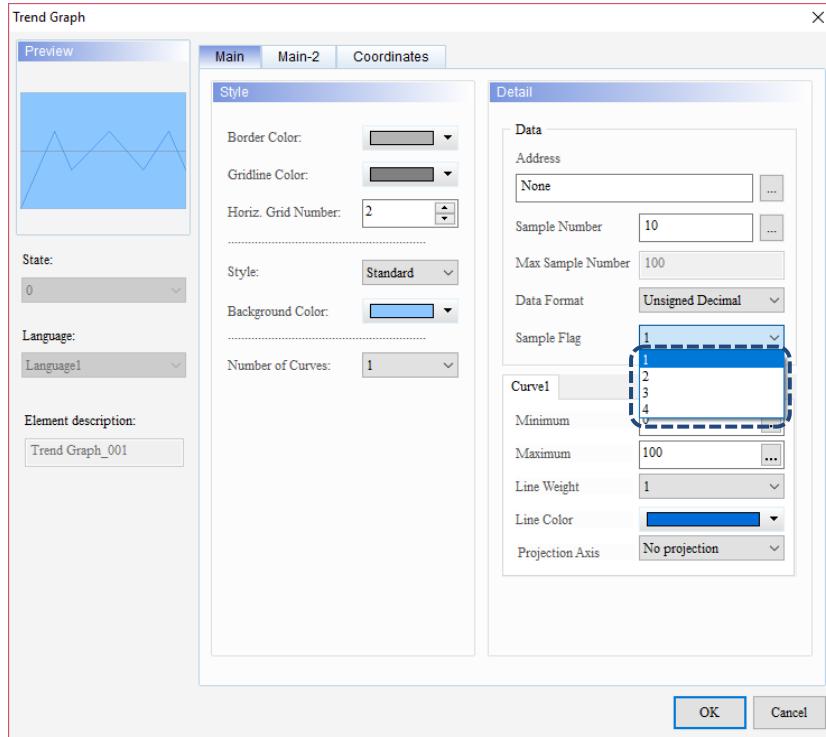
Table 4.1.4 Control Block - Curve control register

Curve control register																											
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0												
(4)				(3)				(2)				(1)															
(1) b0 - b3 Curve sampling flags 1 - 4				(2) b4 - b7 Reserved				(3) b8 - b11 Curve clear flags 1 - 4				(4) b12 - 15 Reserved															
<ul style="list-style-type: none"> <li>■ The DOPSoft provides four curve sampling flags. The curves include the Trend Graph and X-Y Chart of which the curve drawing action is controlled by the curve sampling flags.</li> <li>■ If the flag is turned ON, the corresponding curve element samples and draws the curve. To reactivate the function, you must turn flag OFF and then ON again.</li> <li>■ The sampling flag 1 of the Trend Graph element corresponds to the curve sampling flag 1; the sampling flag 2 of the Trend Graph element corresponds to the curve sampling flag 2, and so forth.</li> </ul>																											
 <p>b0 - b3 – Curve sampling flags (1 - 4)</p>																											

### Curve control register

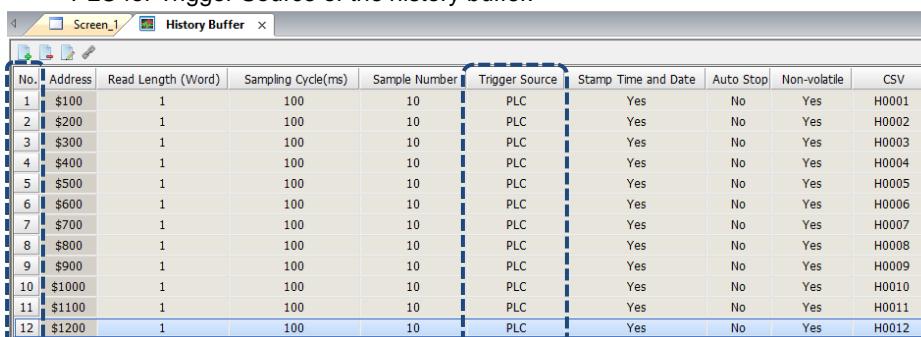
- The DOPSoft provides four curve clear flags. The curves include the Trend Graph and X-Y Chart of which the curve clearing action is controlled by the curve clear flags.
- If the flag is turned ON, the corresponding curve element clears the curve. To reactivate the function, you must turn the flag OFF and then ON again.
- The curve element sampling flag 1 corresponds to the curve clear flag 1; the curve element sampling flag 2 corresponds to the curve clear flag 2, and so forth.

b8 - b11 –  
Curve clear  
flags (1 - 4)



- History buffer sampling register

Table 4.1.5 Control Block - History buffer sampling register

History buffer sampling register																																																																																																																																																	
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0																																																																																																																																		
(2)								(1)																																																																																																																																									
(1) b0 - b11 History buffer sampling flags 1 - 12 (b0 refers to flag 1, and so forth.)								(2) b12 - b15 Reserved																																																																																																																																									
<ul style="list-style-type: none"> <li>■ The history buffer sampling register can record up to twelve sets of history buffer data. Each buffer corresponds to a history buffer sampling flag. To execute sampling with the history buffer sampling flags of the control block, you must set PLC for Trigger Source of the history buffer.</li> </ul>																																																																																																																																																	
 <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> <th>Sample Number</th> <th>Trigger Source</th> <th>Stamp Time and Date</th> <th>Auto Stop</th> <th>Non-volatile</th> <th>CSV</th> </tr> </thead> <tbody> <tr><td>1</td><td>\$100</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0001</td></tr> <tr><td>2</td><td>\$200</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0002</td></tr> <tr><td>3</td><td>\$300</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0003</td></tr> <tr><td>4</td><td>\$400</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0004</td></tr> <tr><td>5</td><td>\$500</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0005</td></tr> <tr><td>6</td><td>\$600</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0006</td></tr> <tr><td>7</td><td>\$700</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0007</td></tr> <tr><td>8</td><td>\$800</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0008</td></tr> <tr><td>9</td><td>\$900</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0009</td></tr> <tr><td>10</td><td>\$1000</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0010</td></tr> <tr><td>11</td><td>\$1100</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0011</td></tr> <tr><td>12</td><td>\$1200</td><td>1</td><td>100</td><td>10</td><td>PLC</td><td>Yes</td><td>No</td><td>Yes</td><td>H0012</td></tr> </tbody> </table>																No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source	Stamp Time and Date	Auto Stop	Non-volatile	CSV	1	\$100	1	100	10	PLC	Yes	No	Yes	H0001	2	\$200	1	100	10	PLC	Yes	No	Yes	H0002	3	\$300	1	100	10	PLC	Yes	No	Yes	H0003	4	\$400	1	100	10	PLC	Yes	No	Yes	H0004	5	\$500	1	100	10	PLC	Yes	No	Yes	H0005	6	\$600	1	100	10	PLC	Yes	No	Yes	H0006	7	\$700	1	100	10	PLC	Yes	No	Yes	H0007	8	\$800	1	100	10	PLC	Yes	No	Yes	H0008	9	\$900	1	100	10	PLC	Yes	No	Yes	H0009	10	\$1000	1	100	10	PLC	Yes	No	Yes	H0010	11	\$1100	1	100	10	PLC	Yes	No	Yes	H0011	12	\$1200	1	100	10	PLC	Yes	No	Yes	H0012
No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source	Stamp Time and Date	Auto Stop	Non-volatile	CSV																																																																																																																																								
1	\$100	1	100	10	PLC	Yes	No	Yes	H0001																																																																																																																																								
2	\$200	1	100	10	PLC	Yes	No	Yes	H0002																																																																																																																																								
3	\$300	1	100	10	PLC	Yes	No	Yes	H0003																																																																																																																																								
4	\$400	1	100	10	PLC	Yes	No	Yes	H0004																																																																																																																																								
5	\$500	1	100	10	PLC	Yes	No	Yes	H0005																																																																																																																																								
6	\$600	1	100	10	PLC	Yes	No	Yes	H0006																																																																																																																																								
7	\$700	1	100	10	PLC	Yes	No	Yes	H0007																																																																																																																																								
8	\$800	1	100	10	PLC	Yes	No	Yes	H0008																																																																																																																																								
9	\$900	1	100	10	PLC	Yes	No	Yes	H0009																																																																																																																																								
10	\$1000	1	100	10	PLC	Yes	No	Yes	H0010																																																																																																																																								
11	\$1100	1	100	10	PLC	Yes	No	Yes	H0011																																																																																																																																								
12	\$1200	1	100	10	PLC	Yes	No	Yes	H0012																																																																																																																																								
<ul style="list-style-type: none"> <li>■ You can determine the sampling timing by triggering the history buffer sampling flags. When the history buffer sampling flag is ON, the register samples one time. To reactivate the function, you must turn the flag OFF and then ON again.</li> </ul>																																																																																																																																																	

- History buffer clear register

Table 4.1.6 Control Block - History buffer clear register

History buffer clear register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(2)								(1)							
(1) b0 - b11 History buffer clear flags 1 - 12 (b0 refers to flag 1, and so forth.)								(2) b12 - b15 Reserved							
<p>b0 - b11 – History buffer clear flags (1 - 12)</p> <p>You can clear the buffer by triggering the history buffer clear flags. When the history buffer clear flag is ON, the HMI clears the buffer. To reactivate the function, you must turn the flag OFF and then ON again.</p>															

#### ■ Recipe control register

Table 4.1.7 Control Block - Recipe control register

## Recipe control register

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
-----	-----	-----	-----	-----	-----	----	----	----	----	----	----	----	----	----	----

(6) (5) (4) (3) (2) (1)

- (1) b0 Recipe number change flag (16-bit)
- (2) b1 Recipe read flag (PLC → HMI)
- (3) b2 Recipe write flag (HMI → PLC)
- (4) b3 Recipe group change flag (32-bit)
- (5) b4 - b7 Reserved
- (6) b8 - b15 Designate recipe group to be changed

b0 – Recipe number change flag	<ul style="list-style-type: none"> <li>■ This is applicable to 16-bit recipes.</li> <li>■ There are two ways to call or change the recipe number:           <ul style="list-style-type: none"> <li>a. Use the HMI internal register RCPNO.</li> </ul> </li> </ul>
--------------------------------	---

Numeric Entry element

b0 – Recipe number change flag	<ul style="list-style-type: none"> <li>■ b. Use the recipe number change flag.</li> <li>■ To change the HMI recipe number with this flag, you should first write the recipe number to be changed into the recipe number control register (Table 4.1.8 recipe number control register) and then trigger the recipe number change flag.</li> <li>■ When the recipe number change flag is turned ON, the recipe number is changed according to the number defined in the recipe number control register, and the number of the RCPNO internal register is changed automatically. To reactivate the function, you must turn the flag OFF and then ON again.</li> </ul>
--------------------------------	--

b1 – Recipe read flag (PLC → HMI)

When the recipe read flag is turned ON, the HMI reads the controller recipe data and writes the data into the designated recipe data register. To reactivate the function, you must turn the flag OFF and then ON again.

b2 – Recipe write flag (HMI → PLC)

When the recipe write flag is turned ON, the HMI writes the designated recipe data into the controller register. To reactivate the function, you must turn the flag OFF and then ON again.

b3 – Recipe group change flag	<ul style="list-style-type: none"> <li>■ This is applicable to 32-bit recipes.</li> <li>■ There are two ways to call or change the recipe group:           <ul style="list-style-type: none"> <li>a. Use the HMI internal register RCPG.</li> </ul> </li> </ul>
-------------------------------	---

Numeric Entry element

b3 – Recipe group change flag	<ul style="list-style-type: none"> <li>■ b. Use the recipe group change flag.</li> <li>■ When the recipe group change flag is turned ON, the recipe group is changed according to the number defined in the recipe group change bits (b8 - b15), and the number of the RCPG internal register is changed automatically. To reactivate the function, you must turn the flag OFF and then ON again.</li> </ul>
-------------------------------	--

b8 - b15 – Designate recipe group to be changed

You can designate the recipe group to be changed with the high byte (Bits 8 - 15) from the recipe control register. By activating the recipe group change flag, the HMI changes the number of the RCPG internal register, thus changing the recipe group.

4

#### ■ Recipe number control register

Table 4.1.8 Control Block - Recipe number control register

#### ■ System control flag register

Table 4.1.9 Control Block - System control flag register

System control flag register	
<p>b8 – Printer flag</p>	<ul style="list-style-type: none"> <li>■ The DOPSoft provides two print functions, general printing and Screen Print Setup.</li> <li>■ Note that only one option is enabled at a time. The Screen Print Setup is prioritized.</li> <li>■ When the printer flag is turned ON, the printing task runs according to the set mode: general printing or Screen Print Setup; when the printer flag is OFF, the printer function is idled.</li> </ul> <p style="text-align: center;"><b>Printer action process</b></p> <pre> graph TD     Start([Start]) --&gt; ReadP{Read printer status}     ReadP -- OFF --&gt; PrintFunc[Screen Print Setup or general printing]     PrintFunc --&gt; End([End])     ReadP -- ON --&gt; PrinterFlag{Printer flag}     PrinterFlag -- Yes --&gt; PrintFunc     PrinterFlag -- No --&gt; ReadP   </pre>
<p>b9 - Printer form feed flag</p>	<p>When the printer form feed flag is turned ON, the printer retracts the paper and aligns the paper for the next run automatically; when the flag is OFF, the printer form feed function is idled.</p> <p style="text-align: center;"><b>Printer action process</b></p> <pre> graph TD     Start([Start]) --&gt; ReadP{Read printer status}     ReadP -- OFF --&gt; PrintFunc[The printer prints the next page automatically.]     PrintFunc --&gt; End([End])     ReadP -- ON --&gt; PrinterFormFeed{Printer form feed flag}     PrinterFormFeed -- Yes --&gt; PrintFunc     PrinterFormFeed -- No --&gt; ReadP   </pre>
<p>b10 – Reacquire the Ethernet IP address</p>	<p>When the HMI does not get the IP address assigned by the DHCP server, you can trigger this bit to reacquire the IP address.</p> <p>If you are using the DOP-112 or DOP-115 models, b10 is for getting the IP address with LAN1 and b11 is for getting the IP address with LAN2.</p>

- Enhanced recipe control register

Table 4.1.10 Control Block - Enhanced recipe control register

4

Enhanced recipe control register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
							(6)					(5)			(4) (3) (2) (1)
(1) b0 Enhanced recipe number change flag (ENRCPO)															
(2) b1 Enhanced recipe read flag (PLC → HMI)															
(3) b2 Enhanced recipe write flag (HMI → PLC)															
(4) b3 Enhanced recipe group change flag (ENRCPG)															
(5) b4 - b7 Reserved															
(6) b8 - b15 Designate enhanced recipe group to be changed															
b0 – Enhanced recipe number change flag	<ul style="list-style-type: none"> <li>■ This is applicable to enhanced recipes.</li> <li>■ There are two ways to call or change the enhanced recipe number:           <ul style="list-style-type: none"> <li>a. Use the HMI internal register ENRCPO.</li> </ul>              b. Use the enhanced recipe number change flag.         </li> <li>■ To change the HMI enhanced recipe number with this flag, you should first write the enhanced recipe number to be changed into the recipe number control register (Table 4.1.11 enhanced recipe number control register) and then trigger the enhanced recipe number change flag.</li> <li>■ When the enhanced recipe number change flag is turned ON, the enhanced recipe number is changed according to the number defined in the enhanced recipe number control register, and the number in the internal register ENRCPO is changed automatically. To reactivate the function, you must turn the flag OFF and then ON again.</li> </ul>														
b1 – Enhanced recipe read flag (PLC → HMI)	<p>When the enhanced recipe read flag is turned ON, the HMI reads the controller enhanced recipe data and writes them into the designated enhanced recipe data register. To reactivate the function, you must turn the flag OFF and then ON again.</p>														
b2 – Enhanced recipe write flag (HMI → PLC)	<p>When the enhanced recipe write flag is turned ON, the HMI writes the designated enhanced recipe data into the controller register. To reactivate the function, you must turn the flag OFF and then ON again.</p>														
b3 – Enhanced recipe group change flag	<ul style="list-style-type: none"> <li>■ This is applicable to enhanced recipes.</li> <li>■ There are two ways to call or change enhanced recipe group:           <ul style="list-style-type: none"> <li>a. Use the HMI internal register ENRCPG.</li> </ul>              b. Use the enhanced recipe group change flag.         </li> <li>■ When the enhanced recipe group change flag is turned ON, the enhanced recipe group is changed according to the number defined in the enhanced recipe group change bits (b8 - b15), and the number in the internal register ENRCPG is changed automatically. To reactivate the function, you must turn the flag OFF and then ON again.</li> </ul>														
b8 - b15 Designate enhanced recipe group to be changed	<p>You can designate the enhanced recipe group to be changed with the high byte (Bits 8 - 15) from the enhanced recipe control register. By activating the enhanced recipe group change flag, the HMI changes the number in the internal register ENRCPG, thus changing the enhanced recipe group.</p>														

- Enhanced recipe number control register

Table 4.1.11 Control Block - Enhanced recipe number control register

Enhanced recipe number control register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
															Enhanced recipe number designation
b0 - b15 – Enhanced recipe number designation	You can designate the enhanced recipe number to be changed with the enhanced recipe number control register. By activating the enhanced recipe number change flag (Table 4.1.10 enhanced recipe control register b0), the HMI changes the number of the ENRCPNO internal register, thus changing the enhanced recipe number.														

## 4.2 Status Area

You can define the register addresses of the controller or the HMI internal memory with the Status Area. You can view the present HMI status with the Status Area settings, such as current screen number, current security level, curves and history buffer sampling status, recipe control, enhanced recipe control, multi-language settings, and printing. The Status Area is a continuous data block in units of words.

Note: when the function of Control Block is not configured, the Status Area cannot monitor the status.

Furthermore, the addresses of the Control Block and the Status Area must not be identical.

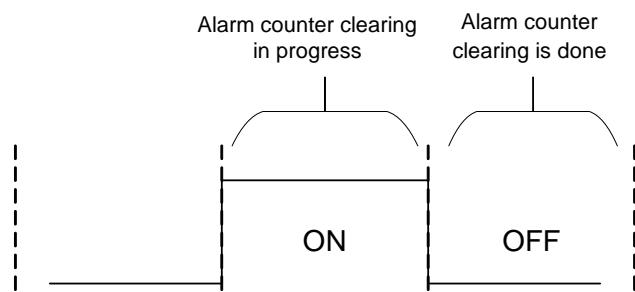
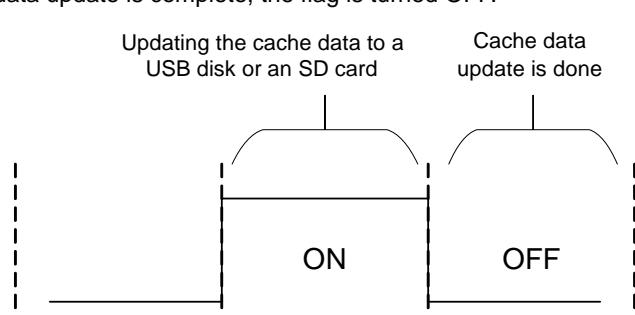
Table 4.2.1 Status Area - Register type

Status Area register type	Controller register		Internal memory	
	Register (D)	Example	Register (\$)	Example
General control status	Dn	D10	\$n	\$25
Screen number status	Dn+1	D11	\$n+1	\$26
Curve control status	Dn+2	D12	\$n+2	\$27
History buffer sampling status	Dn+3	D13	\$n+3	\$28
History buffer clear status	Dn+4	D14	\$n+4	\$29
Recipe control status	Dn+5	D15	\$n+5	\$30
Recipe number control status	Dn+6	D16	\$n+6	\$31
System control flag status	Dn+7	D17	\$n+7	\$32
Enhanced recipe control status	Dn+8	D18	\$n+8	\$33
Enhanced recipe number control status	Dn+9	D19	\$n+9	\$34

■ General control status register

Table 4.2.2 Status Area - General control register

General control status register																
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	
(9)							(8)		(7)	(6)	(5)	(4)	(3)	(2)	(1)	
(1) b0 Screen switch status flag																
(2) b1 - b2 Reserved																
(3) b3 Alarm buffer clear status flag																
(4) b4 Alarm counter clear status flag																
(5) b5 External storage device cache write status flag																
(6) b6 Remote control lock flag																
(7) b7 Reserved																
(8) b8 - b11 Flags for user security level settings																
(9) b12 - b15 Reserved																
b0 – Screen switch status flag	<ul style="list-style-type: none"> <li>■ When the screen is switched, the flag is turned ON.</li> <li>■ When the screen switch is complete, the flag is turned OFF.</li> </ul> <p>The diagram shows a horizontal timeline with two vertical dashed lines. Between these lines, a rectangular pulse is labeled 'ON'. Above the pulse, a bracket spans its width with the text 'Screen switch in progress'. To the right of the pulse, another bracket spans its width with the text 'Screen switch is done'.</p> <p>Screen switch status flag</p>															
b3 – Alarm buffer clear status flag	<ul style="list-style-type: none"> <li>■ When the HMI is clearing the alarm buffer, the flag is turned ON.</li> <li>■ When clearing the alarm buffer is complete, the flag is turned OFF.</li> </ul> <p>The diagram shows a horizontal timeline with two vertical dashed lines. Between these lines, a rectangular pulse is labeled 'ON'. Above the pulse, a bracket spans its width with the text 'Alarm buffer clear in progress'. To the right of the pulse, another bracket spans its width with the text 'Alarm buffer clear is done'.</p> <p>Alarm buffer clear status flag</p>															

General control status register																																																							
<p>b4 – Alarm counter clear status flag</p>	<ul style="list-style-type: none"> <li>■ When the HMI clears the alarm counter, the flag is turned ON.</li> <li>■ When clearing the alarm counter is complete, the flag is turned OFF.</li> </ul>  <p style="text-align: center;">Alarm counter clearing in progress      Alarm counter clearing is done</p> <p style="text-align: center;">ON    OFF</p> <p style="text-align: center;">Alarm counter clear status flag</p>																																																						
<p>b5 – External storage device cache write status flag</p>	<ul style="list-style-type: none"> <li>■ When the HMI cache data is updated into a USB Disk or an SD Card, the flag is turned ON.</li> <li>■ When data update is complete, the flag is turned OFF.</li> </ul>  <p style="text-align: center;">Updating the cache data to a USB disk or an SD card      Cache data update is done</p> <p style="text-align: center;">ON    OFF</p> <p style="text-align: center;">Flag for instant data update of USB disk or SD card</p>																																																						
<p>b6 – Remote control lock flag</p>	<ul style="list-style-type: none"> <li>■ This flag indicates whether VNC is operable. When this flag is turned ON, VNC is not operable but can be monitored. When this flag is turned OFF, VNC is operable.</li> <li>■ The Action complete clear flag function is not applicable to this flag.</li> </ul>																																																						
<p>b8 - b11 – Flags for user security level settings</p>	<p>You can find the present HMI operator security level with Bit 8, Bit 9 and Bit 10. Bit 11 is the highest security level.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Security level</th> <th colspan="4" style="text-align: center;">Flag control</th> </tr> <tr> <th style="text-align: center;">Bit 11</th> <th style="text-align: center;">Bit 10</th> <th style="text-align: center;">Bit 9</th> <th style="text-align: center;">Bit 8</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Security level 0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">Security level 1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Security level 2</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">Security level 3</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Security level 4</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">Security level 5</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Security level 6</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">Security level 7</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">Highest security level</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> </tbody> </table>	Security level	Flag control				Bit 11	Bit 10	Bit 9	Bit 8	Security level 0	0	0	0	0	Security level 1	0	0	0	1	Security level 2	0	0	1	0	Security level 3	0	0	1	1	Security level 4	0	1	0	0	Security level 5	0	1	0	1	Security level 6	0	1	1	0	Security level 7	0	1	1	1	Highest security level	1	0	0	0
Security level	Flag control																																																						
	Bit 11	Bit 10	Bit 9	Bit 8																																																			
Security level 0	0	0	0	0																																																			
Security level 1	0	0	0	1																																																			
Security level 2	0	0	1	0																																																			
Security level 3	0	0	1	1																																																			
Security level 4	0	1	0	0																																																			
Security level 5	0	1	0	1																																																			
Security level 6	0	1	1	0																																																			
Security level 7	0	1	1	1																																																			
Highest security level	1	0	0	0																																																			

■ Screen number status register

Table 4.2.3 Status Area - Screen number register

Screen number status register																
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	
Screen number																
b0 - b15 – Screen number status	You can check the number of the last opened screen with this status register.															

■ Curve control status register

Table 4.2.4 Status Area - Curve control register

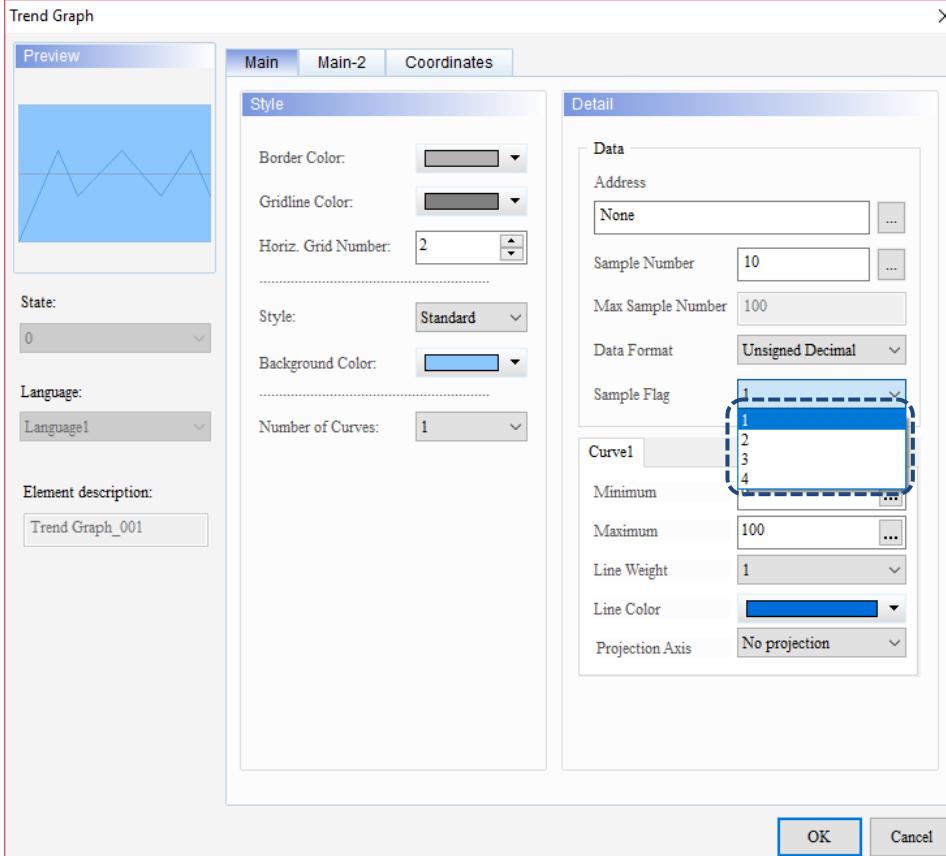
Curve control status register																
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	
	(4)				(3)				(2)							(1)
(1)	b0 - b3 Curve sampling status flags 1 - 4 (b0 refers to flag 1, and so forth)				(2)				(3)							
(2)	b4 - b7 Reserved				(4)				(1)							
(3)	b8 - b11 Curve clear status flags 1 - 4 (b8 refers to flag 1, and so forth)				(1)				(2)							
(4)	b12 - b15 Reserved															
b0 - b3 – Curve sampling status flags (1 - 4)	<p>■ When the Trend Graph or X-Y Chart elements sample the data, the HMI turns the corresponding curve sampling status flag ON. When the sampling is complete, the curve sampling status flag is turned OFF in real time.</p> <p>Curve sampling in progress      Curve sampling is done</p> <p>ON      OFF</p> <p>Curve sampling status flag</p>															

b0 - b3 –  
Curve  
sampling  
status flags  
(1 - 4)

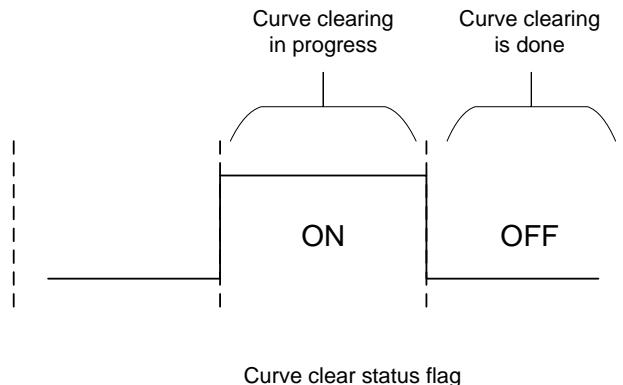
b8 - b11 –  
Curve clear  
status flags  
(1 - 4)

### Curve control status register

- The sampling flag 1 of the Trend Graph element corresponds to the curve sampling status flag 1; the sampling flag 2 of the Trend Graph element corresponds to the curve sampling status flag 2, and so forth.



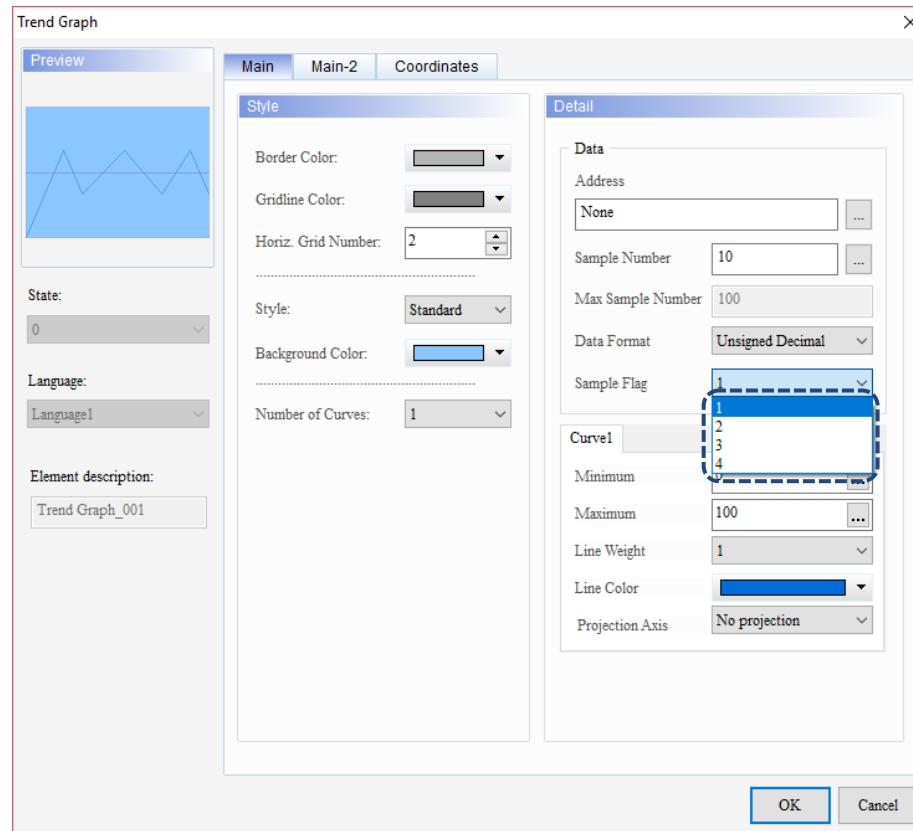
When the Trend Graph or X-Y Chart elements clear the data, the HMI turns the corresponding curve clear status flag ON. When the clearing is complete, the curve clear status flag is turned OFF in real time.



**Curve control status register**

The clear flag 1 of the Trend Graph element corresponds to the curve clear status flag 1; the clear flag 2 of the Trend Graph element corresponds to the curve clear flag 2, and so forth.

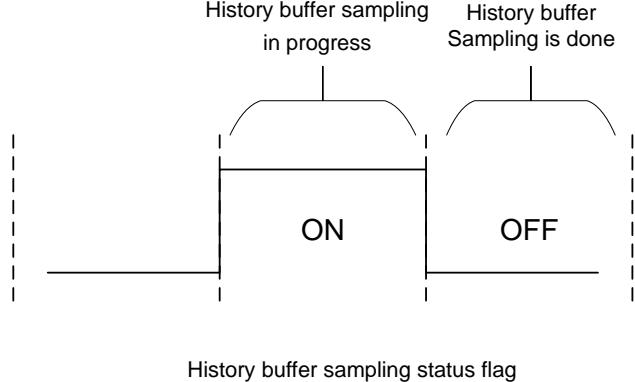
b8 - b11 –  
Curve clear  
status flags  
(1 - 4)



- History buffer sampling status register

Table 4.2.5 Status Area - History buffer sampling register

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History buffer sampling status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
(2)								(1)							
(1) b0 - b11 History buffer sampling flags 1 - 12 (b0 refers to flag 1, and so forth)								(2) b12 - b15 Reserved							
<p>When the HMI samples the history buffer, it turns the corresponding history buffer sampling status flag ON. After the sampling is complete, the history buffer sampling status flag is turned OFF in real time.</p>  <p>b0 - b11 – History buffer sampling status flags (1 - 12)</p>															

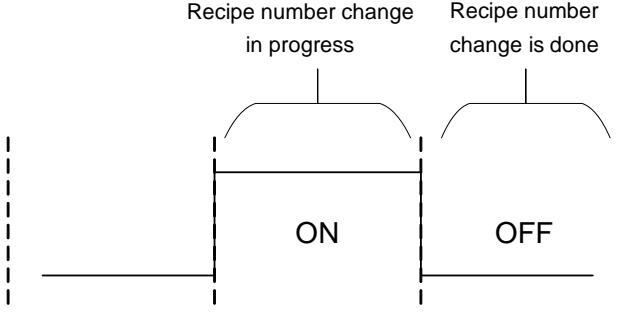
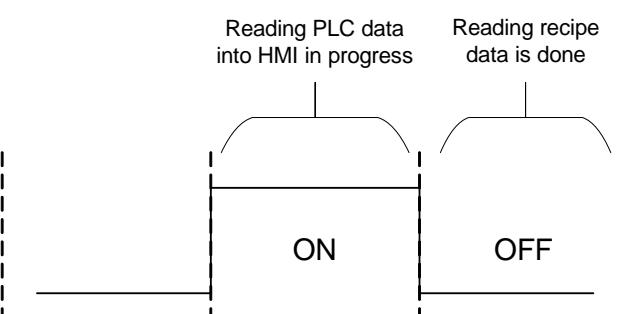
- History buffer clear status register

Table 4.2.6 Status Area - History buffer clear register

History buffer clear status register																	
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0		
(2)								(1)									
(1) b0 - b11 History buffer clear status flags 1 - 12 (b0 refers to flag 1, and so forth)								(2) b12 - b15 Reserved									
b0 - b11 – History buffer clear status flags (1 - 12)								<p>When the HMI clears the history buffer, it turns the corresponding history buffer clear status flag ON. After the clearing is complete, the history buffer clear status flag is turned OFF in real time.</p> <p>History buffer clearing in progress</p> <p>History buffer clearing is done</p> <p>ON</p> <p>OFF</p> <p>History buffer clear status flag</p>									

- Recipe control status register

Table 4.2.7 Status Area - Recipe control register

<b>Recipe control status register</b>															
b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0															
(4) (3) (2) (1)															
(1) b0 Recipe number change status flag (2) b1 Recipe read status flag (PLC → HMI) (3) b2 Recipe write status flag (HMI → PLC) (4) b3 - b15 Reserved															
b0 – Recipe number change status flag	<p>When the control recipe number in the Control Block is changed, the recipe number change status flag is turned ON; when the HMI changes the recipe number and completes updating the RCPNO number, the recipe number change status flag is turned OFF.</p>  <p>The diagram shows a horizontal timeline with two vertical dashed lines. Between these lines, there is a rectangular pulse labeled "ON" at its peak. Above the pulse, the text "Recipe number change in progress" is connected by a bracket. After the pulse ends, it drops to a lower level labeled "OFF". Above "OFF", the text "Recipe number change is done" is connected by a bracket.</p> <p style="text-align: center;">Recipe number change status flag</p>														
	<p>When the HMI reads one set of recipe data from the Control Block, the recipe read status flag is turned ON; when the HMI completes reading and saving the recipe through the Control Block, the recipe read status flag is turned OFF.</p>  <p>The diagram shows a horizontal timeline with two vertical dashed lines. Between these lines, there is a rectangular pulse labeled "ON" at its peak. Above the pulse, the text "Reading PLC data into HMI in progress" is connected by a bracket. After the pulse ends, it drops to a lower level labeled "OFF". Above "OFF", the text "Reading recipe data is done" is connected by a bracket.</p> <p style="text-align: center;">Recipe read status flag</p>														

Recipe control status register	
b2 – Recipe write status flag	<p>When the HMI sends one set of designated recipe data to the Control Block, the recipe write status flag is turned ON; when the HMI completes writing the recipe into the Control Block, the recipe write status flag is turned OFF.</p>

- Recipe number control status register

Table 4.2.8 Status Area - Recipe number control register

Recipe number control status register															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Recipe number designation status															
b0 - b15 – Recipe number designation status	<ul style="list-style-type: none"> <li>■ No matter you designate the recipe number by using the recipe number change flag of the Control Block or by the RCPNO register, the recipe number status register updates its value as soon as the recipe number changes.</li> <li>■ The recipe number designation flag must work with the recipe number change flag. Refer to Table 4.2.7 Recipe control status register b0.</li> </ul>														

- System control status register

Table 4.2.9 Status Area - System control register

System control status register																									
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0										
(5)	(4)	(3)	(2)						(1)																
(1)	b0 - b7 Multi-language status value																								
(2)	b8 Printer status flag																								
(3)	b9 Printer form feed status flag																								
(4)	b10 - b11 Status value of reacquiring the Ethernet IP address (If you are using the DOP-112 and DOP-115 models, b10 is for LAN1 control and b11 is for LAN2 control.)																								
(5)	b12 - b15 Reserved																								
b0 - b7 – Multi-language status value	Display the corresponding status value of the language in use.																								
b8 – Printer status flag	When the printer status flag is turned ON, the printer prints the display screen or the edited screen of the HMI; when the printer status flag is turned OFF, the printer is idled.																								
b9 – Printer form feed status flag	When the printer form feed status flag is turned ON, the printer retracts the paper and aligns the paper for the next run automatically; when the flag is OFF, the printer is idled.																								
b10 - b11 – Status value of reacquiring the Ethernet IP address	Display whether the Ethernet IP address is reacquired.																								

- Enhanced recipe control status register

Table 4.2.10 Status Area - Enhanced recipe control register

## Enhanced recipe control status register

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
-----	-----	-----	-----	-----	-----	----	----	----	----	----	----	----	----	----	----

(4)

(3)

(2)

(1)

- (1) b0 Enhanced recipe number change status flag
- (2) b1 Enhanced recipe read status flag (PLC → HMI)
- (3) b2 Enhanced recipe write status flag (HMI → PLC)
- (4) b3 - b15 Reserved

When the enhanced control recipe number in the Control Block is changed, the enhanced recipe number status change flag is turned ON; after the HMI changes the recipe number and updates the ENRCPNO number, the enhanced recipe number change status flag is turned OFF in real time.

b0 – Enhanced recipe number change status flag

Changing enhanced recipe number in progress

Changing enhanced recipe number is done

The diagram shows a single vertical line representing the status flag. It has two distinct segments: a lower segment labeled 'ON' and an upper segment labeled 'OFF'. Above the 'ON' segment, there is a bracket labeled 'Changing enhanced recipe number in progress'. Above the 'OFF' segment, there is a bracket labeled 'Changing enhanced recipe number is done'. The line starts at a baseline, goes up to the 'ON' segment, then down to the 'OFF' segment, and then back up to the baseline.

Status flag of enhanced recipe number change

b1 – Enhanced recipe read status flag

When the HMI reads one set of recipe data through the Control Block, the enhanced recipe read status flag is turned ON; when the reading and saving of the enhanced recipe via the Control Block is complete, the enhanced recipe read status flag is turned OFF in real time.

HMI is reading the data from PLC

Reading the enhanced recipe data is done

The diagram shows a single vertical line representing the status flag. It has two distinct segments: a lower segment labeled 'ON' and an upper segment labeled 'OFF'. Above the 'ON' segment, there is a bracket labeled 'HMI is reading the data from PLC'. Above the 'OFF' segment, there is a bracket labeled 'Reading the enhanced recipe data is done'. The line starts at a baseline, goes up to the 'ON' segment, then down to the 'OFF' segment, and then back up to the baseline.

Enhanced recipe read status flag

Enhanced recipe control status register	
b2 – Enhanced recipe write status flag	When the HMI sends one set of designated enhanced recipe data through the Control Block, the enhanced recipe write status flag is turned ON; after the enhanced recipe is written through the Control Block, the enhanced recipe write status flag is turned OFF in real time.

- Enhanced recipe number control status register

Table 4.2.11 Status Area - Enhanced recipe number control register

Enhanced recipe number control status register																
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	Designation status of the enhanced recipe number
b0 - b15 – Enhanced recipe number designation status	<ul style="list-style-type: none"> <li>■ No matter you designate the enhanced recipe number by using the enhanced recipe number change flag of the Control Block or by the ENRCPNO register, the enhanced recipe number status register updates its value as soon as the value changes. Thus, the Control Block accesses the recipe number with this register.</li> <li>■ The enhanced recipe number designation status flag must work with the enhanced recipe number change status flag. Refer to Table 4.2.10 Enhanced recipe control status register b0.</li> </ul>															

# 5

## Buttons

This chapter introduces the usage for the HMI Button elements.

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This chapter introduces the usage and setting details for the DOPSoft Button elements.

■ Button element classification

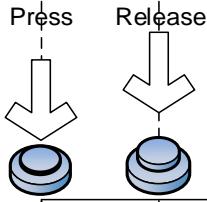
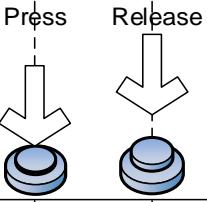
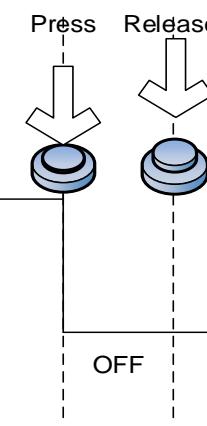
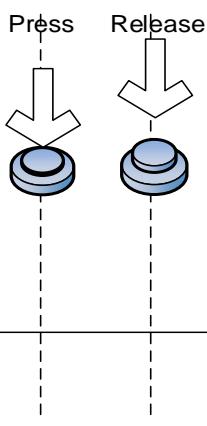
Button 		Set to On
		Set to Off
		Momentary
		Maintained
		Multistate
		Set Value
		Set Constant
		Increment
		Decrement
		Goto Screen
		System Date and Time
		Password Table Setup
		Enter Password
		Contrast Brightness
		Set Low Security
		System Menu
		Report List
		Screen Capture
		Remove Storage
		Import / Export Recipe
		Calibration
		Language Change
		Import / Export FileSlot
		Multiple actions

## 5.1 Set to On / Set to Off / Maintained / Momentary

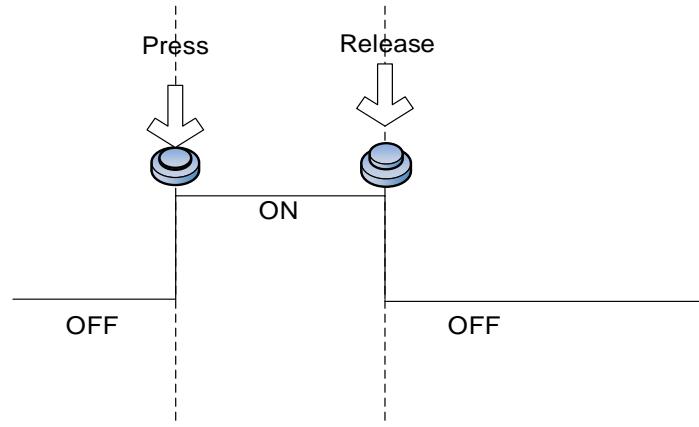
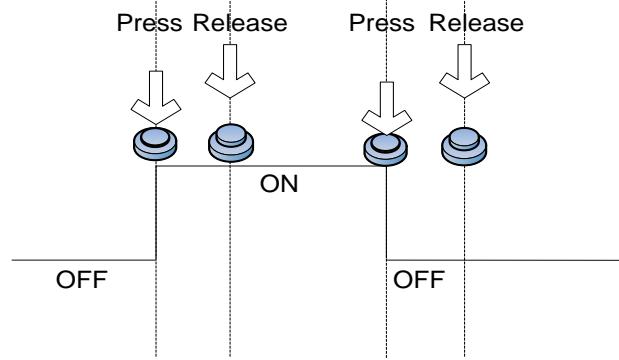
Set to On / Set to Off / Maintained / Momentary elements switch the specified communication address to ON / OFF by touching the buttons or running the macros.

You can create the Set to On and Set to Off elements by clicking [Elements] > [Button]. You can also click the icons on the element toolbar, or right-click the screen and select **Button** to create these elements.

Table 5.1.1 Differences among Set to On / Set to Off / Maintained / Momentary buttons

	 <b>ON</b>  <b>OFF</b>
<b>ON</b>	<p><b>Set to On</b></p> <p>The specified communication address switches to ON when you press the Set to On button. You cannot switch the state to OFF by pressing the Set to On button again.</p>
<b>OFF</b>	 <b>ON</b>  <b>OFF</b>
	<p><b>Set to Off</b></p> <p>The specified communication address switches to OFF when you press the Set to Off button. You cannot switch the state to ON by pressing the Set to Off button again.</p>

## 5

	 <p>Momentary</p> <p>The Momentary button allows you to reverse the specified communication address values. When you release the Momentary button, the communication address recovers to its original state. To keep the communication address values reversed, you must press the button continuously.</p>
	 <p>Maintained</p> <p>The Maintained button allows you to reverse the specified communication address values. The Maintained button differs from the Momentary button in that when you release the Maintained button, the specified communication address values stay reversed. You need to press the Maintained button again for the specified communication address to recover to its original state.</p>

The DOPSoft also provides convenient programming tools for you to double-click the elements to set their properties and thus edit the application screens more easily.

When you double-click the Set to On / Set to Off / Momentary / Maintained elements, the property page is shown as follows.

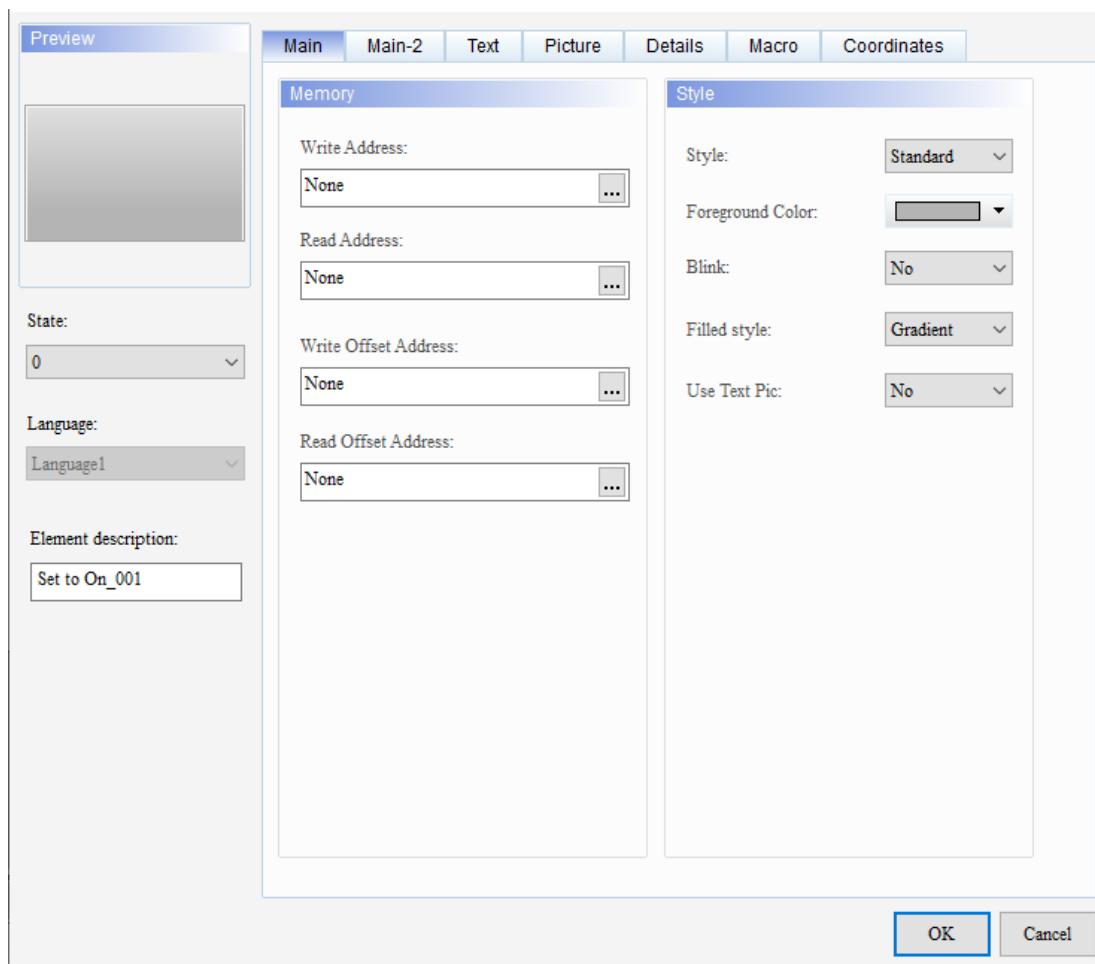


Figure 5.1.1 Properties of Set to On / Set to Off / Momentary / Maintained

Table 5.1.2 Function page of Set to On / Set to Off / Momentary / Maintained

<b>Set to On / Set to Off / Maintained / Momentary</b>	
<b>Function page</b>	<b>Description</b>
Preview	View State 0 or 1 and multi-language data display.
Main	Set the Write and Read Addresses, and Write and Read Offset Addresses. Set the Style, Foreground Color, Blink, Filled style, and Use Text Pic function.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color options.
Details	<b>Set to On / Set to Off / Maintained</b>
	Set the Interlock Address, Interlock State, Interlock Display Mode, Invisible Address, User Security Level, Set Low Security, Min. Press Time, Confirm Window, and Modifier + Hot Key.
	<b>Momentary</b>
	Set the Interlock Address, Interlock State, Interlock Display Mode, Invisible Address, User Security Level, Set Low Security, Min. Press Time, Confirm Window, Enable OFF Tone, and Modifier + Hot Key.
Macro	Set the On Macro, Off Macro, Before Execute Macro, and After Execute Macro options.
Coordinates	Set the X and Y coordinates, width, and height of the button elements.

## ■ Main

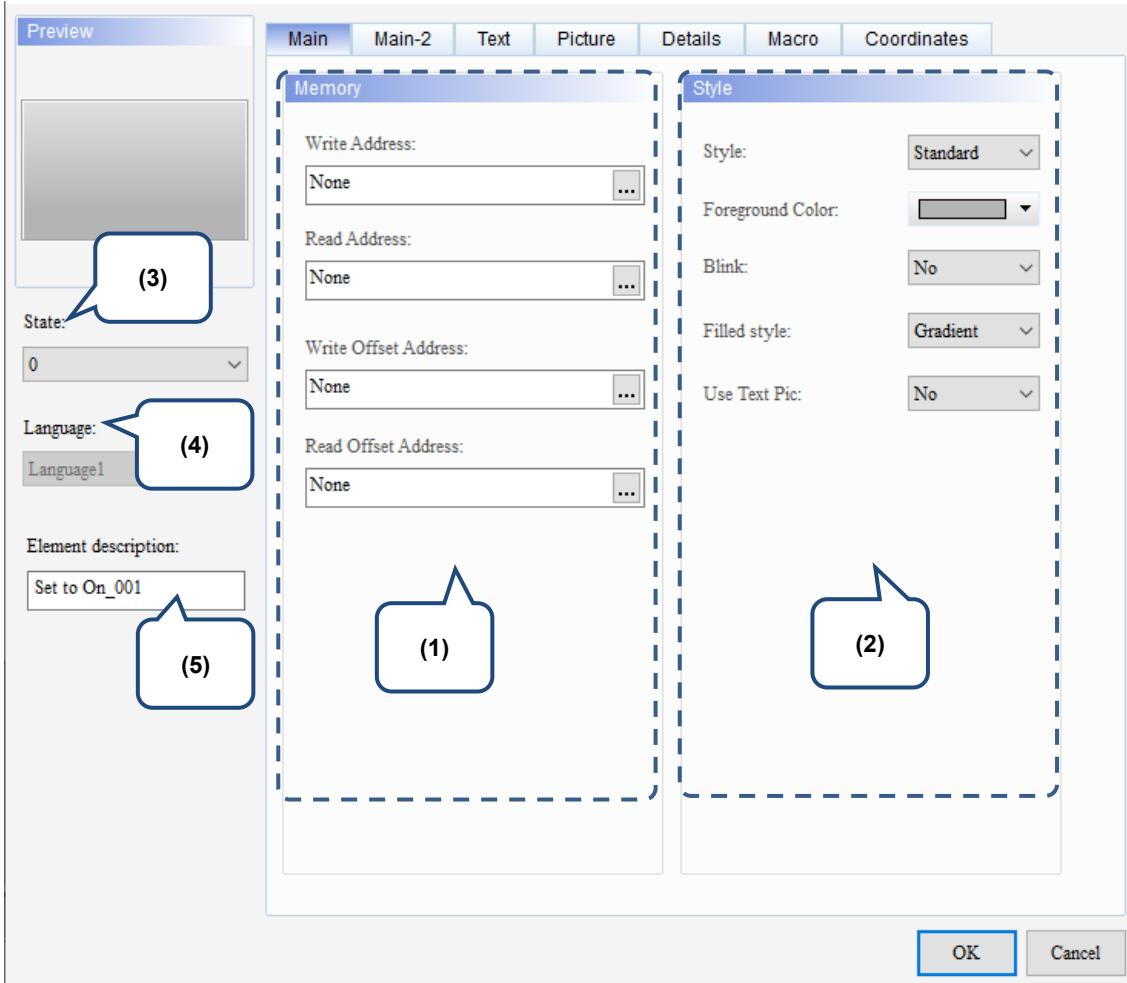
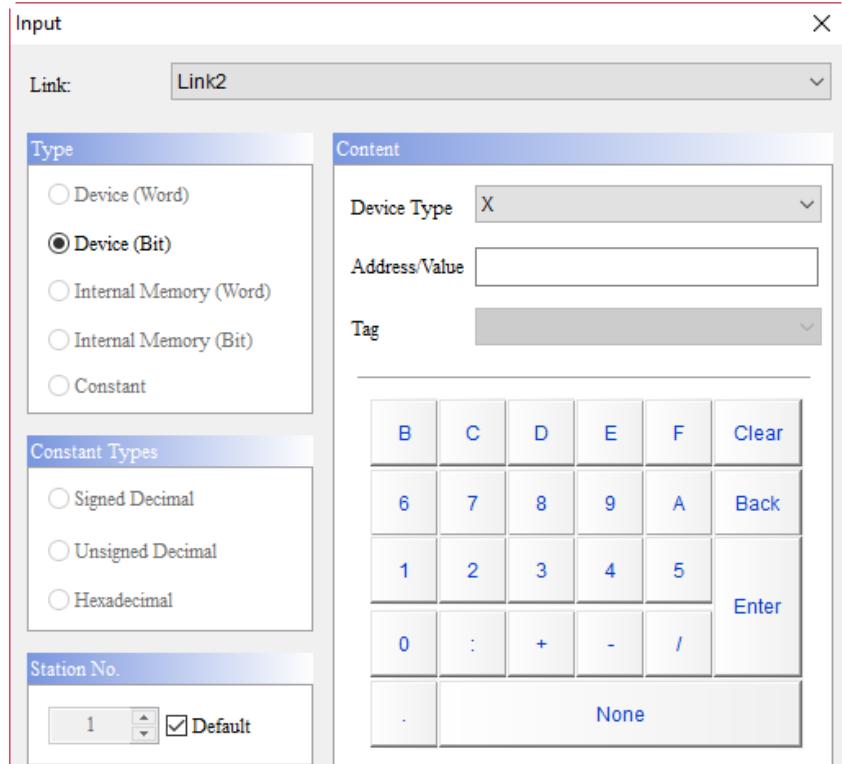
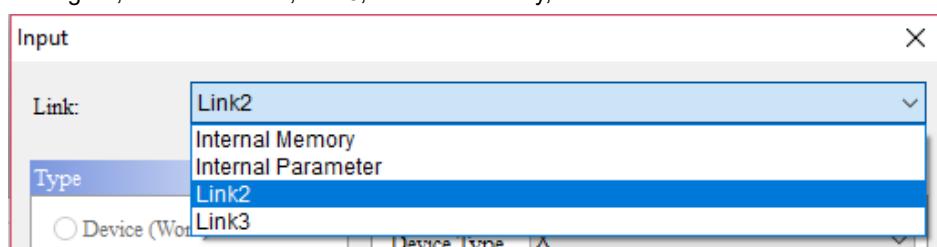


Figure 5.1.2 Main property page for the Set to On / Set to Off / Momentary / Maintained elements

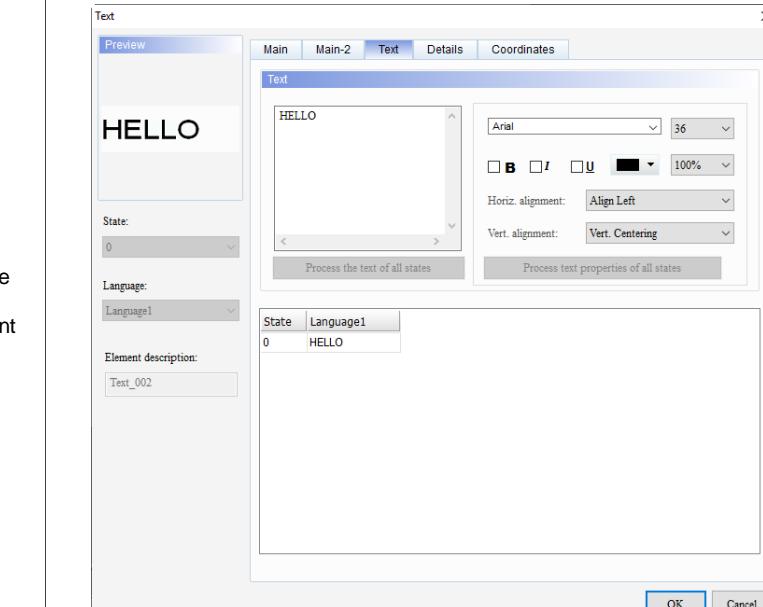
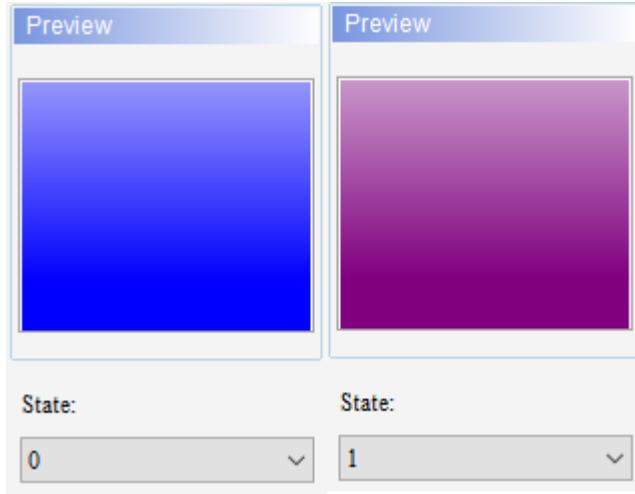
## 5

No.	Property	Function description
(1)	Memory	<p>■ Write Address:</p> <p>1. You can select the internal memory or the controller register address. If you set the Write Address without setting the Read Address, the HMI automatically reads the Write Address data.</p>  <p>2. You can select the link for different communication devices from the Link. It displays the quantity of the set links. If you have multiple communication devices, you can select the required link from the drop-down list box. As shown in the following figure, there are Link2, Link3, Internal Memory, and Internal Parameter.</p>  <p>3. Select the Link and Device Type, input correct addresses, press <b>OK</b>, and the selected element records the corresponding data.</p> <ul style="list-style-type: none"> <li>■ Read Address: you can select the internal memory or the controller register address. Other settings are the same as that of Write Address.</li> <li>■ Write Offset Address and Read Offset Address: refer to the instructions in Appendix D Write and Read Offset Addresses.</li> </ul>

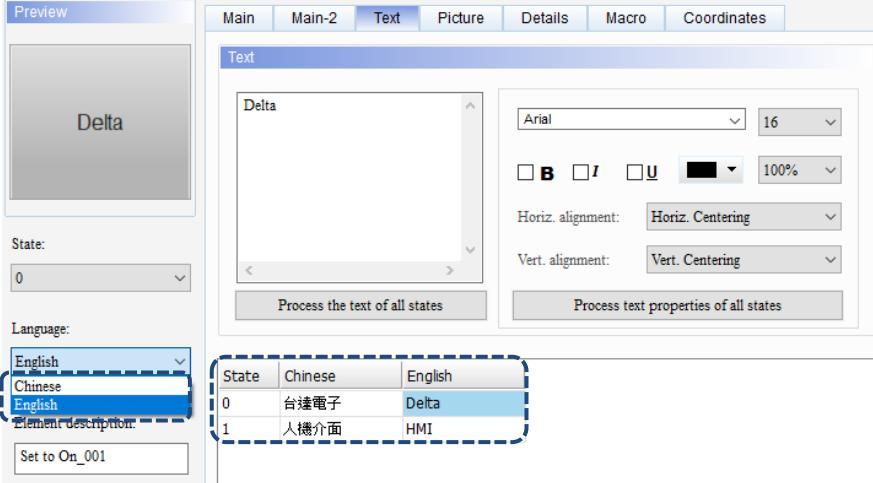
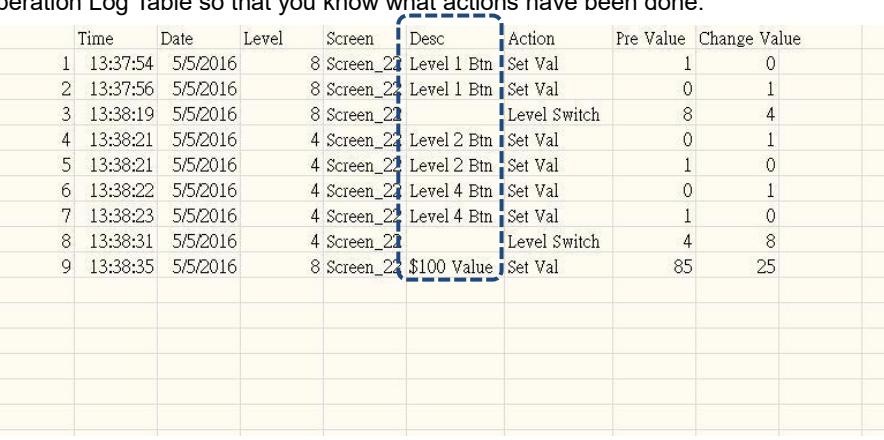
No.	Property	Function description												
(2)	Style	<p>■ Style: the available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> </table> <p>■ Foreground Color:</p> <ol style="list-style-type: none"> <li>1. Set the foreground color of the element.</li> <li>2. When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ol> <p>Foreground Color: </p> <p>■ Blink:</p> <p>You can set the blink prompt of the element when the button changes states. The blink color is the opposite color of the foreground color.</p>	Standard	Raised	Round	Invisible					Standard	Raised	Round	Invisible
Standard	Raised	Round	Invisible											
Standard	Raised	Round	Invisible											

5

No.	Property	Function description
		<p>■ Filled style: The default fill style for the elements on the DOP-100 models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p>
(2)	Style	<p>■ Use Text Pic: Unlike the DOP-B series models using pictures to present all texts, the DOP-100 series models present directly with the texts. Therefore, if the language you use for the element is not yet supported by the PC, it is possible to cause missing characters and garbled texts when the element is displayed on the HMI. To have the text display effect be the same as that on the DOP-B models, the Use Text Pic function is added for the Text, Button, and General Message Display elements. Refer to the following examples.</p> <p>Use Text Pic function</p> <p>■ Create a Text element and go to the [Main] tab to set the Use Text Pic function.</p> <p>Note: if you use the DOPSoft 4.00.06 version to open a DOP-B project, the Use Text Pic function is enabled (Yes) by default. If you add a DOP-100 project, then the Use Text Pic function is disabled (No) by default.</p>

No.	Property	Function description			
(2)	Style	<p>Use Text Pic function</p> <ul style="list-style-type: none"> <li>■ Go to the [Text] tab, and type the text and set its font.</li> </ul> 			
		<ul style="list-style-type: none"> <li>■ After creating the element, download it to the HMI.</li> <li>■ The following table shows the results of using and not using the Use Text Pic function.</li> </ul> <table border="1"> <thead> <tr> <th>Use Text Pic is Yes</th> <th>Use Text Pic is No</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>		Use Text Pic is Yes	Use Text Pic is No
Use Text Pic is Yes	Use Text Pic is No				
(3)	State	<p>You can preview or change the parameters set for each button element by switching the states.</p> 			

5

No.	Property	Function description																																																																																
(4)	Language	<p>If you have set the language data, you can edit the properties of the displayed text with the Language setting of the element.</p> 																																																																																
(5)	Element description	<p>Record the button actions to be executed. The record is written into the CSV file of the Operation Log Table so that you know what actions have been done.</p>  <table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1 13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_2</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2 13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_2</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3 13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_2</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4 13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_2</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5 13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_2</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6 13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_2</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7 13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_2</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8 13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_2</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9 13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_2</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1 13:37:54	5/5/2016	8	Screen_2	Level 1 Btn	Set Val	1	0	2 13:37:56	5/5/2016	8	Screen_2	Level 1 Btn	Set Val	0	1	3 13:38:19	5/5/2016	8	Screen_2		Level Switch	8	4	4 13:38:21	5/5/2016	4	Screen_2	Level 2 Btn	Set Val	0	1	5 13:38:21	5/5/2016	4	Screen_2	Level 2 Btn	Set Val	1	0	6 13:38:22	5/5/2016	4	Screen_2	Level 4 Btn	Set Val	0	1	7 13:38:23	5/5/2016	4	Screen_2	Level 4 Btn	Set Val	1	0	8 13:38:31	5/5/2016	4	Screen_2		Level Switch	4	8	9 13:38:35	5/5/2016	8	Screen_2	\$100 Value	Set Val	85	25
Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																											
1 13:37:54	5/5/2016	8	Screen_2	Level 1 Btn	Set Val	1	0																																																																											
2 13:37:56	5/5/2016	8	Screen_2	Level 1 Btn	Set Val	0	1																																																																											
3 13:38:19	5/5/2016	8	Screen_2		Level Switch	8	4																																																																											
4 13:38:21	5/5/2016	4	Screen_2	Level 2 Btn	Set Val	0	1																																																																											
5 13:38:21	5/5/2016	4	Screen_2	Level 2 Btn	Set Val	1	0																																																																											
6 13:38:22	5/5/2016	4	Screen_2	Level 4 Btn	Set Val	0	1																																																																											
7 13:38:23	5/5/2016	4	Screen_2	Level 4 Btn	Set Val	1	0																																																																											
8 13:38:31	5/5/2016	4	Screen_2		Level Switch	4	8																																																																											
9 13:38:35	5/5/2016	8	Screen_2	\$100 Value	Set Val	85	25																																																																											

## ■ Main-2

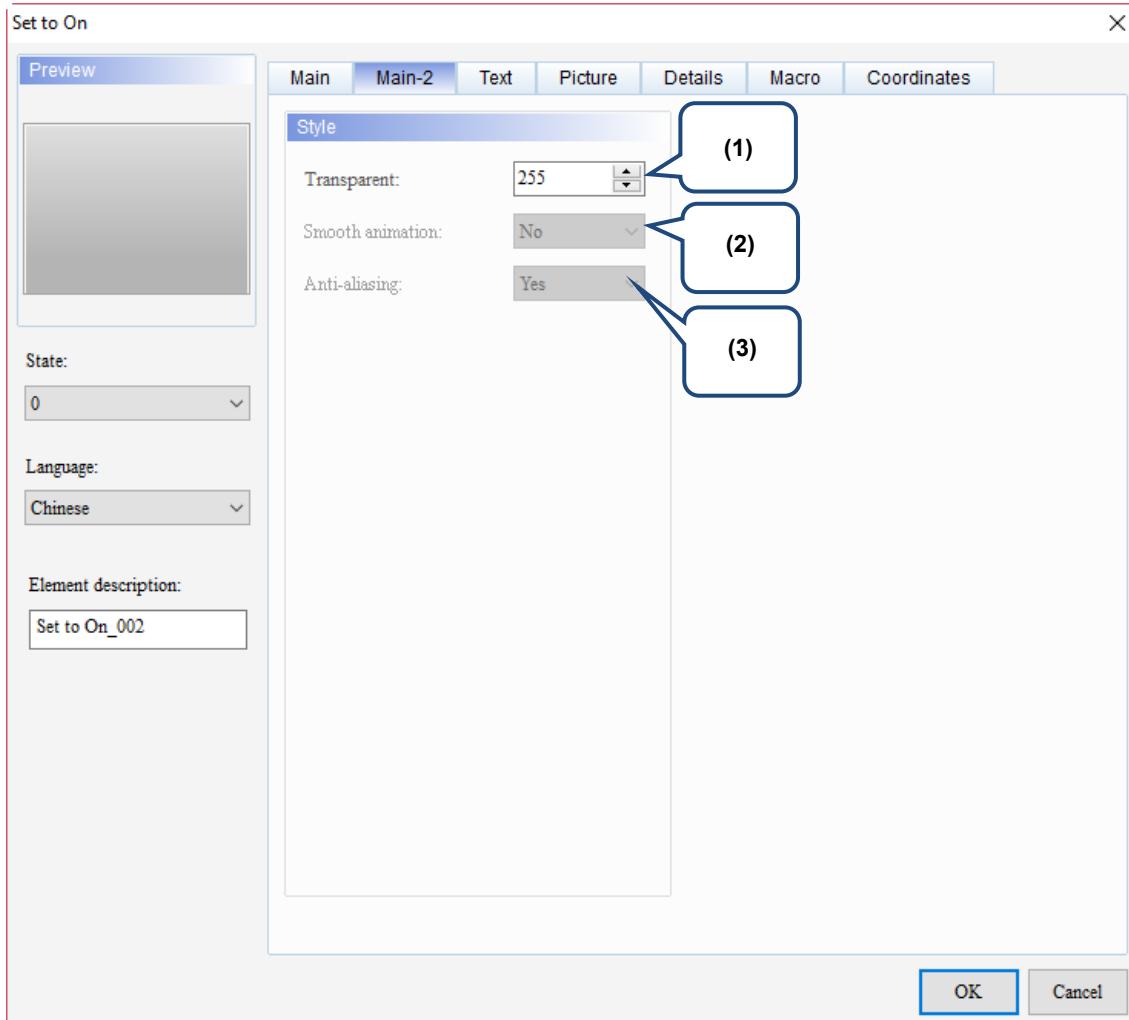


Figure 5.1.3 Main-2 property page for the Set to On / Set to Off / Momentary / Maintained elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Text

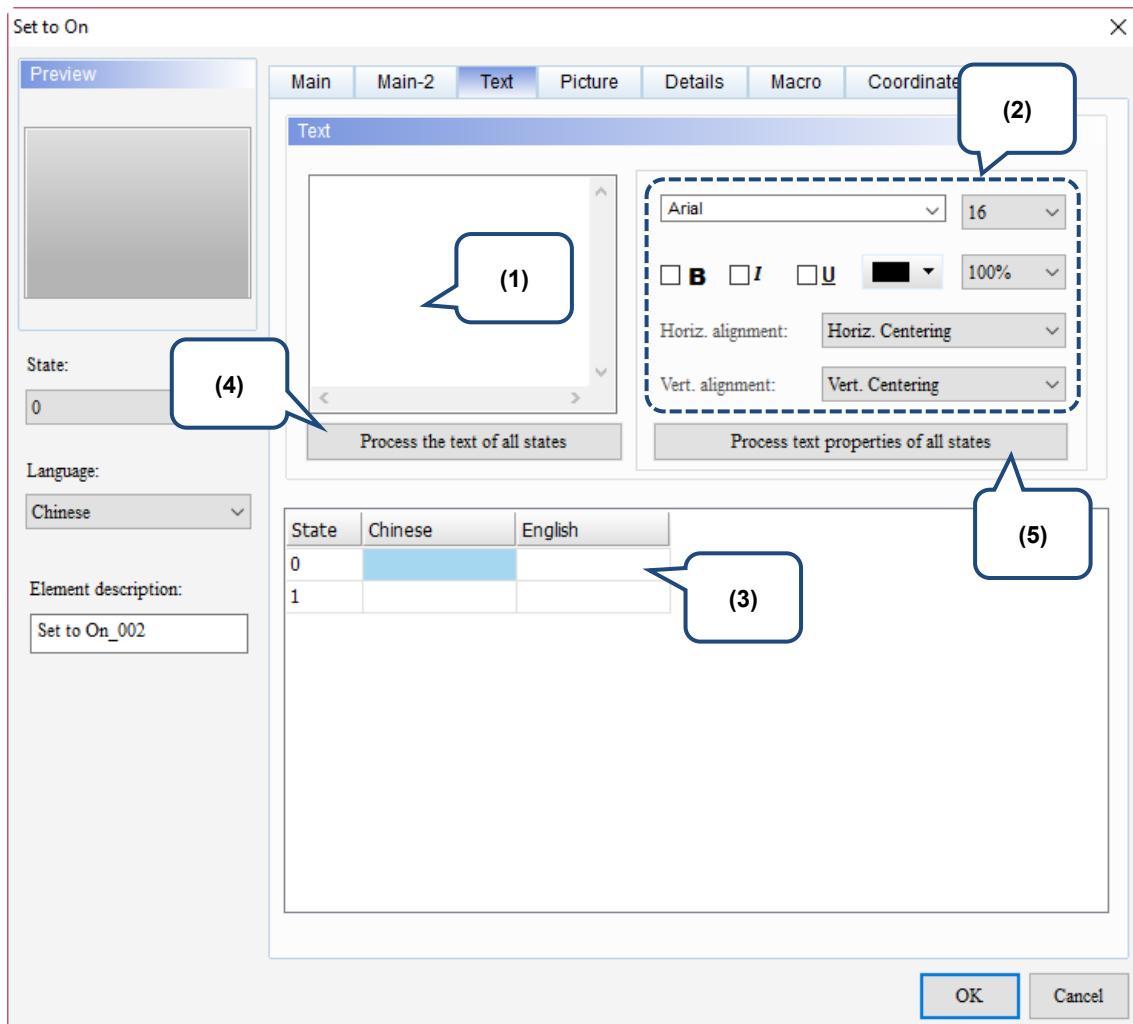
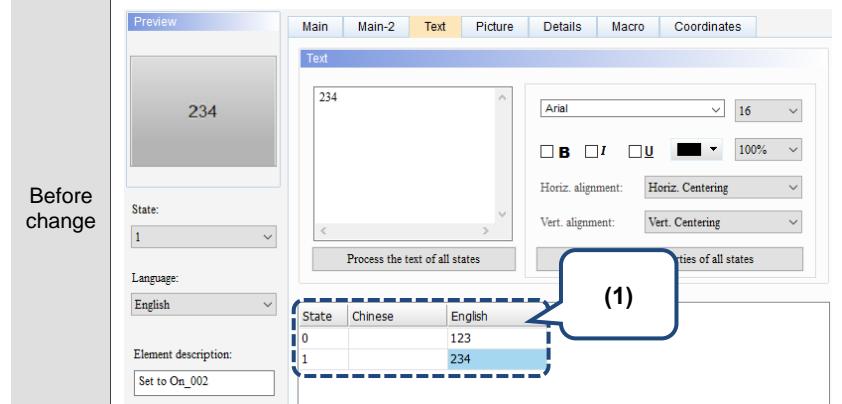
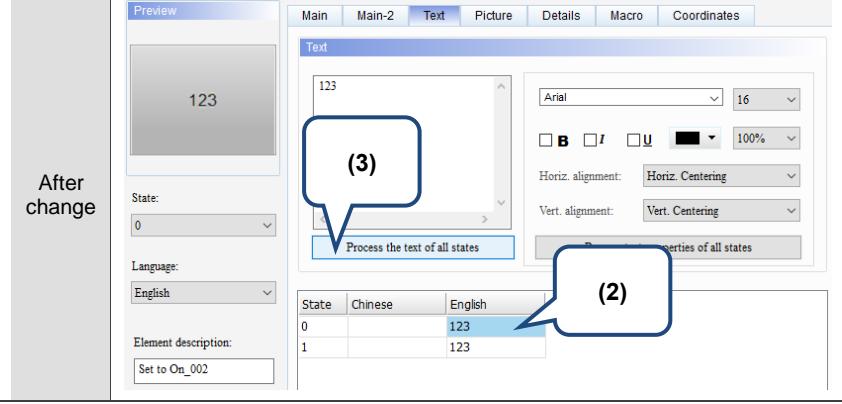
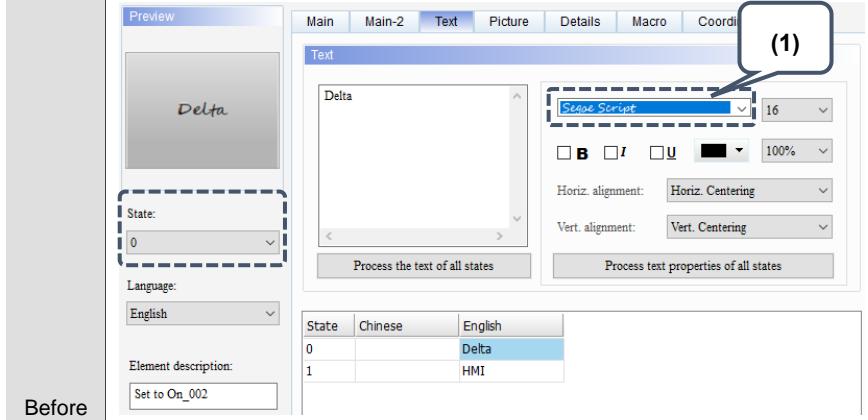
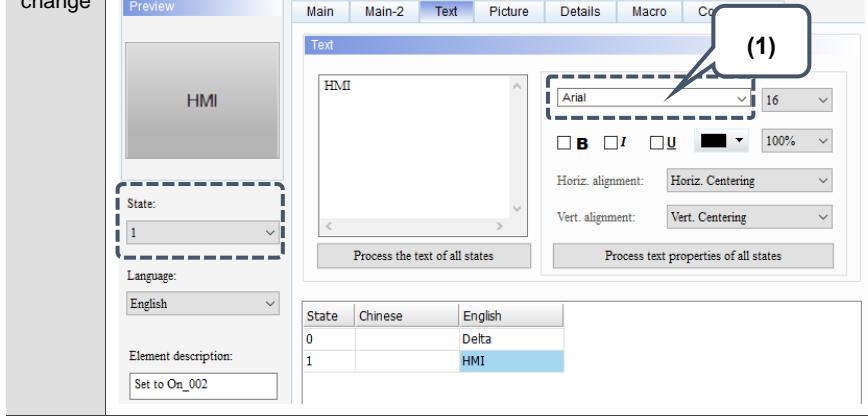
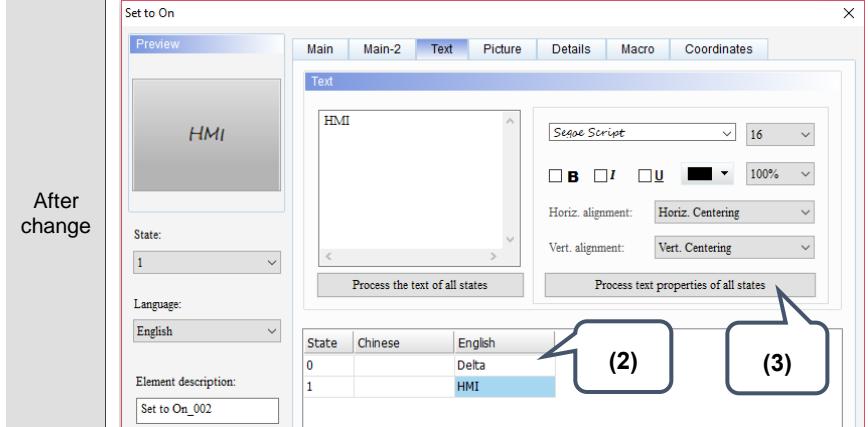


Figure 5.1.4 Text property page for the Set to On / Set to Off / Momentary / Maintained elements

No.	Property	Function description									
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to be displayed in the text box.</li> </ul> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.</li> </ul>	State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI
State	Chinese	English									
0	台達電子	Delta									
1	人機介面	HMI									

No.	Property	Function description
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text.
(3)	Edit Multi-language Text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected.</p> <p>The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input 123 to State 0, and 234 to State 1.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process the text of all states</b>, and the State 1 text changes to 123.</li> </ol>  
(5)	Process text properties of all states	This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.

5

No.	Property	Function description
(5)	Process text properties of all states	<p>The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process text properties of all states</b>, and the State 1 font changes to Segoe Script.</li> </ol>  
		

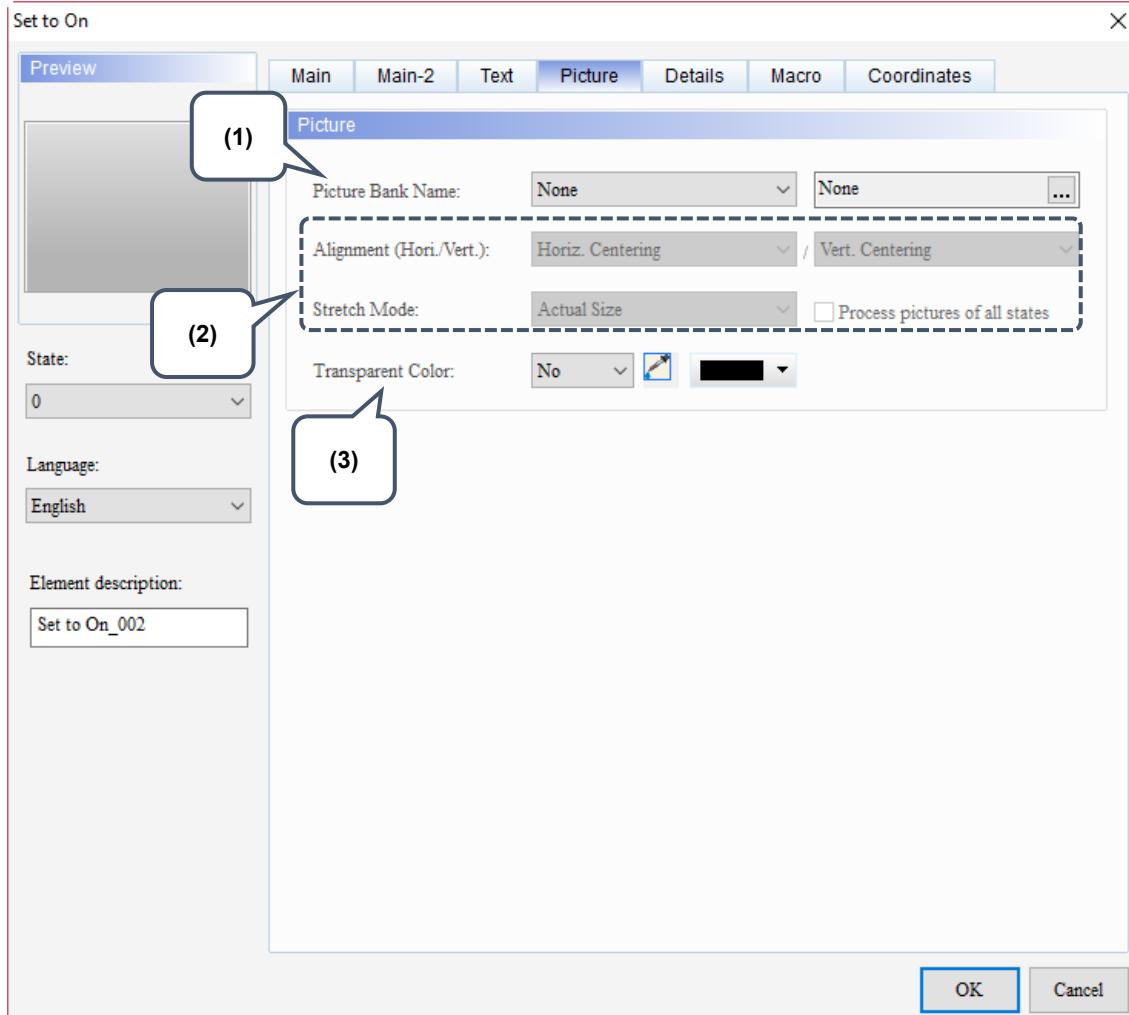
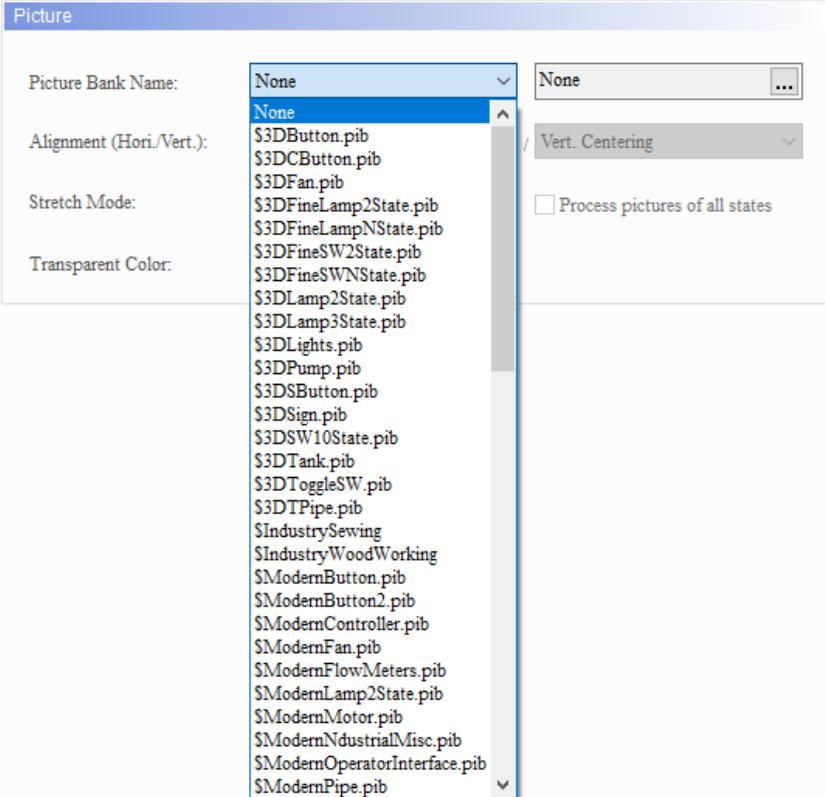
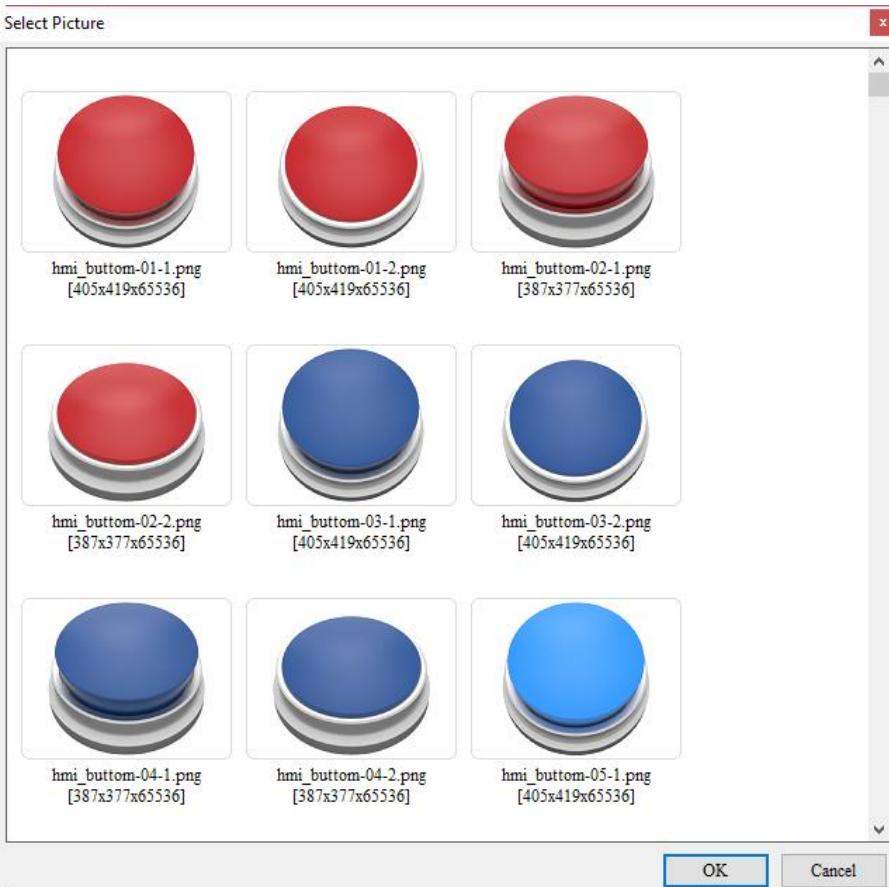
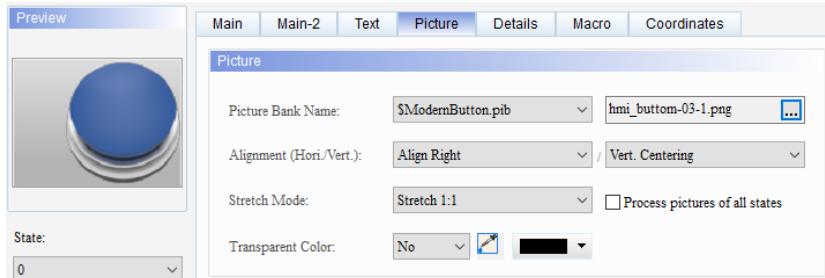
**■ Picture**

Figure 5.1.5 Picture property page for the Set to On / Set to Off / Momentary / Maintained elements

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No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>Picture</p> <p>Picture Bank Name: None</p> <p>None</p> <p>\$3DButton.pib \$3DCButton.pib \$3DFan.pib \$3DFineLamp2State.pib \$3DFineLampNState.pib \$3DFineSW2State.pib \$3DFineSWNState.pib \$3DLamp2State.pib \$3DLamp3State.pib \$3DLights.pib \$3DPump.pib \$3DSButton.pib \$3DSign.pib \$3DSW10State.pib \$3DTank.pib \$3DToggleSW.pib \$3DTPipe.pib \$IndustrySewing \$IndustryWoodWorking \$ModernButton.pib \$ModernButton2.pib \$ModernController.pib \$ModernFan.pib \$ModernFlowMeters.pib \$ModernLamp2State.pib \$ModernMotor.pib \$ModernIndustrialMisc.pib \$ModernOperatorInterface.pib \$ModernPipe.pib</p> <p>Alignment (Hori./Vert.): Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p><input type="checkbox"/> Process pictures of all states</p> <p>Select Picture</p>  <p>hmi_button-01-1.png [405x419x65536]   hmi_button-01-2.png [405x419x65536]   hmi_button-02-1.png [387x377x65536]</p> <p>hmi_button-02-2.png [387x377x65536]   hmi_button-03-1.png [405x419x65536]   hmi_button-03-2.png [405x419x65536]</p> <p>hmi_button-04-1.png [387x377x65536]   hmi_button-04-2.png [387x377x65536]   hmi_button-05-1.png [405x419x65536]</p> <p>OK Cancel</p>

No.	Property	Function description					
(2)	Alignment	<ul style="list-style-type: none"> <li>You can use the Alignment options to set how pictures are aligned.</li> </ul>  <p>The screenshot shows the 'Picture' tab of the Properties dialog for a button. It includes fields for 'Picture Bank Name' (\$ModernButton.pib), 'hmi_button-03-1.png', 'Alignment (Hori./Vert.)' (Align Right / Vert. Centering), 'Stretch Mode' (Stretch 1:1), and 'Transparent Color' (No). A preview window on the left shows a blue button icon.</p>					
	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table> 	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.
Stretch All	Stretch 1:1	Actual Size					
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.					
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 					

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## ■ Details

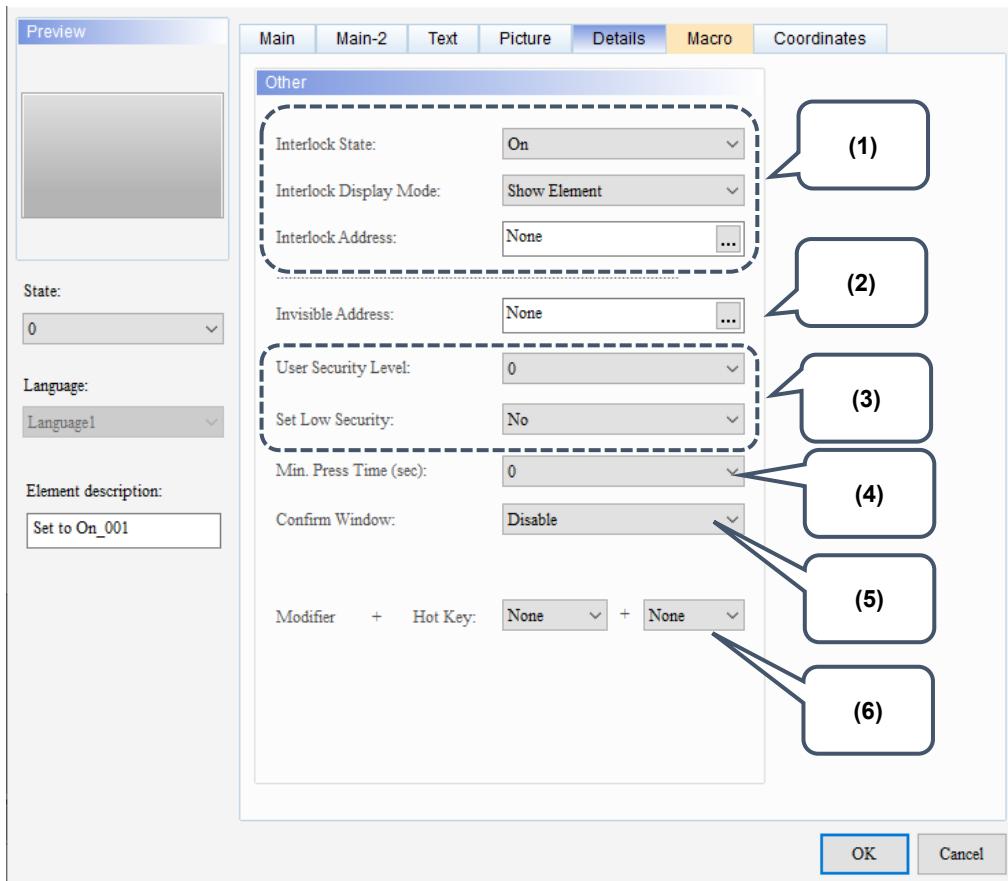
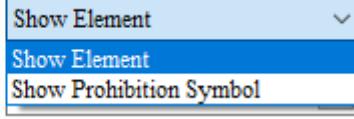
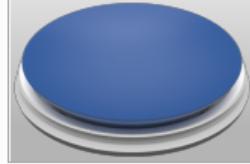
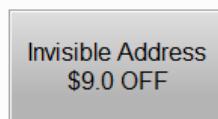
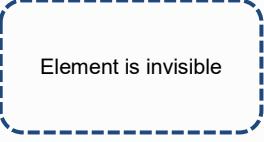
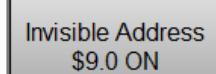
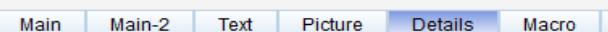
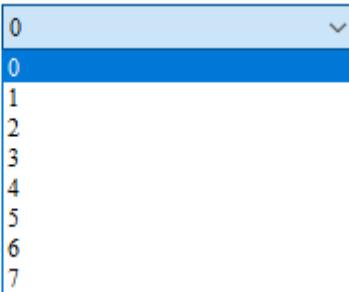
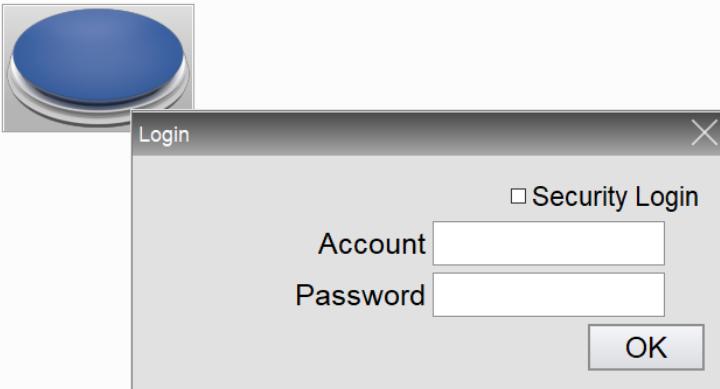
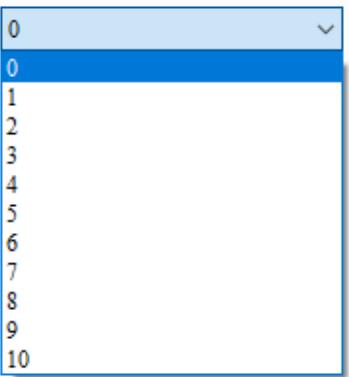


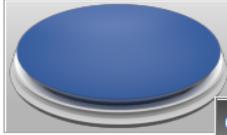
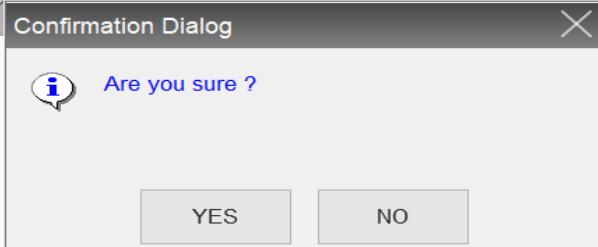
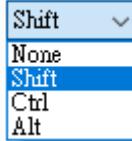
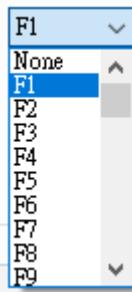
Figure 5.1.6 Details property page for the Set to On / Set to Off / Momentary / Maintained elements

No.	Property	Function description
	Interlock State	<ul style="list-style-type: none"> <li>The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON.</li> <li>The following describes how it works:</li> </ul> <ol style="list-style-type: none"> <li>Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0.</li> <li>Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.</li> </ol>
(1)	Interlock Address	<p>1. Create a button and set its address to \$8.0.</p> <p>W:\$8.0</p> <p>2. Execute the button (address \$8.0) first so you can press the other button (address \$99.0).</p> <p>W:\$99.0</p>

No.	Property	Function description		
(1)	Interlock Display Mode	<ul style="list-style-type: none"> <li>The Interlock Display Mode includes two options, Show Element and Show Prohibition Symbol.</li> </ul> <p>Interlock Display Mode:</p>  <p>Interlock Address:</p>		
		Show Element		
(2)	Invisible Address	Show Prohibition Symbol		
		<ul style="list-style-type: none"> <li>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</li> </ul>		
		Invisible Address is off		
		Invisible Address is on		
		 State:	 <b>Main</b> <b>Other</b> Interlock State: <input type="text" value="On"/> Interlock Address: <input type="text" value="None"/>  Invisible Address: <input type="text" value="\$9.0"/>	

## 5

No.	Property	Function description
(3)	User Security Level	<ul style="list-style-type: none"> <li>You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element; refer to Section 5.7.2 Password Table Setup).</li> </ul> <p>User Security Level:</p>  <p>Set Low Security:</p> <p>Min. Press Time (sec):</p> <p>Confirm Window:</p>
(4)	Set Low Security	<ul style="list-style-type: none"> <li>If you set the Set Low Security to Yes, each time you enter the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to enter the password for the corresponding security level again.</li> </ul> 
	Min. Press Time (sec)	<p>Set the minimum pressing duration for the element to activate. The element is activated only when you press it for more than the set Min. Press Time. This function is to avoid misoperation of elements. The setting range is 0 - 10 second(s).</p> <p>Min. Press Time (sec):</p>  <p>Confirm Window:</p>

No.	Property	Function description
(5)	Confirm Window	If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the pressing action after pressing the element:  
(6)	Modifier + Hot Key	<ul style="list-style-type: none"> <li>■ Allows you to use the hot keys on the external keyboard to execute the button.</li> <li>■ The Modifier options include None, Shift, Ctrl, and Alt. </li> <li>■ The Hot Key options include F1 to F12, English letters A to Z, and number keys 0 to 9. </li> </ul>

## ■ Macro

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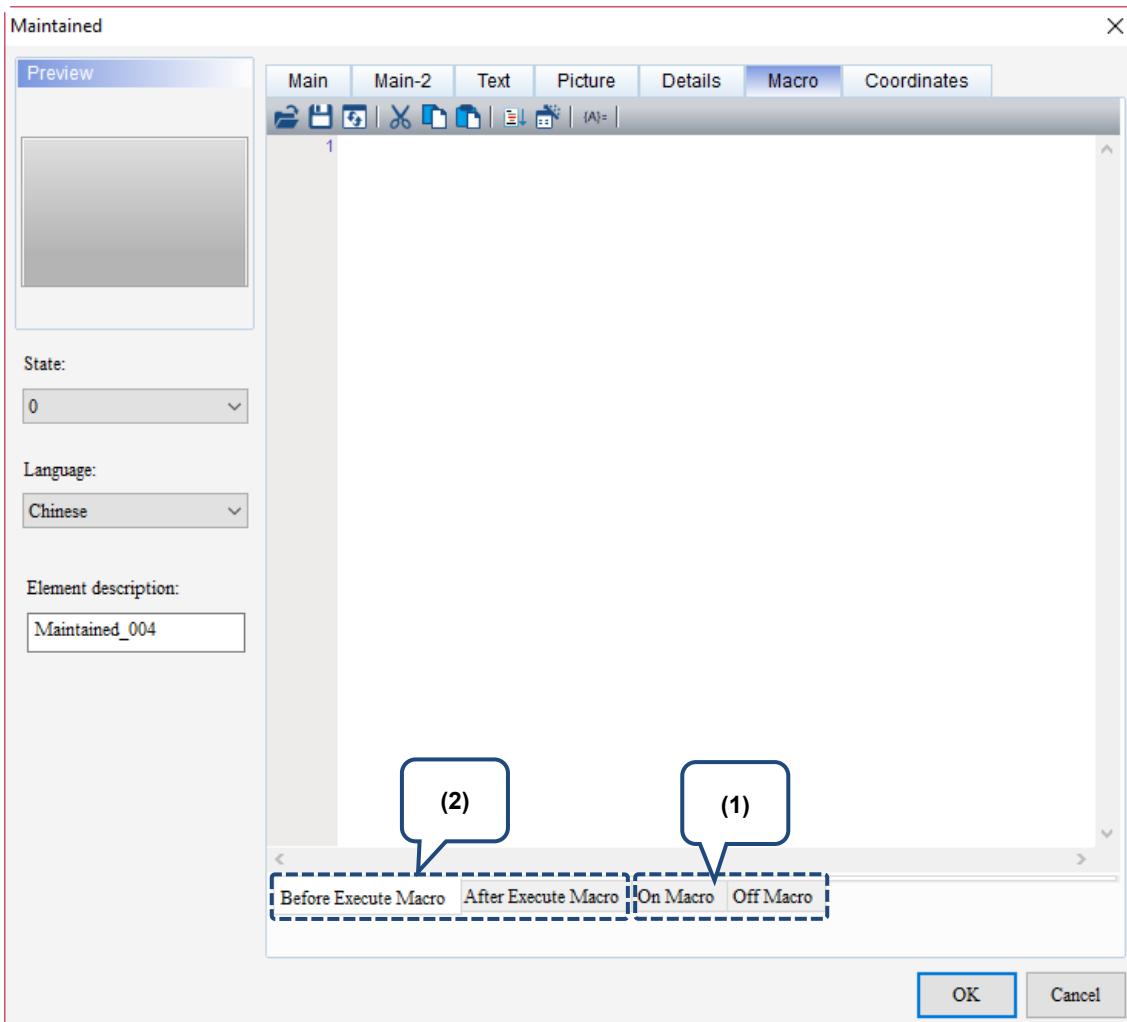


Figure 5.1.7 Macro property page for the Set to On / Set to Off / Momentary / Maintained elements

No.	Function description	
	On Macro	Off Macro
(1)	<p>Flowchart of On Macro:</p> <pre> graph TD     A[Maintained Button] -- Trigger ON --&gt; B[Maintained Button]     B --&gt; C[Execute On Macro]     C -- Trigger OFF --&gt; D[Maintained Button]     D -- Trigger at next time --&gt; B   </pre> <p>The flowchart shows a 'Maintained Button' being triggered ON. This leads to an 'Execute On Macro' step, which then triggers the button OFF. A feedback loop returns the button to its previous state, ready for the next trigger.</p>	<p>Flowchart of Off Macro:</p> <pre> graph TD     A[Maintained Button] -- Trigger ON --&gt; B[Maintained Button]     B --&gt; C[Execute OFF Macro]     C -- Trigger OFF --&gt; D[Maintained Button]     D -- Trigger at next time --&gt; B   </pre> <p>The flowchart shows a 'Maintained Button' being triggered ON. This leads to an 'Execute OFF Macro' step, which then triggers the button OFF. A feedback loop returns the button to its previous state, ready for the next trigger.</p>

■ When you press the button and set the state to ON, the HMI executes the On Macro commands. When you press the button and set the state to OFF, the HMI executes the Off Macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the On / Off Macro commands.

■ Every time when you trigger the states to ON / OFF, the HMI executes the On / Off Macros once without repeating the actions.

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No.	Function description	
	Before Execute Macro	After Execute Macro
(2)	<p>Flowchart of Before Execute Macro:</p> <pre> graph TD     A[Trigger ON / Input Numeric] --&gt; B[Before Execute Macro]     B --&gt; C[Button triggered ON and numeric written]     C --&gt; D[Trigger at next time]     D --&gt; E[Trigger OFF / Input Numeric]     E --&gt; F[Before Execute Macro]     F --&gt; G[Button triggered OFF and numeric written]     G --&gt; H[Trigger at next time]     H --&gt; I[Maintained Button]     I --&gt; J[0]     J --&gt; K[Trigger ON / Input Numeric]     K --&gt; L[Before Execute Macro]     L --&gt; M[Button triggered ON and numeric written]     M --&gt; N[Trigger at next time]     N --&gt; O[Trigger OFF / Input Numeric]     O --&gt; P[Before Execute Macro]     P --&gt; Q[Button triggered OFF and numeric written]     Q --&gt; R[Trigger at next time]     R --&gt; S[Maintained Button]     S --&gt; T[50]     T --&gt; U[Trigger ON / Input Numeric]     U --&gt; V[Before Execute Macro]     V --&gt; W[Button triggered ON and numeric written]     W --&gt; X[Trigger at next time]     X --&gt; Y[Trigger OFF / Input Numeric]     Y --&gt; Z[Before Execute Macro]     Z --&gt; AA[Button triggered OFF and numeric written]     AA --&gt; BB[Trigger at next time]     BB --&gt; CC[Maintained Button]     CC --&gt; DD[90]     DD --&gt; EE[Trigger ON / Input Numeric]     EE --&gt; FF[Before Execute Macro]     FF --&gt; GG[Button triggered ON and numeric written]     GG --&gt; HH[Trigger at next time]     HH --&gt; II[Trigger OFF / Input Numeric]     II --&gt; JJ[Before Execute Macro]     JJ --&gt; KK[Button triggered OFF and numeric written]     KK --&gt; LL[Trigger at next time]     LL --&gt; MM[Trigger ON / Input Numeric]     MM --&gt; NN[Before Execute Macro]     NN --&gt; OO[Button triggered ON and numeric written]     OO --&gt; PP[Trigger at next time]     PP --&gt; QQ[Trigger OFF / Input Numeric]     QQ --&gt; RR[Before Execute Macro]     RR --&gt; TT[Button triggered OFF and numeric written]     TT --&gt; YY[Trigger at next time]     YY --&gt; ZZ[Trigger ON / Input Numeric]     ZZ --&gt; AA[Before Execute Macro]   </pre> <p>When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>	<p>Flowchart of After Execute Macro:</p> <pre> graph TD     A[Trigger ON / Input Numeric] --&gt; B[Before Execute Macro]     B --&gt; C[Button triggered ON and numeric written]     C --&gt; D[Trigger at next time]     D --&gt; E[Trigger OFF / Input Numeric]     E --&gt; F[Before Execute Macro]     F --&gt; G[Button triggered OFF and numeric written]     G --&gt; H[Trigger at next time]     H --&gt; I[Maintained Button]     I --&gt; J[50]     J --&gt; K[Trigger ON / Input Numeric]     K --&gt; L[Before Execute Macro]     L --&gt; M[Button triggered ON and numeric written]     M --&gt; N[Trigger at next time]     N --&gt; O[Trigger OFF / Input Numeric]     O --&gt; P[Before Execute Macro]     P --&gt; Q[Button triggered OFF and numeric written]     Q --&gt; R[Trigger at next time]     R --&gt; S[Trigger ON / Input Numeric]     S --&gt; T[Before Execute Macro]     T --&gt; U[Button triggered ON and numeric written]     U --&gt; V[Trigger at next time]     V --&gt; W[Trigger OFF / Input Numeric]     W --&gt; X[Before Execute Macro]     X --&gt; Y[Button triggered OFF and numeric written]     Y --&gt; Z[Trigger at next time]     Z --&gt; AA[Trigger ON / Input Numeric]     AA --&gt; BB[Before Execute Macro]     BB --&gt; CC[Button triggered ON and numeric written]     CC --&gt; DD[Trigger at next time]     DD --&gt; EE[Trigger OFF / Input Numeric]     EE --&gt; FF[Before Execute Macro]     FF --&gt; GG[Button triggered OFF and numeric written]     GG --&gt; HH[Trigger at next time]     HH --&gt; II[Trigger ON / Input Numeric]     II --&gt; JJ[Before Execute Macro]     JJ --&gt; KK[Button triggered ON and numeric written]     KK --&gt; LL[Trigger at next time]     LL --&gt; MM[Trigger OFF / Input Numeric]     MM --&gt; RR[Before Execute Macro]     RR --&gt; TT[Button triggered OFF and numeric written]     TT --&gt; YY[Trigger at next time]     YY --&gt; ZZ[Trigger ON / Input Numeric]     ZZ --&gt; AA[Before Execute Macro]   </pre> <p>When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>

## ■ Coordinates

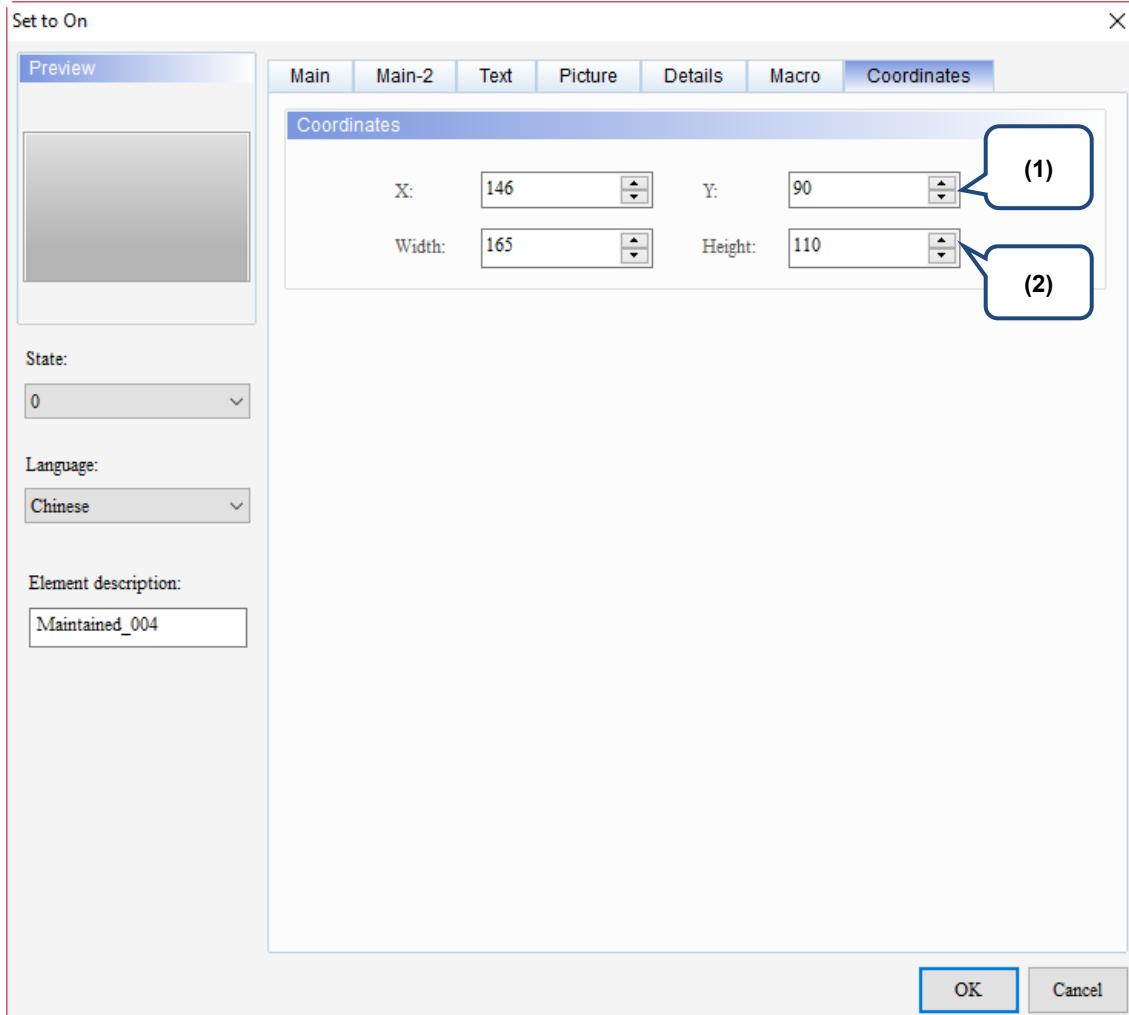


Figure 5.1.8 Coordinates property page for the Set to On / Set to Off / Momentary / Maintained elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 5.2 Multistate

The Multistate is for displaying multiple state pictures or state values. If you set the Multistate Memory Address to D100, Data Type to Word, and State Counts to 4, when you change the value of D100, the Multistate element changes the states according to the sequence you set. Refer to Figure 5.2.1 Multistate example.

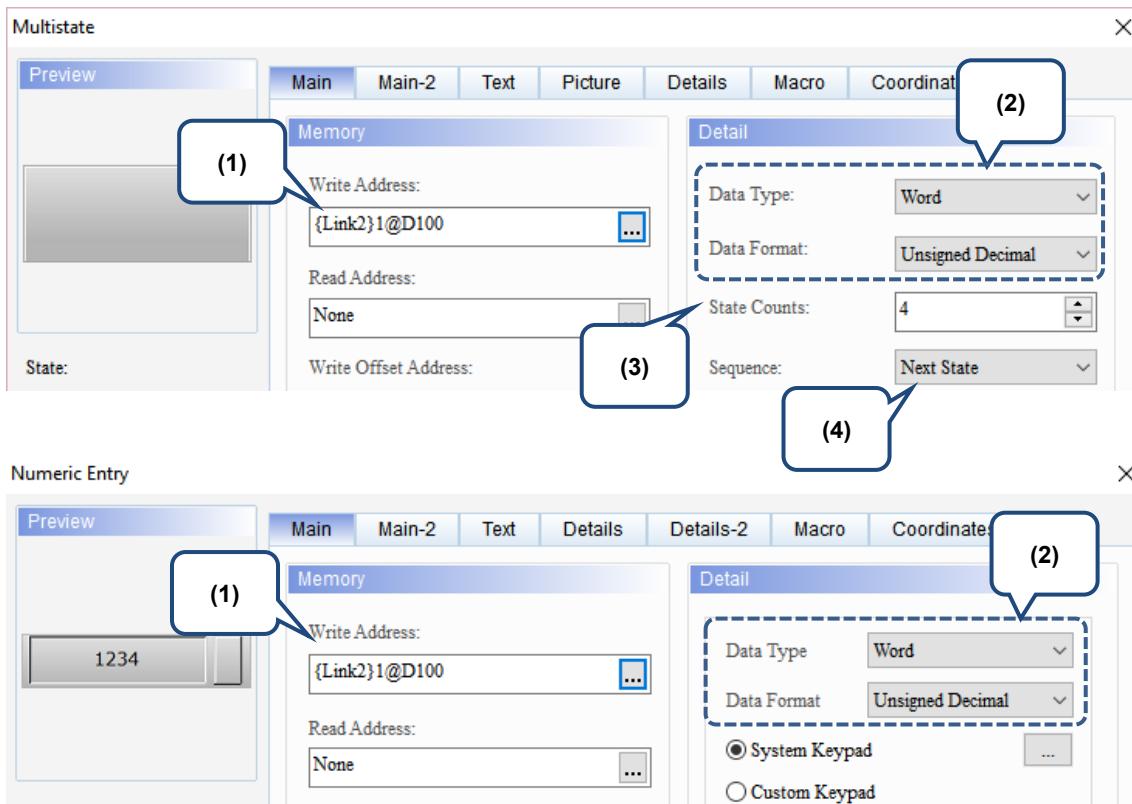


Figure 5.2.1 Multistate example - 1

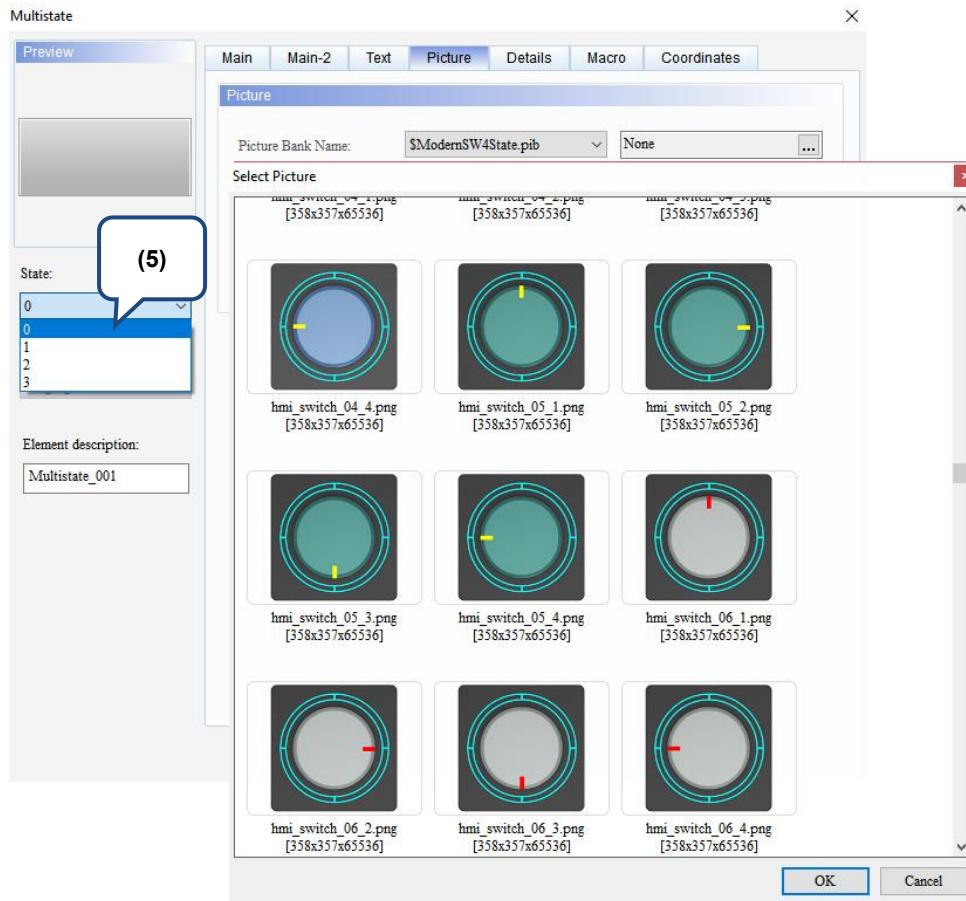
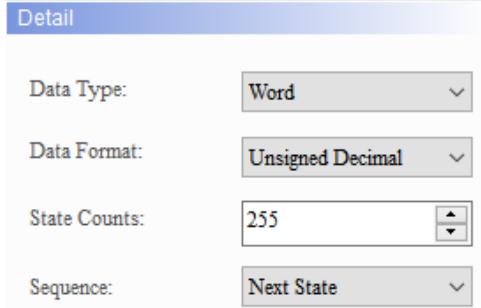
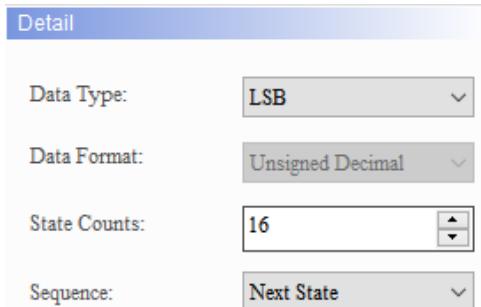
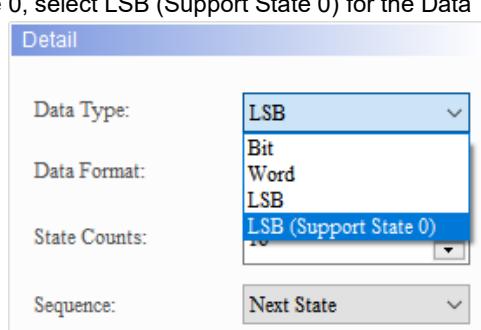
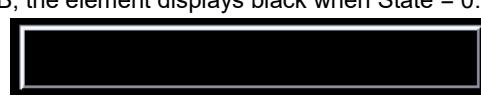


Figure 5.2.2 Multistate example - 2

No.	Item	Content
(1)	Write Address	Create a Multistate button and a Numeric Entry element and set the Write Addresses to D100.
(2)	Data Type / Data Format	Set the Data Type to Word and Data Format to Unsigned Decimal for the Multistate button and Numeric Entry element.
(3)	State Counts	Set the State Counts of the Multistate button to 4.
(4)	Sequence	Set the Sequence of the Multistate button to Next State.
(5)	Set State pictures	Set the pictures for States 0 - 3.
(6)	Execution results	<p>Set D100 = 0 to D100 = 3 sequentially, and the Multistate element pictures change as well.</p>

The Multistate button supports four data types. See the following table for details. If you need to add or remove state counts, you can simply increase and decrease the state counts from the State Counts in the Properties window.

Table 5.2.1 Data Type of the Multistate

Multistate button	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p> 
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>■ When the Data Type is set to LSB, the register data is first converted to binary data. And then, the current object state is defined by using the lowest non-zero bit.</li> <li>■ If the Data Type is LSB, you can set 1 to 16 states except for State 0.</li> </ul> <p><b>Detail</b></p>  <ul style="list-style-type: none"> <li>■ To display State 0, select LSB (Support State 0) for the Data Type.</li> </ul> <p><b>Detail</b></p>  <ul style="list-style-type: none"> <li>■ If you select LSB, the element displays black when State = 0.</li> </ul>  <ul style="list-style-type: none"> <li>■ If the Data Type is LSB or LSB (Support State 0), the memory address is also in Word as the unit.</li> </ul>

Multistate button																																																														
Data Type	State Counts																																																													
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>The examples in the following table explains how to use the lowest non-zero bit of the binary value converted from a decimal value to determine the state value. There are also examples showing how the software determines the lowest bit to define the display state value when the decimal values are 3 and 7.</li> </ul> <table border="1"> <thead> <tr> <th>Decimal</th><th>Binary</th><th>State Value</th></tr> </thead> <tbody> <tr> <td><u>0</u></td><td><u>0000000000000000</u></td><td><u>State = 0 when all bits are 0.</u> <u>You must select LSB (Support State 0).</u></td></tr> <tr> <td>1</td><td>0000000000000001</td><td>The lowest non-zero bit is bit 0, State = 1.</td></tr> <tr> <td>2</td><td>0000000000000010</td><td>The lowest non-zero bit is bit 1, State = 2.</td></tr> <tr> <td><u>3</u></td><td><u>0000000000000011</u></td><td><u>The lowest non-zero bit is bit 0. State = 1.</u></td></tr> <tr> <td>4</td><td>00000000000000100</td><td>The lowest non-zero bit is bit 2, State = 3.</td></tr> <tr> <td><u>7</u></td><td><u>00000000000000111</u></td><td><u>The lowest non-zero bit is bit 0. State = 1.</u></td></tr> <tr> <td>8</td><td>00000000000001000</td><td>The lowest non-zero bit is bit 3, State = 4.</td></tr> <tr> <td>16</td><td>00000000000010000</td><td>The lowest non-zero bit is bit 4, State = 5.</td></tr> <tr> <td>32</td><td>00000000000100000</td><td>The lowest non-zero bit is bit 5, State = 6.</td></tr> <tr> <td>64</td><td>00000000001000000</td><td>The lowest non-zero bit is bit 6, State = 7.</td></tr> <tr> <td>128</td><td>00000000100000000</td><td>The lowest non-zero bit is bit 7, State = 8.</td></tr> <tr> <td>256</td><td>00000001000000000</td><td>The lowest non-zero bit is bit 8, State = 9.</td></tr> <tr> <td>512</td><td>00000010000000000</td><td>The lowest non-zero bit is bit 9, State = 10.</td></tr> <tr> <td>1024</td><td>00000100000000000</td><td>The lowest non-zero bit is bit 10, State = 11.</td></tr> <tr> <td>2048</td><td>00001000000000000</td><td>The lowest non-zero bit is bit 11, State = 12.</td></tr> <tr> <td>4096</td><td>00010000000000000</td><td>The lowest non-zero bit is bit 12, State = 13.</td></tr> <tr> <td>8192</td><td>00100000000000000</td><td>The lowest non-zero bit is bit 13, State = 14.</td></tr> <tr> <td>16384</td><td>01000000000000000</td><td>The lowest non-zero bit is bit 14, State = 15.</td></tr> <tr> <td>32768</td><td>10000000000000000</td><td>The lowest non-zero bit is bit 15, State = 16.</td></tr> </tbody> </table>		Decimal	Binary	State Value	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>You must select LSB (Support State 0).</u>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0. State = 1.</u>	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.	<u>7</u>	<u>00000000000000111</u>	<u>The lowest non-zero bit is bit 0. State = 1.</u>	8	00000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	00000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	00000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	00000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	00000000100000000	The lowest non-zero bit is bit 7, State = 8.	256	00000001000000000	The lowest non-zero bit is bit 8, State = 9.	512	00000010000000000	The lowest non-zero bit is bit 9, State = 10.	1024	00000100000000000	The lowest non-zero bit is bit 10, State = 11.	2048	00001000000000000	The lowest non-zero bit is bit 11, State = 12.	4096	00010000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	00100000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	01000000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	10000000000000000	The lowest non-zero bit is bit 15, State = 16.
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If the Data Type is set to Bit, you can only set 2 state counts.																																																														
<p style="text-align: center;"><b>Detail</b></p> <table> <tr> <td style="vertical-align: top;">Data Type:</td> <td><input type="button" value="Bit"/></td> </tr> <tr> <td style="vertical-align: top;">Data Format:</td> <td><input type="button" value="Unsigned Decimal"/></td> </tr> <tr> <td style="vertical-align: top;">State Counts:</td> <td><input type="button" value="2"/></td> </tr> <tr> <td style="vertical-align: top;">Sequence:</td> <td><input type="button" value="Next State"/></td> </tr> </table>		Data Type:	<input type="button" value="Bit"/>	Data Format:	<input type="button" value="Unsigned Decimal"/>	State Counts:	<input type="button" value="2"/>	Sequence:	<input type="button" value="Next State"/>																																																					
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When you double-click the Multistate element, the property page is shown as follows.

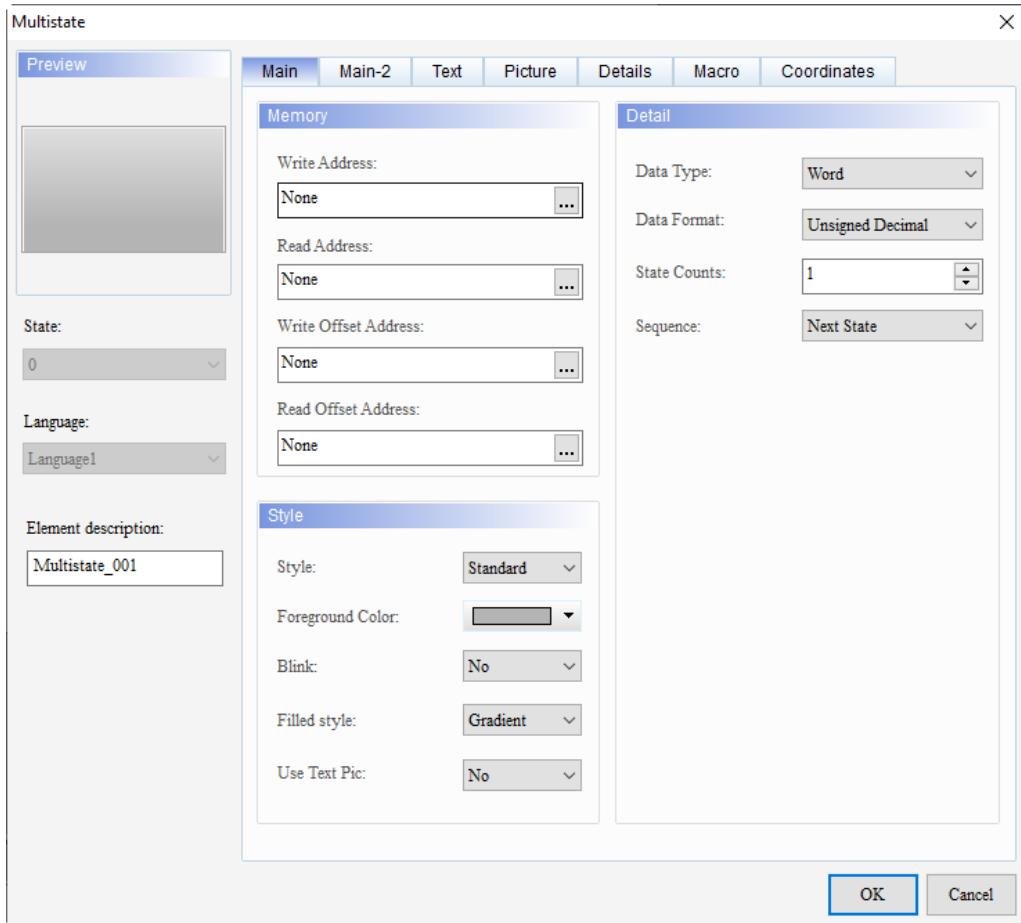


Figure 5.2.3 Properties of Multistate

Multistate	
Function page	Description
Preview	View the element multistate value and multi-language data display.
Main	Set the Write and Read Addresses, and Write and Read Offset Addresses. Set the Style, Foreground Color, Blink, Filled style, and Use Text Pic function. Set the Data Type, Data Format, State Counts, and Sequence of Multistate.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color options.
Details	Set the Interlock Address, Interlock Display Mode, Interlock State, Invisible Address, User Security Level, Set Low Security, Confirm Window, and Modifier + Hot Key.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

## ■ Main

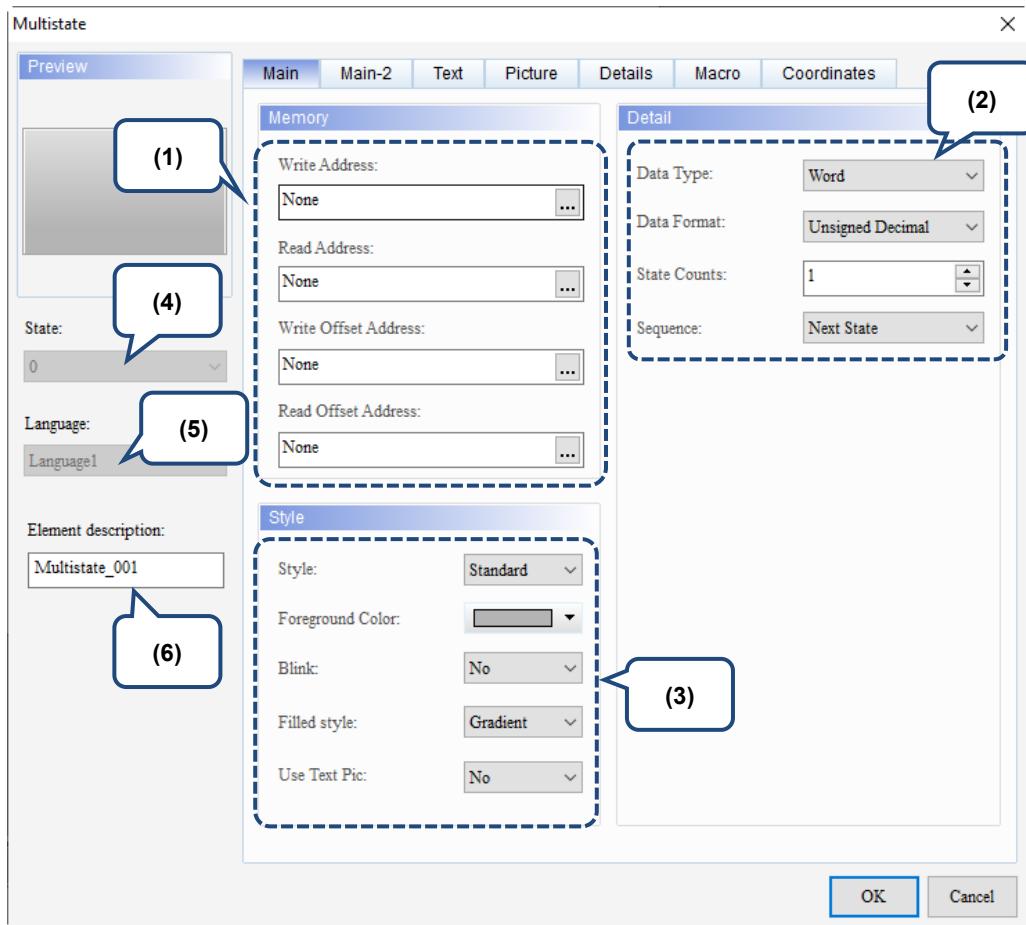
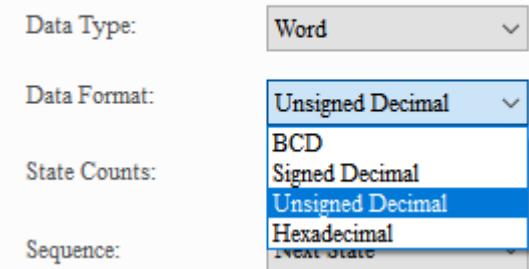
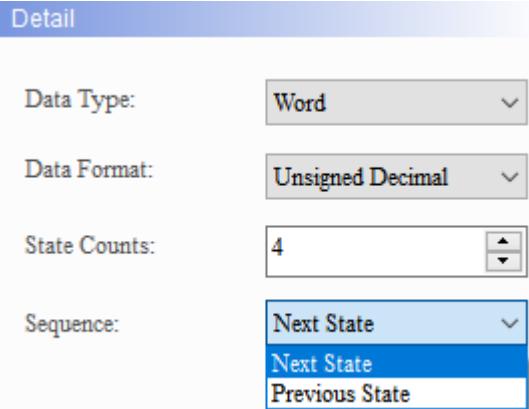
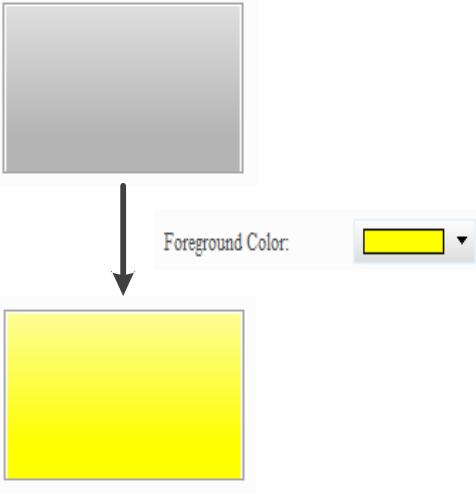


Figure 5.2.4 Main property page for the Multistate element

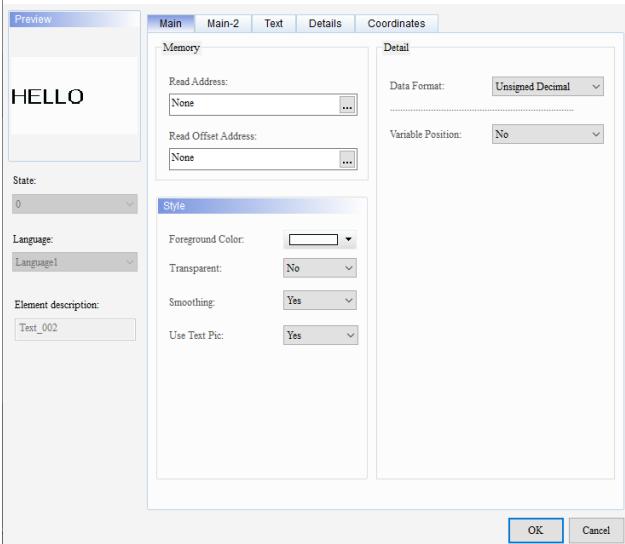
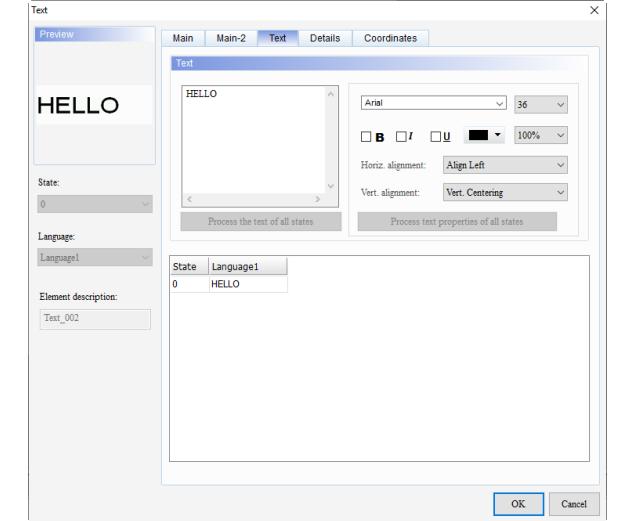
No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> <li>You can choose the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 5.2.2.</li> </ul>
	Read Address	<ul style="list-style-type: none"> <li>If you set the Write Address without setting the Read Address, the HMI automatically reads the Write Address values.</li> <li>For the Link name and Device Type, refer to Section 5.1.</li> </ul>
	Write Offset Address	Refer to the instructions in Appendix D Write and Read Offset Addresses.
	Read Offset Address	

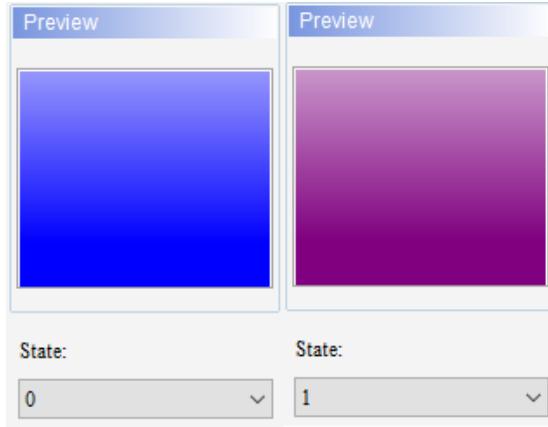
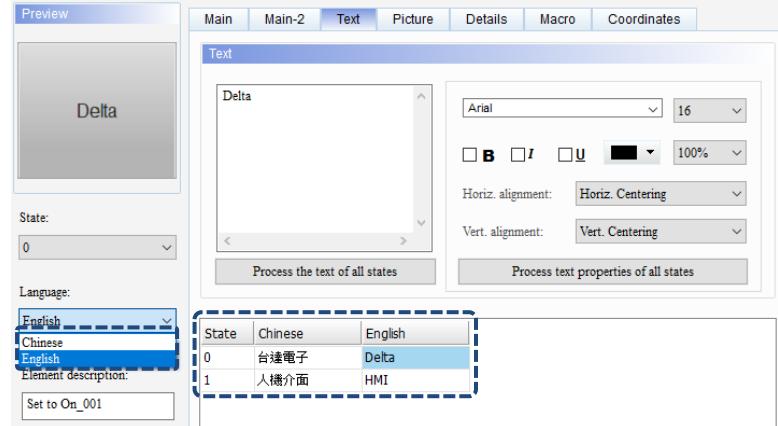
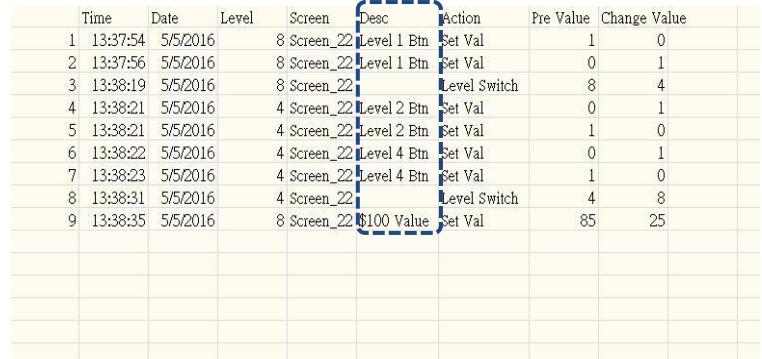
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No.	Property	Function description
(2)	Data Type	<p>There are four data types: Bit, Word, LSB, and LSB (Support State 0). See Table 5.2.2 for more details.</p>
		<ul style="list-style-type: none"> <li>■ You can only select the Data Format when the Data Type is Word.</li> <li>■ There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</li> </ul>
		<p><b>Detail</b></p> 
	Detail settings	<p>Set the State Counts of the Multistate button. When the Data Type is Word, the State Counts range from 1 to 256; when the Data Type is LSB, 16 states are available; when the Data Type is LSB (Support State 0), 17 states are available; when the Data Type is Bit, only 2 states are available. See Table 5.2.2 for more details.</p>
		<ul style="list-style-type: none"> <li>■ Set the state changing sequence for the Multistate button, including Next State and Previous State.</li> <li>■ Next State: when changing states, the HMI changes the state in ascending order.</li> <li>■ Previous State: when changing states, the HMI changes the state in descending order.</li> </ul>
		<p><b>Detail</b></p> 

No.	Property	Function description			
(3)	Style Property	The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.			
		Standard	Raised	Round	Invisible
	Filled style	<ul style="list-style-type: none"> <li>Set the foreground color of the element.</li> <li>When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ul> 			
	Blink	You can set the blink prompt of the element when the button changes states. The blink color is the opposite color of the foreground color.			
	Filled style	The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.			

## 5

No.	Property	Function description				
(3)	Style Property	<p>Unlike the DOP-B series models using pictures to present all texts, the DOP-100 series models present directly with the texts. Therefore, if the language you use for the element is not yet supported by the PC, it is possible to cause missing characters and garbled texts when the element is displayed on the HMI. To have the text display effect be the same as that on the DOP-B models, the Use Text Pic function is added for the Text, Button, and General Message Display elements. Refer to the following examples.</p> <p><b>Use Text Pic function</b></p> <ul style="list-style-type: none"> <li>Create a Text element and go to the [Main] tab to set the Use Text Pic function.</li> </ul>  <p>Note: if you use the DOPSoft 4.00.06 version to open a DOP-B project, the Use Text Pic function is enabled (Yes) by default. If you add a DOP-100 project, then the Use Text Pic function is disabled (No) by default.</p> <ul style="list-style-type: none"> <li>Go to the [Text] tab, and type the text and set its font.</li> </ul> 				
	Execution result	<ul style="list-style-type: none"> <li>After creating the element, download it to the HMI.</li> <li>The following table shows the results of using and not using the Use Text Pic function.</li> </ul> <table border="1"> <thead> <tr> <th>Use Text Pic is Yes</th> <th>Use Text Pic is No</th> </tr> </thead> <tbody> <tr> <td><b>HELLO</b></td> <td><b>HELLO</b></td> </tr> </tbody> </table>	Use Text Pic is Yes	Use Text Pic is No	<b>HELLO</b>	<b>HELLO</b>
Use Text Pic is Yes	Use Text Pic is No					
<b>HELLO</b>	<b>HELLO</b>					

No.	Property	Function description																																																																																
(4)	State	<p>The Multistate element determines its number of states according to the State Counts you have defined. Therefore, you can view the states with the State.</p> 																																																																																
(5)	Language	<p>If you have set the language data, you can edit the properties of the displayed text with the Language setting of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI																																																																							
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(6)	Element description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.</p>  <table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1 13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2 13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3 13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4 13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5 13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6 13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7 13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8 13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9 13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3 13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6 13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8 13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
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## ■ Main-2

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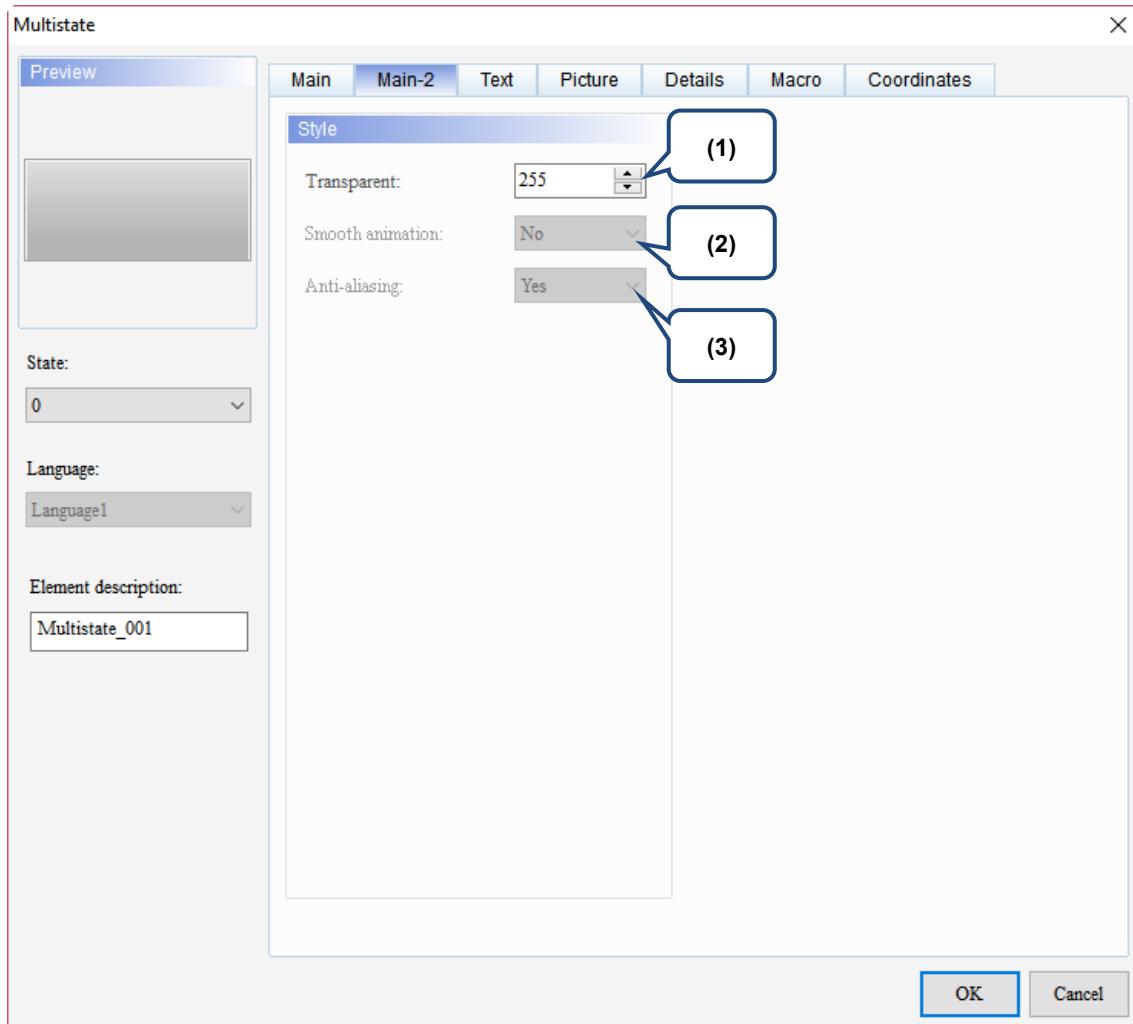


Figure 5.2.5 Main-2 property page for the Multistate element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

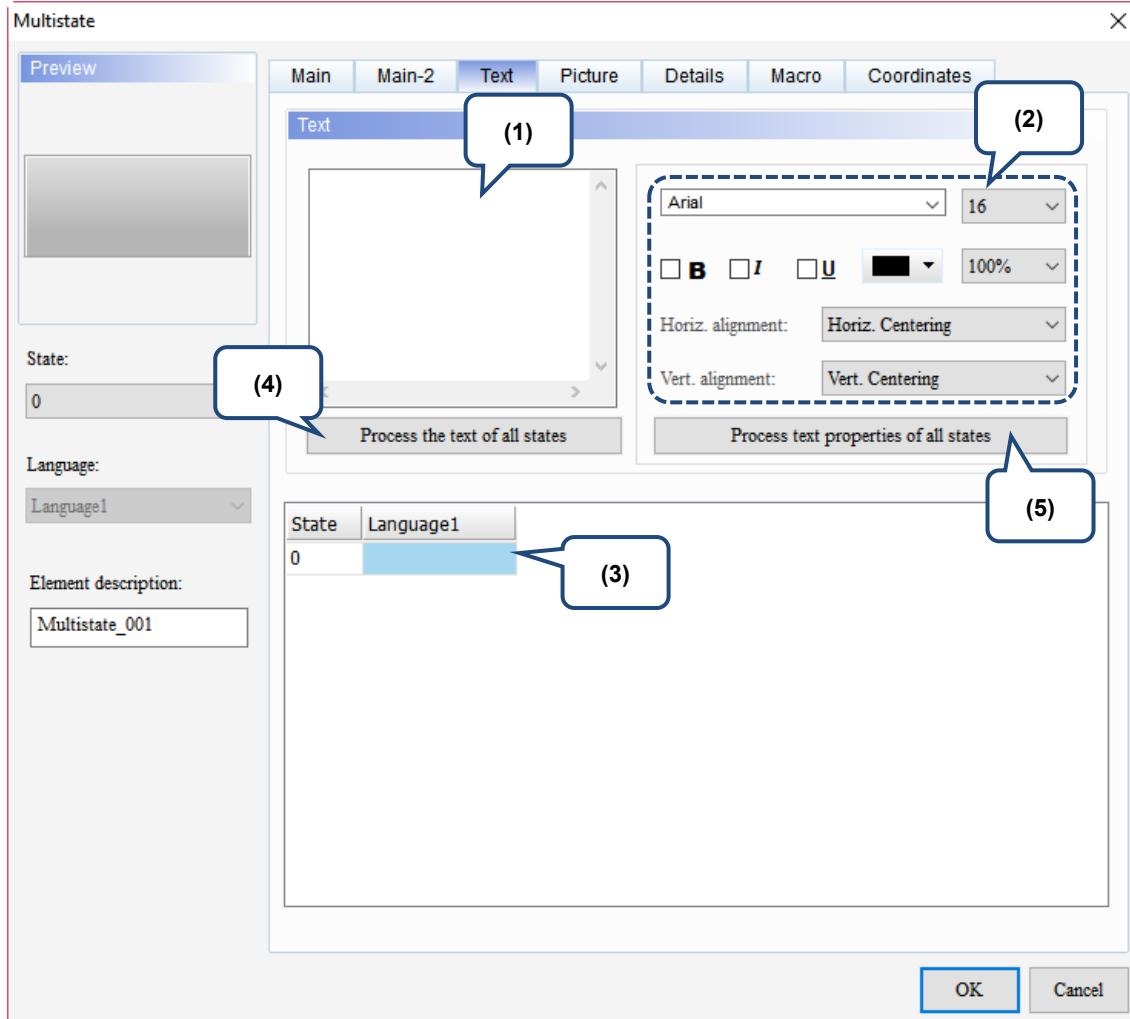
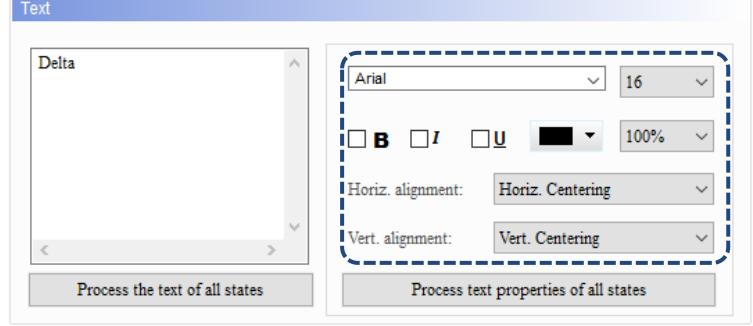
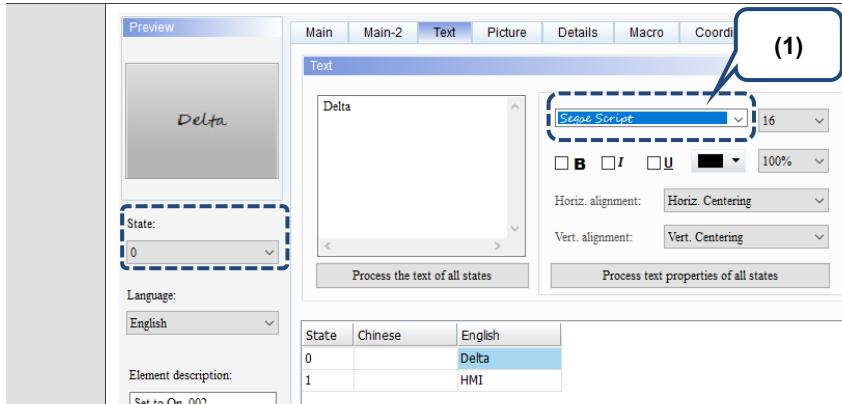
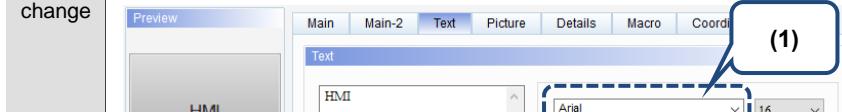
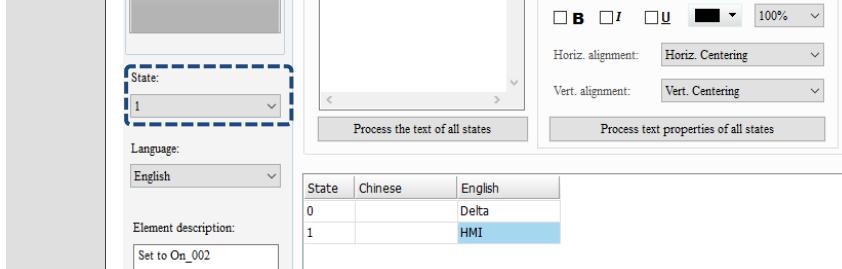
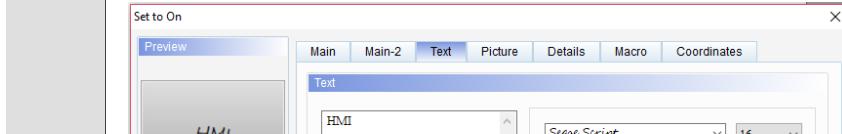
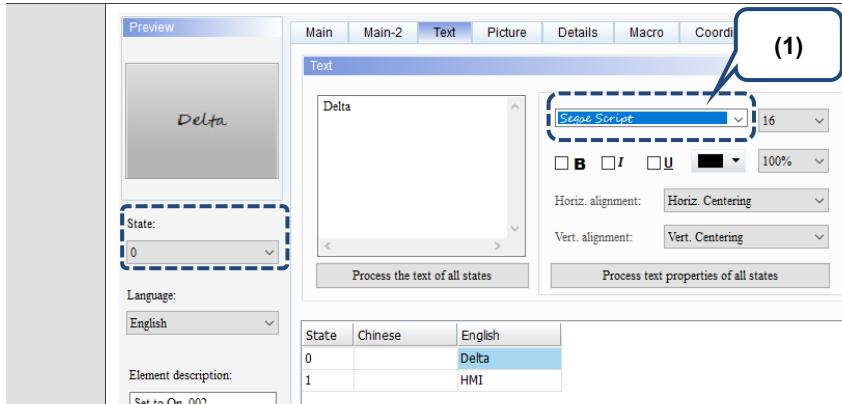
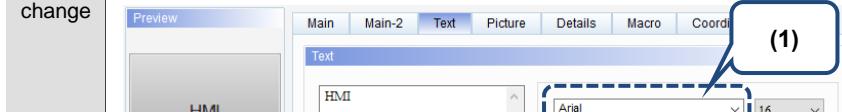
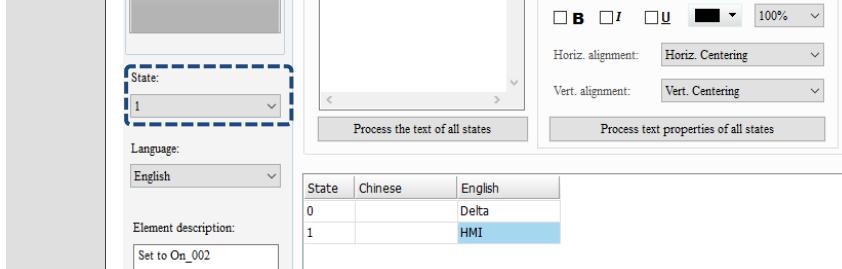
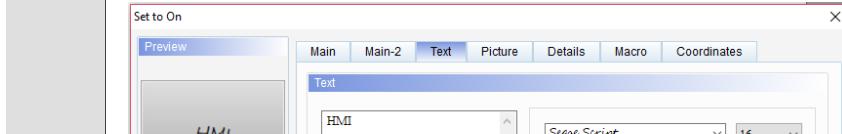
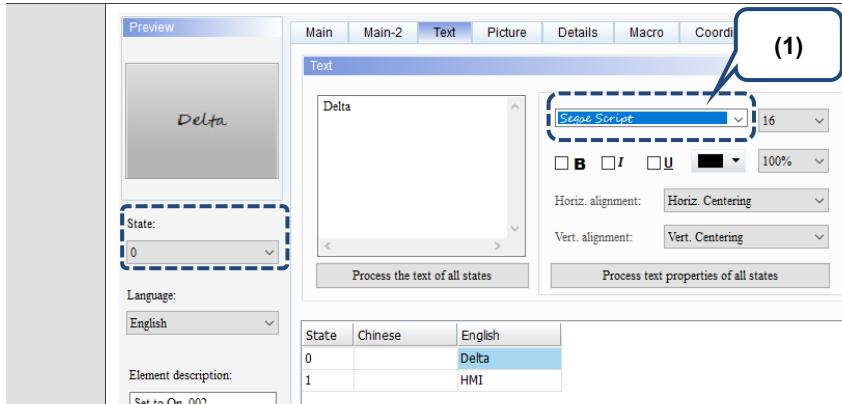
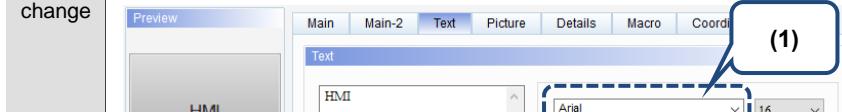
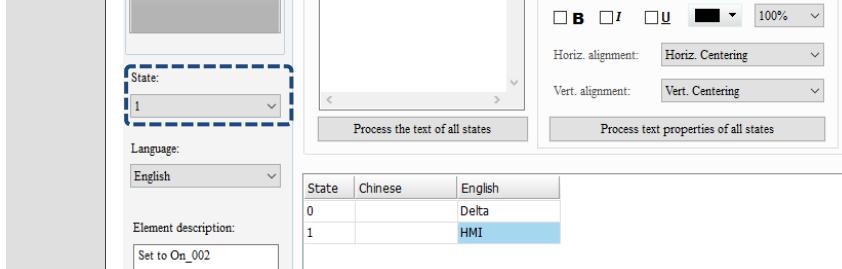
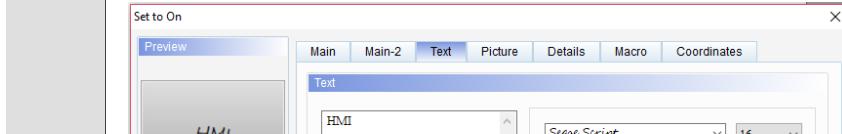


Figure 5.2.6 Text property page for the Multistate element

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No.	Property	Function description
(1)	Text	<p>You can enter the text to be displayed in the text box.</p>
(2)	Text property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the text property setting results.</p>
(3)	Edit multi-language text	<p>If you have added multi-language text, the Text page allows you to edit multi-language data.</p>
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input 123 to State 0, and 234 to State 1.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process the text of all states</b>, and the State 1 text changes to 123.</li> </ol>

No.	Property	Function description						
		<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p> 						
(5)	Process text properties of all states	<p>The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process text properties of all states</b>, and the State 1 font changes to Segoe Script.</li> </ol> <table border="1"> <tr> <td style="text-align: center;">Before change</td> <td>  </td> <td>  </td> </tr> <tr> <td style="text-align: center;">After change</td> <td>  </td> <td>  </td> </tr> </table>	Before change			After change		
Before change								
After change								

## ■ Picture

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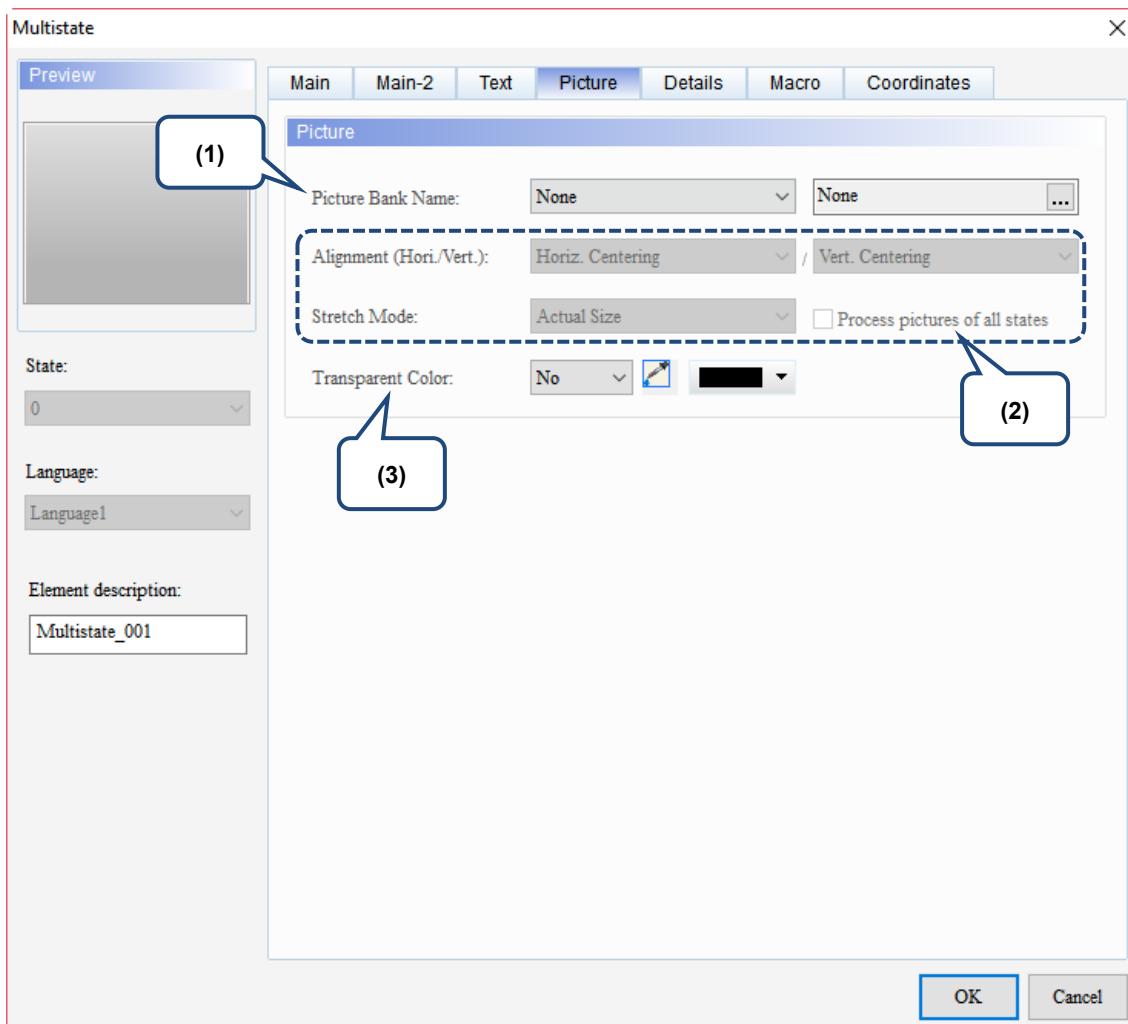
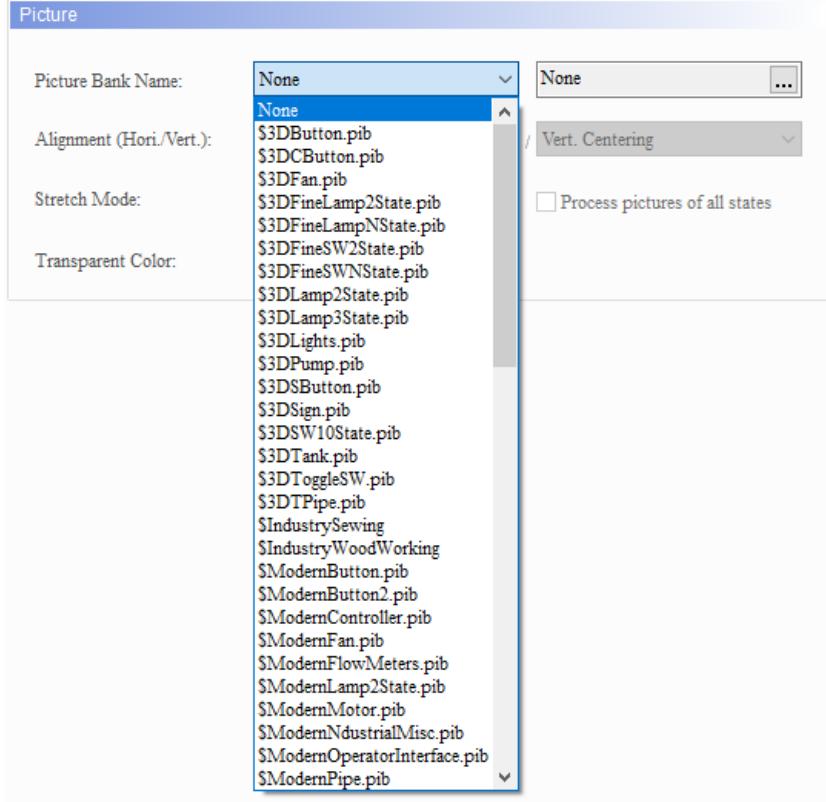
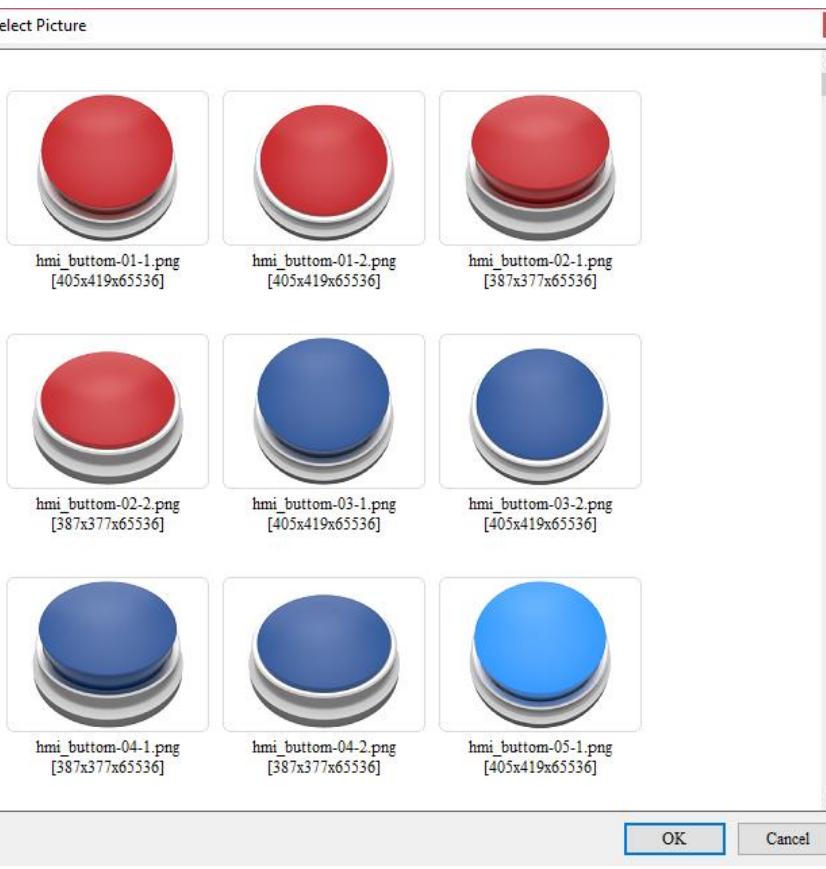
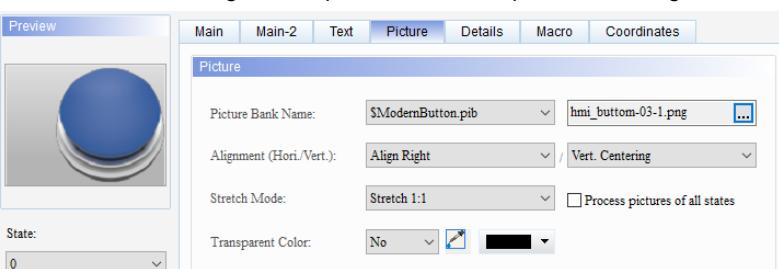


Figure 5.2.7 Picture property page for the Multistate element

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>Picture</p> <p>Picture Bank Name: <input type="button" value="None"/></p> <p>Alignment (Hori./Vert.): <input type="button" value="None"/> / Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <ul style="list-style-type: none"> <li>\$None</li> <li>\$3DFineLamp2State.pib</li> <li>\$3DFineLampNState.pib</li> <li>\$3DFan.pib</li> <li>\$3DFineLamp2State.pib</li> <li>\$3DFineLampNState.pib</li> <li>\$3DFineSW2State.pib</li> <li>\$3DFineSWNState.pib</li> <li>\$3DLamp2State.pib</li> <li>\$3DLamp3State.pib</li> <li>\$3DLights.pib</li> <li>\$3DPump.pib</li> <li>\$3DSButton.pib</li> <li>\$3DSign.pib</li> <li>\$3DSW10State.pib</li> <li>\$3DTank.pib</li> <li>\$3DToggleSW.pib</li> <li>\$3DTPipe.pib</li> <li>\$IndustrySewing</li> <li>\$IndustryWoodWorking</li> <li>\$ModernButton.pib</li> <li>\$ModernButton2.pib</li> <li>\$ModernController.pib</li> <li>\$ModernFan.pib</li> <li>\$ModernFlowMeters.pib</li> <li>\$ModernLamp2State.pib</li> <li>\$ModernMotor.pib</li> <li>\$ModernIndustrialMisc.pib</li> <li>\$ModernOperatorInterface.pib</li> <li>\$ModernPipe.pib</li> </ul> <p>Select Picture</p>  <p>hmi_button-01-1.png [405x419x65536]</p> <p>hmi_button-01-2.png [405x419x65536]</p> <p>hmi_button-02-1.png [387x377x65536]</p> <p>hmi_button-02-2.png [387x377x65536]</p> <p>hmi_button-03-1.png [405x419x65536]</p> <p>hmi_button-03-2.png [405x419x65536]</p> <p>hmi_button-04-1.png [387x377x65536]</p> <p>hmi_button-04-2.png [387x377x65536]</p> <p>hmi_button-05-1.png [405x419x65536]</p> <p>OK Cancel</p>

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No.	Property	Function description					
(2)	Alignment	<ul style="list-style-type: none"> <li>You can use the Alignment options to set how pictures are aligned.</li> </ul>  <p>The screenshot shows the 'Picture' tab of the properties dialog. It includes a preview window showing a blue button, a 'State:' dropdown set to '0', and several alignment settings: 'Picture Bank Name' (\$ModernButton.pib), 'hmi_button-03-1.png', 'Alignment (Hori./Vert.):' (Align Right / Vert. Centering), 'Stretch Mode:' (Stretch 1:1), and 'Transparent Color' (No). There is also a checkbox for 'Process pictures of all states'.</p>					
	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table>  <p>The screenshot shows three examples of stretch modes applied to a button. The first example, 'Stretch All', shows the button completely filling its container. The second example, 'Stretch 1:1', shows the button maintaining its original proportions but being scaled to fit the container. The third example, 'Actual Size', shows the button displayed at its original size within the container.</p> <ul style="list-style-type: none"> <li>If you select the check box for <b>Process pictures of all states</b>, it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.
Stretch All	Stretch 1:1	Actual Size					
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.					
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p>  <p>The screenshot shows two side-by-side previews of a calendar icon. The left preview shows the original image with a red background and white text. The right preview shows the same image with the white text and background turned transparent, appearing as if it is floating against a black background.</p>					

## ■ Details

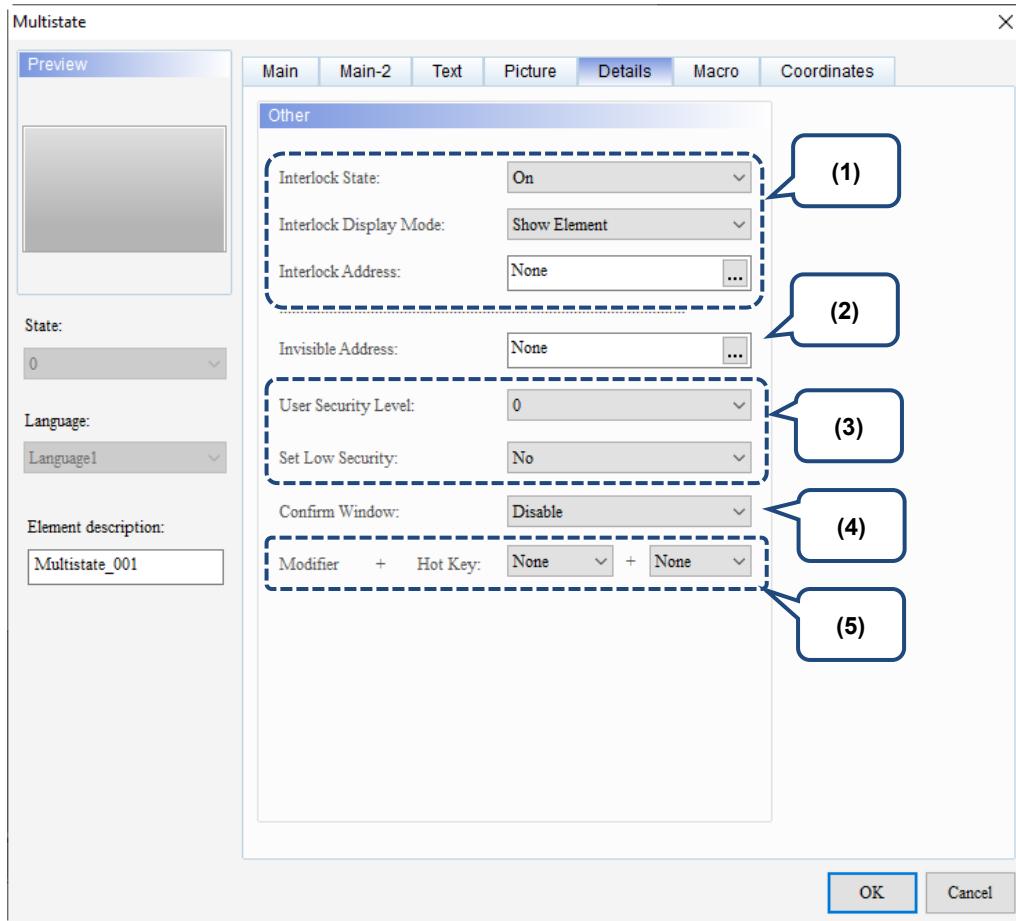
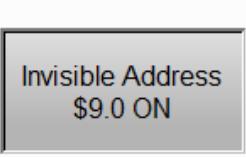
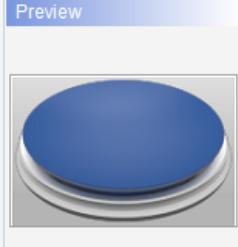


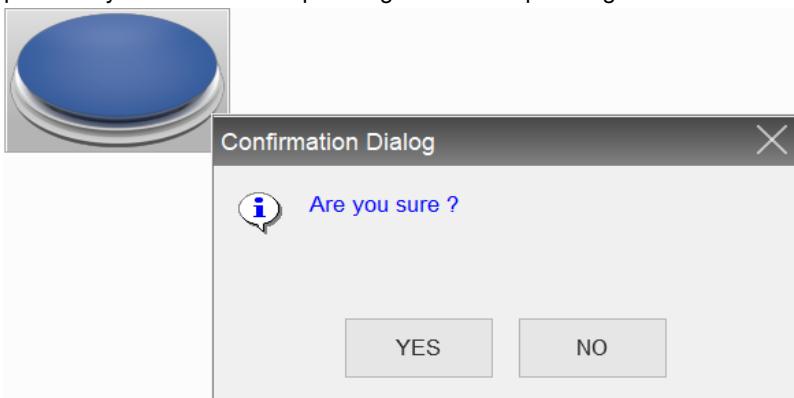
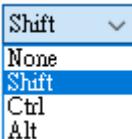
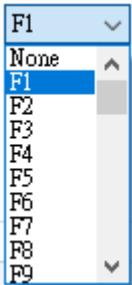
Figure 5.2.8 Details property page for the Multistate element

## 5

No.	Property	Function description				
(1)	Interlock State Interlock Address	<p>■ The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON.</p> <p>■ The following describes how it works:</p> <ol style="list-style-type: none"> <li>1. Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0.</li> <li>2. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.</li> </ol> <p>1. Create a button and set its address to \$8.0.</p> <p>2. Execute the button (address \$8.0) first so you can press the other button (address \$99.0).</p>				
	Interlock Display Mode	<p>■ The Interlock Display Mode includes two options, Show Element and Show Prohibition Symbol.</p> <table border="1"> <tr> <td>Interlock Display Mode:</td> <td>Show Element</td> </tr> <tr> <td>Interlock Address:</td> <td>Show Element Show Prohibition Symbol</td> </tr> </table>	Interlock Display Mode:	Show Element	Interlock Address:	Show Element Show Prohibition Symbol
Interlock Display Mode:	Show Element					
Interlock Address:	Show Element Show Prohibition Symbol					
(2)	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</p>				

No.	Property	Function description																		
		<p>Invisible Address is on</p>  <p>Element is invisible</p>  <p>Invisible Address \$9.0 ON</p> <p>Preview</p>  <p>Main Main-2 Text Picture Details Macro</p> <p>Other</p> <p>Interlock State: On</p> <p>Interlock Address: None</p> <p>Invisible Address: \$9.0</p>																		
(3)	User Security Level	<ul style="list-style-type: none"> <li>You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>After you set the permission level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element; refer to Section 5.7.2 Password Table Setup).</li> </ul> <table border="1"> <tr> <td>User Security Level:</td> <td>0</td> </tr> <tr> <td>Set Low Security:</td> <td>0</td> </tr> <tr> <td>Min. Press Time (sec):</td> <td>1</td> </tr> <tr> <td>Confirm Window:</td> <td>2</td> </tr> <tr> <td></td> <td>3</td> </tr> <tr> <td></td> <td>4</td> </tr> <tr> <td></td> <td>5</td> </tr> <tr> <td></td> <td>6</td> </tr> <tr> <td></td> <td>7</td> </tr> </table> <p>If you specify Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to input the password for the corresponding security level.</p> 	User Security Level:	0	Set Low Security:	0	Min. Press Time (sec):	1	Confirm Window:	2		3		4		5		6		7
User Security Level:	0																			
Set Low Security:	0																			
Min. Press Time (sec):	1																			
Confirm Window:	2																			
	3																			
	4																			
	5																			
	6																			
	7																			

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No.	Property	Function description
(4)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the pressing action after pressing the element.</p> 
(5)	Modifier + Hot Key	<ul style="list-style-type: none"> <li>■ Allows you to use the hot keys on the external keyboard to execute the button.</li> <li>■ The Modifier options include None, Shift, Ctrl, and Alt.</li> </ul>  <ul style="list-style-type: none"> <li>■ The Hot Key options include F1 to F12, English letters A to Z, and number keys 0 to 9.</li> </ul> 

## ■ Macro

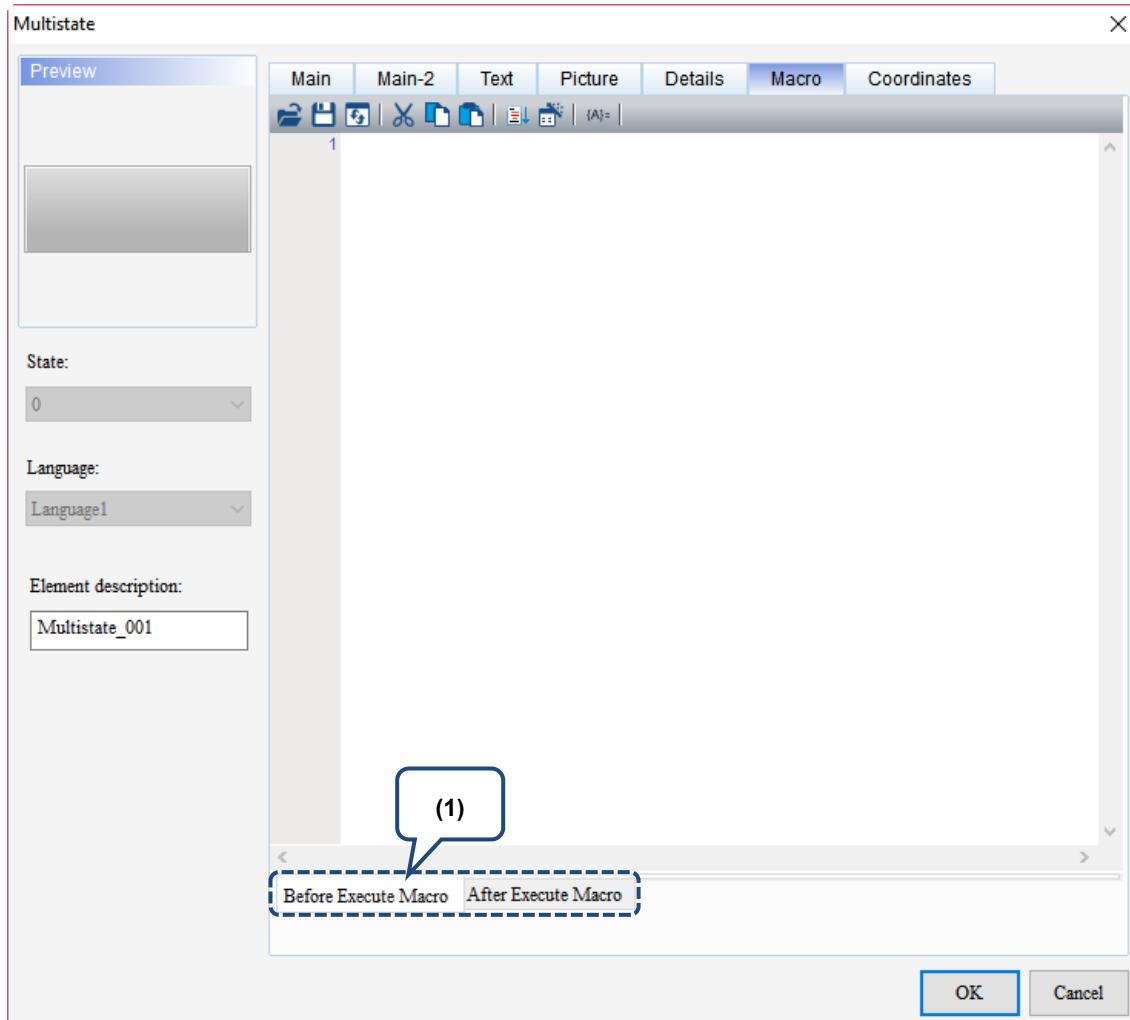


Figure 5.2.9 Macro property page for the Multistate element

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No.	Function description	
	Before Execute Macro	After Execute Macro
(1)	<p>Flowchart of Before Execute Macro:</p> <pre> graph TD     A[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B[Before Execute Macro]     B -- "Button triggered ON and numeric written" --&gt; C[Maintained Button]     C -- "Trigger OFF / Input Numeric" --&gt; D[Before Execute Macro]     D -- "Button triggered OFF and numeric written" --&gt; E[Maintained Button]     </pre> <p>When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>	<p>Flowchart of After Execute Macro:</p> <pre> graph TD     A[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B[Before Execute Macro]     B -- "Button triggered ON and numeric written" --&gt; C[Maintained Button]     C -- "Trigger at next time" --&gt; D[After Execute Macro]     D -- "Trigger OFF / Input Numeric" --&gt; E[Maintained Button]     E -- "Button triggered OFF and numeric written" --&gt; F[After Execute Macro]     </pre> <p>When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.</p>

## ■ Coordinates

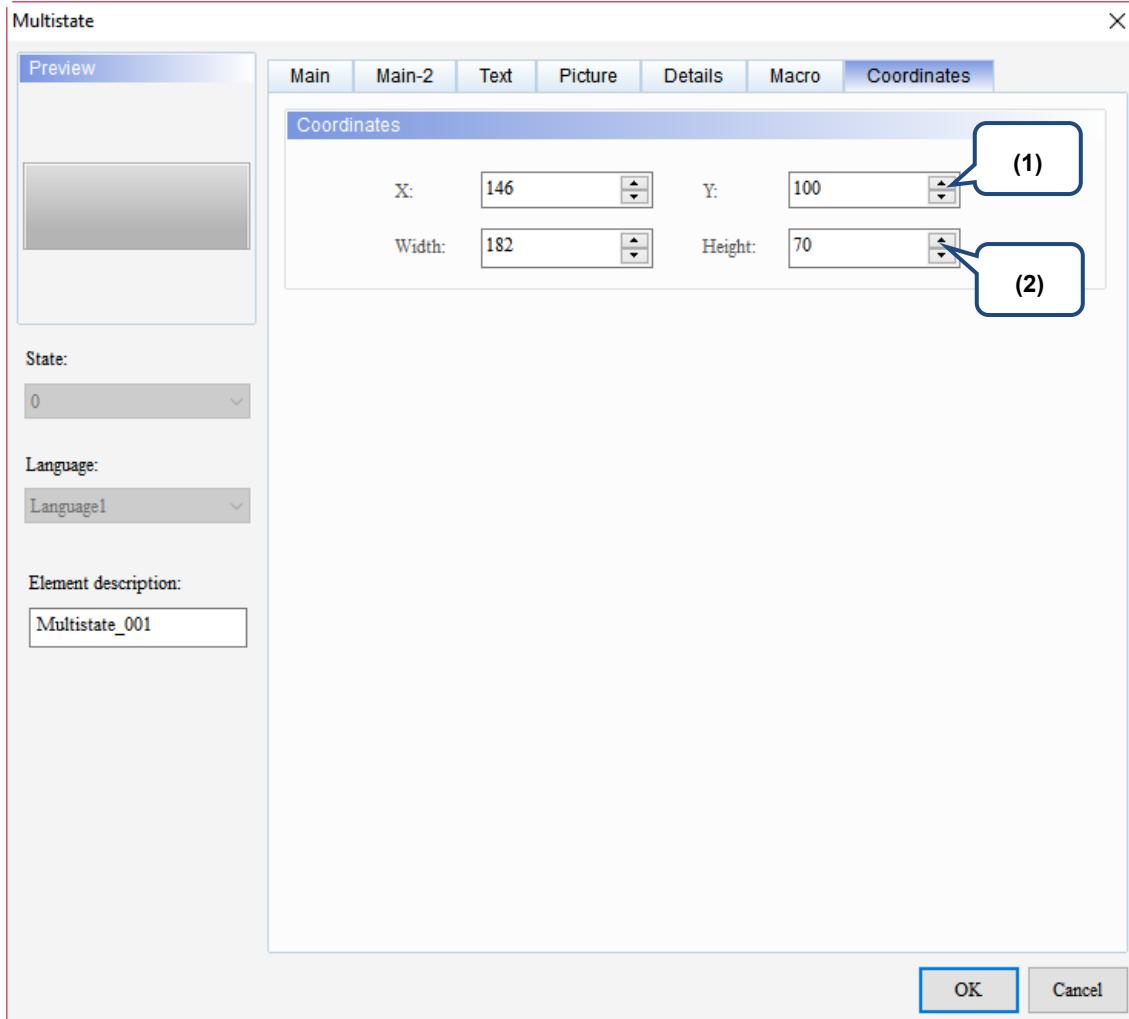


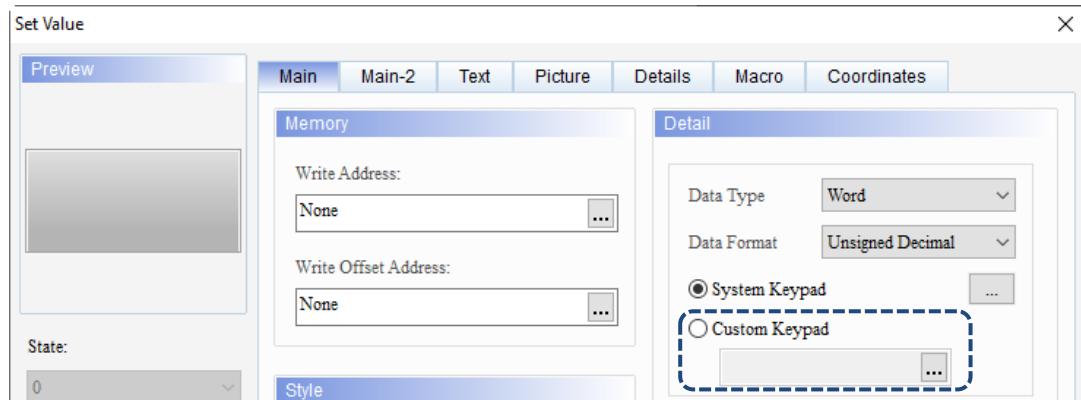
Figure 5.2.10 Coordinates property page for the Multistate element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 5.3 Set Value

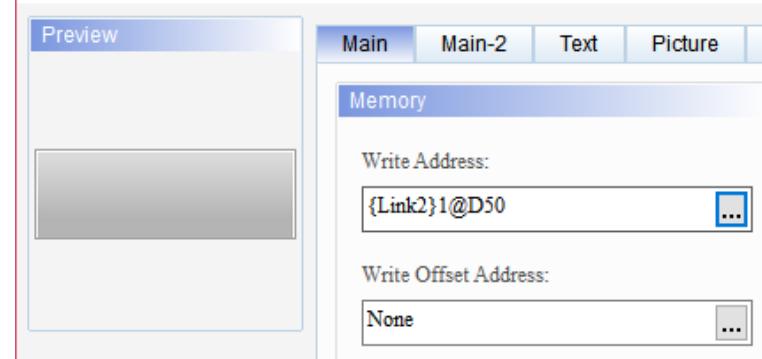
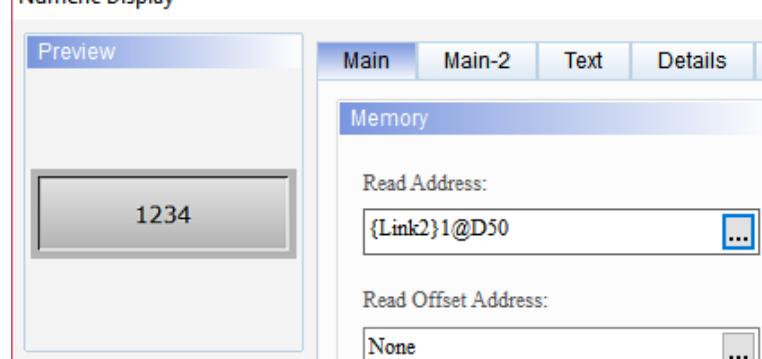
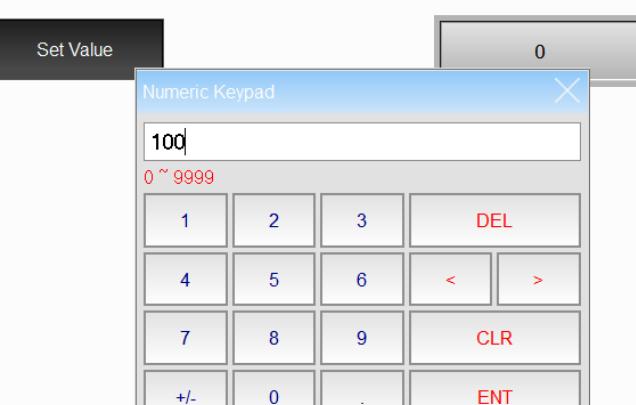
When you touch this button on the HMI, the built-in Numeric Keypad appears on the screen for you to input values. After you press **ENTER**, the HMI sends the values to the corresponding register. You can set the maximum and minimum input values and set the trigger mode, such as triggering the specified controller Bit address before or after writing.

Note: the Custom Keypad for the Set Value element is not supported on DOP-B, DOP-H and HMC series HMIs.



Refer to Table 5.3.1 for the Set Value example.

Table 5.3.1 Set Value example

Set Value	
Write Address	<ul style="list-style-type: none"> <li>■ Create a Set Value element and set the Write Address to D50.</li> <li>■ Create a Numeric Display element and set the Read Address to D50.</li> </ul> <p><b>Set Value</b></p>  <p><b>Numeric Display</b></p> 
Execution results	<p>Before Set Value</p>  <p>After Set Value</p>  <p>Click <b>Set Value</b>, input the value of 100, and the Numeric Display element displays 100.</p>

When you double-click the Set Value element, the property page is shown as follows.

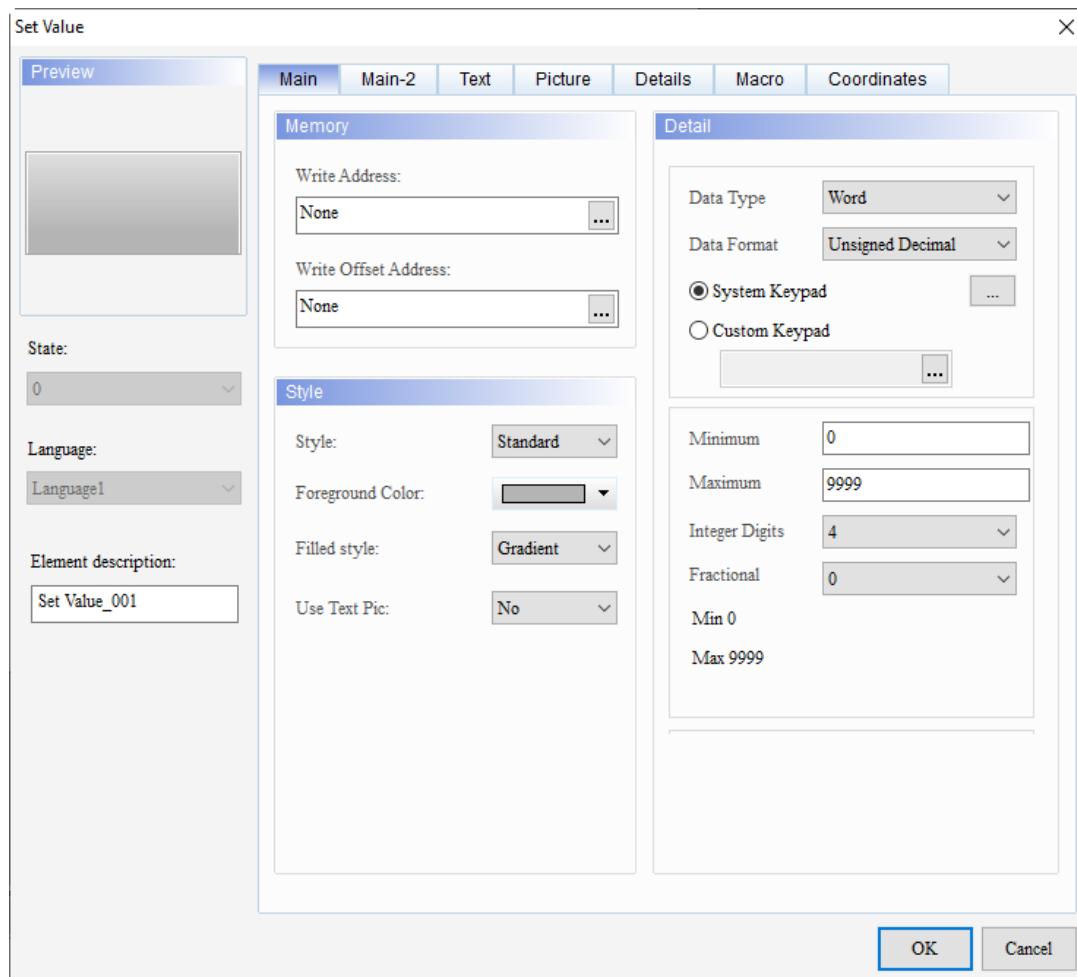


Figure 5.3.1 Properties of Set Value

Table 5.3.2 Function page of Set Value

Set Value	
Function page	Description
Preview	The Set Value element can only view multi-language data display since the multistate property is not available for this element.
Main	Set the Write Address, Write Offset Address, Style, Foreground Color, Filled style, and Use Text Pic function. Set the Data Type, Data Format, keypad style, Minimum / Maximum, Integer Digits, and Fractional of the Set Value element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing options.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color options.
Details	Set the Interlock Address, Interlock State, Interlock Display Mode, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, Mark as Asterisk (*), Confirm Window, Show overrange message, and Modifier + Hot Key.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

■ Main

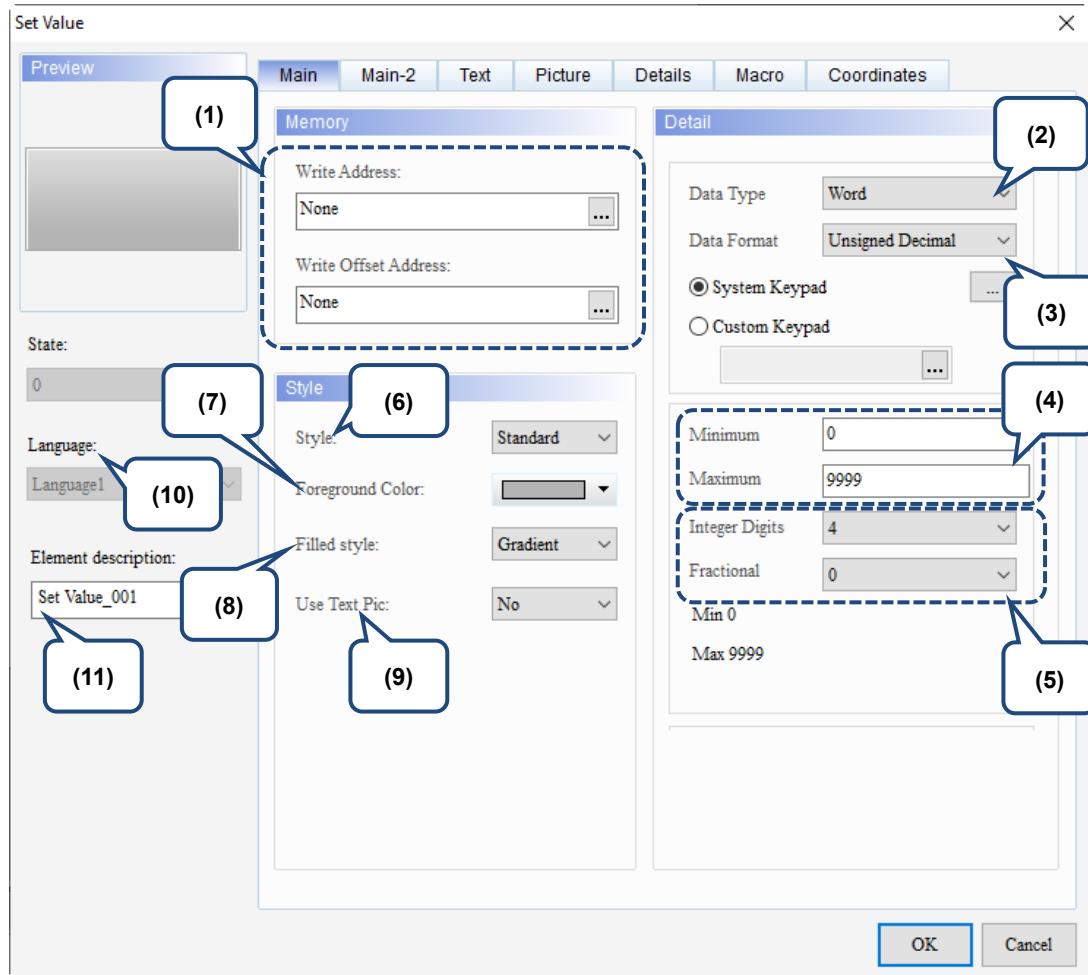
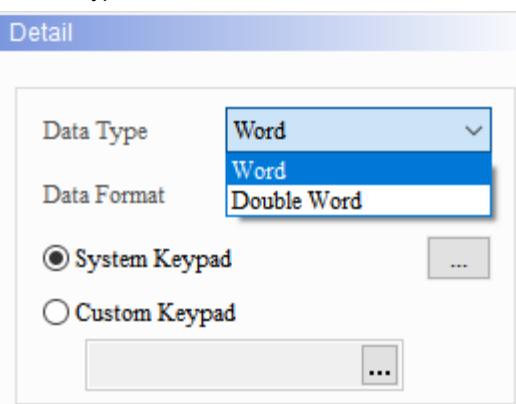
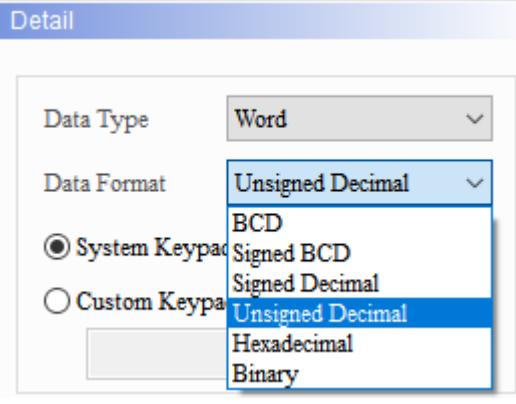
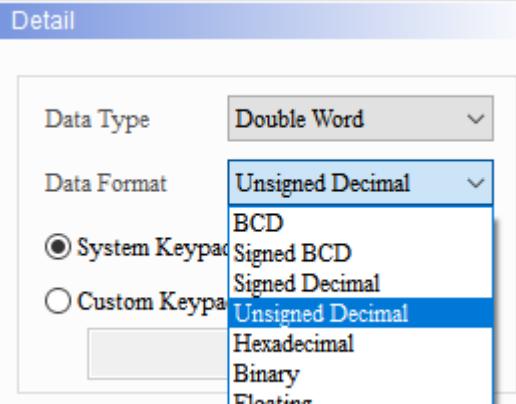


Figure 5.3.2 Main property page for the Set Value element

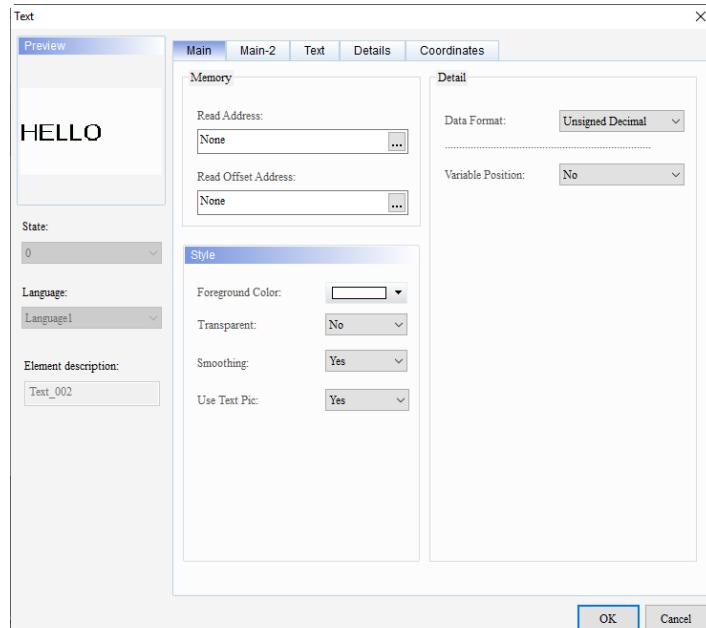
No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> <li>You can choose the internal memory or the controller register address. The input memory type must be Word.</li> <li>For the Link name and Device Type, refer to Section 5.1.</li> </ul>
	Write Offset Address	Refer to the instructions in Appendix D Write and Read Offset Addresses.

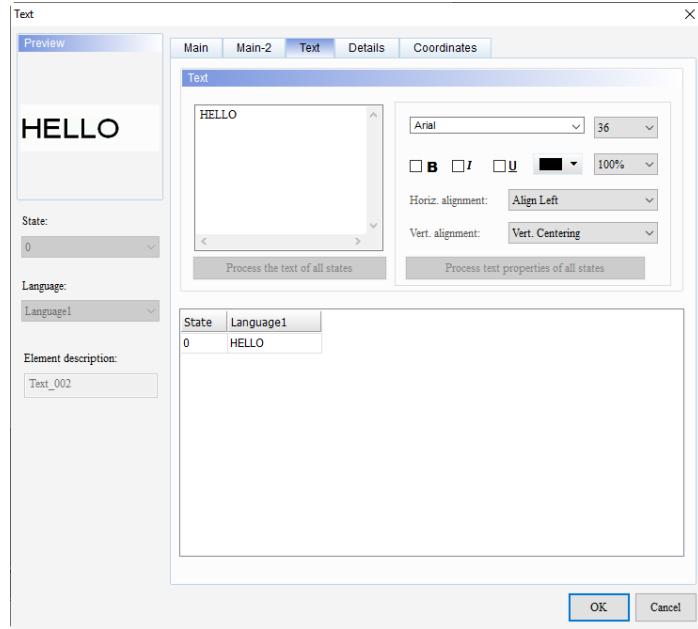
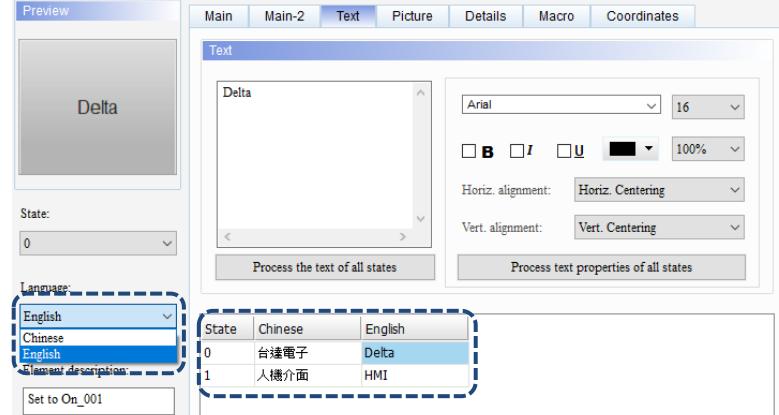
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No.	Property	Function description
(2)	Data Type	<p>There are two data types: Word and Double Word.</p> 
(3)	Detail settings Data Format	<ul style="list-style-type: none"> <li>■ When you set the Data Type to Word, the supported data formats are as follows:</li> </ul>  <ul style="list-style-type: none"> <li>■ When you set the Data Type to Double Word, the supported data formats are as follows:</li> </ul> 

No.	Property	Function description									
(4)	Detail settings	Minimum / Maximum	The allowable ranges for the minimum and maximum values are subject to change based on the selected Data Type and Data Format.								
			Word	Data Type      Data Format      Allowable range							
				BCD      0 to 9999							
				Signed BCD      -999 to +9999							
				Signed Decimal      -32768 to +32767							
				Unsigned Decimal      0 to 65535							
				Hex      0 to 0xFFFF							
				Binary      0 to 0xFFFF							
				BCD      0 to 99999999							
				Signed BCD      -9999999 to +9999999							
(5)		Integer Digits Fractional Digits	You can set the displaying number of integer digits and the number of decimal places.								
(6)	Style	The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.									
		<table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>				Standard	Raised	Round	Invisible		
Standard	Raised	Round	Invisible								
(7)	Foreground Color	<ul style="list-style-type: none"> <li>Set the foreground color of the element.</li> <li>When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ul>									
		<p>Foreground Color: </p>									

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No.	Property	Function description	
(8)	Filled style	Gradient	
		Fixed (Solid)	
(9)	Use Text Pic	<p>Unlike the DOP-B series models using pictures to present all texts, the DOP-100 series models present directly with the texts. Therefore, if the language you use for the element is not yet supported by the PC, it is possible to cause missing characters and garbled texts when the element is displayed on the HMI. To have the text display effect be the same as that on the DOP-B models, the Use Text Pic function is added for the Text, Button, and General Message Display elements. Refer to the following examples.</p> <p><b>Use Text Pic function</b></p>	
		<p>■ Create a Text element and go to the [Main] tab to set the Use Text Pic function.</p>  <p>Note: if you use the DOPSoft 4.00.06 version to open a DOP-B project, the Use Text Pic function is enabled (Yes) by default. If you add a DOP-100 project, then the Use Text Pic function is disabled (No) by default.</p>	

No.	Property	Function description										
(9)	Use Text Pic	<p>■ Go to the [Text] tab, and type the text and set its font.</p> 										
		<p>■ After creating the element, download it to the HMI.</p> <p>■ The following table shows the results of using and not using the Use Text Pic function.</p> <table border="1"> <tr> <td>Use Text Pic is Yes</td> <td>Use text Pic is No</td> </tr> <tr> <td></td> <td></td> </tr> </table>		Use Text Pic is Yes	Use text Pic is No							
Use Text Pic is Yes	Use text Pic is No											
												
(10)	Language	<p>If you have set the language data, you can edit the properties of the displayed text with the Language setting of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table>		State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI
State	Chinese	English										
0	台達電子	Delta										
1	人機介面	HMI										

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No.	Property	Function description						
(11)	Element description	Record the button actions executed and to be executed. The record is written into the CSV file of the Operation Log Table.						

Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value
1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0
2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1
3 13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4
4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1
5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0
6 13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1
7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0
8 13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8
9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25

## ■ Main-2

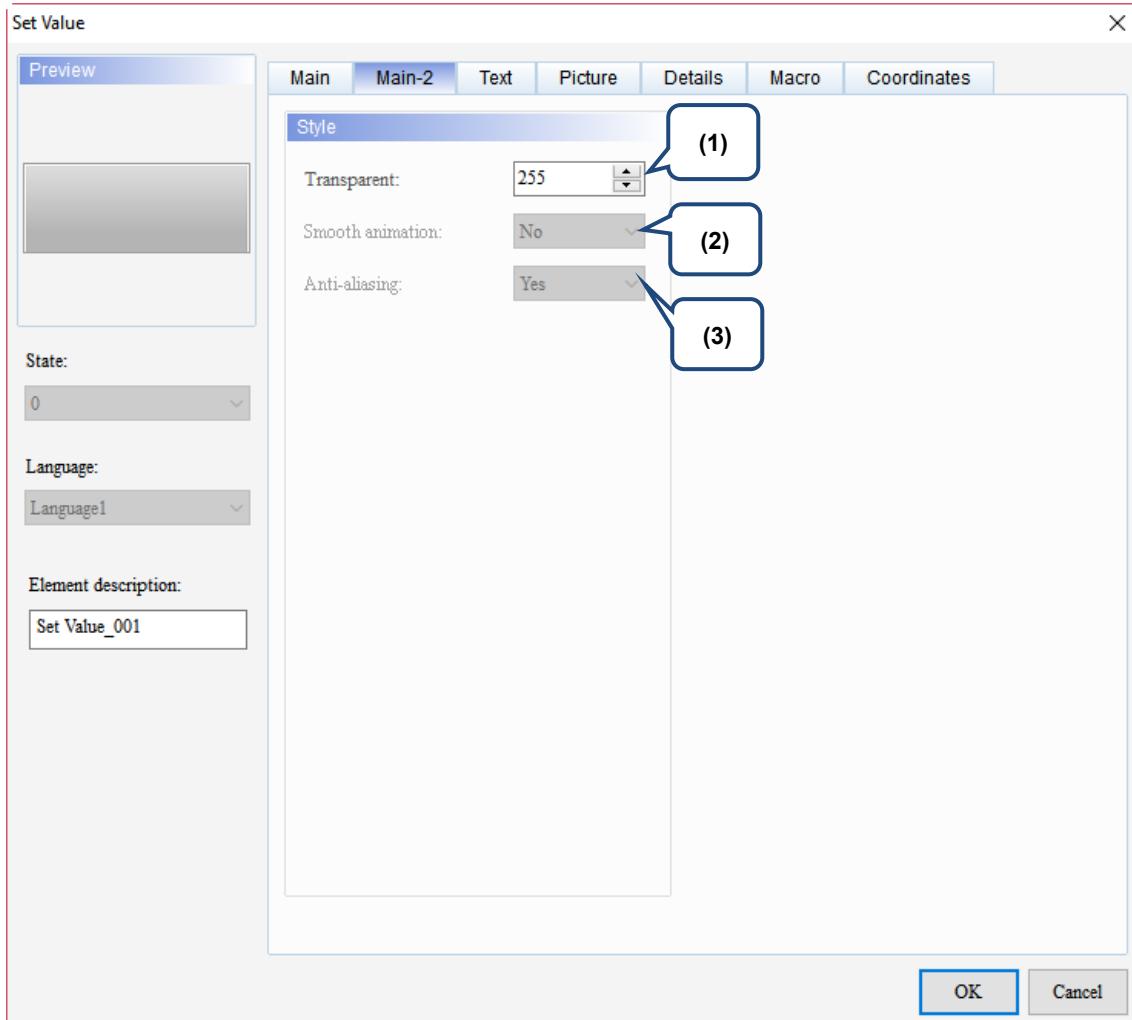


Figure 5.3.3 Main-2 property page for the Set Value element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

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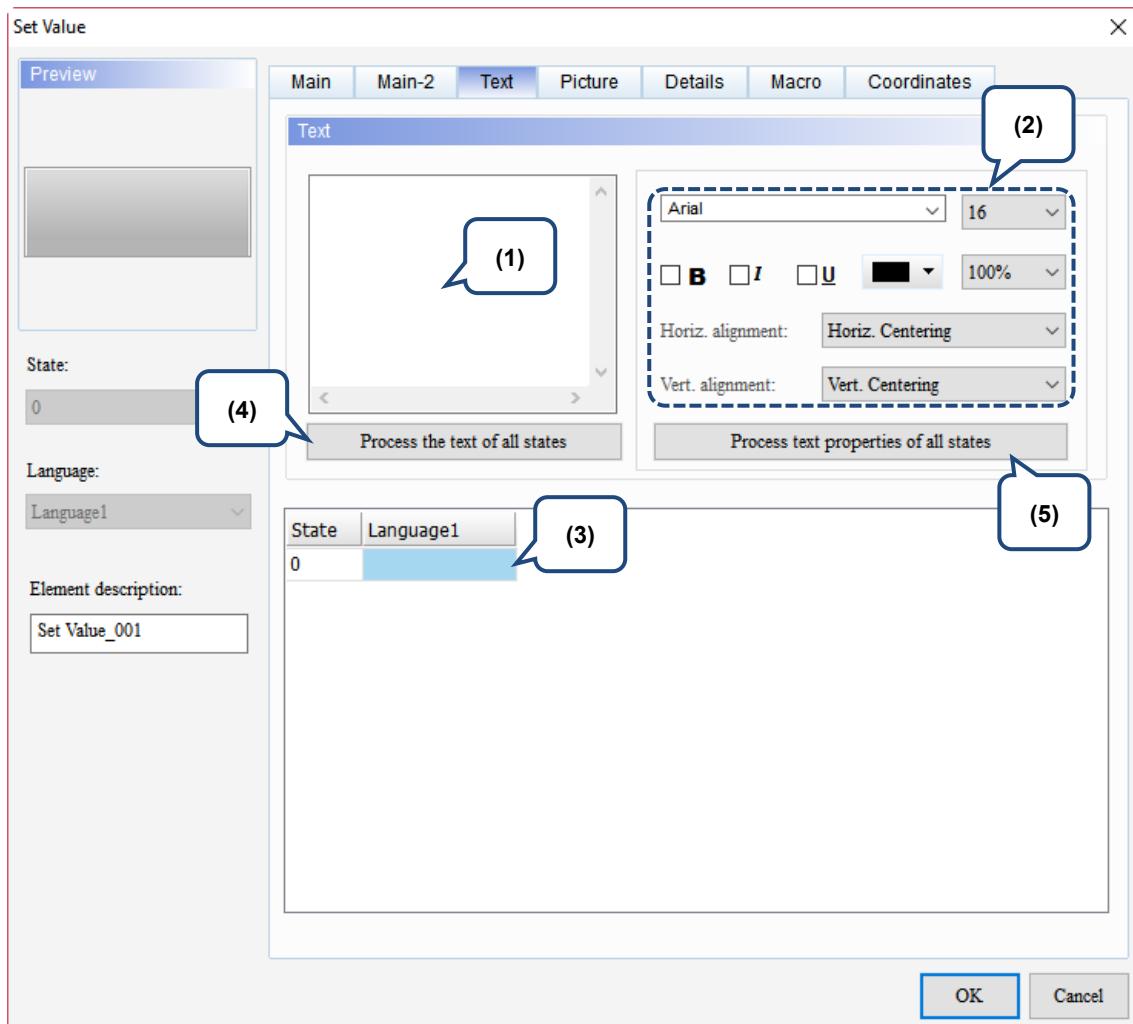
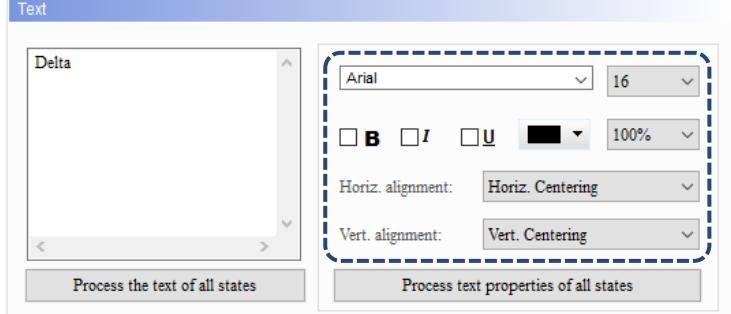
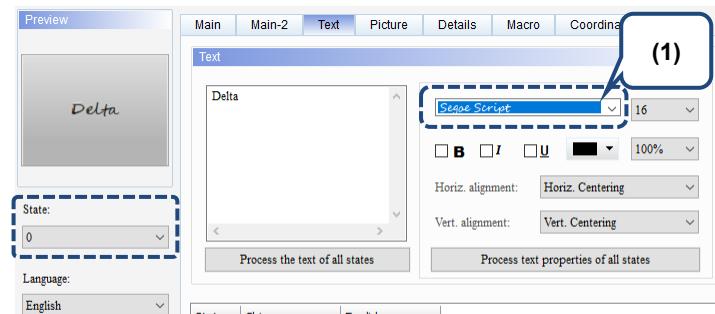
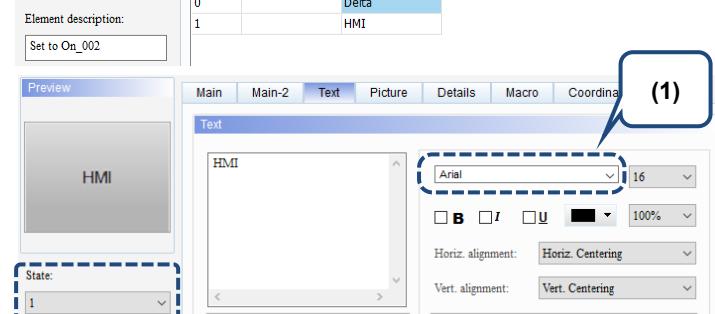
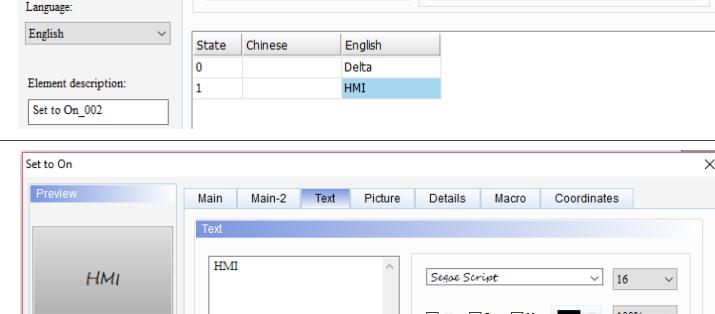
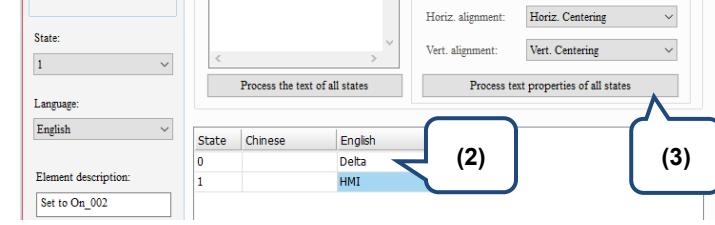
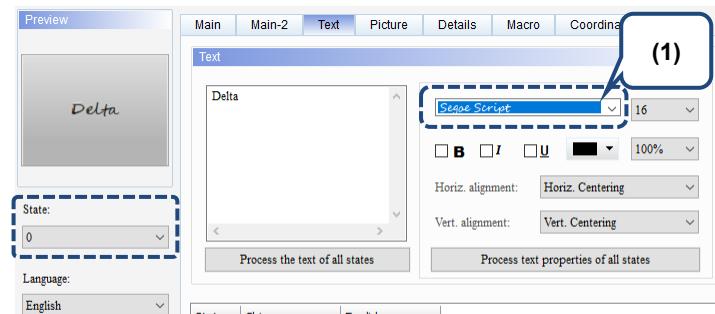
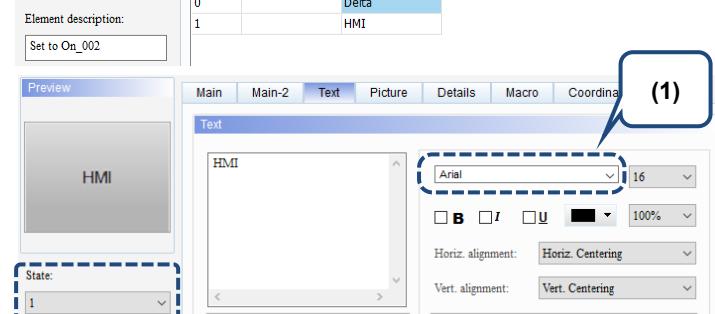
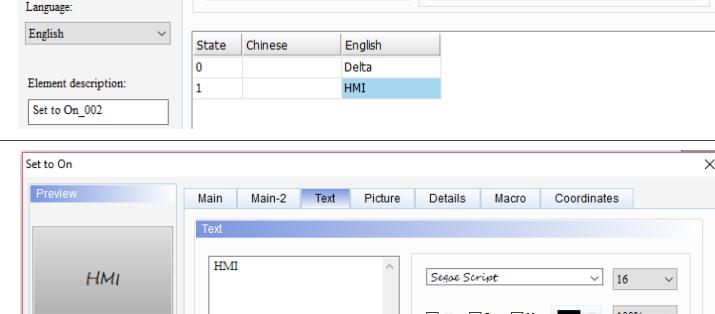
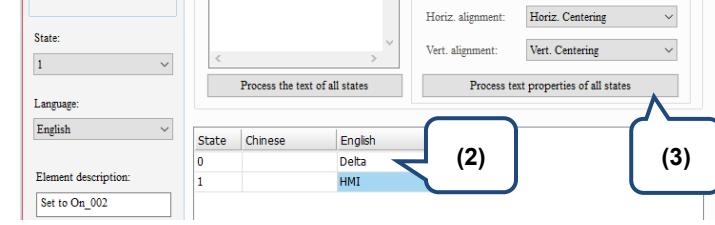
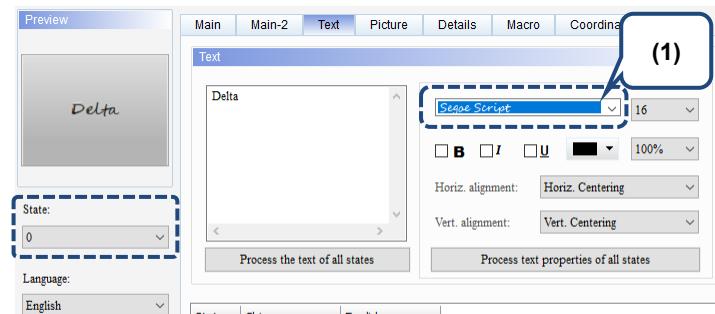
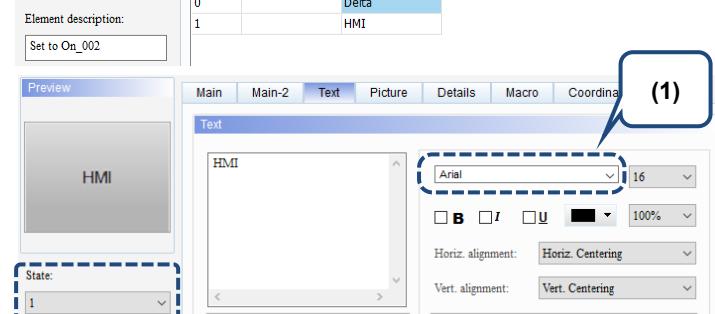
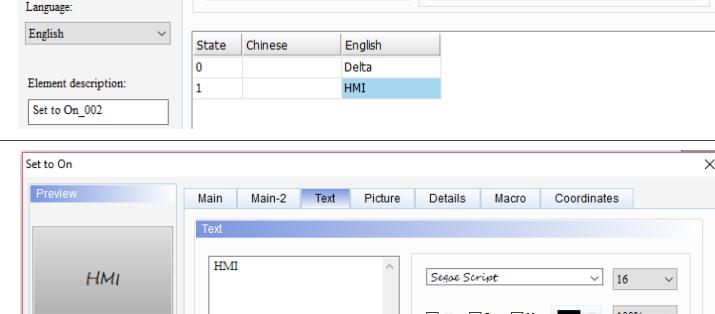
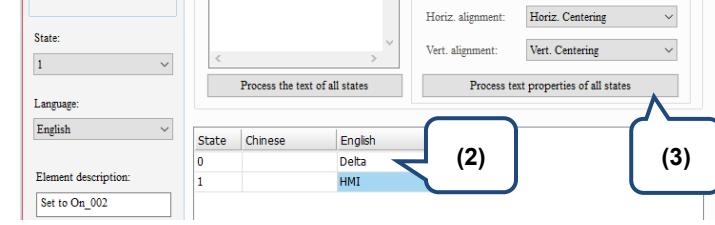


Figure 5.3.4 Text property page for the Set Value element

No.	Property	Function description									
(1)	Text	<p>■ You can input the text to be displayed in the text box.</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table> <p>■ As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.</p>	State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI
State	Chinese	English									
0	台達電子	Delta									
1	人機介面	HMI									
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the text property setting results.									
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.									

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No.	Property	Function description
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected.</p> <p>The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input 123 to State 0, and 234 to State 1.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process the text of all states</b>, and the State 1 text changes to 123.</li> </ol> <p>Before change</p> <p>After change</p>

No.	Property	Function description				
		<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>  <p>The screenshot shows the 'Text' dialog box with a preview window containing the word 'Delta'. To the right are font selection dropdowns for 'Font' (set to Arial) and 'Size' (set to 16), along with bold, italic, underline, and color buttons. Below these are alignment options: 'Horiz. alignment' set to 'Horiz. Centering' and 'Vert. alignment' set to 'Vert. Centering'. At the bottom are two buttons: 'Process the text of all states' and 'Process text properties of all states'.</p>				
(5)	Process text properties of all states	<p>■ The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process text properties of all states</b>, and the State 1 font changes to Segoe Script.</li> </ol> <table border="1"> <tr> <td style="text-align: center; vertical-align: top;">Before change</td> <td>  <p>The 'Text' dialog box shows 'Delta' in Segoe Script font. A callout (1) points to the font dropdown which is set to 'Segoe Script'. The preview window also shows 'Delta' in Segoe Script.</p>    <p>The 'Text' dialog box shows 'HMI' in Arial font. A callout (1) points to the font dropdown which is set to 'Arial'. The preview window shows 'HMI' in Arial.</p> </td> </tr> <tr> <td style="text-align: center; vertical-align: top;">After change</td> <td>  <p>The 'Text' dialog box shows 'HMI' in Segoe Script font. A callout (1) points to the font dropdown which is now set to 'Segoe Script'. The preview window shows 'HMI' in Segoe Script.</p>    <p>The 'Text' dialog box shows 'HMI' in Segoe Script font. Callouts (2) and (3) point to the 'Process the text of all states' and 'Process text properties of all states' buttons respectively at the bottom of the dialog.</p> </td> </tr> </table>	Before change	 <p>The 'Text' dialog box shows 'Delta' in Segoe Script font. A callout (1) points to the font dropdown which is set to 'Segoe Script'. The preview window also shows 'Delta' in Segoe Script.</p>  <p>The 'Text' dialog box shows 'HMI' in Arial font. A callout (1) points to the font dropdown which is set to 'Arial'. The preview window shows 'HMI' in Arial.</p>	After change	 <p>The 'Text' dialog box shows 'HMI' in Segoe Script font. A callout (1) points to the font dropdown which is now set to 'Segoe Script'. The preview window shows 'HMI' in Segoe Script.</p>  <p>The 'Text' dialog box shows 'HMI' in Segoe Script font. Callouts (2) and (3) point to the 'Process the text of all states' and 'Process text properties of all states' buttons respectively at the bottom of the dialog.</p>
Before change	 <p>The 'Text' dialog box shows 'Delta' in Segoe Script font. A callout (1) points to the font dropdown which is set to 'Segoe Script'. The preview window also shows 'Delta' in Segoe Script.</p>  <p>The 'Text' dialog box shows 'HMI' in Arial font. A callout (1) points to the font dropdown which is set to 'Arial'. The preview window shows 'HMI' in Arial.</p>					
After change	 <p>The 'Text' dialog box shows 'HMI' in Segoe Script font. A callout (1) points to the font dropdown which is now set to 'Segoe Script'. The preview window shows 'HMI' in Segoe Script.</p>  <p>The 'Text' dialog box shows 'HMI' in Segoe Script font. Callouts (2) and (3) point to the 'Process the text of all states' and 'Process text properties of all states' buttons respectively at the bottom of the dialog.</p>					

## ■ Picture

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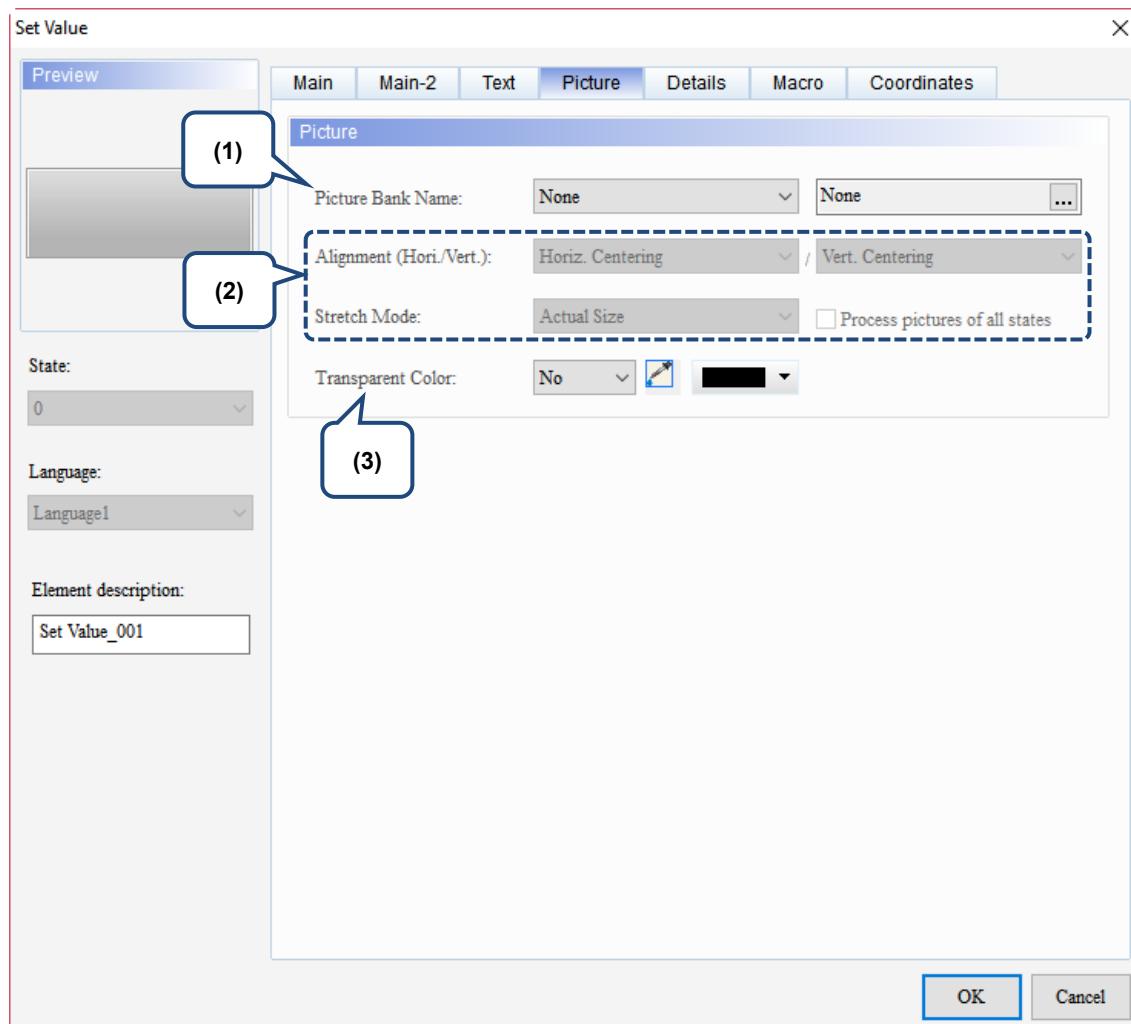
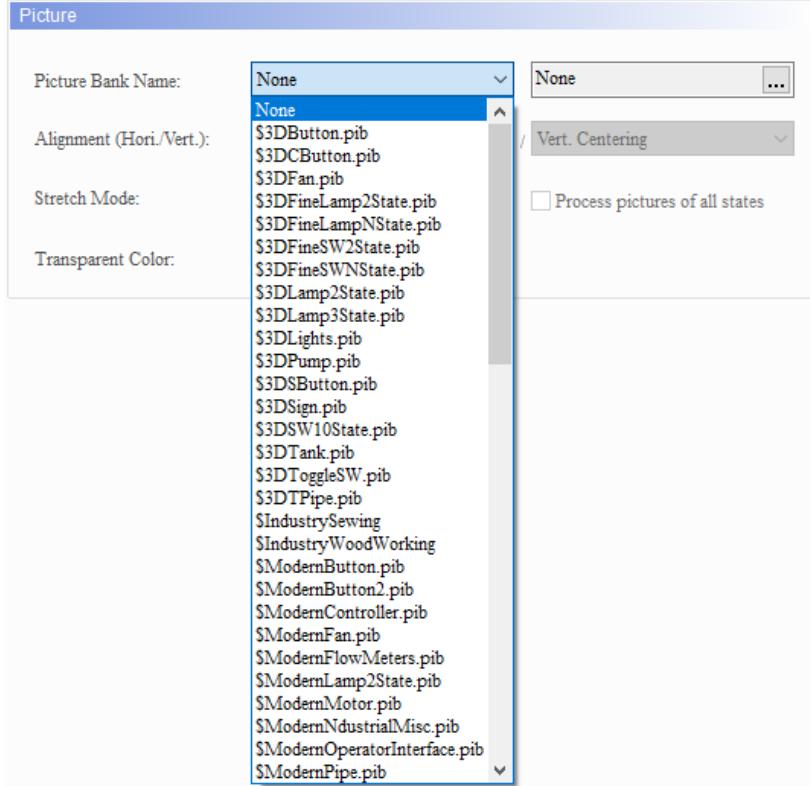
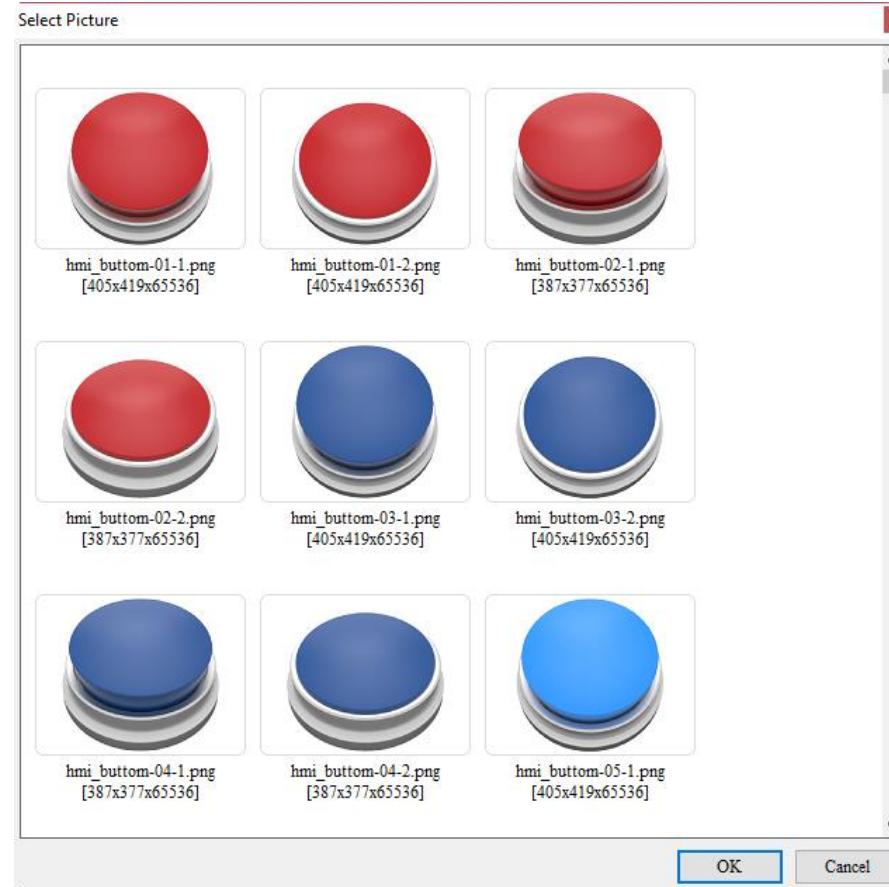
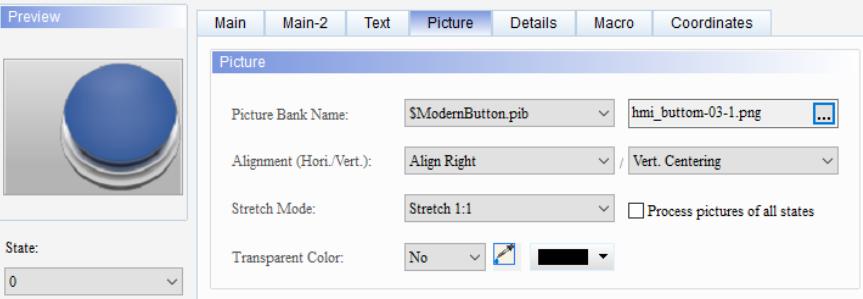


Figure 5.3.5 Picture property page for the Set Value element

No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>Picture</p> <p>Picture Bank Name: None</p> <p>Alignment (Hori./Vert.): Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p>None</p> <p>\$3DFineLamp2State.pib \$3DFineLampNState.pib \$3DFan.pib \$3DFineLamp2State.pib \$3DFineLampNState.pib \$3DFineSW2State.pib \$3DFineSWNState.pib \$3DLamp2State.pib \$3DLamp3State.pib \$3DLights.pib \$3DPump.pib \$3DSButton.pib \$3DSign.pib \$3DSW10State.pib \$3DTank.pib \$3DToggleSW.pib \$3DTPipe.pib \$IndustrySewing \$IndustryWoodWorking \$ModernButton.pib \$ModernButton2.pib \$ModernController.pib \$ModernFan.pib \$ModernFlowMeters.pib \$ModernLamp2State.pib \$ModernMotor.pib \$ModernIndustrialMisc.pib \$ModernOperatorInterface.pib \$ModernPipe.pib</p> <p>Select Picture</p>  <p>hmi_button-01-1.png [405x419x65536]</p> <p>hmi_button-01-2.png [405x419x65536]</p> <p>hmi_button-02-1.png [387x377x65536]</p> <p>hmi_button-02-2.png [387x377x65536]</p> <p>hmi_button-03-1.png [405x419x65536]</p> <p>hmi_button-03-2.png [405x419x65536]</p> <p>hmi_button-04-1.png [387x377x65536]</p> <p>hmi_button-04-2.png [387x377x65536]</p> <p>hmi_button-05-1.png [405x419x65536]</p> <p>OK Cancel</p>

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No.	Property	Function description						
	Alignment	<p>You can use the Alignment options to set how pictures are aligned.</p>  <p>The screenshot shows the 'Picture' tab of the properties dialog. It includes a preview window showing a blue button, a state dropdown set to '0', and tabs for Main, Main-2, Text, Picture, Details, Macro, and Coordinates. The 'Picture' tab is selected. Under 'Picture', the 'Picture Bank Name' is '\$ModernButton.pib' and the file is 'hmi_button-03-1.png'. The 'Alignment (Hori./Vert.)' dropdown shows 'Align Right' and 'Vert. Centering'. The 'Stretch Mode' dropdown shows 'Stretch 1:1' and there is a checked checkbox for 'Process pictures of all states'. The 'Transparent Color' dropdown has 'No' selected with a color swatch.</p>						
(2)	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.           <table border="1"> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </table>  <p>The three images show a blue button. The first image (Stretch All) shows the button stretched to fit the entire element area. The second image (Stretch 1:1) shows the button at its original size within a smaller element area. The third image (Actual Size) shows the button at its original size within a larger element area.</p> </li> <li>If you select the check box for <b>Process pictures of all states</b>, it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.
Stretch All	Stretch 1:1	Actual Size						
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.						
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and select the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p>  <p>The screenshot shows the 'Picture' tab of the properties dialog. It includes a preview window showing a calendar page with the number 18, a state dropdown set to '0', and tabs for Main, Main-2, Text, Picture, Details, Macro, and Coordinates. The 'Picture' tab is selected. Under 'Picture', the 'Picture Bank Name' is '\$ModernButton.pib' and the file is 'hmi_button-03-1.png'. The 'Transparent Color' dropdown has a color swatch and a small icon. The 'Foreground Color' dropdown has a color swatch.</p>						

## ■ Details

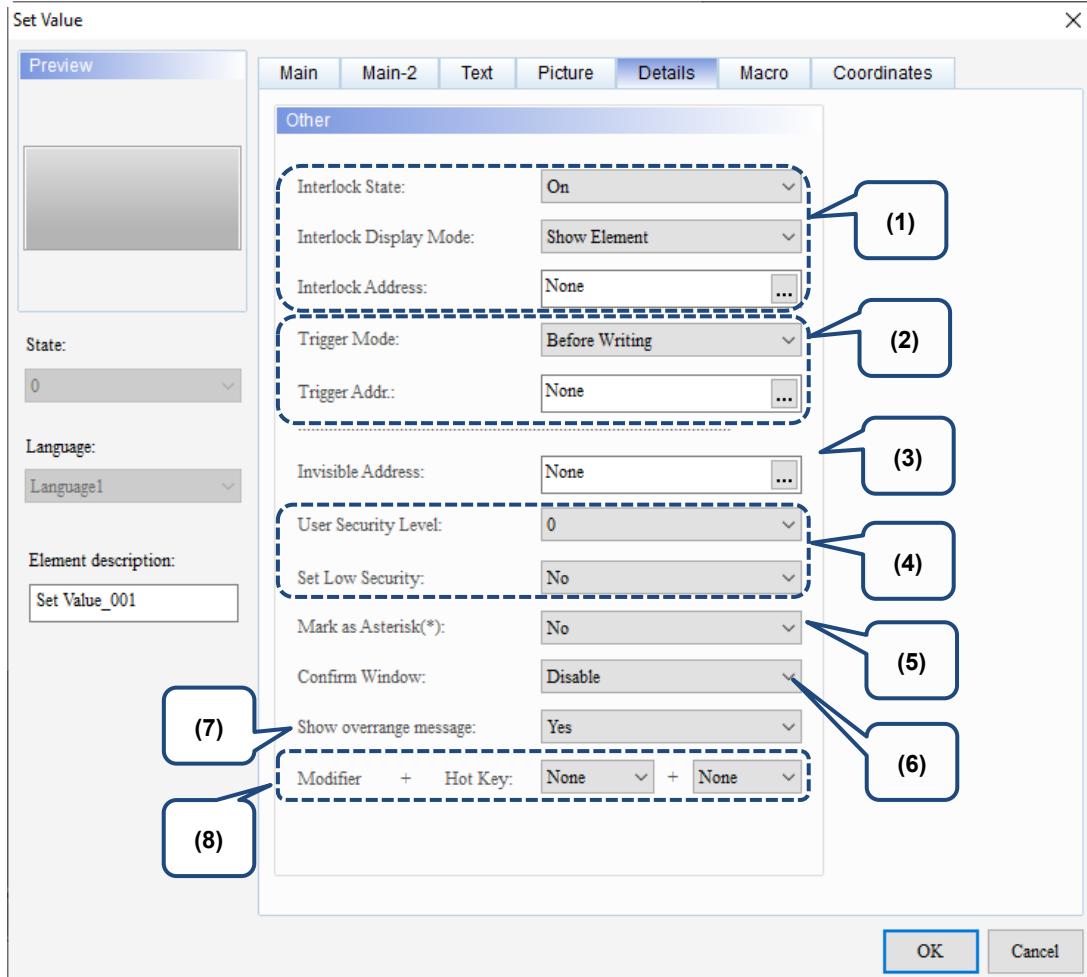
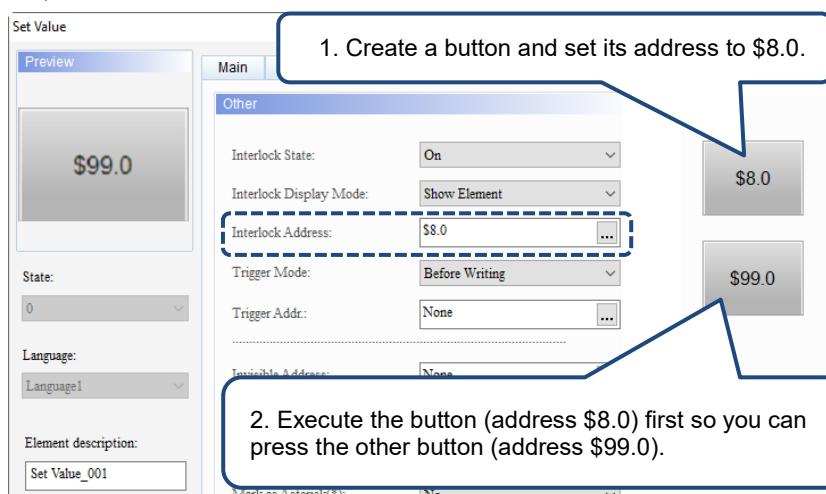
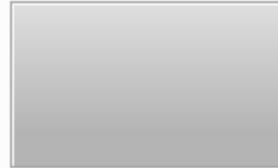
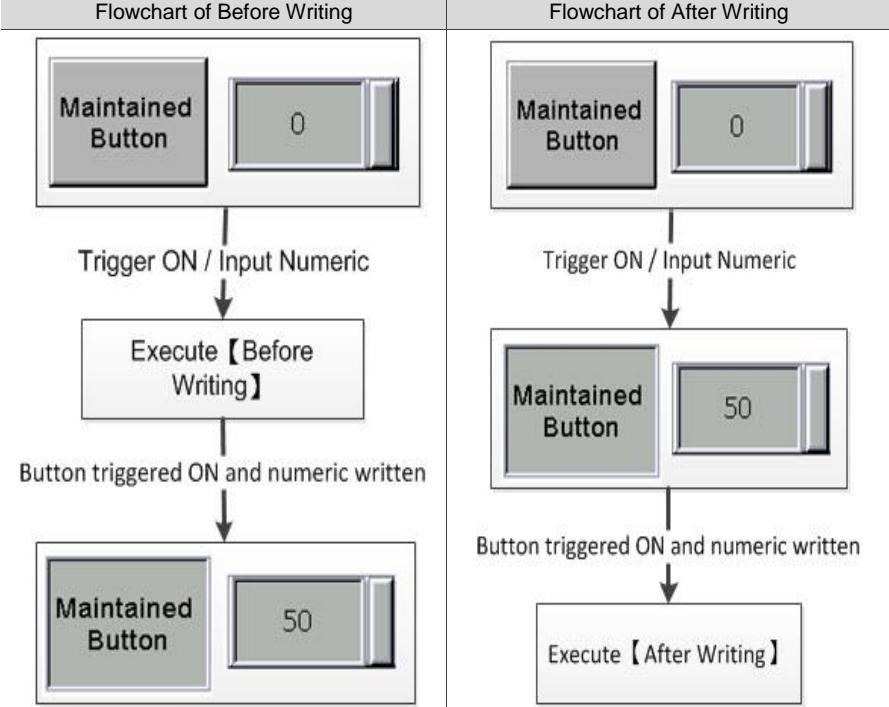
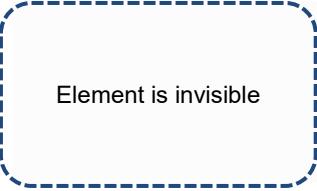
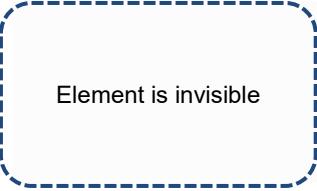
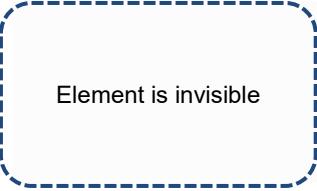


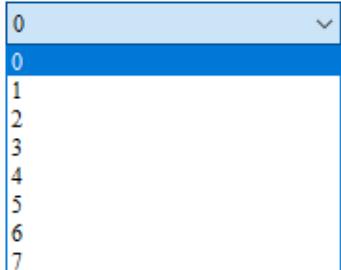
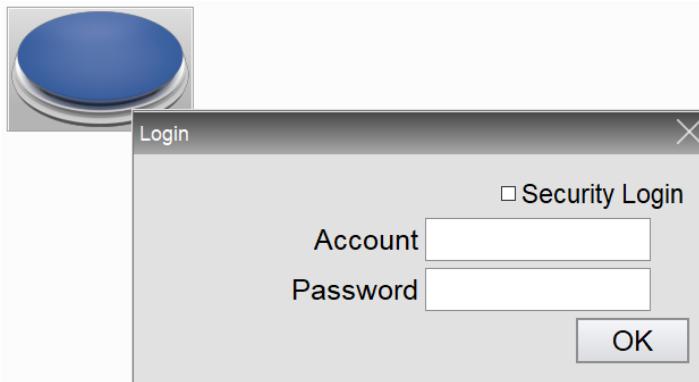
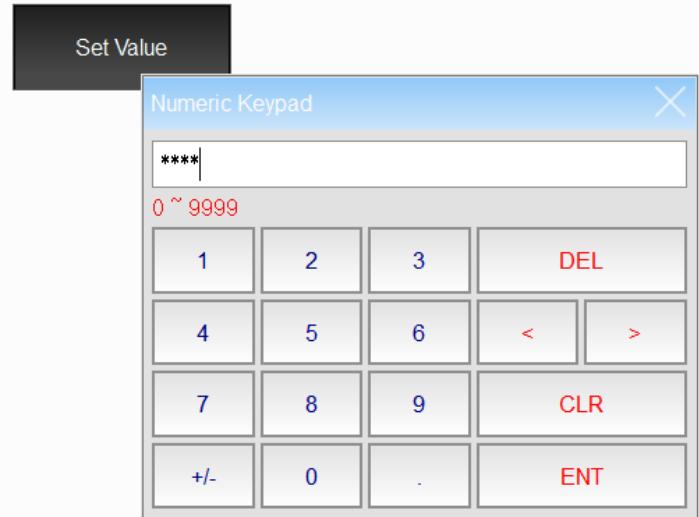
Figure 5.3.6 Details property page for the Set Value element

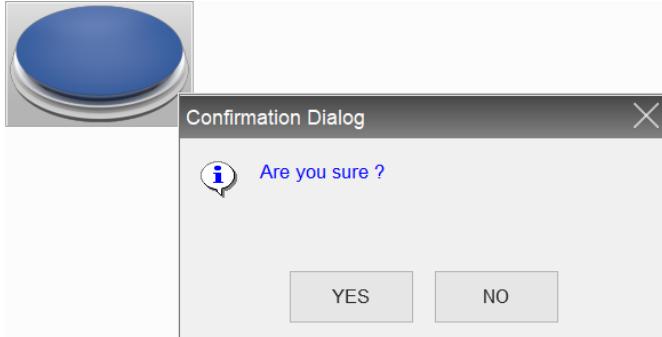
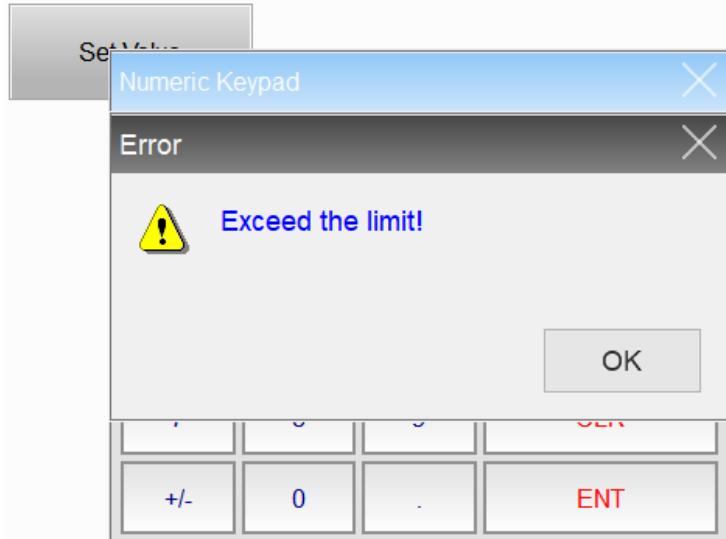
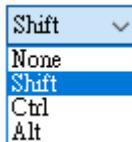
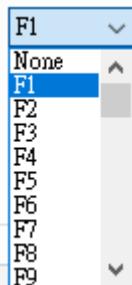
## 5

No.	Property	Function description						
(1)	Interlock State / Interlock Address / Interlock Display Mode	<ul style="list-style-type: none"> <li>The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock is ON.</li> <li>The following describes how it works:           <ol style="list-style-type: none"> <li>Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0.</li> <li>Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.</li> </ol>  </li> <li>There are two options for Interlock Display Mode, Show Element and Show Prohibition Symbol.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Interlock Display Mode:</td> <td style="padding: 5px;">Show Element</td> </tr> <tr> <td style="padding: 5px;">Interlock Address:</td> <td style="padding: 5px; border-bottom: 2px solid #000;">Show Element Show Prohibition Symbol</td> </tr> </table> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p>Show Element</p>  </div> <div style="text-align: center;"> <p>Show Prohibition Symbol</p>  </div> </div>	Interlock Display Mode:	Show Element	Interlock Address:	Show Element Show Prohibition Symbol		
Interlock Display Mode:	Show Element							
Interlock Address:	Show Element Show Prohibition Symbol							
(2)	Trigger Mode / Trigger Address	<ul style="list-style-type: none"> <li>There are two trigger modes: Before Writing and After Writing.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 35%; text-align: center;"><b>Before Writing</b></th> <th style="width: 35%; text-align: center;"><b>After Writing</b></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Trigger type</td> <td style="text-align: center;">Set the Trigger Address to ON before changing values.</td> <td style="text-align: center;">Change values before setting the Trigger Address to ON.</td> </tr> </tbody> </table>		<b>Before Writing</b>	<b>After Writing</b>	Trigger type	Set the Trigger Address to ON before changing values.	Change values before setting the Trigger Address to ON.
	<b>Before Writing</b>	<b>After Writing</b>						
Trigger type	Set the Trigger Address to ON before changing values.	Change values before setting the Trigger Address to ON.						

No.	Property	Function description							
(2)	Trigger Mode / Trigger Address	<p>■ The trigger function only specifies the set Trigger Address to ON, so you need to specify the Trigger Address to OFF if triggering again is required.</p> 							
(3)	Invisible Address	<p>When the Invisible Address is set to On, the button element is invisible and you cannot enable its functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td></td> <td>Invisible Address \$9.0 OFF</td> </tr> <tr> <td>Invisible Address is on</td> <td></td> <td>Invisible Address \$9.0 ON</td> </tr> </table> <p><b>Preview</b></p>  <p><b>Main</b> <b>Main-2</b> <b>Text</b> <b>Picture</b> <b>Details</b> <b>Macro</b></p> <p><b>Other</b></p> <p>Interlock State: <input type="button" value="On"/></p> <p>Interlock Address: <input type="button" value="None"/></p> <p>Invisible Address: <input type="button" value="\$9.0"/></p>	Invisible Address is off		Invisible Address \$9.0 OFF	Invisible Address is on		Invisible Address \$9.0 ON	
Invisible Address is off		Invisible Address \$9.0 OFF							
Invisible Address is on		Invisible Address \$9.0 ON							

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No.	Property	Function description
(4)	User Security Level	<p>User Security Level:</p>  <p>Set Low Security:</p> <p>Min. Press Time (sec):</p> <p>Confirm Window:</p> <ul style="list-style-type: none"> <li>You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element; refer to Section 5.7.2 Password Table Setup).</li> </ul> 
(5)	Set Low Security	<ul style="list-style-type: none"> <li>If you set the Set Low Security to Yes, each time you enter the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to enter the password for the corresponding security level again.</li> </ul>
	Mark as Asterisk (*)	<p>If you set the item to Yes, the values are displayed with asterisks when you input values to the Numeric Keypad.</p> 

No.	Property	Function description
(6)	Confirm Window	If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the pressing action after pressing the element. 
(7)	Show overrange message	If you set the Show overrange message to Yes, when the inputted value exceeds the set data range, an error message appears to remind you as shown as follows: 
(8)	Modifier + Hot Key	<ul style="list-style-type: none"> <li>■ Allows you to use the hot keys on the external keyboard to execute the buttons.</li> <li>■ The Modifier options include None, Shift, Ctrl, and Alt keys. </li> <li>■ The Hot Key options include F1 to F12, English letters A to Z, and number keys 0 to 9. </li> </ul>

## ■ Macro

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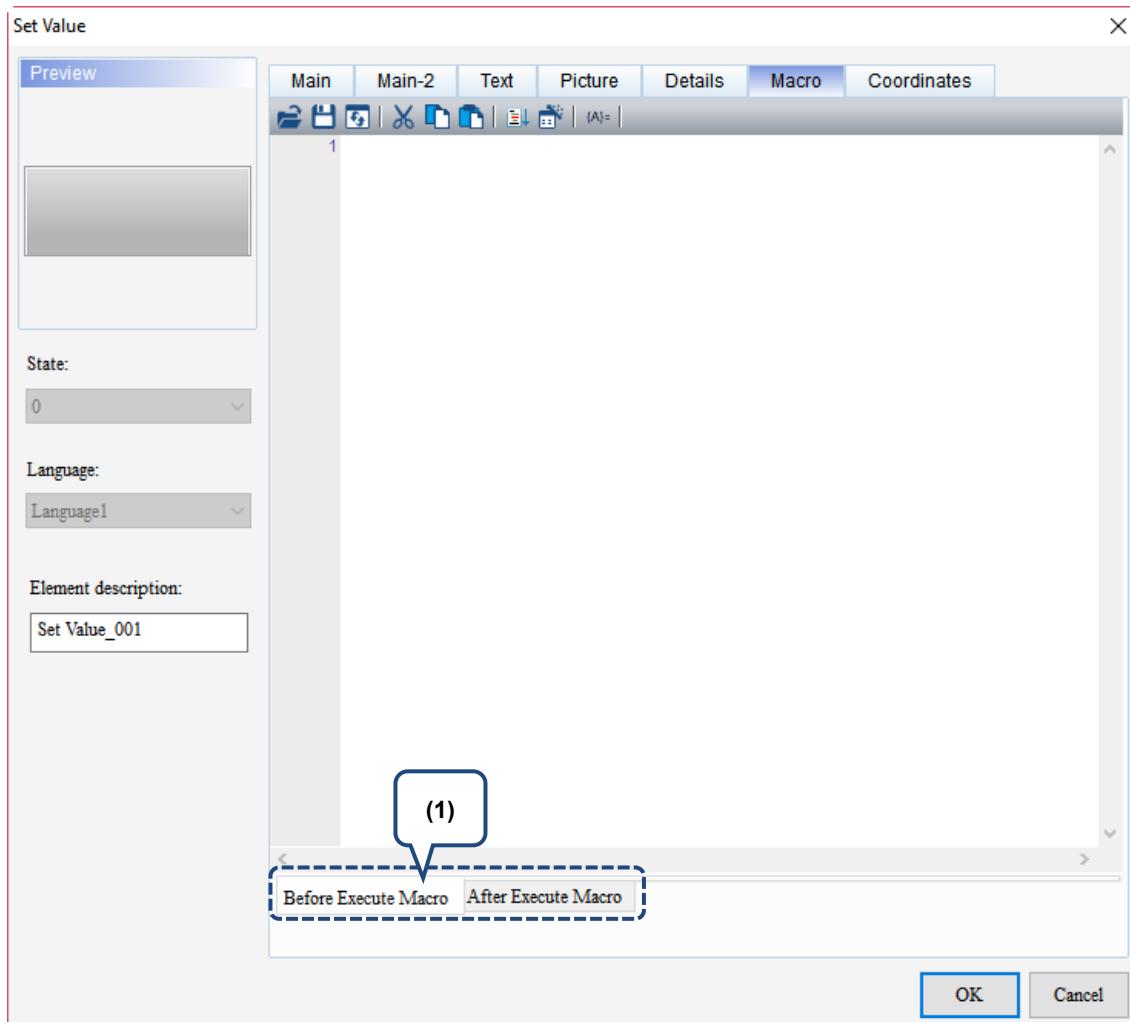


Figure 5.3.7 Macro property page for the Set Value element

No.	Property	Function description
Flowcharts of Before / After Execute Macro:		
(1)	<pre> graph TD     subgraph ON_Path [Trigger ON / Input Numeric]         A[Trigger ON / Input Numeric] --&gt; B[Before Execute Macro]         B --&gt; C[Button triggered ON and numeric written]         C --&gt; D[Maintained Button]         D --&gt; E[Trigger at next time]         E --&gt; F[Before Execute Macro]         F --&gt; G[Button triggered ON and numeric written]         G --&gt; H[Maintained Button]         H --&gt; I[50]     end      subgraph OFF_Path [Trigger OFF / Input Numeric]         J[Trigger OFF / Input Numeric] --&gt; K[Before Execute Macro]         K --&gt; L[Button triggered OFF and numeric written]         L --&gt; M[Maintained Button]         M --&gt; N[90]     end </pre> <p>The flowchart illustrates the execution of macros before and after button actions. It shows two parallel paths: one for triggering ON and one for triggering OFF. Each path involves a 'Before Execute Macro' step followed by a numeric write step, and then a 'After Execute Macro' step. The numeric values are updated between the two paths.</p>	
	Before Execute Macro	When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.

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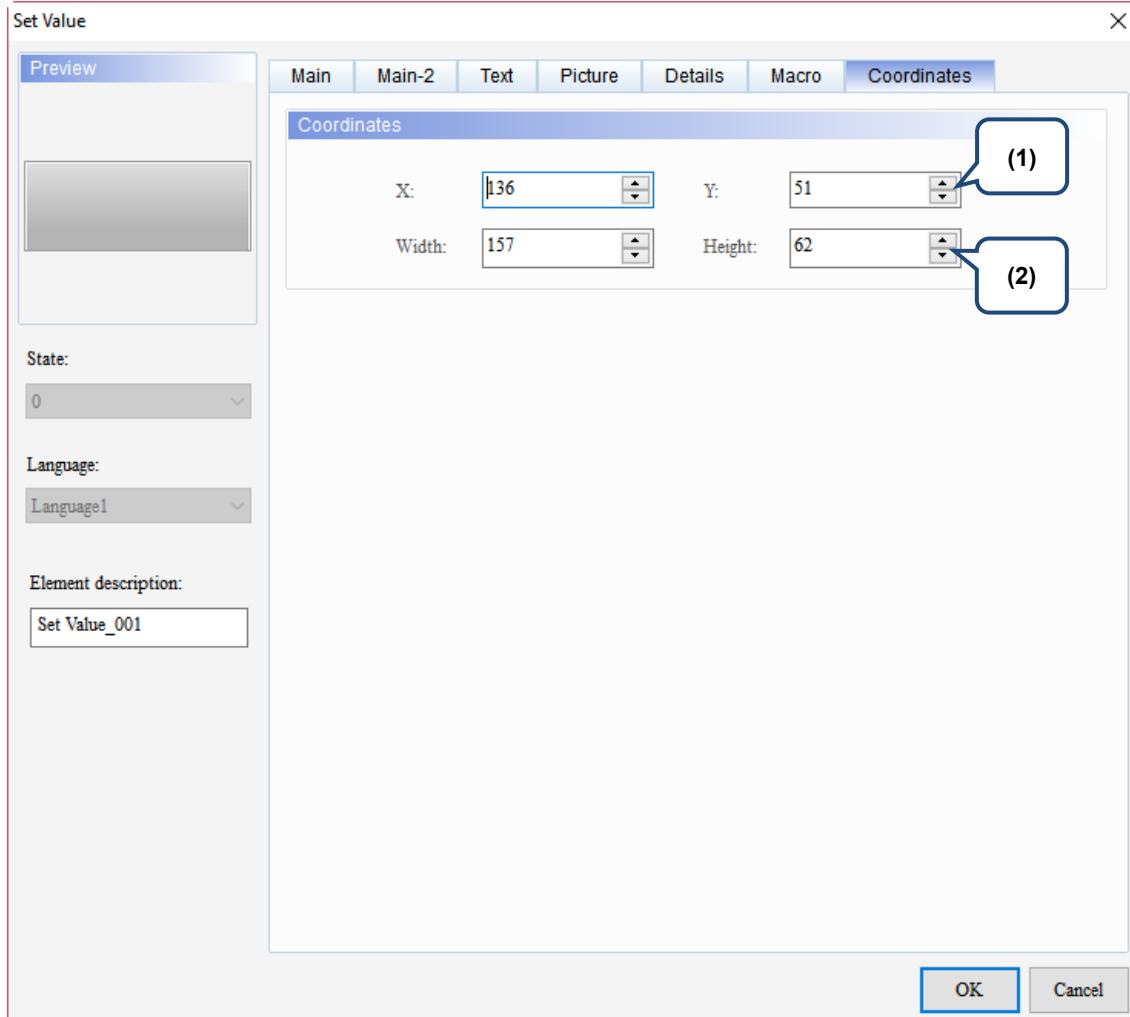
**■ Coordinates**

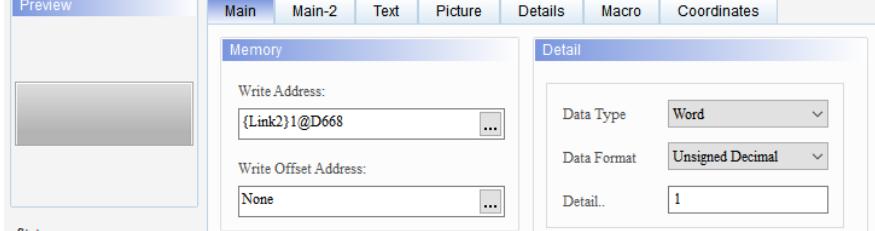
Figure 5.3.8 Coordinates property page for the Set Value element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 5.4 Set Constant

When you touch this button on the HMI, the HMI changes the register data into the specified Constant. Refer to Table 5.4.1 Set Constant example.

Table 5.4.1 Set Constant example

Set Constant	
Memory address of the Set Constant element	
Detail of the Set Constant element	<p>Set the Numeric Display element address to D668.</p> 
Data Type	Word
Execution results	<p>Press <b>Set Constant</b> to write 1 into the Numeric Display element.</p> 

When you double-click the Set Constant element, the property page is shown as follows.

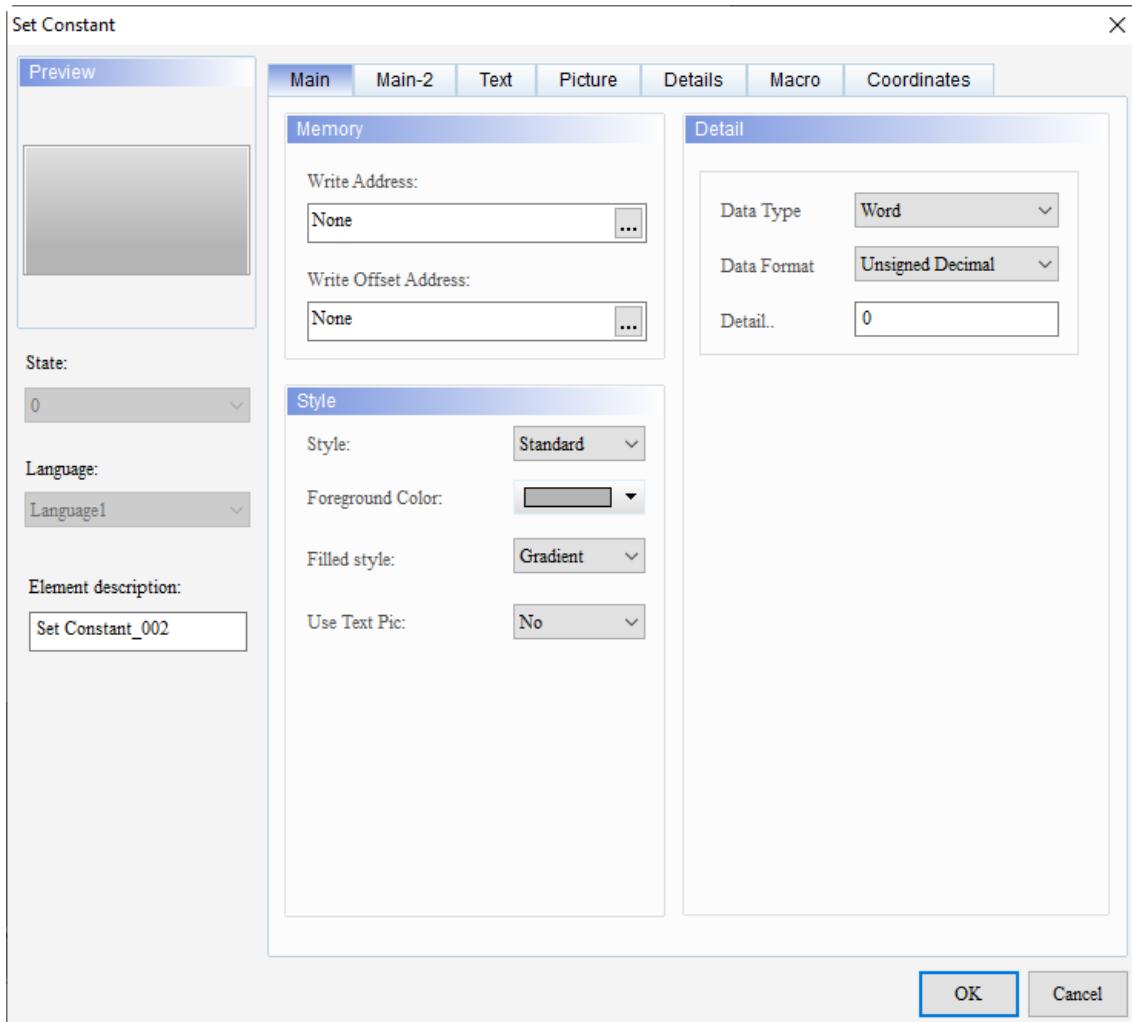


Figure 5.4.1 Properties of Set Constant

Table 5.4.2 Function page of Set Constant

Set Constant	
Function page	Description
Preview	The Set Constant elements can only view multi-language data display since the multistate property is not available for this element.
Main	Set the Write Address, Write Offset Address, Style, Foreground Color, Filled style, and Use Text Pic function. Set the Data Type, Data Format, and Detail for the Set Constant element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing options.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color options.
Details	Set the Interlock Address, Interlock State, Interlock Display Mode, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, Confirm Window, and Modifier + Hot Key.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

## ■ Main

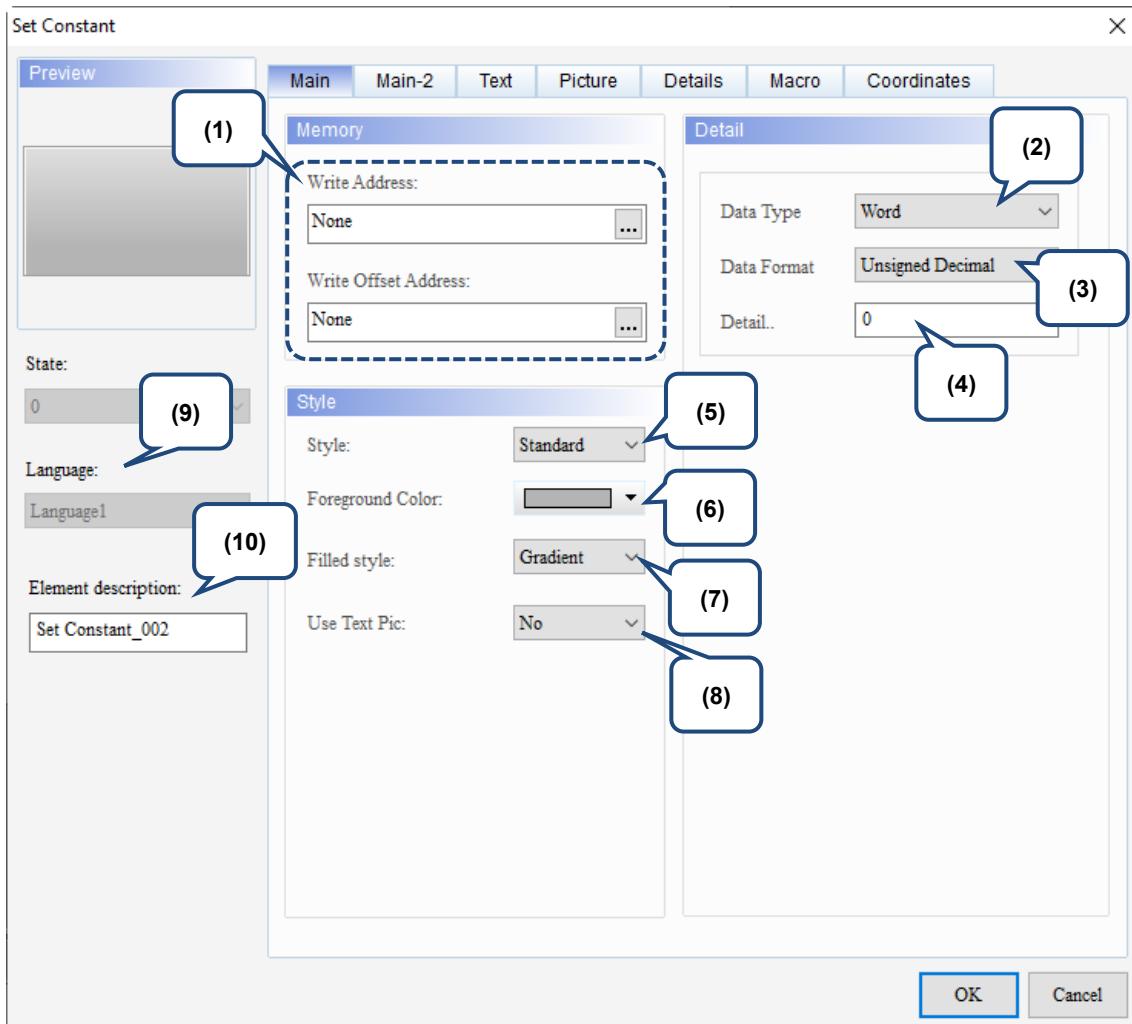
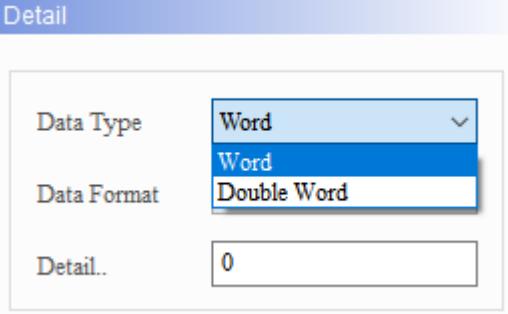
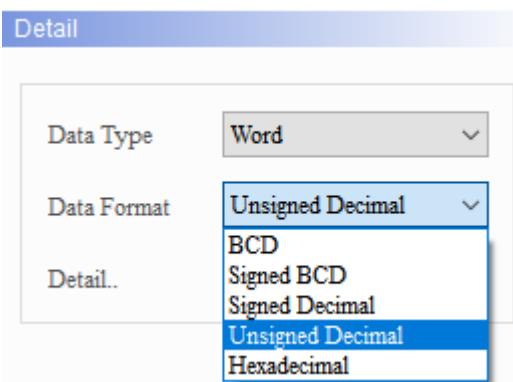
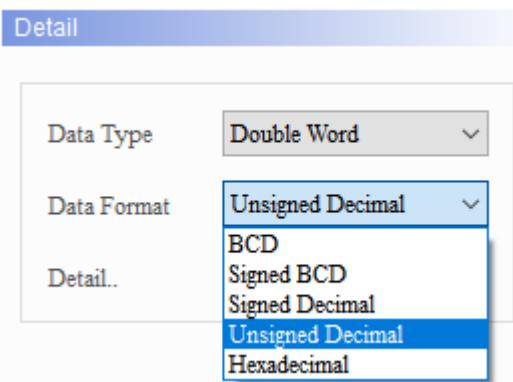
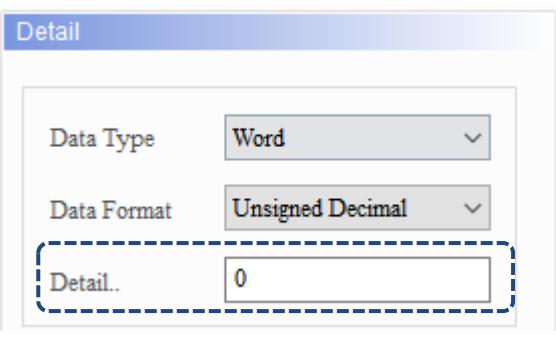
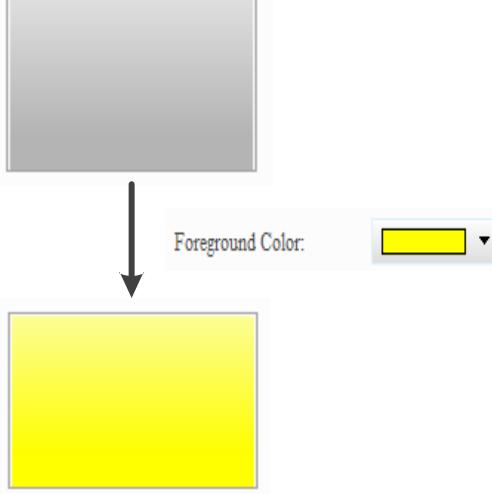


Figure 5.4.2 Main property page for the Set Constant element

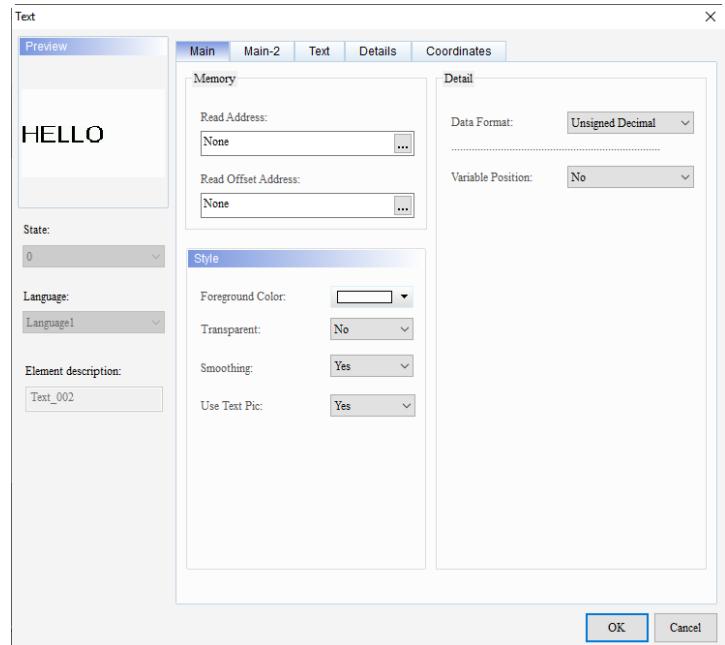
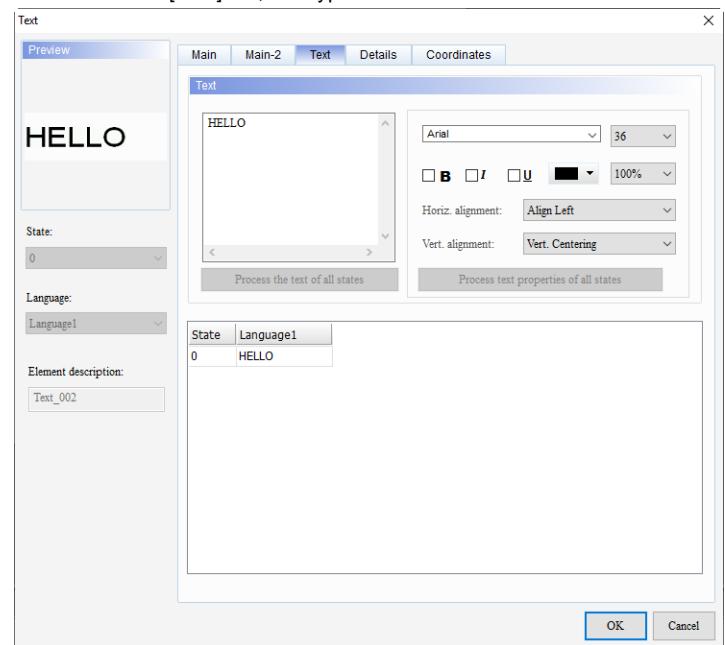
No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> <li>You can choose the internal memory or the controller register address. The input memory type has to be Word.</li> <li>For the Link name and Device Type, refer to Section 5.1.</li> </ul>
	Write Offset Address	Refer to the instructions in Appendix D Write and Read Offset Addresses.
(2)	Data Type	<p>There are two data types: Word and Double Word.</p> 

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No.	Property	Function description								
(3)	Data Format	<ul style="list-style-type: none"> <li>When you set the Data Type to Word, the supported data formats are as follows:</li> </ul>  <ul style="list-style-type: none"> <li>When you set the Data Type to Double Word, the supported data formats are as follows:</li> </ul> 								
(4)	Detail..	Determine the constant value to input. 								
(5)	Style	<p>The available element styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							
										

No.	Property	Function description				
(6)	Foreground Color	<ul style="list-style-type: none"> <li>■ Set the foreground color of the element.</li> <li>■ When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ul> 				
(7)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Gradient</td> <td style="width: 50%;">Solid</td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>	Gradient	Solid	Fixed (Solid)	
Gradient	Solid					
Fixed (Solid)						
(8)	Use Text Pic	<p>Unlike the DOP-B series models using pictures to present all texts, the DOP-100 series models present directly with the texts. Therefore, if the language you use for the element is not yet supported by the PC, it is possible to cause missing characters and garbled texts when the element is displayed on the HMI. To have the text display effect be the same as that on the DOP-B models, the Use Text Pic function is added for the Text, Button, and General Message Display elements. Refer to the following examples.</p>				

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No.	Property	Function description				
(8)	<p>Create Text element</p> <p>Use Text Pic</p>	<p><b>Use Text Pic function</b></p> <ul style="list-style-type: none"> <li>■ Create a Text element and go to the [Main] tab to set the Use Text Pic function.</li> </ul>  <p>Note: if you use the DOPSoft 4.00.06 version to open a DOP-B project, the Use Text Pic function is enabled (Yes) by default. If you add a DOP-100 project, then the Use Text Pic function is disabled (No) by default.</p> <ul style="list-style-type: none"> <li>■ Go to the [Text] tab, and type the text and set its font.</li> </ul> 				
	<p>Execution result</p>	<ul style="list-style-type: none"> <li>■ After creating the element, download it to the HMI.</li> <li>■ The following table shows the results of using and not using the Use Text Pic function.</li> </ul> <table border="1"> <tr> <td>Use Text Pic is Yes</td><td>Use Text Pic is No</td></tr> <tr> <td><b>HELLO</b></td><td><b>HELLO</b></td></tr> </table>	Use Text Pic is Yes	Use Text Pic is No	<b>HELLO</b>	<b>HELLO</b>
Use Text Pic is Yes	Use Text Pic is No					
<b>HELLO</b>	<b>HELLO</b>					

No.	Property	Function description																																																																																
(9)	Language	<p>If you have set the language data, you can edit the properties of the displayed text with the Language setting of the element.</p>																																																																																
(10)	Element description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.</p> <table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr><td>1</td><td>13:37:54</td><td>5/5/2016</td><td>8 Screen_22</td><td>Level 1 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>2</td><td>13:37:56</td><td>5/5/2016</td><td>8 Screen_22</td><td>Level 1 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>3</td><td>13:38:19</td><td>5/5/2016</td><td>8 Screen_22</td><td></td><td>Level Switch</td><td>8</td><td>4</td></tr> <tr><td>4</td><td>13:38:21</td><td>5/5/2016</td><td>4 Screen_22</td><td>Level 2 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>5</td><td>13:38:21</td><td>5/5/2016</td><td>4 Screen_22</td><td>Level 2 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>6</td><td>13:38:22</td><td>5/5/2016</td><td>4 Screen_22</td><td>Level 4 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>7</td><td>13:38:23</td><td>5/5/2016</td><td>4 Screen_22</td><td>Level 4 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>8</td><td>13:38:31</td><td>5/5/2016</td><td>4 Screen_22</td><td></td><td>Level Switch</td><td>4</td><td>8</td></tr> <tr><td>9</td><td>13:38:35</td><td>5/5/2016</td><td>8 Screen_22</td><td>\$100 Value</td><td>Set Val</td><td>85</td><td>25</td></tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25
Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																											
1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0																																																																											
2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1																																																																											
3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4																																																																											
4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1																																																																											
5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0																																																																											
6	13:38:22	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	0	1																																																																											
7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0																																																																											
8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8																																																																											
9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25																																																																											

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## ■ Main-2

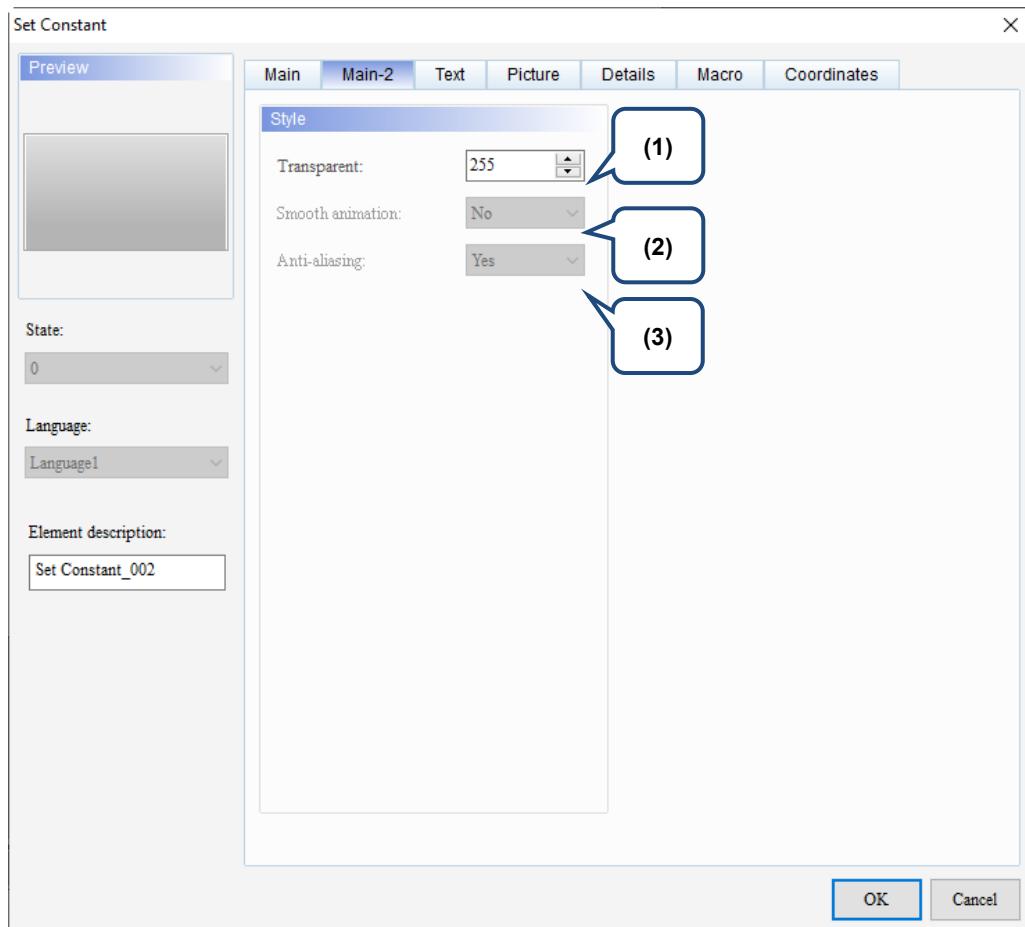


Figure 5.4.3 Main-2 property page for the Set Constant element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

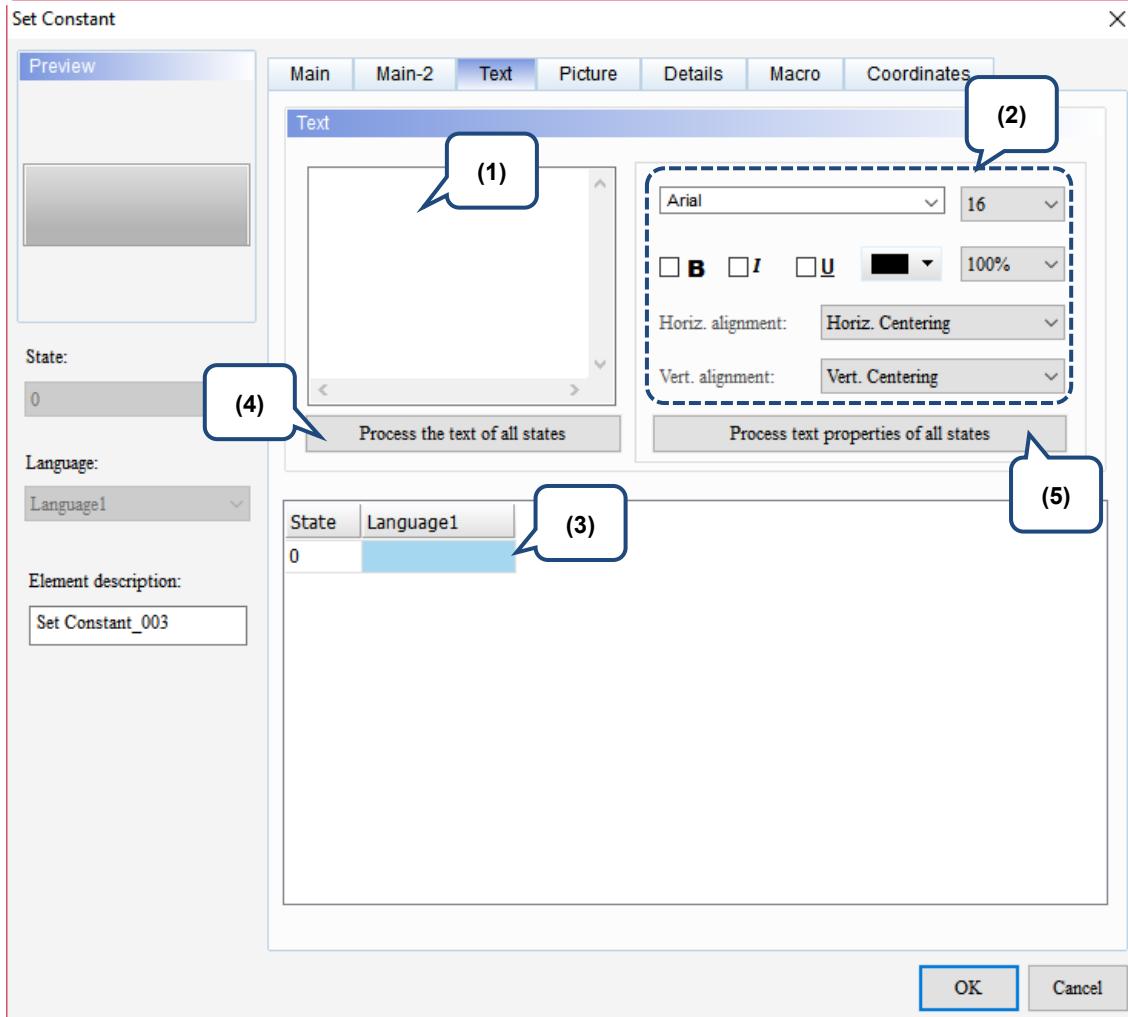
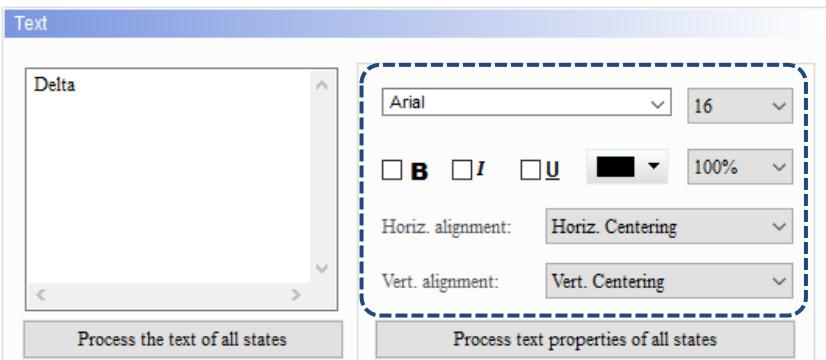


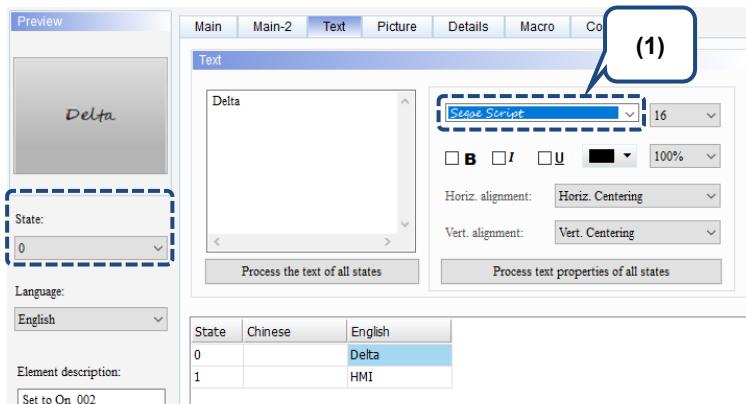
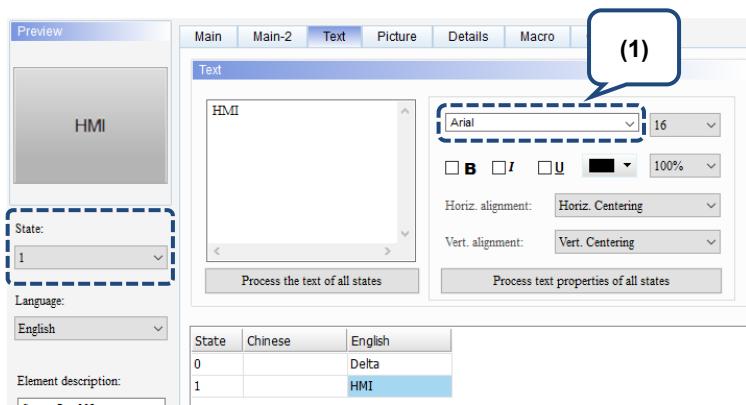
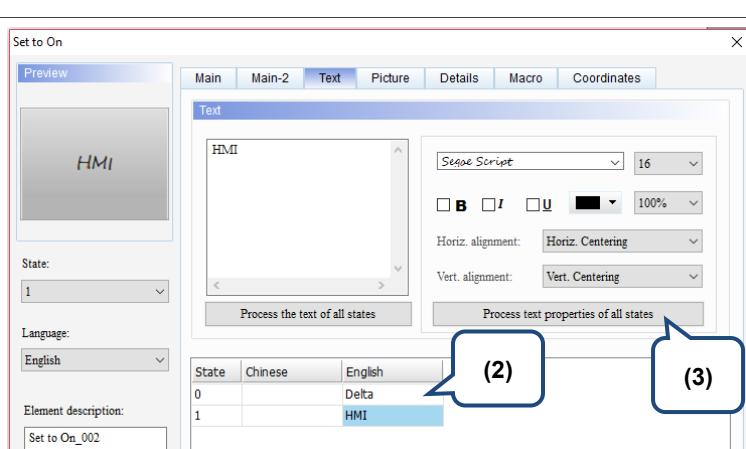
Figure 5.4.4 Text property page for the Set Constant element

No.	Property	Function description									
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to be displayed in the text box.</li> </ul> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.</li> </ul>	State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI
State	Chinese	English									
0	台達電子	Delta									
1	人機介面	HMI									

No.	Property	Function description																		
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the text property setting results.																		
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.																		
(4)	Process the text of all states	<p>■ This function batch changes all the texts into the text contents of the state you selected. The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input 123 to State 0, and 234 to State 1.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process the text of all states</b>, and the State 1 text changes to 123.</li> </ol> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Before change</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>123</td> <td>234</td> </tr> <tr> <td>1</td> <td></td> <td></td> </tr> </tbody> </table> </div> <div style="text-align: center;"> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>123</td> <td>123</td> </tr> <tr> <td>1</td> <td></td> <td></td> </tr> </tbody> </table> </div> </div>	State	Chinese	English	0	123	234	1			State	Chinese	English	0	123	123	1		
State	Chinese	English																		
0	123	234																		
1																				
State	Chinese	English																		
0	123	123																		
1																				

No.	Property	Function description
(5)	Process text properties of all states	<p>■ This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>  <p>The screenshot shows a 'Text' dialog box with a text area containing 'Delta'. To the right are font settings: a dropdown for font (set to Arial), a dropdown for size (set to 16), and checkboxes for bold (B), italic (I), underline (U). Below these are dropdowns for horizontal alignment (set to Horiz. Centering) and vertical alignment (set to Vert. Centering). At the bottom are two buttons: 'Process the text of all states' and 'Process text properties of all states'.</p> <p>■ The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process text properties of all states</b>, and the State 1 font changes to Segoe Script.</li> </ol>

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No.	Property	Function description									
		 <p>Before change</p>									
(5)	Process text properties of all states	 <p>After change</p>									
		 <p>Set to On</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0		Delta	1		HMI
State	Chinese	English									
0		Delta									
1		HMI									

## ■ Picture

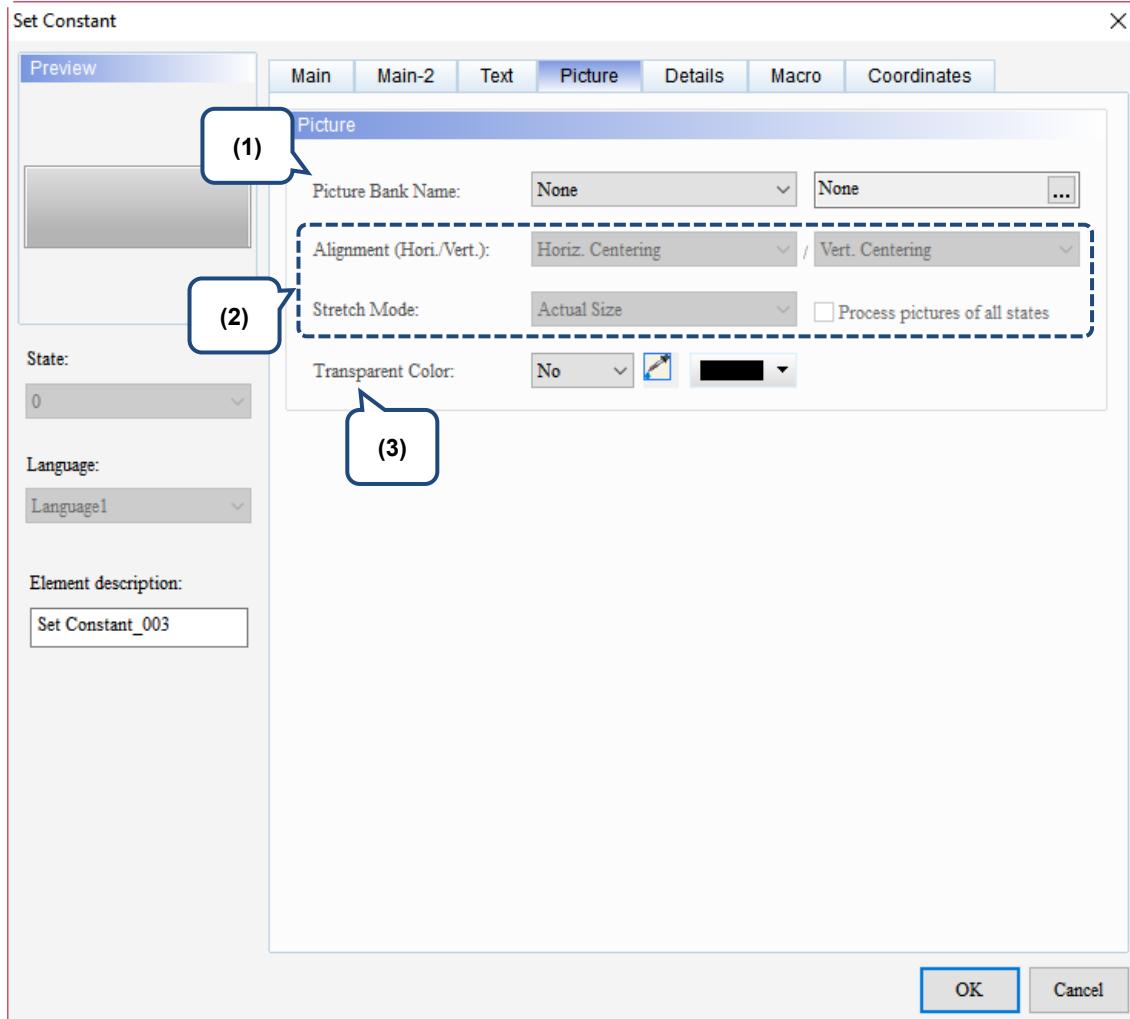
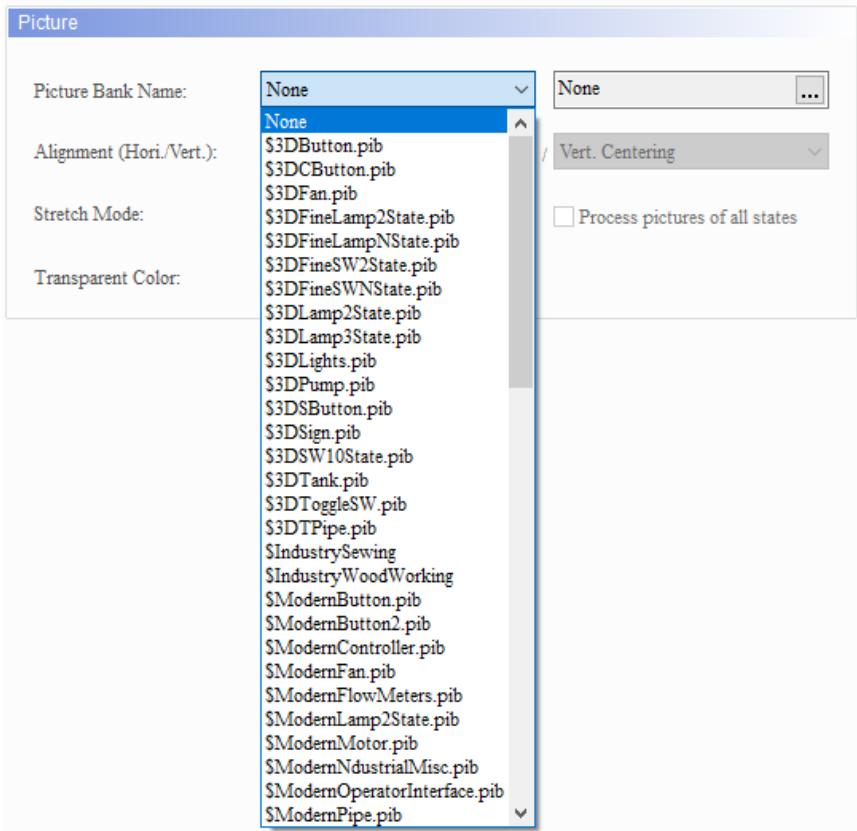
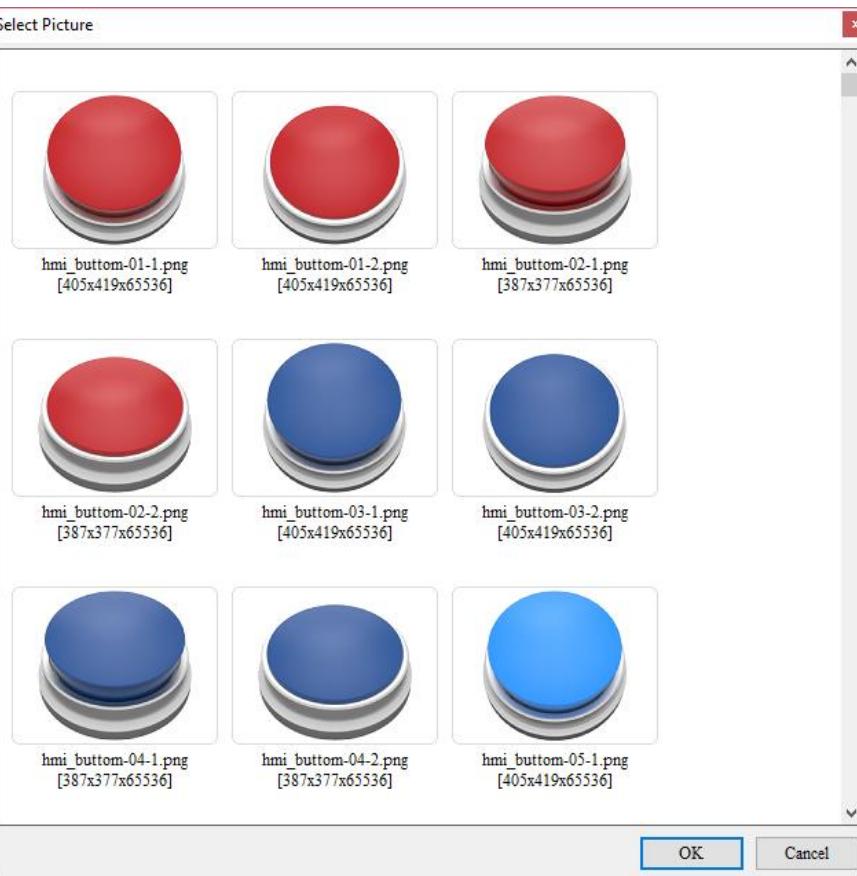
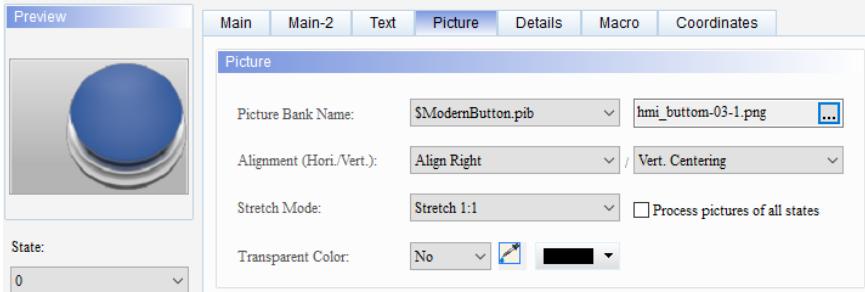


Figure 5.4.5 Picture property page for the Set Constant element

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No.	Property	Function description									
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>Picture</p> <p>Picture Bank Name: None</p> <p>Alignment (Hori./Vert.): Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p><input type="checkbox"/> Process pictures of all states</p>  <p>Select Picture</p> <table border="1"> <tbody> <tr> <td> hmi_button-01-1.png [405x419x65536]</td> <td> hmi_button-01-2.png [405x419x65536]</td> <td> hmi_button-02-1.png [387x377x65536]</td> </tr> <tr> <td> hmi_button-02-2.png [387x377x65536]</td> <td> hmi_button-03-1.png [405x419x65536]</td> <td> hmi_button-03-2.png [405x419x65536]</td> </tr> <tr> <td> hmi_button-04-1.png [387x377x65536]</td> <td> hmi_button-04-2.png [387x377x65536]</td> <td> hmi_button-05-1.png [405x419x65536]</td> </tr> </tbody> </table> <p>OK Cancel</p>	 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]	 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]	 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]
 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]									
 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]									
 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]									

No.	Property	Function description								
(2)	Alignment	<ul style="list-style-type: none"> <li>You can use the Alignment options to set the picture alignment.</li> </ul> 								
	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 2px;">Stretch All</th> <th style="text-align: center; padding: 2px;">Stretch 1:1</th> <th style="text-align: center; padding: 2px;">Actual Size</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 10px;">If you select Stretch All, the picture fills the full element display area.</td> <td style="text-align: center; padding: 10px;">If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td style="text-align: center; padding: 10px;">If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td style="text-align: center; padding: 10px;"></td> <td style="text-align: center; padding: 10px;"></td> <td style="text-align: center; padding: 10px;"></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>If you select the check box for <b>Process pictures of all states</b>, it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> 								

5

## ■ Details

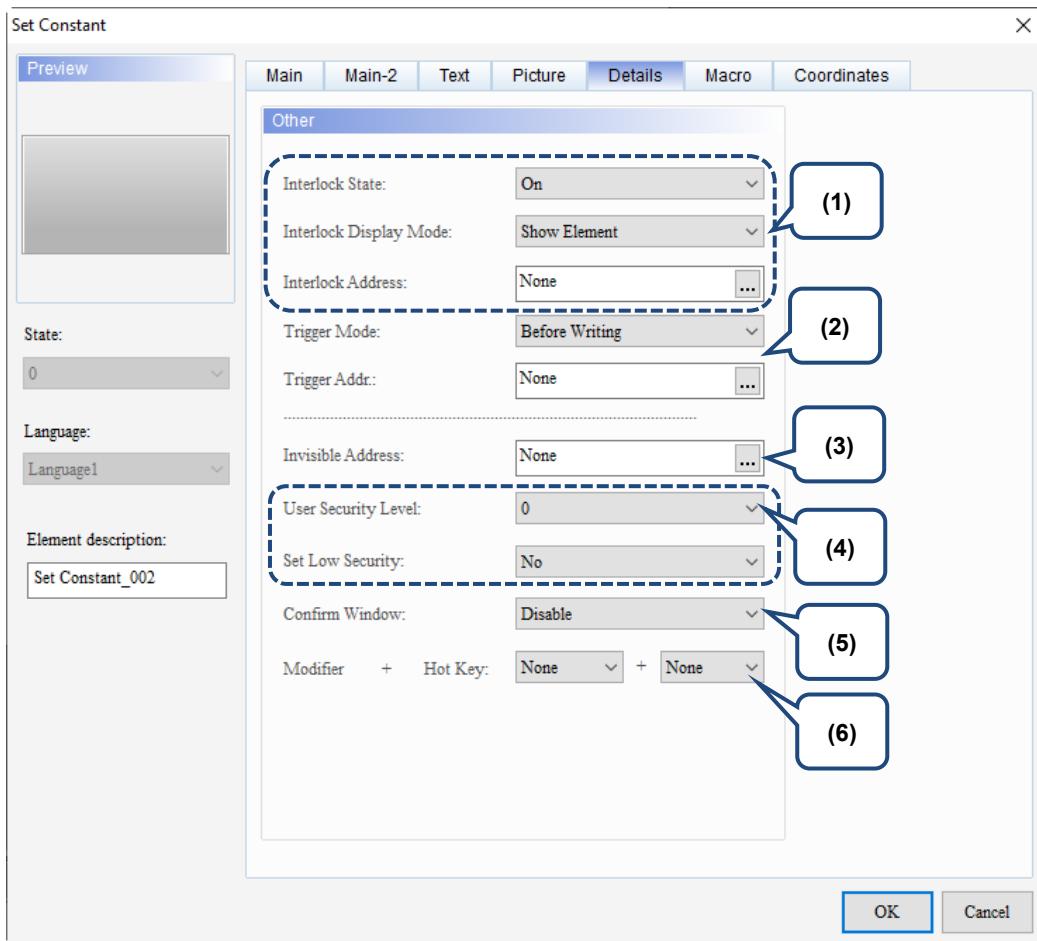
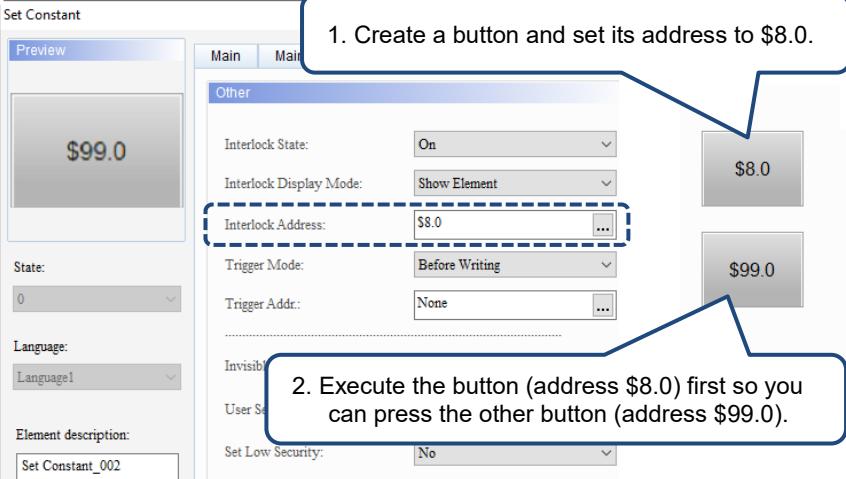
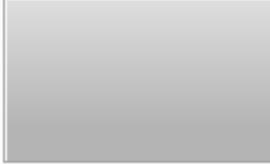
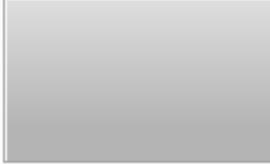
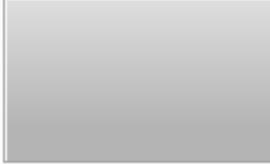
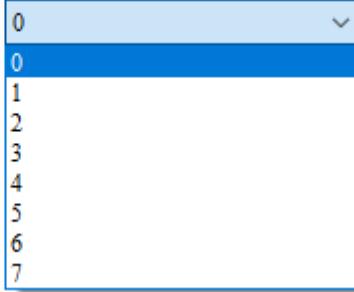
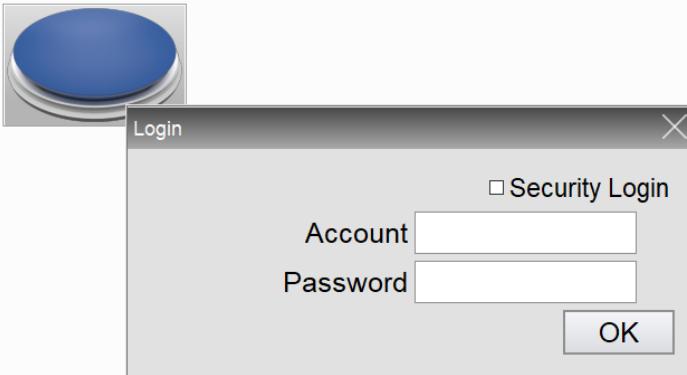


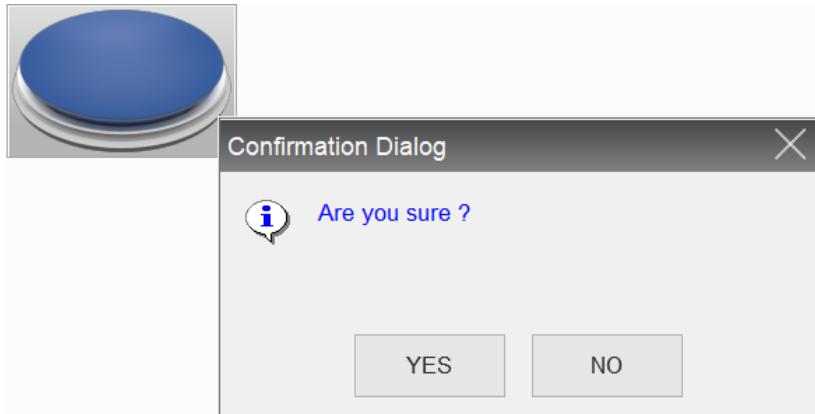
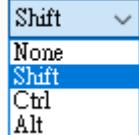
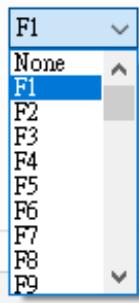
Figure 5.4.6 Details property page for the Set Constant element

No.	Property	Function description				
(1)	Interlock State / Interlock Address / Interlock Display Mode	<ul style="list-style-type: none"> <li>The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON.</li> <li>The following describes how it works:</li> </ul> <ol style="list-style-type: none"> <li>Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0.</li> <li>Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.           <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;">  <p>1. Create a button and set its address to \$8.0.</p> <p>2. Execute the button (address \$8.0) first so you can press the other button (address \$99.0).</p> </div> </li> </ol> <ul style="list-style-type: none"> <li>The Interlock Display Mode includes two options, Show Element and Show Prohibition Symbol.</li> </ul> <div style="display: flex; align-items: center; margin-top: 20px;"> <span style="margin-right: 20px;">Interlock Display Mode:</span> <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <span>Show Element</span> <span>Show Element</span> (highlighted)         </div>   <span>Interlock Address:</span> <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <span>\$8.0</span> </div> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 20px;"> <tr> <td style="text-align: center; padding: 10px;">Show Element</td> <td style="text-align: center; padding: 10px;"></td> </tr> <tr> <td style="text-align: center; padding: 10px;">Show Prohibition Symbol</td> <td style="text-align: center; padding: 10px;"></td> </tr> </table>	Show Element		Show Prohibition Symbol	
Show Element						
Show Prohibition Symbol						

No.	Property	Function description							
(2)	Trigger Mode / Trigger Address	<ul style="list-style-type: none"> <li>There are two trigger modes: Before Writing and After Writing.</li> </ul> <table border="1"> <thead> <tr> <th>Trigger type</th><th>Before Writing</th><th>After Writing</th></tr> </thead> <tbody> <tr> <td></td><td>Set the button to ON before changing values.</td><td>The button turns to ON after changing values.</td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>You can create a button element, set the address, and select Before Writing or After Writing to trigger the specified controller Bit address to ON.</li> <li>The trigger function only turns the controller address to ON, so you need to turn the address to OFF if triggering again is required.</li> </ul>		Trigger type	Before Writing	After Writing		Set the button to ON before changing values.	The button turns to ON after changing values.
Trigger type	Before Writing	After Writing							
	Set the button to ON before changing values.	The button turns to ON after changing values.							
		Flowchart of Before Writing	Flowchart of After Writing						
(3)	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</p>							

No.	Property	Function description
(4)	User Security Level	<p>User Security Level:</p>  <p>Set Low Security:</p> <p>Min. Press Time (sec):</p> <p>Confirm Window:</p> <ul style="list-style-type: none"> <li>■ You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>■ After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element; refer to Section 5.7.2 Password Table Setup).</li> </ul> 
	Set Low Security	<ul style="list-style-type: none"> <li>■ If you set the Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to input the password for the corresponding security level again.</li> </ul>

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No.	Property	Function description
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the pressing action after pressing the element.</p> 
(6)	Modifier + Hot Key	<ul style="list-style-type: none"> <li>■ Allows you to use the hot keys on the external keyboard to execute the button.</li> <li>■ The Modifier options include None, Shift, Ctrl, and Alt.</li> </ul>  <ul style="list-style-type: none"> <li>■ The Hot Key options include F1 to F12, English letters A to Z, and number keys 0 to 9.</li> </ul> 

## ■ Macro

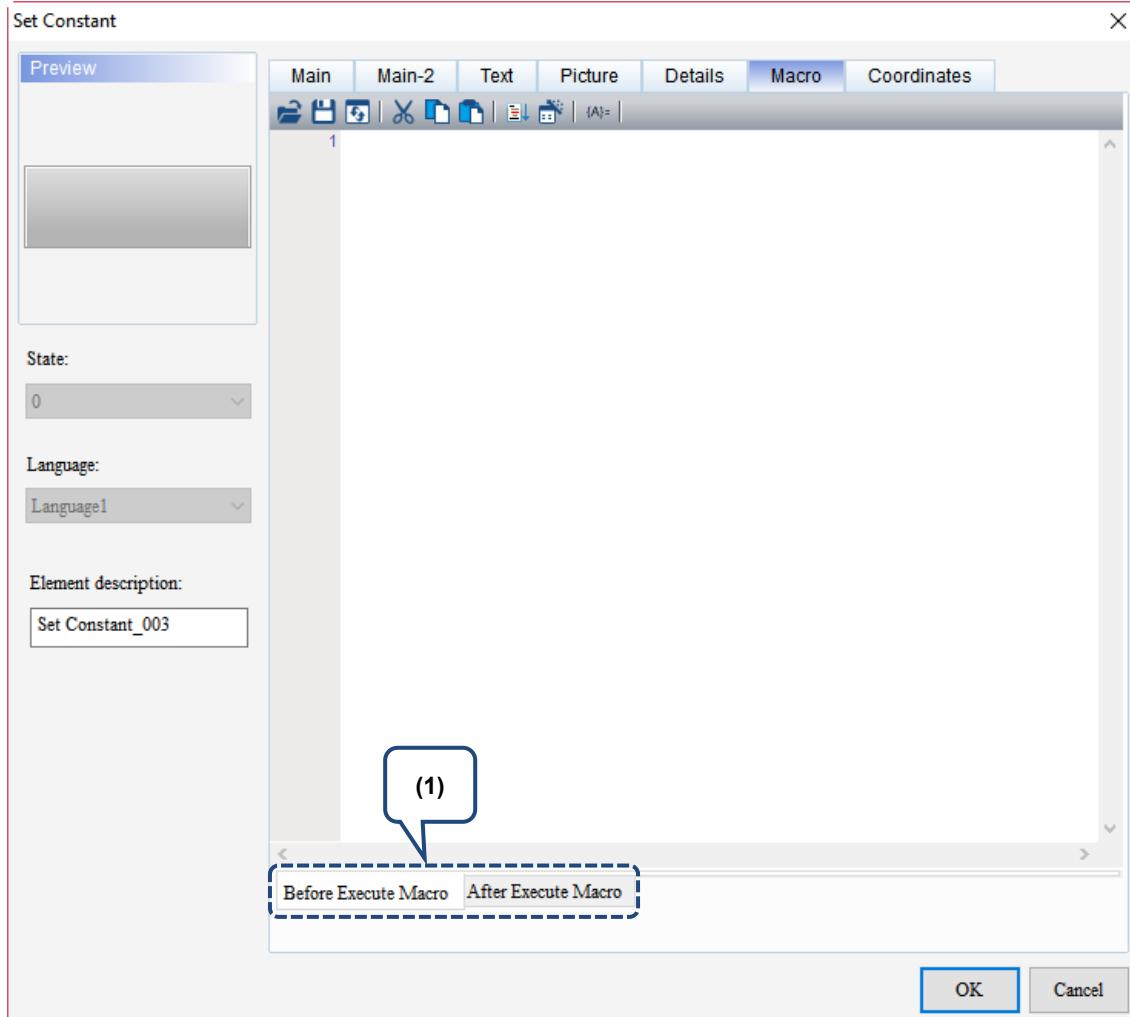


Figure 5.4.7 Macro property page for the Set Constant element

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No.	Property	Function description
(1)	Flowcharts of Before / After Execute Macro:	<pre> graph TD     subgraph Left [Before Execute Macro]         A1[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B1[Before Execute Macro]         B1 -- "Button triggered ON and numeric written" --&gt; C1[Maintained Button]         C1 -- "Trigger OFF / Input Numeric" --&gt; D1[Before Execute Macro]         D1 -- "Button triggered OFF and numeric written" --&gt; E1[Maintained Button]     end     subgraph Right [After Execute Macro]         A2[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B2[After Execute Macro]         B2 -- "Button triggered ON and numeric written" --&gt; C2[Maintained Button]         C2 -- "Trigger OFF / Input Numeric" --&gt; D2[After Execute Macro]         D2 -- "Button triggered OFF and numeric written" --&gt; E2[Maintained Button]     end     E1 -- "Trigger at next time" --&gt; A2     E2 -- "Trigger at next time" --&gt; A1 </pre> <p>The flowcharts illustrate the execution of macro commands relative to a maintained button. In the first sequence (Before Execute Macro), a button is triggered ON, followed by a numeric input, which triggers a macro. This results in the button being set to state 50. When triggered OFF, another numeric input triggers a macro, resulting in the button being set to state 90. The second sequence (After Execute Macro) follows a similar pattern but executes the macro command after the button actions. The 'Trigger at next time' arrows indicate that the button's state is saved between executions.</p>
	Before Execute Macro	When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.

## ■ Coordinates

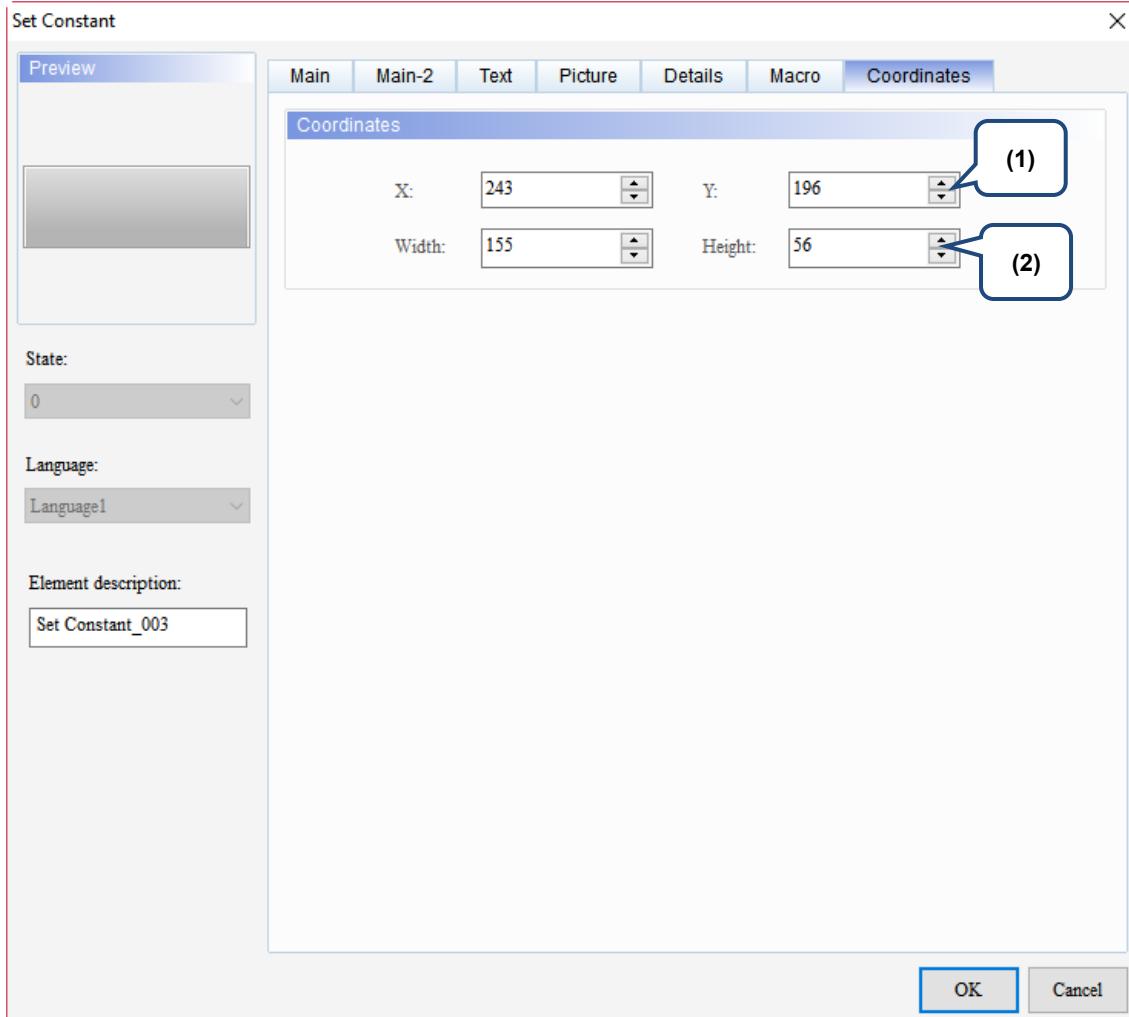


Figure 5.4.8 Coordinates property page for the Set Constant element

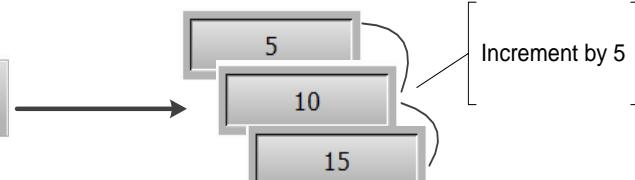
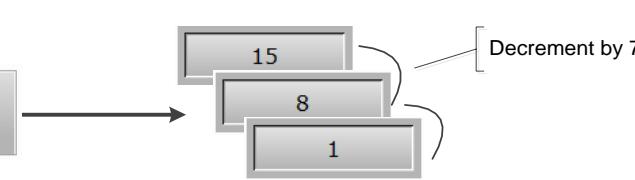
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 5.5 Increment / Decrement

When you touch the Increment or Decrement button on the HMI, the HMI reads the register data, adds or deducts the set increment or decrement, and then writes the results into the corresponding register. If the increased or decreased value exceeds the set upper or lower limit, the Increment / Decrement button maintains the upper / lower limit value in the corresponding register.

Note: if you press and hold the Increment / Decrement button, the value continues to increase or decrease.

Table 5.5.1 Increment / Decrement example

Increment / Decrement																		
Memory address	The Increment element Write Address: \$555 The Decrement element Write Address: \$555 The Numeric Display element Read Address: \$555																	
Increment/ Decrement setting values	Increment	Decrement																
	<div style="border: 1px solid #ccc; padding: 10px;"> <b>Detail</b> <table> <tr> <td>Data Type</td> <td>Word</td> </tr> <tr> <td>Data Format</td> <td>Unsigned Decimal</td> </tr> <tr> <td>Increase/Decrease</td> <td>5</td> </tr> <tr> <td>Limit</td> <td>500</td> </tr> </table> </div>	Data Type	Word	Data Format	Unsigned Decimal	Increase/Decrease	5	Limit	500	<div style="border: 1px solid #ccc; padding: 10px;"> <b>Detail</b> <table> <tr> <td>Data Type</td> <td>Word</td> </tr> <tr> <td>Data Format</td> <td>Signed Decimal</td> </tr> <tr> <td>Increase/Decrease</td> <td>7</td> </tr> <tr> <td>Limit</td> <td>-100</td> </tr> </table> </div>	Data Type	Word	Data Format	Signed Decimal	Increase/Decrease	7	Limit	-100
Data Type	Word																	
Data Format	Unsigned Decimal																	
Increase/Decrease	5																	
Limit	500																	
Data Type	Word																	
Data Format	Signed Decimal																	
Increase/Decrease	7																	
Limit	-100																	
Execution results	<div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">Increment</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f0f0f0; margin-right: 10px;"> <b>Increment</b> </div>  </div>	<div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">Decrement</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f0f0f0; margin-right: 10px;"> <b>Decrement</b> </div>  </div>																

When you double-click the Increment / Decrement element, the property page is shown as follows.

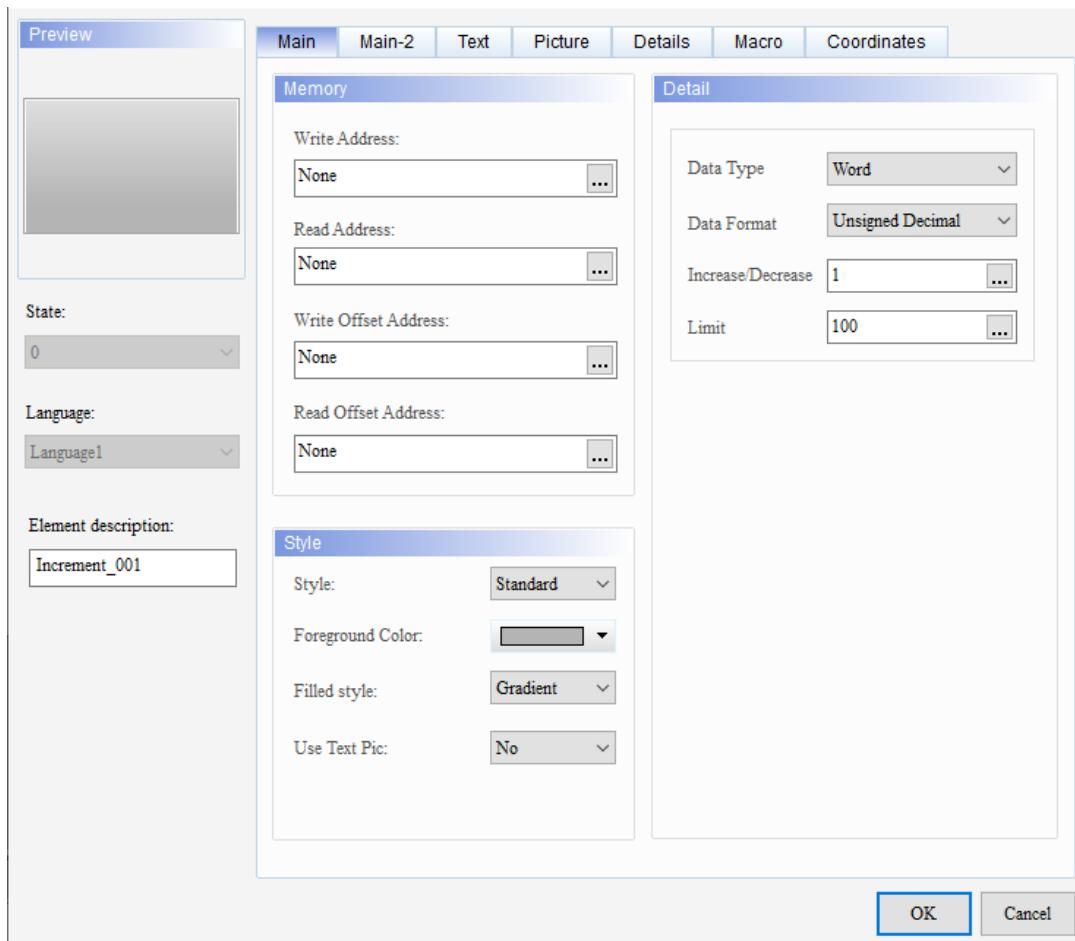


Figure 5.5.1 Properties of Increment / Decrement

Table 5.5.2 Function page of Increment / Decrement

Increment / Decrement	
Function page	Description
Preview	The Increment / Decrement elements are only for viewing multi-language data display since the multistate property is not available for the element.
Main	Set Write Address, Read Address, Write Offset Address, Read Offset Address, Style, Foreground Color, Filled style, and Use Text Pic function. Set the Data Type, Data Format, Increase / Decrease values, and Limit for the Increment / Decrement elements.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing options.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color options.
Details	Set the Interlock Address, Interlock State, Interlock Display Mode, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, Confirm Window, and Modifier + Hot Key.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

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## ■ Main

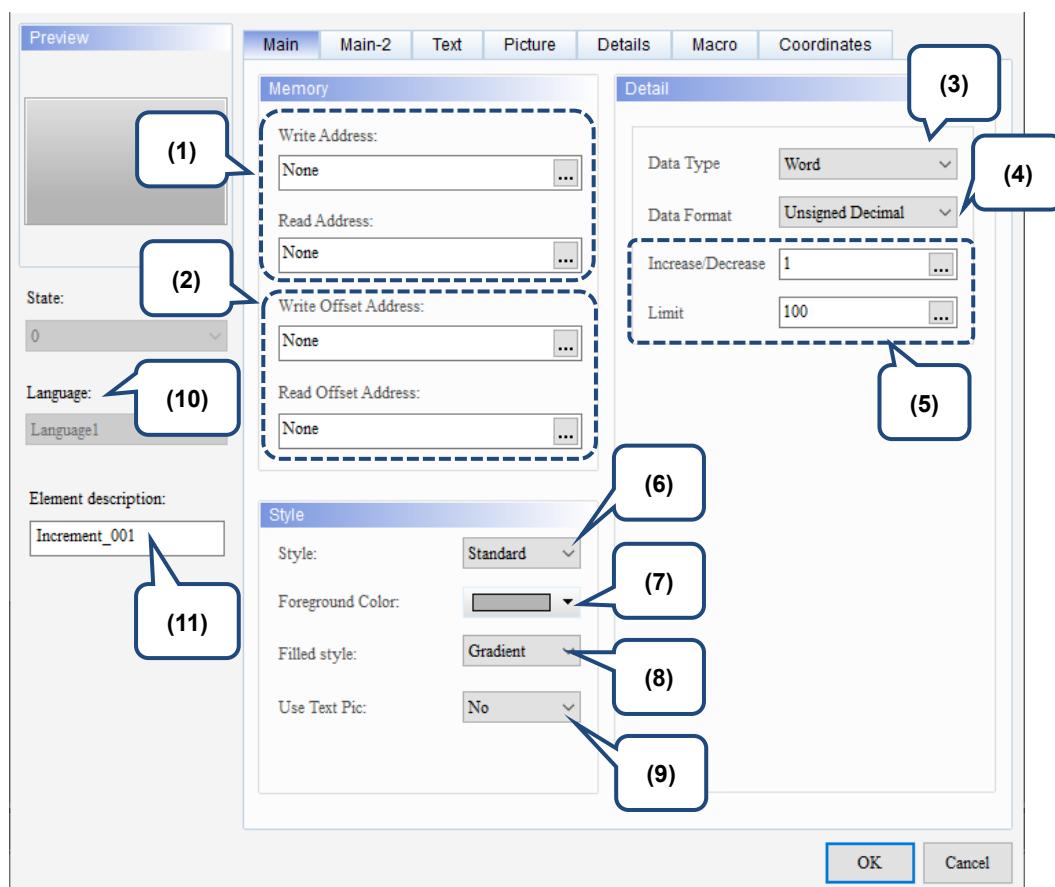
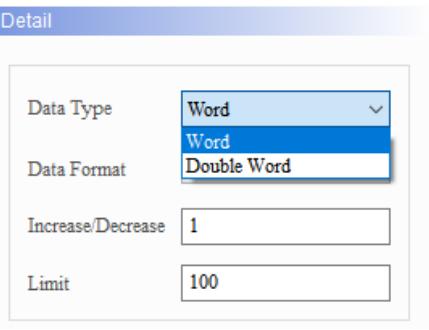
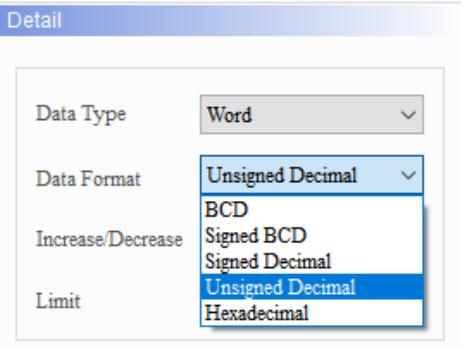
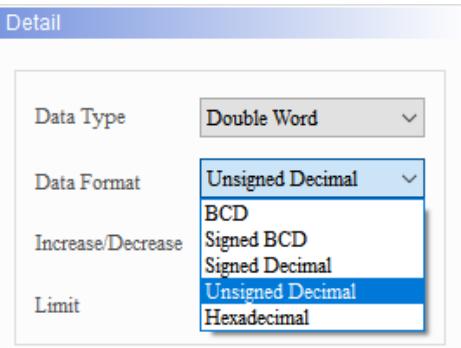
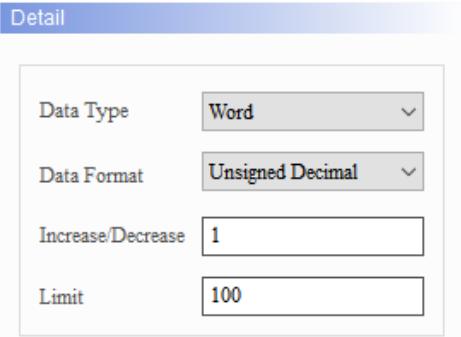
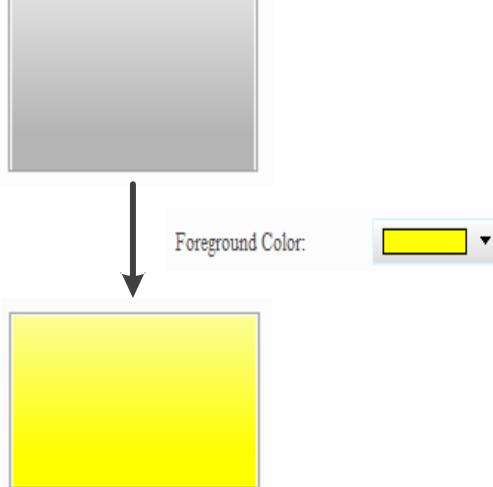


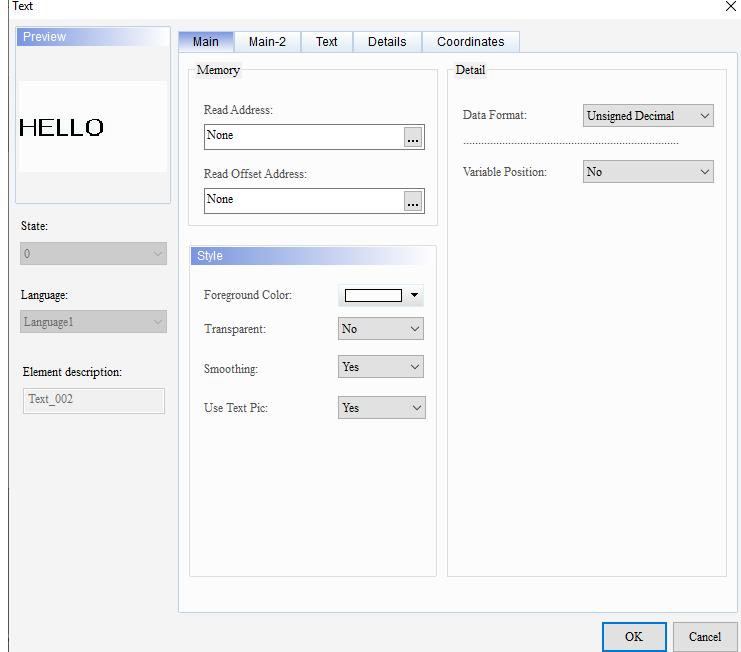
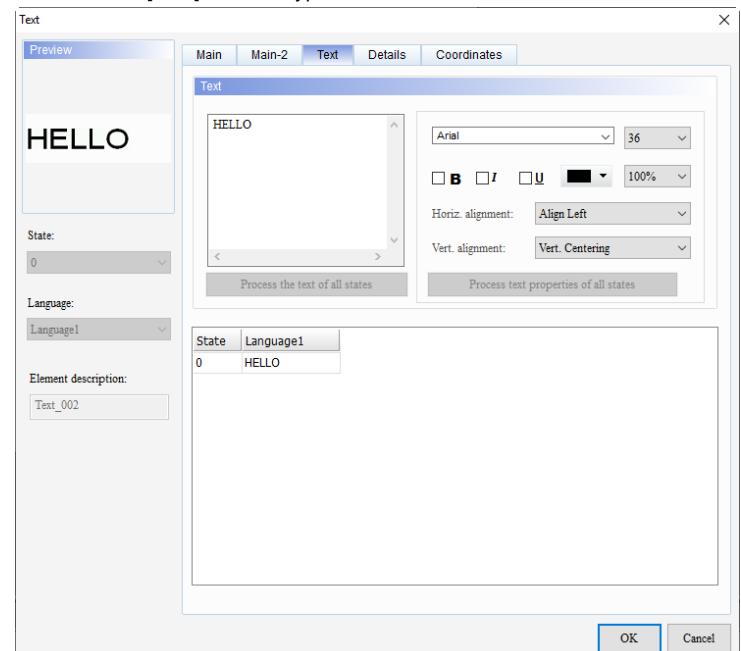
Figure 5.5.2 Main property page for the Increment / Decrement elements

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> <li>You can choose the internal memory or the controller register address. The input memory type has to be Word.</li> <li>For the Link name and Device Type, refer to Section 5.1.</li> </ul>
	Read Address	
(2)	Write Offset Address	
	Read Offset Address	Refer to the instructions in Appendix D Write and Read Offset Addresses.
(3)	Data Type	<p>There are two data types: Word and Double Word.</p> 

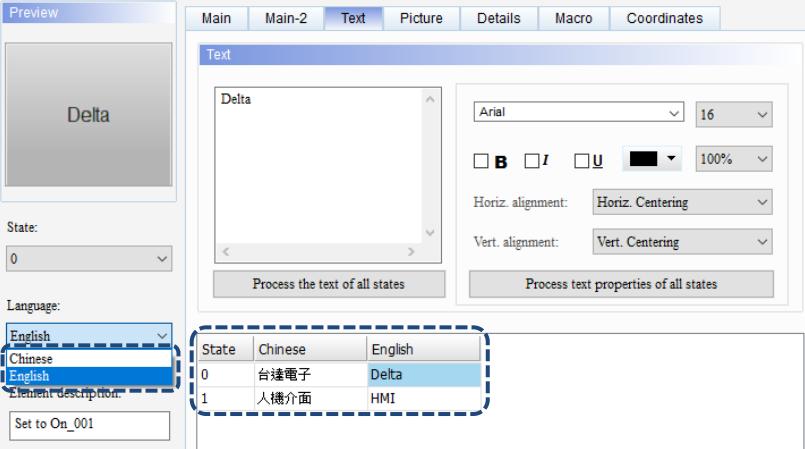
No.	Property	Function description								
(4)	Data Format	<ul style="list-style-type: none"> <li>When you set the Data Type to Word, the supported data formats are as follows:</li> </ul>  <ul style="list-style-type: none"> <li>When you set the Data Type to Double Word, the supported data formats are as follows:</li> </ul> 								
(5)	Increase/Decrease	<ul style="list-style-type: none"> <li>The Increase/Decrease refers to the increment or decrement value when you touch the Increment / Decrement buttons.</li> <li>Limit refers to the increasing or decreasing value range. After you press <b>OK</b>, the DOPSoft checks the value range of the inputted Increase / Decrease values and Limit values according to the selected Data Type and Data Format.</li> </ul>								
	Limit									
(6)	Style	<p>The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							

## 5

No.	Property	Function description				
(7)	Foreground Color	<ul style="list-style-type: none"> <li>■ Set the foreground color of the element.</li> <li>■ When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ul> 				
(8)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50%;">Gradient</td> <td style="text-align: center; width: 50%;">  </td> </tr> <tr> <td style="text-align: center;">Fixed (Solid)</td> <td style="text-align: center;">  </td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						
(9)	Use Text Pic	<p>Unlike the DOP-B series models using pictures to present all texts, the DOP-100 series models present directly with the texts. Therefore, if the language you use for the element is not yet supported by the PC, it is possible to cause missing characters and garbled texts when the element is displayed on the HMI. To have the text display effect be the same as that on the DOP-B models, the Use Text Pic function is added for the Text, Button, and General Message Display elements. Refer to the following examples.</p>				

No.	Property	Function description	
		Use Text Pic function	
(9)	Use Text Pic	Create Text element	<p>■ Create a Text element and go to the [Main] tab to set the Use Text Pic function.</p>  <p>Note: if you use the DOPSoft 4.00.06 version to open a DOP-B project, the Use Text Pic function is enabled (Yes) by default. If you add a DOP-100 project, then the Use Text Pic function is disabled (No) by default.</p> <p>■ Go to the [Text] tab, and type the text and set its font.</p> 

5

No.	Property	Function description																																																																																		
(9)	Use Text Pic	Execution result	Use Text Pic function																																																																																	
			■ After creating the element, download it to the HMI. ■ The following table shows the results of using and not using the Use Text Pic function.	Use Text Pic is Yes																																																																																
			Use Text Pic is No	Use Text Pic is Yes																																																																																
			<b>HELLO</b>	<b>HELLO</b>																																																																																
(10)	Language	If you have set the language data, you can edit the properties of the displayed text with the Language setting of the element.																																																																																		
		 <p>The screenshot shows the software's configuration interface. On the left, there's a preview window showing the text "Delta". Below it, the "Text" properties dialog is open, displaying "Delta" in a text area. The dialog includes font settings (Arial, 16pt), styling options (bold, italic, underline), and alignment (Horiz. Centering, Vert. Centering). At the bottom of the dialog are buttons for "Process the text of all states" and "Process text properties of all states". To the left of the preview, there's a "State:" dropdown set to "0" and a "Language:" dropdown with "English" selected. A list of languages is shown, with "English" highlighted. Below these are "Element description" fields and a "Set to On_001" button. A table below the preview lists language translations for state 0 and state 1. The table has columns for State, Chinese, and English. The first row shows "0" and "台達電子" under Chinese, and "Delta" under English. The second row shows "1" and "人機介面" under Chinese, and "HMI" under English. The entire table is enclosed in a dashed blue border.</p> <p>If you have set the language data, you can edit the properties of the displayed text with the Language setting of the element.</p>																																																																																		
(11)	Element description	Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.																																																																																		
		<table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1 13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2 13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3 13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4 13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5 13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6 13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7 13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8 13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9 13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>			Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3 13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6 13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8 13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																													
1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																													
2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																													
3 13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																													
4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																													
5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																													
6 13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																													
7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																													
8 13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																													
9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																													

## ■ Main-2

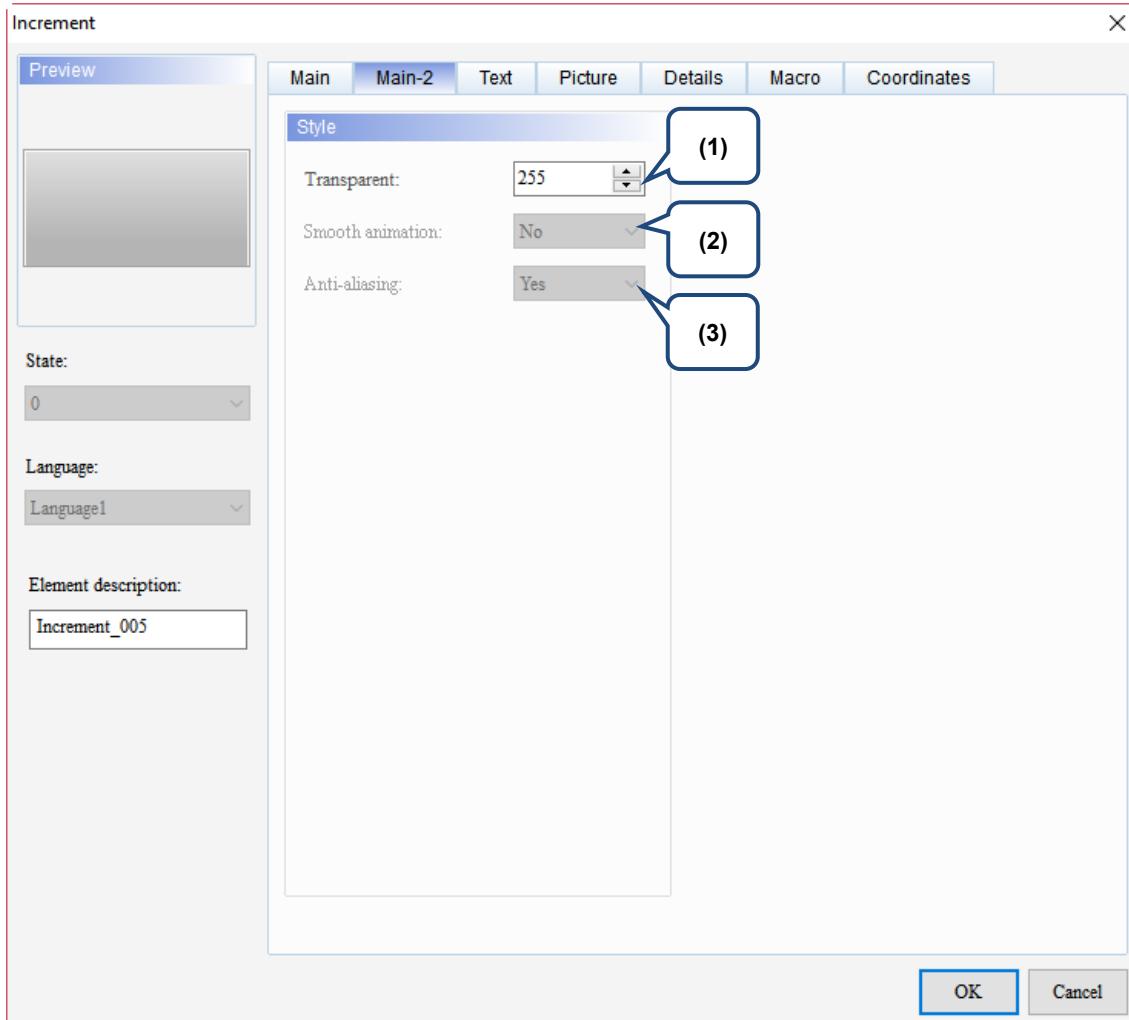


Figure 5.5.3 Main-2 property page for the Increment / Decrement elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

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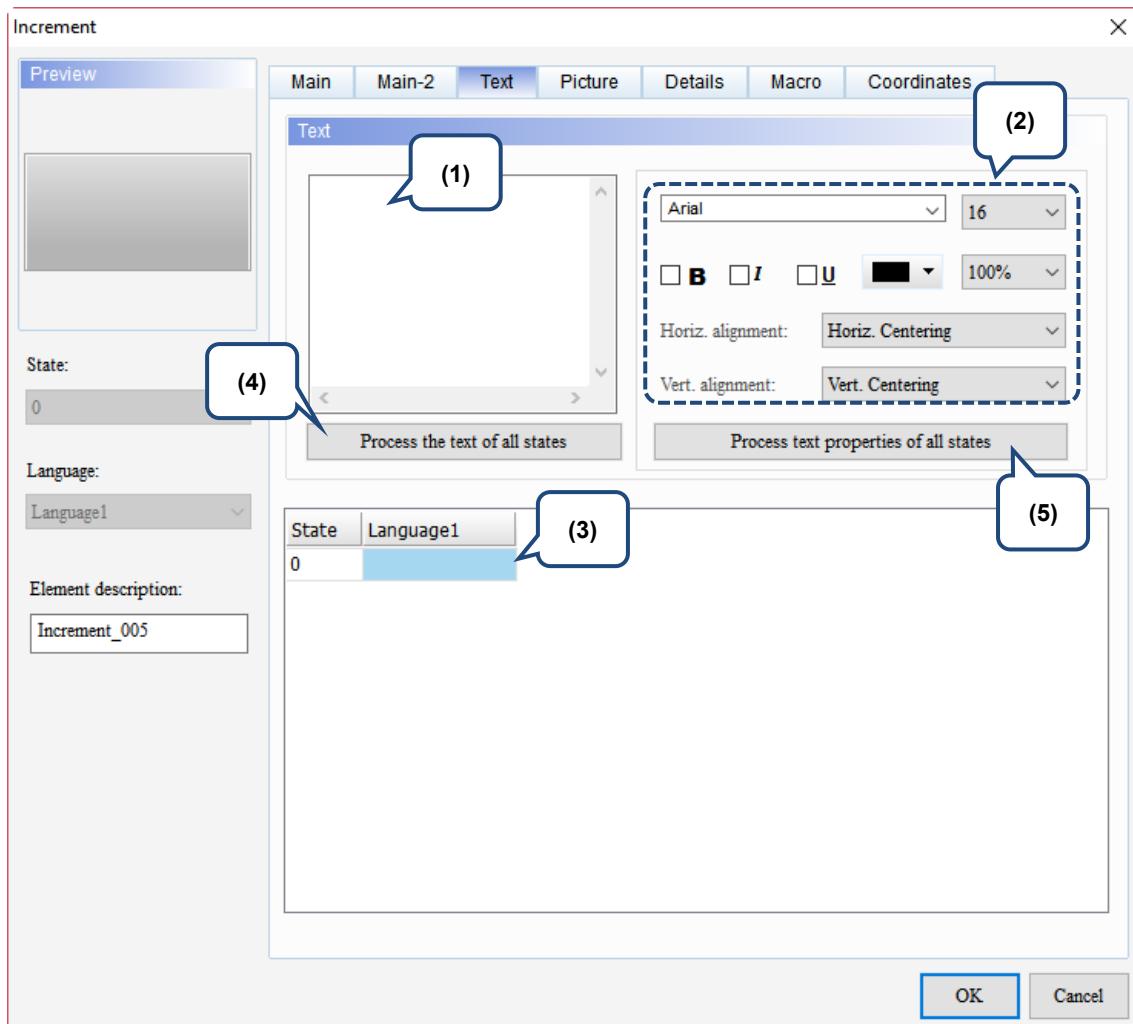
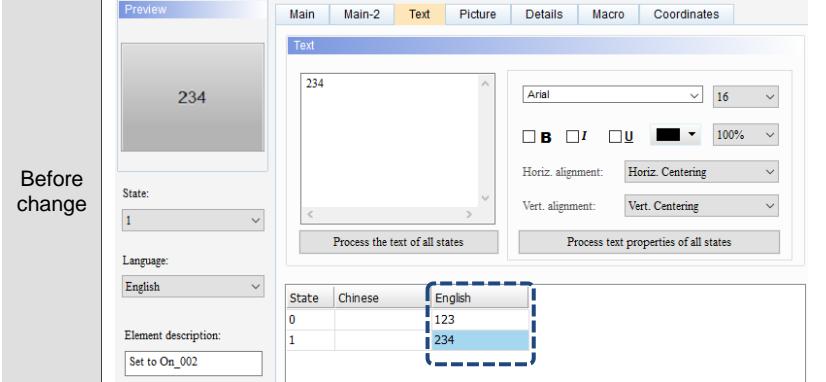
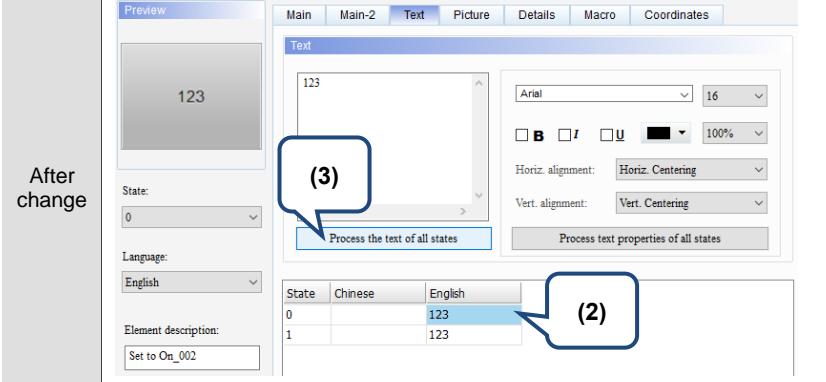
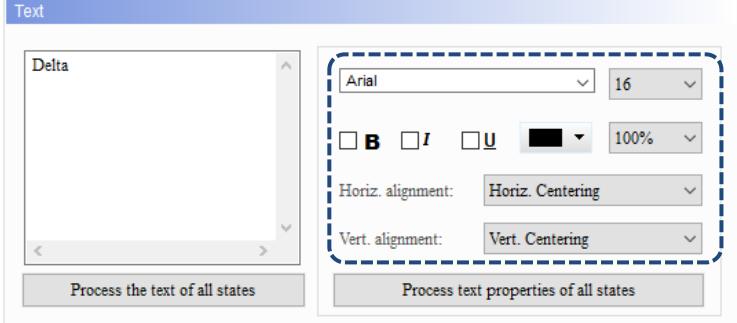
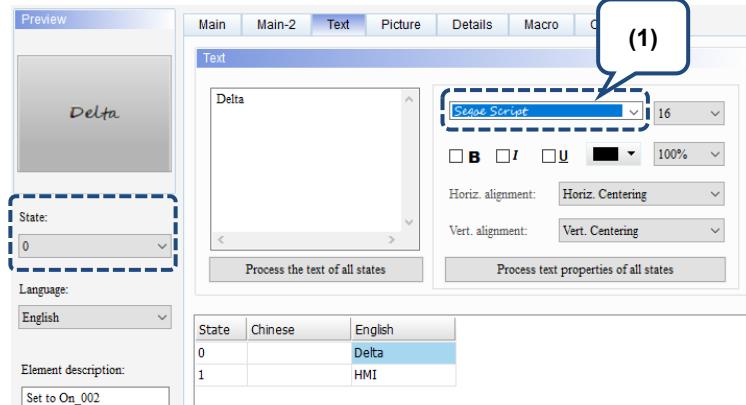
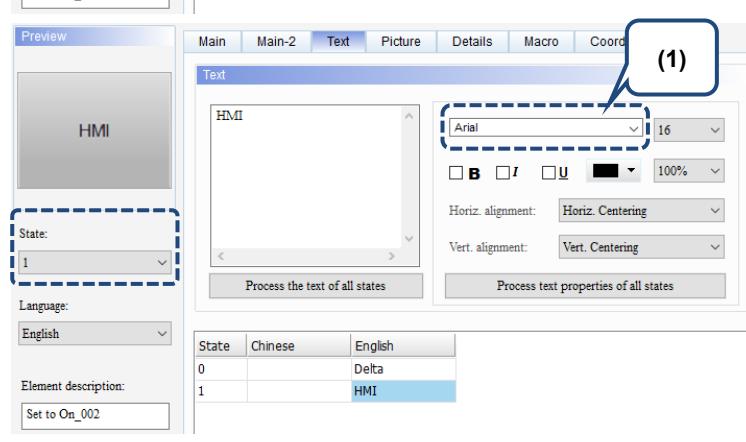
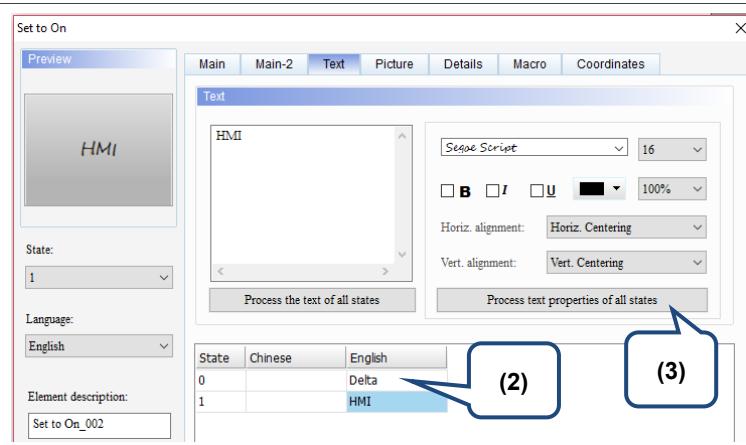


Figure 5.5.4 Text property page for the Increment / Decrement elements

No.	Property	Function description															
(1)	Text	<ul style="list-style-type: none"> <li>You can input the text to be displayed in the text box.</li> </ul> <table border="1"> <thead> <tr> <th>State</th> <th>Language</th> <th>Text</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Chinese</td> <td>台達電子</td> </tr> <tr> <td>0</td> <td>English</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>Chinese</td> <td>人機介面</td> </tr> <tr> <td>1</td> <td>English</td> <td>HMI</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.</li> </ul>	State	Language	Text	0	Chinese	台達電子	0	English	Delta	1	Chinese	人機介面	1	English	HMI
State	Language	Text															
0	Chinese	台達電子															
0	English	Delta															
1	Chinese	人機介面															
1	English	HMI															

No.	Property	Function description
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the text property setting results.
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>■ This function batch changes all the texts into the text contents of the state you selected. The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input 123 to State 0, and 234 to State 1.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process the text of all states</b>, and the State 1 text changes to 123.</li> </ol>  
(5)	Process text properties of all states	<p>■ This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>  <p>The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process text properties of all states</b>, and the State 1 font changes to Segoe Script.</li> </ol>

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No.	Property	Function description																		
(5)	Process text properties of all states	<p>Before change</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0		Delta	1		HMI	State	Chinese	English	0		Delta	1		HMI
State	Chinese	English																		
0		Delta																		
1		HMI																		
State	Chinese	English																		
0		Delta																		
1		HMI																		
	After change																			

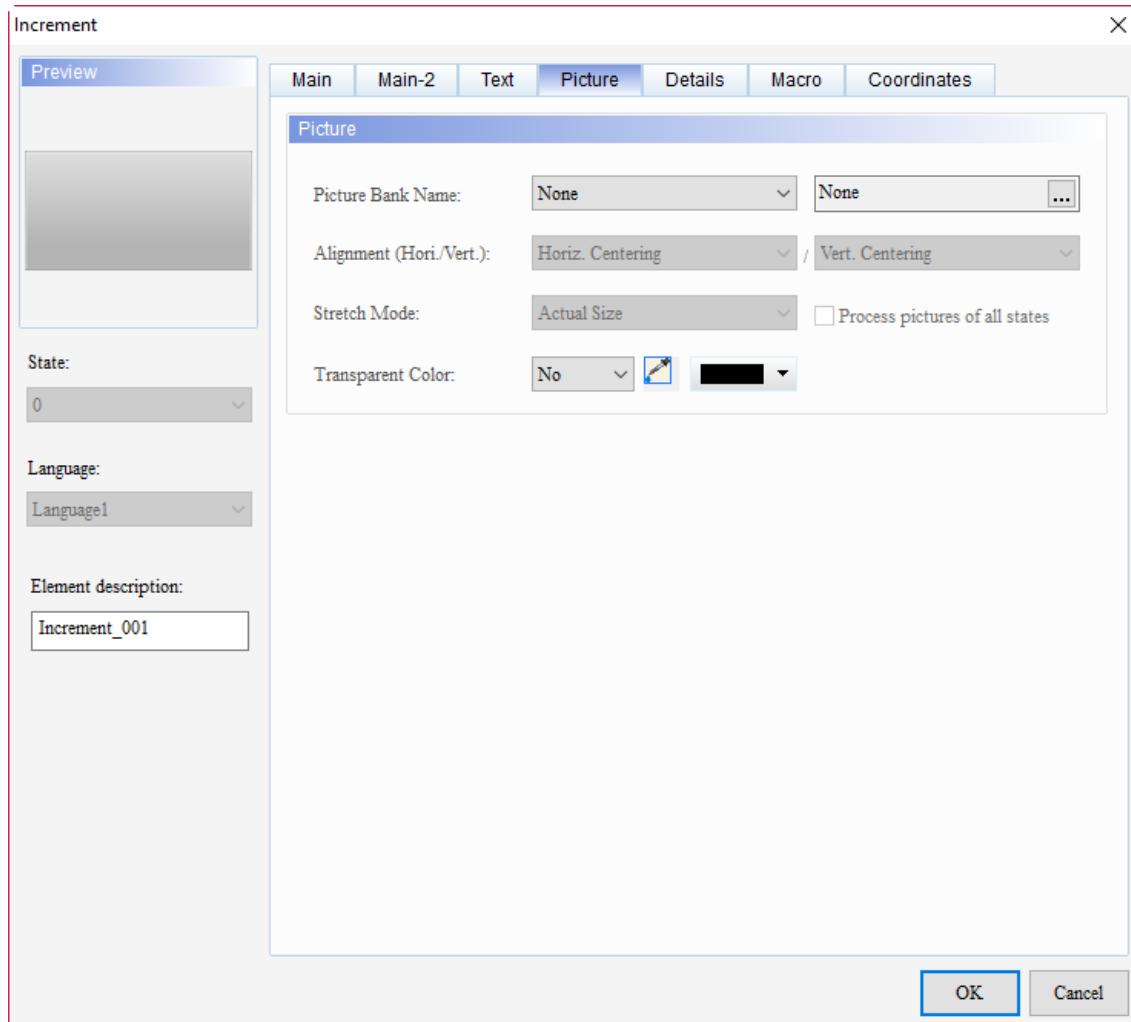
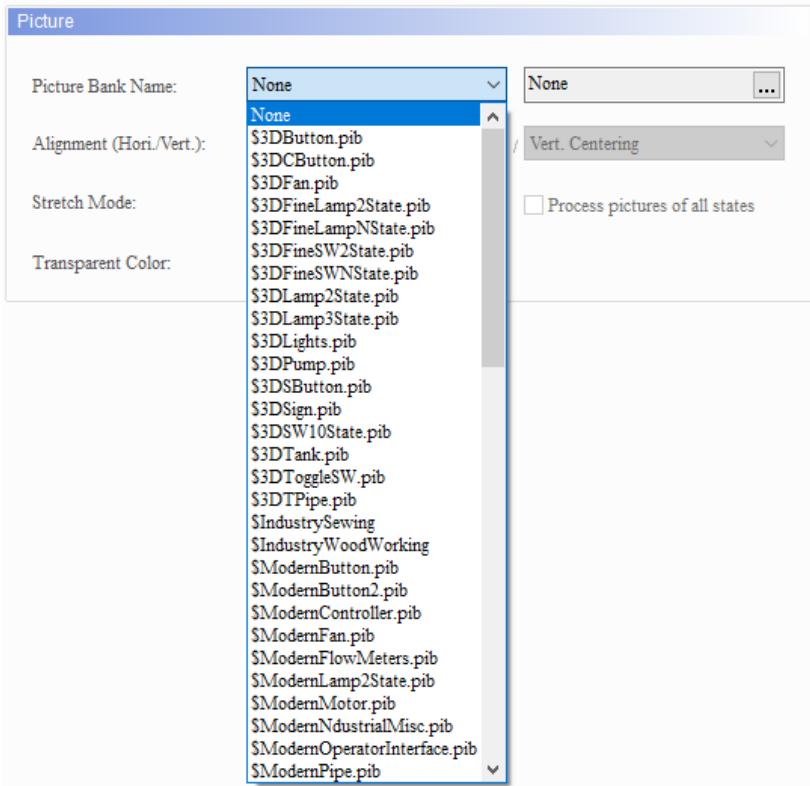
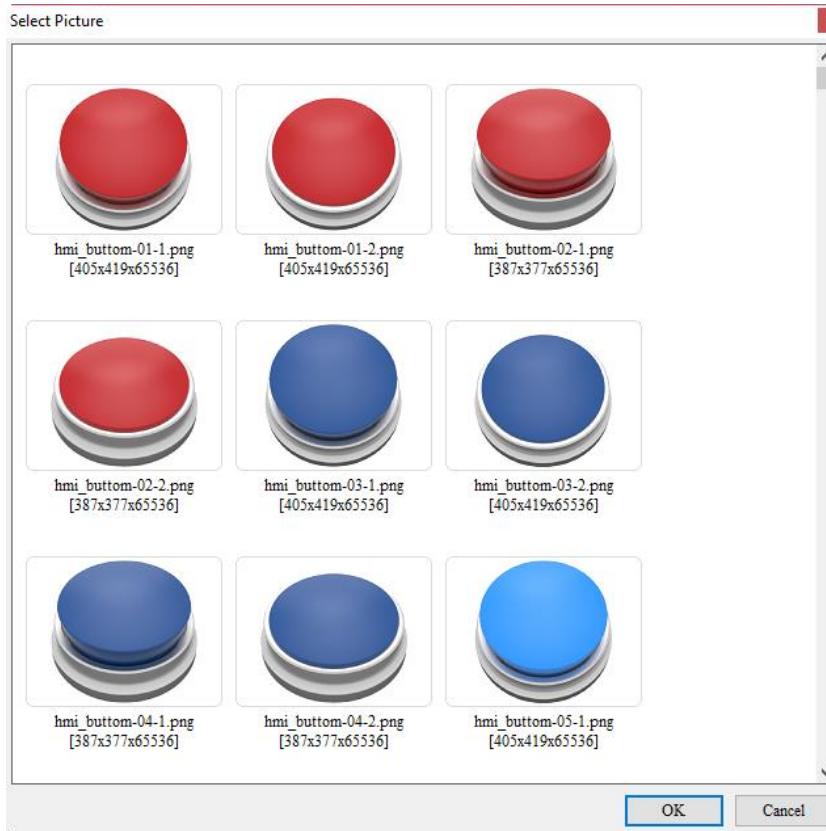
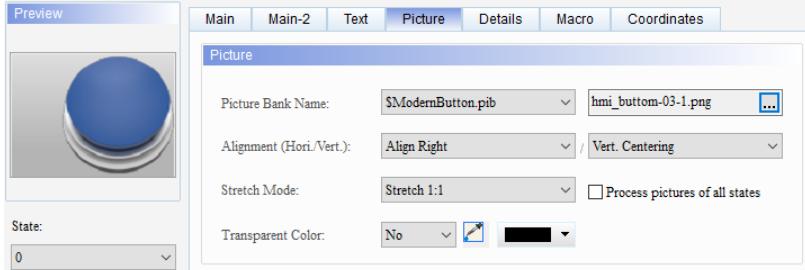
**■ Picture**

Figure 5.5.5 Picture property page for the Increment / Decrement elements

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No.	Property	Function description									
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>Picture</p> <p>Picture Bank Name: <input type="button" value="None"/></p> <p>Alignment (Hori./Vert.): <input type="button" value="Vert. Centering"/></p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <ul style="list-style-type: none"> <li>\$3DFineLamp2State.pib</li> <li>\$3DFineLampNState.pib</li> <li>\$3DFineSW2State.pib</li> <li>\$3DFineSWNState.pib</li> <li>\$3DLamp2State.pib</li> <li>\$3DLamp3State.pib</li> <li>\$3DLights.pib</li> <li>\$3DPump.pib</li> <li>\$3DSButton.pib</li> <li>\$3DSign.pib</li> <li>\$3DSW10State.pib</li> <li>\$3DTank.pib</li> <li>\$3DToggleSW.pib</li> <li>\$3DTPipe.pib</li> <li>\$IndustrySewing</li> <li>\$IndustryWoodWorking</li> <li>\$ModernButton.pib</li> <li>\$ModernButton2.pib</li> <li>\$ModernController.pib</li> <li>\$ModernFan.pib</li> <li>\$ModernFlowMeters.pib</li> <li>\$ModernLamp2State.pib</li> <li>\$ModernMotor.pib</li> <li>\$ModernIndustrialMisc.pib</li> <li>\$ModernOperatorInterface.pib</li> <li>\$ModernPipe.pib</li> </ul>  <p>Select Picture</p> <table border="1"> <tbody> <tr> <td> hmi_button-01-1.png [405x419x65536]</td> <td> hmi_button-01-2.png [405x419x65536]</td> <td> hmi_button-02-1.png [387x377x65536]</td> </tr> <tr> <td> hmi_button-02-2.png [387x377x65536]</td> <td> hmi_button-03-1.png [405x419x65536]</td> <td> hmi_button-03-2.png [405x419x65536]</td> </tr> <tr> <td> hmi_button-04-1.png [387x377x65536]</td> <td> hmi_button-04-2.png [387x377x65536]</td> <td> hmi_button-05-1.png [405x419x65536]</td> </tr> </tbody> </table> <p>OK Cancel</p>	 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]	 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]	 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]
 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]									
 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]									
 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]									

No.	Property	Function description									
(2)	Alignment / Stretch Mode	<ul style="list-style-type: none"> <li>You can use the Alignment options to set how pictures are aligned.</li> </ul>  <p>The screenshot shows the 'Picture' tab of the properties dialog. It includes a preview window showing a blue button, a 'Picture Bank Name' dropdown set to '\$ModernButton.picb', a 'State' dropdown set to '0', and alignment settings for 'Align Right' horizontally and 'Vert. Centering' vertically. Below this is a 'Stretch Mode' dropdown set to 'Stretch 1:1' and a checkbox for 'Process pictures of all states' which is checked.</p> <ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>If you select the check box for <b>Process pictures of all states</b>, it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size									
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p>  <p>The screenshot shows a calendar element with a white background. A dashed red box highlights a white area on the calendar. To the right, a color picker shows a blue square, indicating that the white area has been converted to blue.</p>									

## ■ Details

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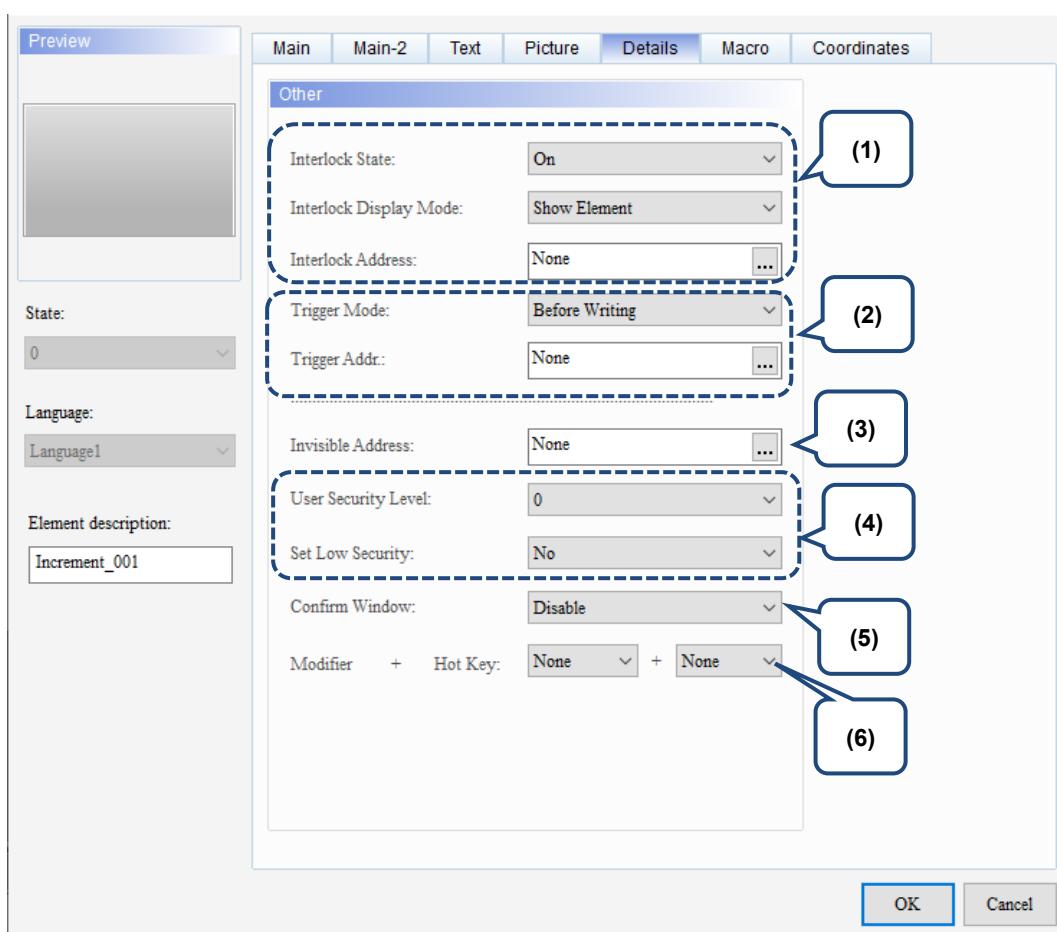
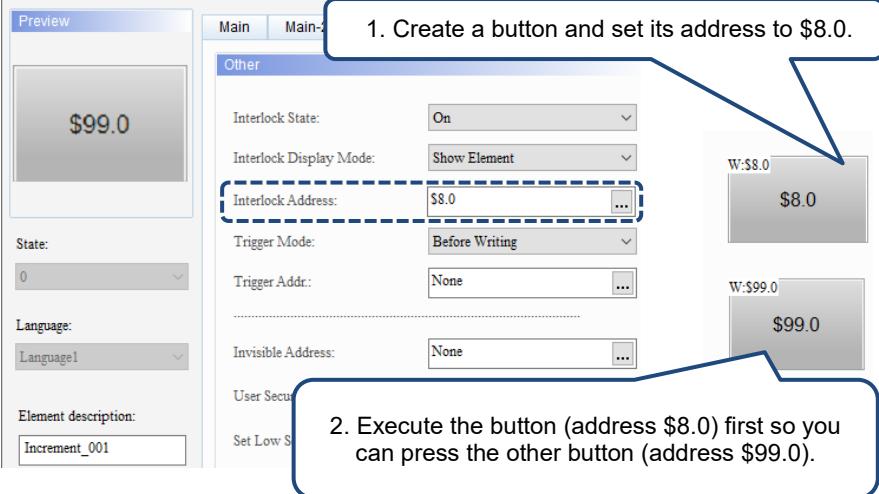
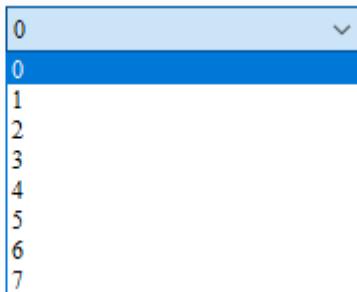
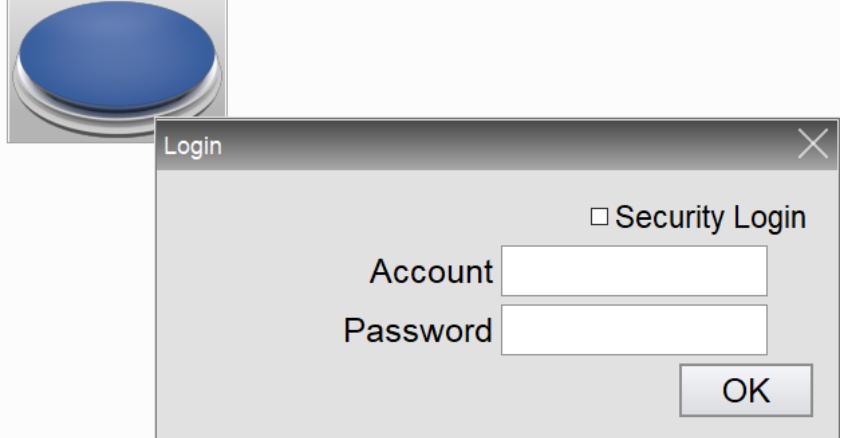
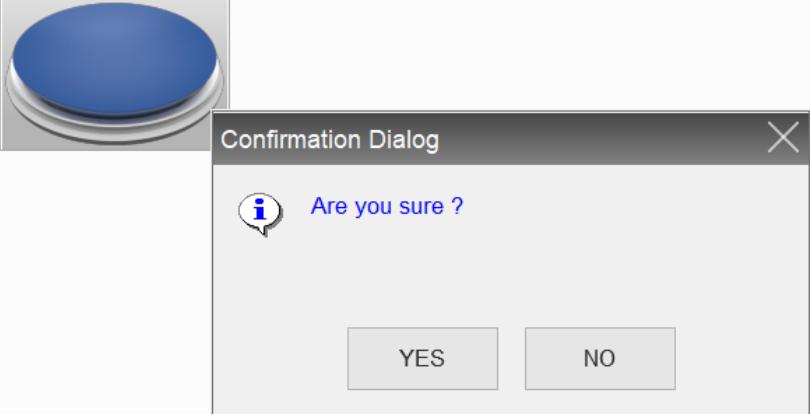


Figure 5.5.6 Details property page for the Increment / Decrement elements

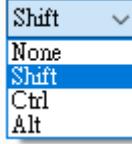
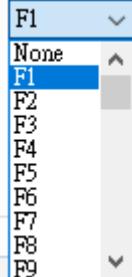
No.	Property	Function description							
(1)	Interlock State	<ul style="list-style-type: none"> <li>The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON.</li> <li>The following describes how it works:</li> </ul> <ol style="list-style-type: none"> <li>Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0.</li> <li>Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.</li> </ol> 							
	Interlock Address	<ul style="list-style-type: none"> <li>The Interlock Display Mode includes two options, Show Element and Show Prohibition Symbol.</li> </ul> <table border="1"> <tr> <td style="text-align: right;">Interlock Display Mode:</td> <td>Show Element</td> </tr> <tr> <td style="text-align: right;">Interlock Address:</td> <td>Show Element Show Prohibition Symbol</td> </tr> <tr> <td style="text-align: right;">Show Element</td> <td></td> </tr> <tr> <td style="text-align: right;">Show Prohibition Symbol</td> <td></td> </tr> </table>	Interlock Display Mode:	Show Element	Interlock Address:	Show Element Show Prohibition Symbol	Show Element		Show Prohibition Symbol
Interlock Display Mode:	Show Element								
Interlock Address:	Show Element Show Prohibition Symbol								
Show Element									
Show Prohibition Symbol									
(2)	Trigger Mode / Trigger Addr.	<ul style="list-style-type: none"> <li>There are two trigger modes: Before Writing and After Writing.</li> </ul> <table border="1"> <thead> <tr> <th></th> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td>Trigger type</td> <td>Set the button to ON before changing values.</td> <td>The button turns to ON after changing values.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>You can create a button element, set the address, and select Before Writing or After Writing to trigger the specified controller Bit address to ON.</li> <li>The Trigger function only turns the controller address to ON, so you need to turn the address to OFF if triggering again is required.</li> </ul>		Before Writing	After Writing	Trigger type	Set the button to ON before changing values.	The button turns to ON after changing values.	
	Before Writing	After Writing							
Trigger type	Set the button to ON before changing values.	The button turns to ON after changing values.							

## 5

No.	Property	Function description							
(2)	Trigger Mode / Trigger Addr.	<p>Flowchart of Before Writing</p> <p>Flowchart of After Writing</p>							
(3)	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td></td> <td>Invisible Address \$9.0 OFF</td> </tr> <tr> <td>Invisible Address is on</td> <td></td> <td>Invisible Address \$9.0 ON</td> </tr> </table> <p>Preview</p> <p>Main Main-2 Text Picture Details Macro</p> <p>Other</p> <p>Interlock State: On</p> <p>Interlock Address: None</p> <p>Invisible Address: \$9.0</p>	Invisible Address is off		Invisible Address \$9.0 OFF	Invisible Address is on		Invisible Address \$9.0 ON	
Invisible Address is off		Invisible Address \$9.0 OFF							
Invisible Address is on		Invisible Address \$9.0 ON							

No.	Property	Function description
	User Security Level	<p>User Security Level:</p>  <p>Set Low Security:</p> <p>Min. Press Time (sec):</p> <p>Confirm Window:</p> <ul style="list-style-type: none"> <li>■ You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>■ After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element; refer to Section 5.7.2 Password Table Setup).</li> </ul>
(4)	Set Low Security	 <ul style="list-style-type: none"> <li>■ If you set the Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to enter the password for the corresponding security level again.</li> </ul>
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the pressing action after pressing the element.</p> 

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No.	Property	Function description
(6)	Modifier + Hot Key	<ul style="list-style-type: none"><li>■ Allows you to use the hot keys on the external keyboard to execute the button.</li><li>■ The Modifier options include None, Shift, Ctrl, and Alt. </li><li>■ The Hot Key options include F1 to F12, English letters A to Z, and number keys 0 to 9. </li></ul>

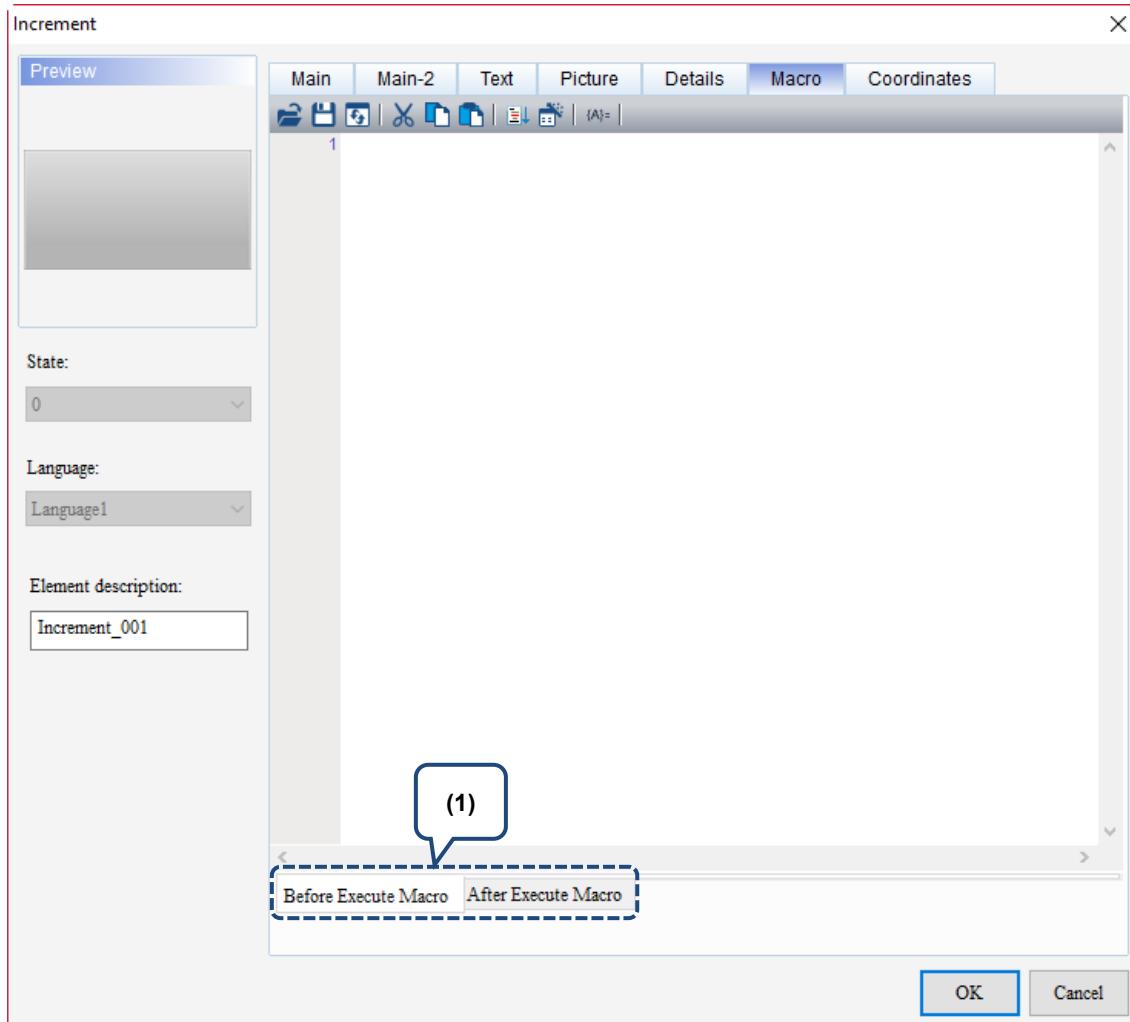
**■ Macro**

Figure 5.5.7 Macro property page for the Increment / Decrement elements

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No.	Property	Function description
Flowcharts of Before / After Execute Macro:		
(1)		<pre> graph TD     subgraph Left [Left Flowchart]         A1[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B1[Before Execute Macro]         B1 -- "Button triggered ON and numeric written" --&gt; C1[Maintained Button]         C1 -- "50" --&gt; D1[After Execute Macro]         D1 -- "Trigger at next time" --&gt; E1[Maintained Button]         E1 -- "Trigger OFF / Input Numeric" --&gt; F1[Before Execute Macro]         F1 -- "Button triggered OFF and numeric written" --&gt; G1[Maintained Button]         G1 -- "90" --&gt; H1[After Execute Macro]         H1 -- "Trigger at next time" --&gt; I1[Maintained Button]     end      subgraph Right [Right Flowchart]         A2[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B2[Before Execute Macro]         B2 -- "Button triggered ON and numeric written" --&gt; C2[Maintained Button]         C2 -- "50" --&gt; D2[After Execute Macro]         D2 -- "Trigger at next time" --&gt; E2[Maintained Button]         E2 -- "Trigger OFF / Input Numeric" --&gt; F2[Before Execute Macro]         F2 -- "Button triggered OFF and numeric written" --&gt; G2[Maintained Button]         G2 -- "90" --&gt; H2[After Execute Macro]         H2 -- "Trigger at next time" --&gt; I2[Maintained Button]     end </pre>
	Before Execute Macro	When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.

## ■ Coordinates

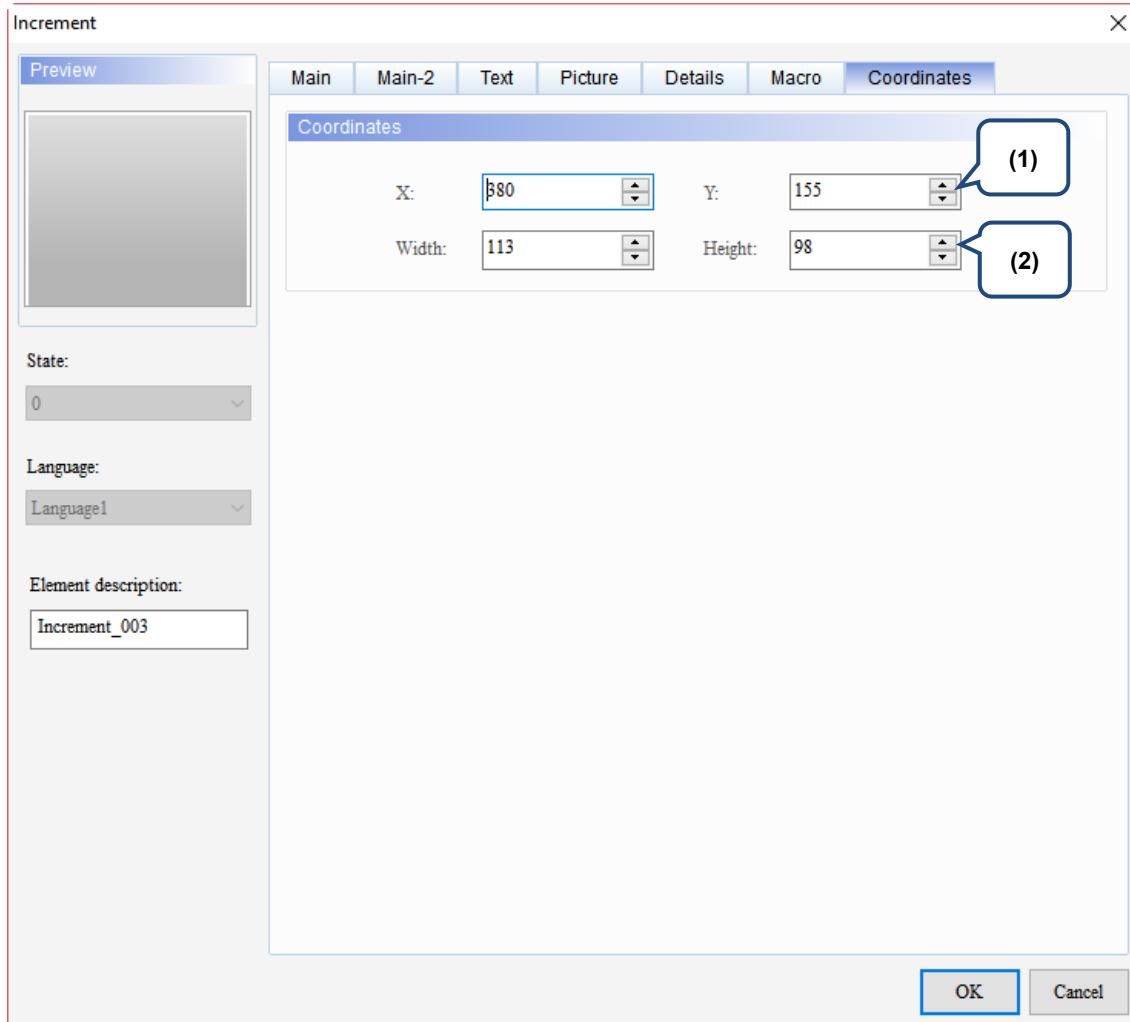
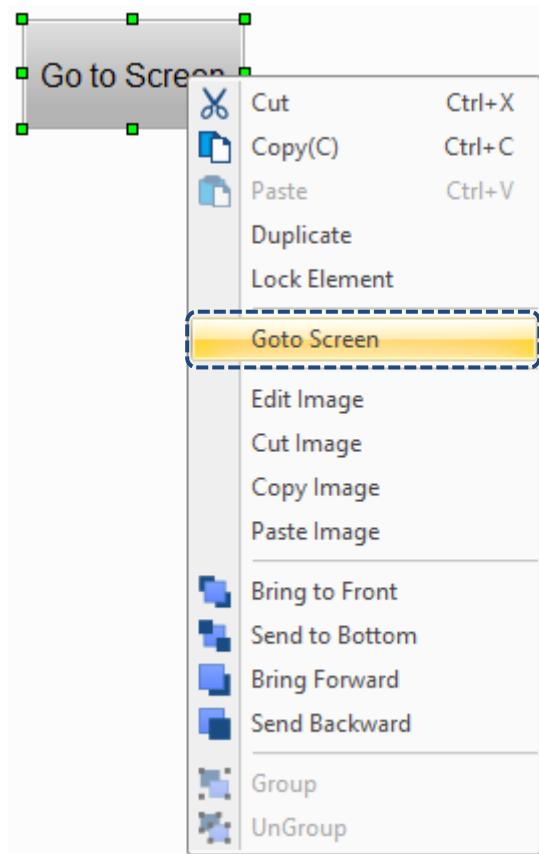


Figure 5.5.8 Coordinates property page for the Increment / Decrement elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 5.6 Goto Screen

The Goto Screen button enables you to right-click the button and select **Goto Screen** to go to the screen of the set number.



The DOPSoft provides three types of Goto Screen buttons:

- Goto Screen: when you touch the **Goto Screen** button on the HMI, the HMI switches to the set screen.
- Previous Page: when you touch the **Previous Page** button on the HMI, the HMI switches to the previously displayed screen.
- Page Up: assuming that you switch the screen from Screen 1, Screen 3, and then to Screen 2, when you press the **Page Up** button, the screen goes to Screen 3, and when you press the **Page Up** button again, the screen goes to Screen 1.

You can set the functions for the three buttons with the Properties on the right-hand side or by double-clicking **Goto Screen** to enter the setting window.

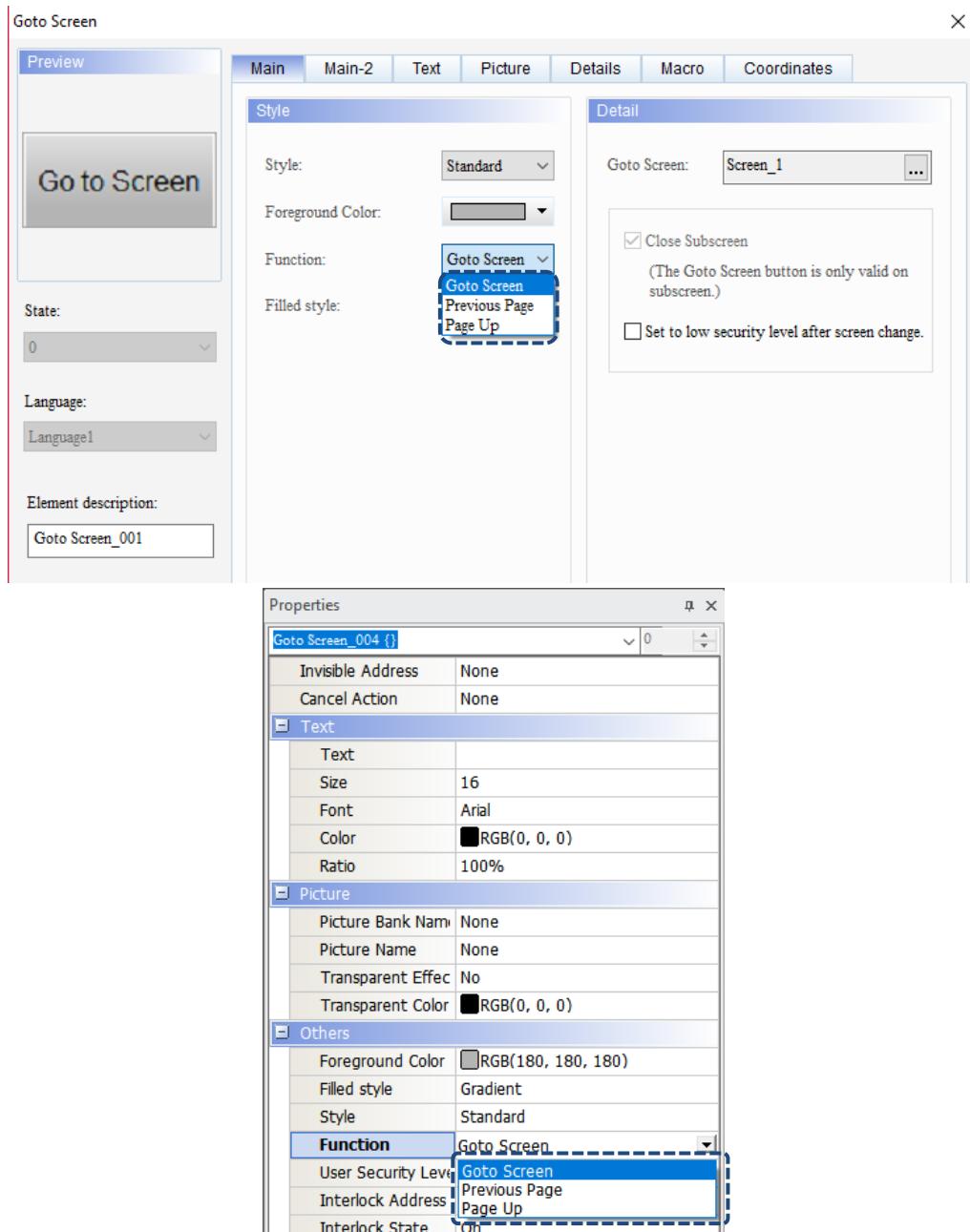
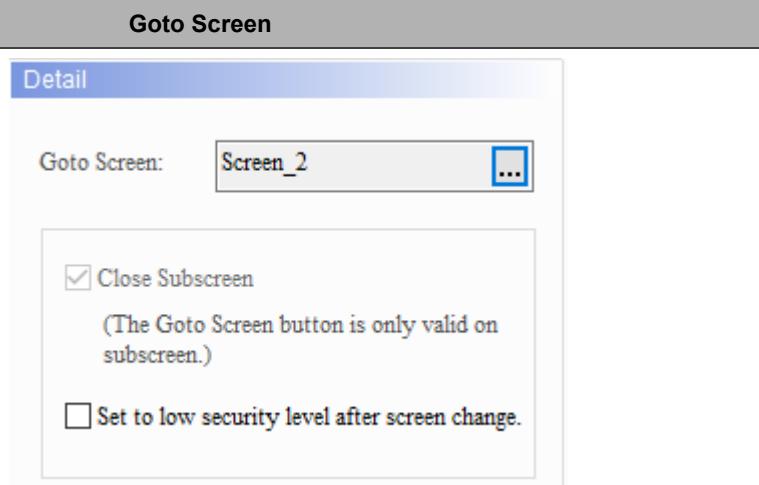


Figure 5.6.1 Properties of Goto Screen

Table 5.6.1 Goto Screen example

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The Goto Screen item in the Goto Screen element

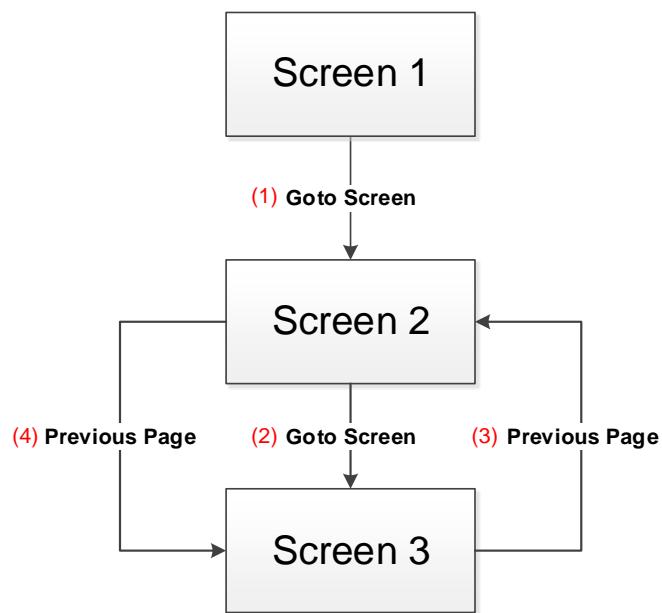


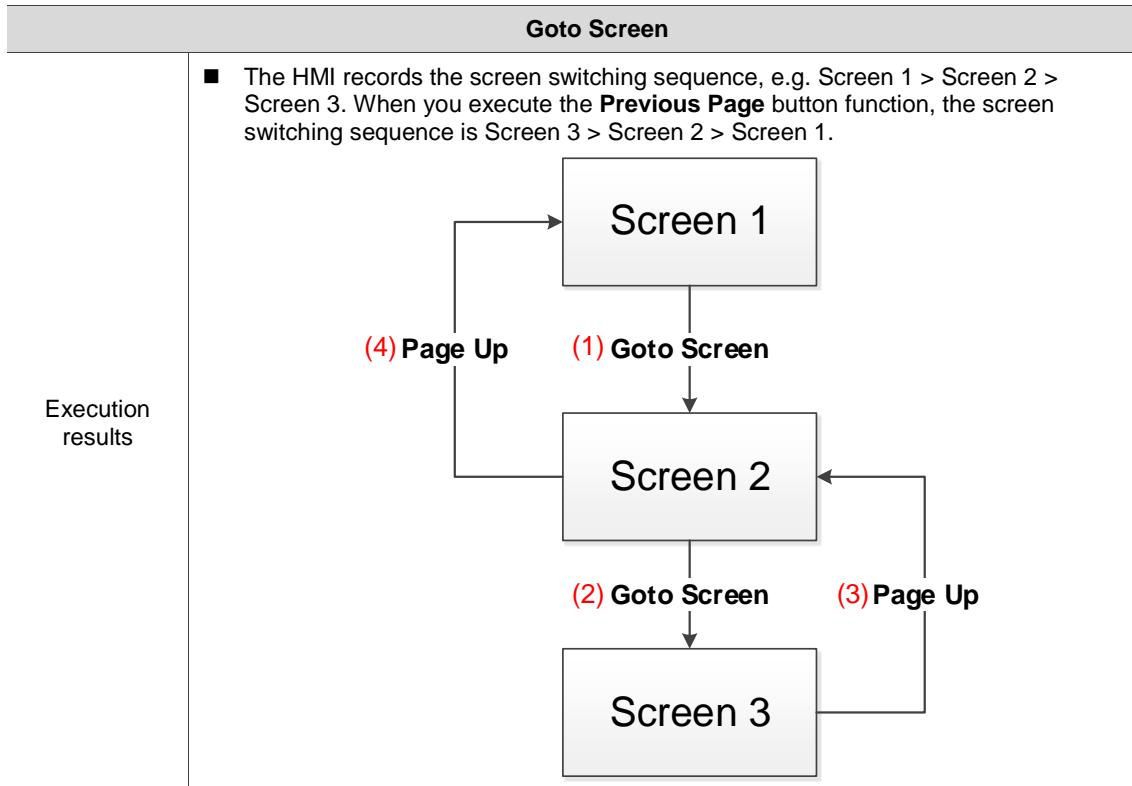
- When you touch **Goto Screen**, the HMI switches to the specified screen.



- When you touch **Previous Page**, the HMI switches to the previously displayed screen.

Execution results





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When you double-click the Goto Screen element, the property page is shown as follows.

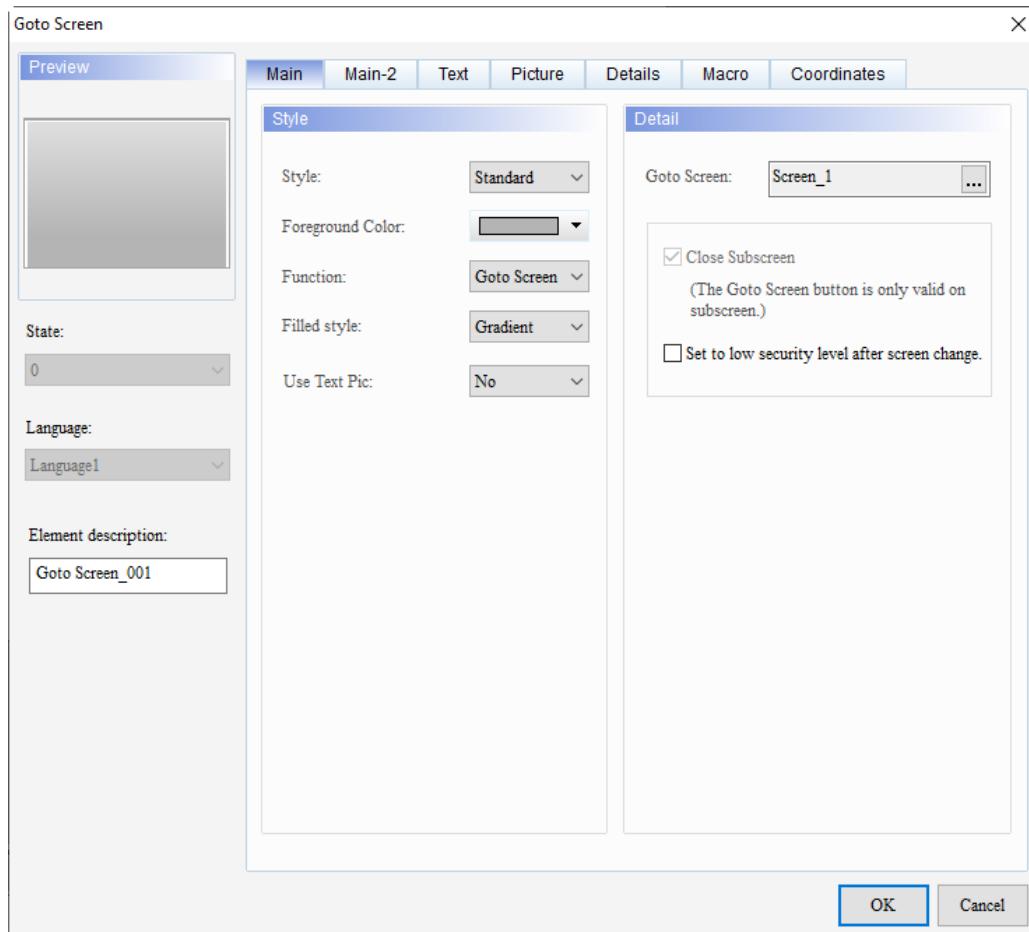


Figure 5.6.2 Properties of Goto Screen

Table 5.6.2 Function page of Goto Screen

<b>Goto Screen</b>	
<b>Function page</b>	<b>Description</b>
Preview	The Goto Screen element can only view multi-language data display since the multistate property is not available for this element.
Main	<p>Set the Style and Foreground Color, Function, Filled style, Use text Pic for the element.</p> <p>Set the Goto Screen, Close Subscreen, and [Set to low security level after screen change] of the Goto Screen element.</p>
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing options.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color options.
Details	<b>Goto Screen</b>
	Set the Interlock Address, Interlock State, Interlock Display Mode, Trigger Mode, Trigger Addr., Invisible Address, Cancel Action, User Security Level, Confirm Window, and Modifier + Hot Key.
	<b>Previous Page</b>
	Set the Interlock Address, Interlock State, Interlock Display Mode, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, Confirm Window, and Modifier + Hot Key.
Macro	<b>Page Up</b>
	Set the Interlock Address, Interlock State, Interlock Display Mode, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, Confirm Window, and Modifier + Hot Key.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

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## ■ Main

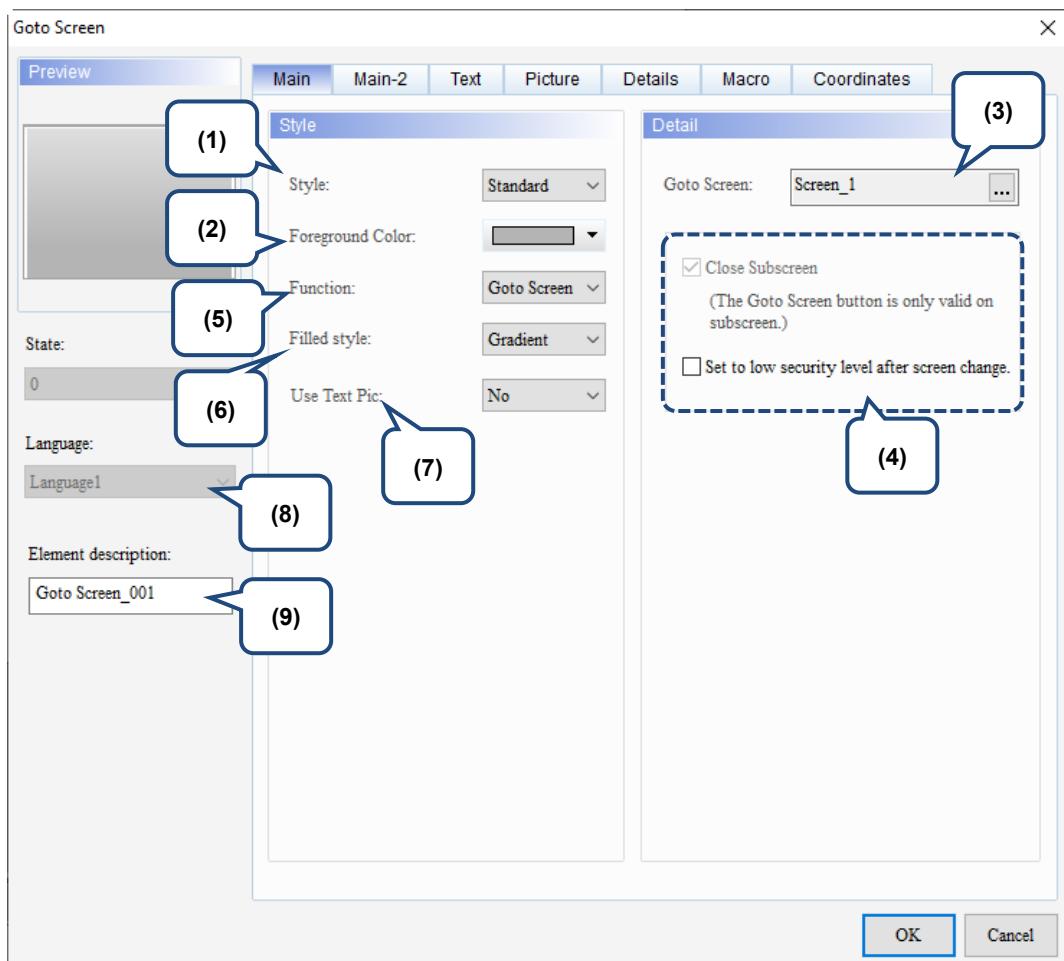
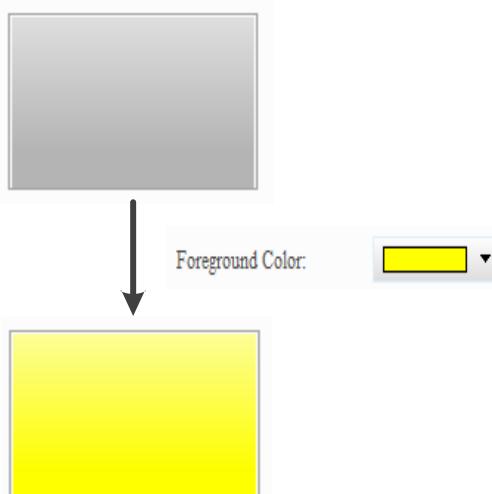
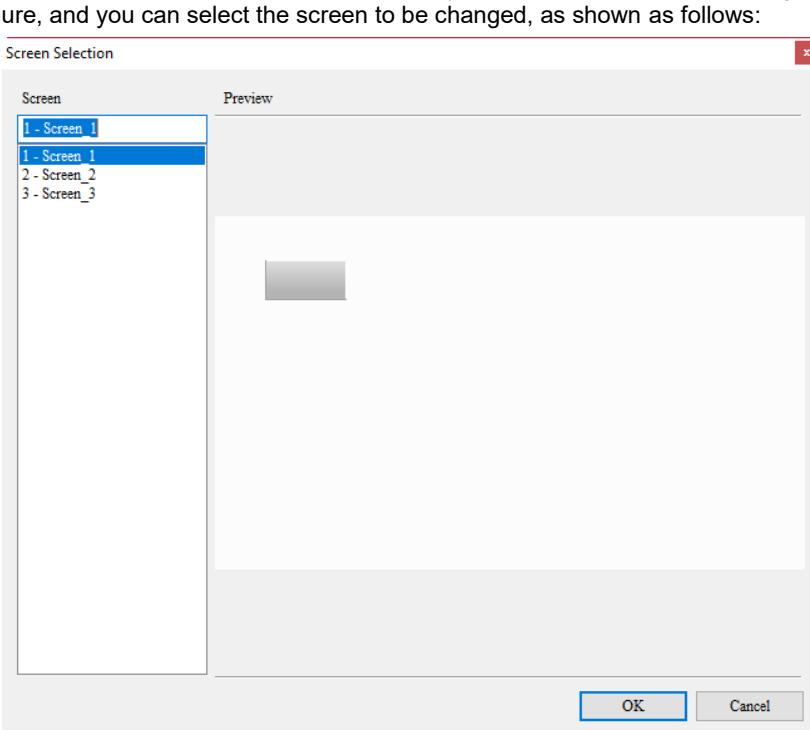
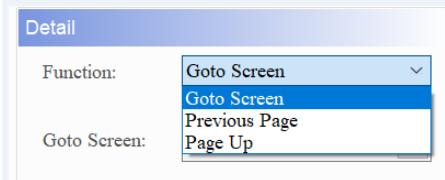


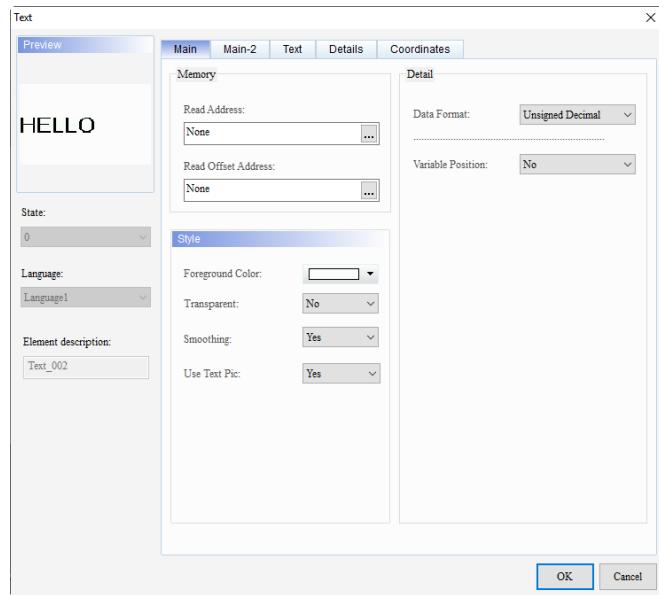
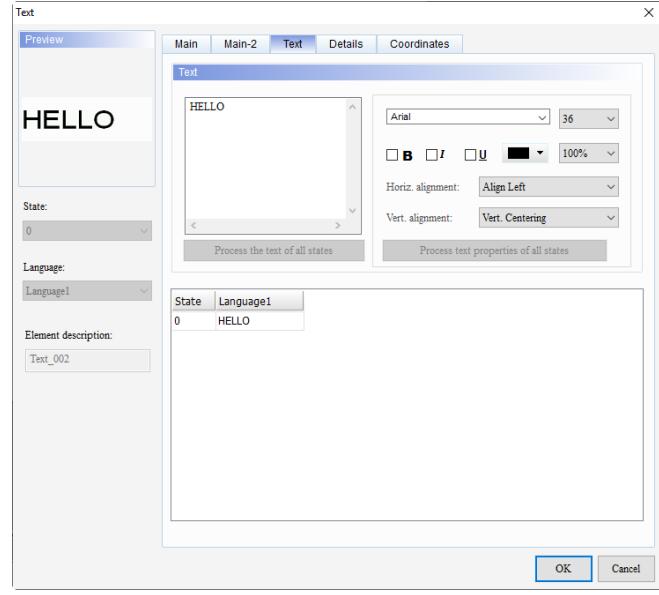
Figure 5.6.3 Main property page for the Goto Screen element

No.	Property	Function description				
(1)	Style	The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.	Standard	Raised	Round	Invisible

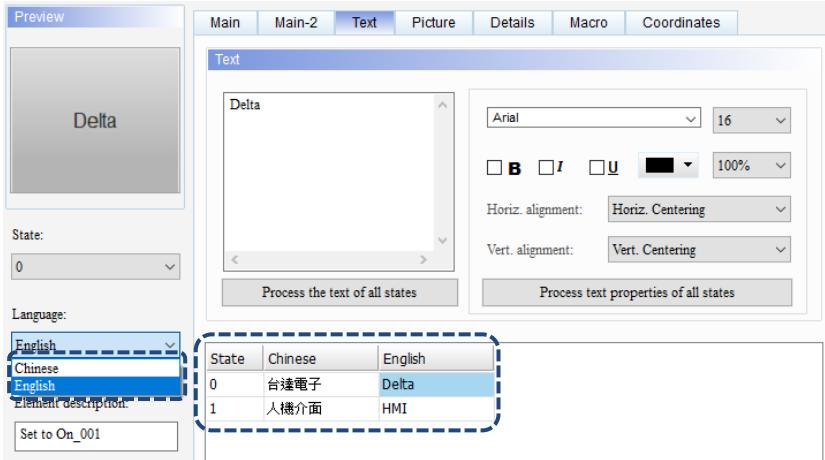
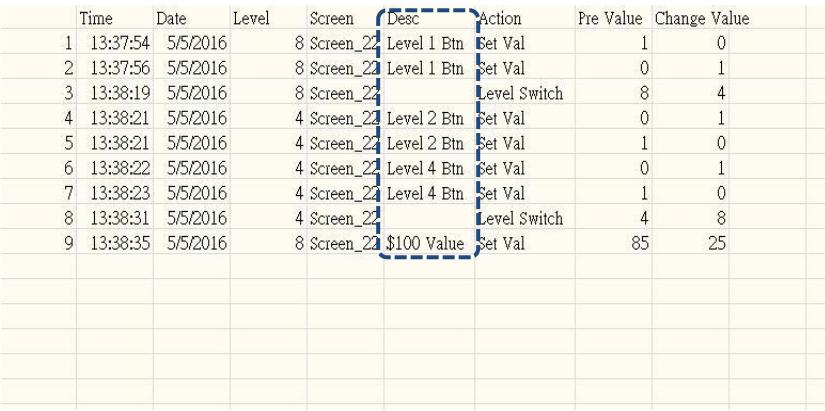
No.	Property	Function description
(2)	Foreground Color	<ul style="list-style-type: none"> <li>■ Set the foreground color of the element.</li> <li>■ When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ul> 
(3)	Goto Screen	<p>The Screen Selection window appears after you click  in the preceding figure, and you can select the screen to be changed, as shown as follows:</p> 

## 5

No.	Property	Function description				
	Close Subscreen	<ul style="list-style-type: none"> <li>Only when the Goto Screen button is created in the Subscreen will the Close Subscreen option be enabled. When you press <b>Goto Screen</b>, the current Subscreen closes at the same time.</li> <li>The Set to low security level after screen change function force sets the current User Security Level to the lowest after the Goto Screen button is pressed, which can prevent the element from being accidentally operated.</li> </ul>				
(4)	Set to low security level after screen change.	<p><input checked="" type="checkbox"/> Close Subscreen (The Goto Screen button is only valid on subscreen.)</p> <p><input type="checkbox"/> Set to low security level after screen change.</p>				
(5)	Function	<ul style="list-style-type: none"> <li>The Function setting determines where the screen goes to when screen changes.</li> </ul>  <ul style="list-style-type: none"> <li>Goto Screen: press the <b>Goto Screen</b> button on the HMI and the HMI switches to the specified screen.</li> <li>Previous Page: press the <b>Previous Page</b> button and the HMI switches to the previous page.</li> <li>Page Up: assuming that you switch the screen from Screen 1, Screen 3, and then to Screen 2, when you press the <b>Page Up</b> button, the screen goes to Screen 3, and when you press the <b>Page Up</b> button again, the screen goes to Screen 1.</li> </ul>				
(6)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 10px;">Gradient</td> <td style="text-align: center; padding: 10px;"></td> </tr> <tr> <td style="text-align: center; padding: 10px;">Fixed (Solid)</td> <td style="text-align: center; padding: 10px;"></td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						

No.	Property	Function description				
(7)	Use Text Pic	<p>Unlike the DOP-B series models using pictures to present all texts, the DOP-100 series models present directly with the texts. Therefore, if the language you use for the element is not yet supported by the PC, it is possible to cause missing characters and garbled texts when the element is displayed on the HMI. To have the text display effect be the same as that on the DOP-B models, the Use Text Pic function is added for the Text, Button, and General Message Display elements. Refer to the following examples.</p> <p><b>Use Text Pic function</b></p> <ul style="list-style-type: none"> <li>Create a Text element and go to the [Main] tab to set the Use Text Pic function.</li> </ul>  <p>Note: if you use the DOPSoft 4.00.06 version to open a DOP-B project, the Use Text Pic function is enabled (Yes) by default. If you add a DOP-100 project, then the Use Text Pic function is disabled (No) by default.</p> <ul style="list-style-type: none"> <li>Go to the [Text] tab, and type the text and set its font.</li> </ul>  <p>■ After creating the element, download it to the HMI.  ■ The following table shows the results of using and not using the Use Text Pic function.</p> <table border="1"> <thead> <tr> <th>Use Text Pic is Yes</th> <th>Use Text Pic is No</th> </tr> </thead> <tbody> <tr> <td><b>HELLO</b></td> <td><b>HELLO</b></td> </tr> </tbody> </table>	Use Text Pic is Yes	Use Text Pic is No	<b>HELLO</b>	<b>HELLO</b>
Use Text Pic is Yes	Use Text Pic is No					
<b>HELLO</b>	<b>HELLO</b>					

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No.	Property	Function description																																																																																
(8)	Language	<p>If you have set the language data, you can edit the properties of the displayed text with the Language setting of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI																																																																							
State	Chinese	English																																																																																
0	台達電子	Delta																																																																																
1	人機介面	HMI																																																																																
(9)	Element description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.</p>  <table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1 13:37:54</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2 13:37:56</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3 13:38:19</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4 13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5 13:38:21</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6 13:38:22</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7 13:38:23</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8 13:38:31</td> <td>5/5/2016</td> <td>4</td> <td>Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9 13:38:35</td> <td>5/5/2016</td> <td>8</td> <td>Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3 13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6 13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8 13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																											
1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																											
2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																											
3 13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																											
4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																											
5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																											
6 13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																											
7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																											
8 13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																											
9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																											

## ■ Main-2

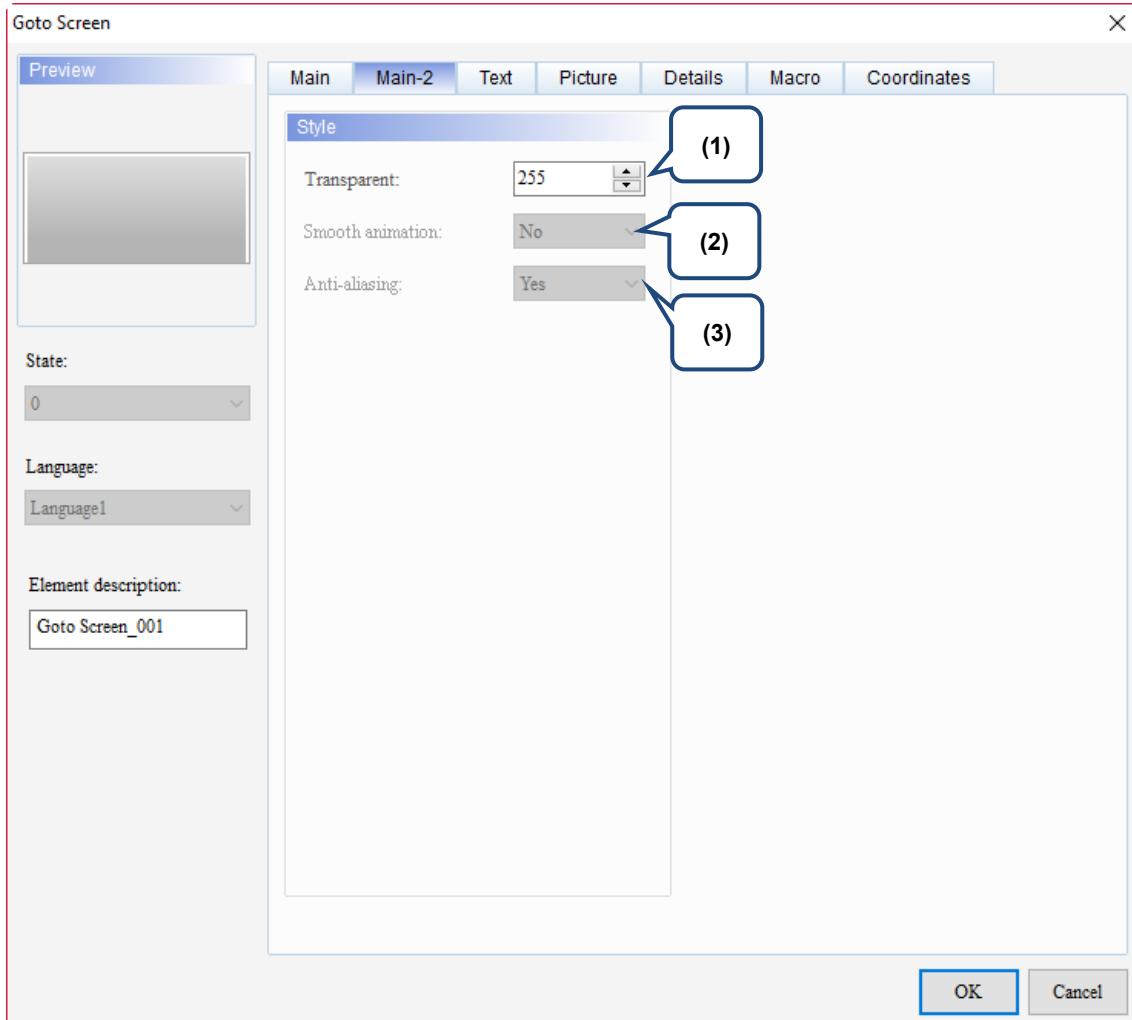


Figure 5.6.4 Main-2 property page for the Goto Screen element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

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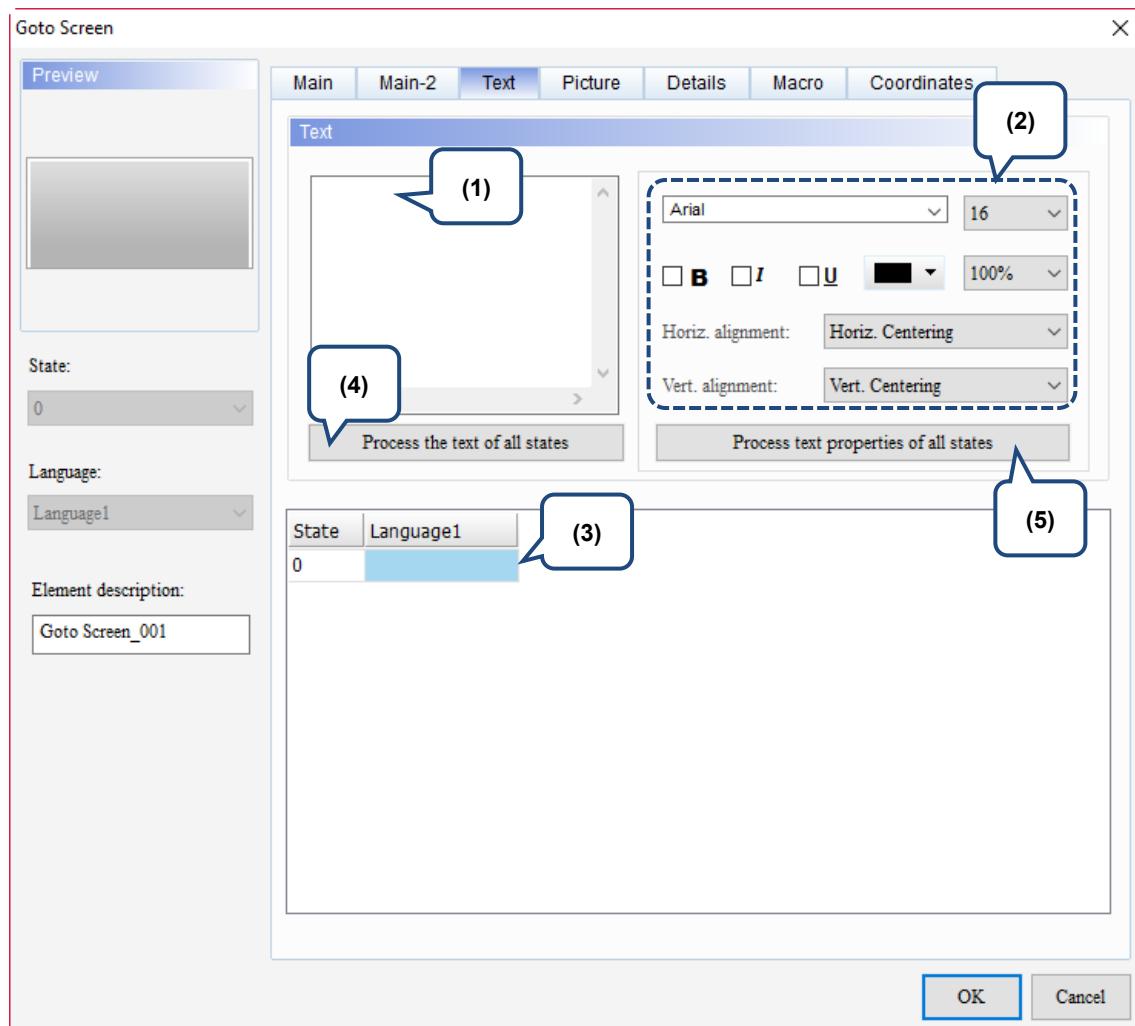
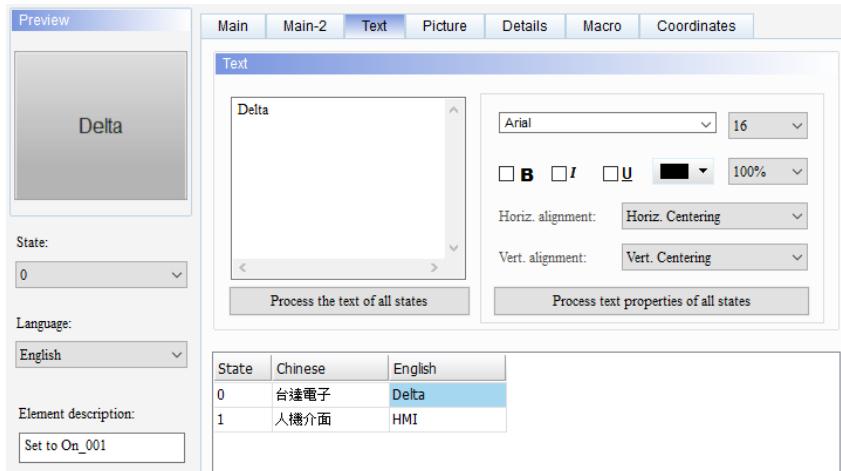
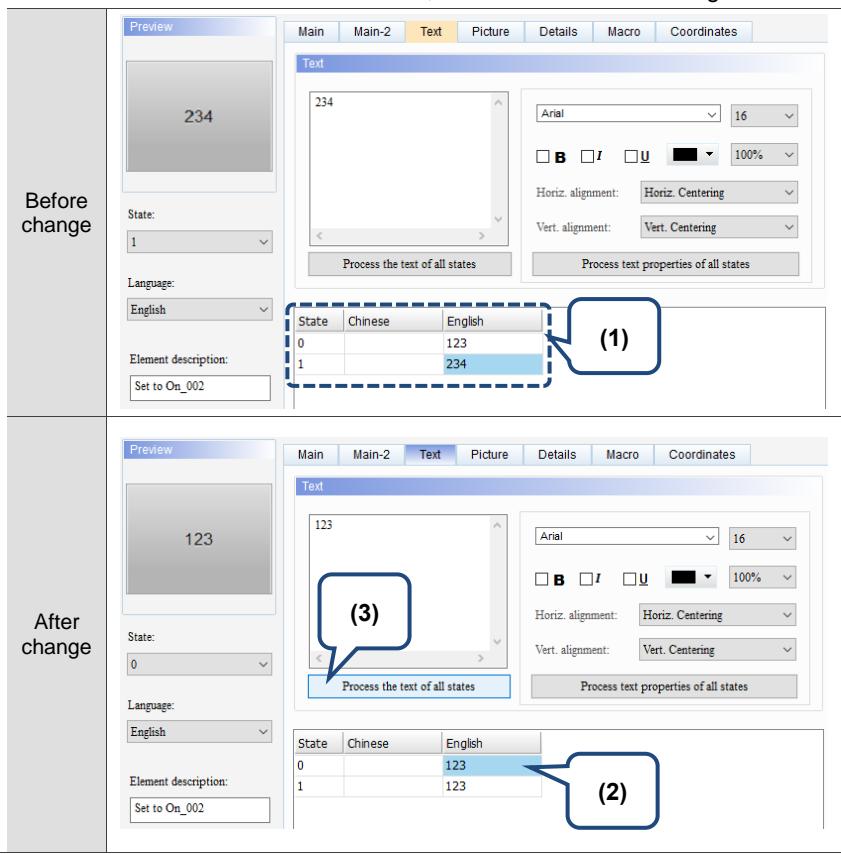
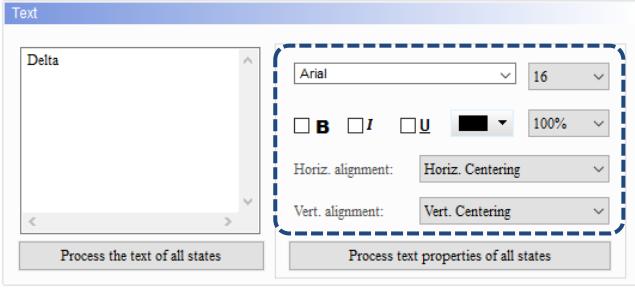
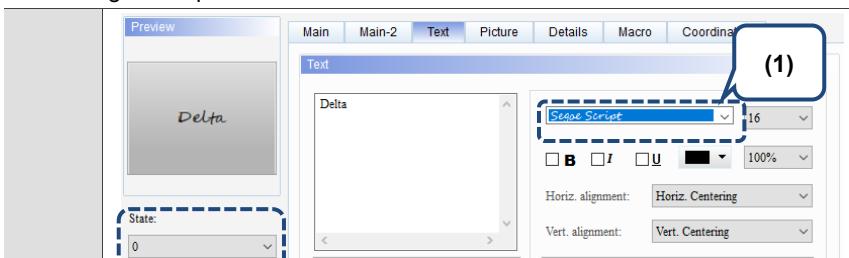
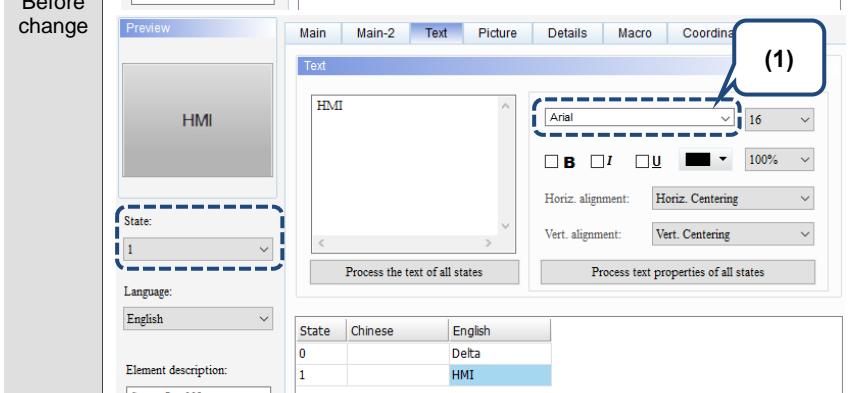


Figure 5.6.5 Text property page for the Goto Screen element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can input the text to be displayed in the text box.</li> </ul> 
		<ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.</li> </ul>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the text property setting results.
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>Input 123 to State 0, and 234 to State 1.</li> <li>Click State 0.</li> <li>Click <b>Process the text of all states</b>, and the State 1 text changes to 123.</li> </ol> 

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No.	Property	Function description																		
		<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>  <p>The following illustrates the steps:</p> <ol style="list-style-type: none"> <li>1. Input Delta to State 0, and set the font to Segoe Script; input HMI to State 1, and set the font to Arial.</li> <li>2. Click State 0.</li> <li>3. Click <b>Process text properties of all states</b>, and the State 1 font changes to Segoe Script.</li> </ol>																		
(5)	Process text properties of all states	<p><b>Before change</b></p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table> <p><b>After change</b></p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0		Delta	1		HMI	State	Chinese	English	0		Delta	1		HMI
State	Chinese	English																		
0		Delta																		
1		HMI																		
State	Chinese	English																		
0		Delta																		
1		HMI																		

## ■ Picture

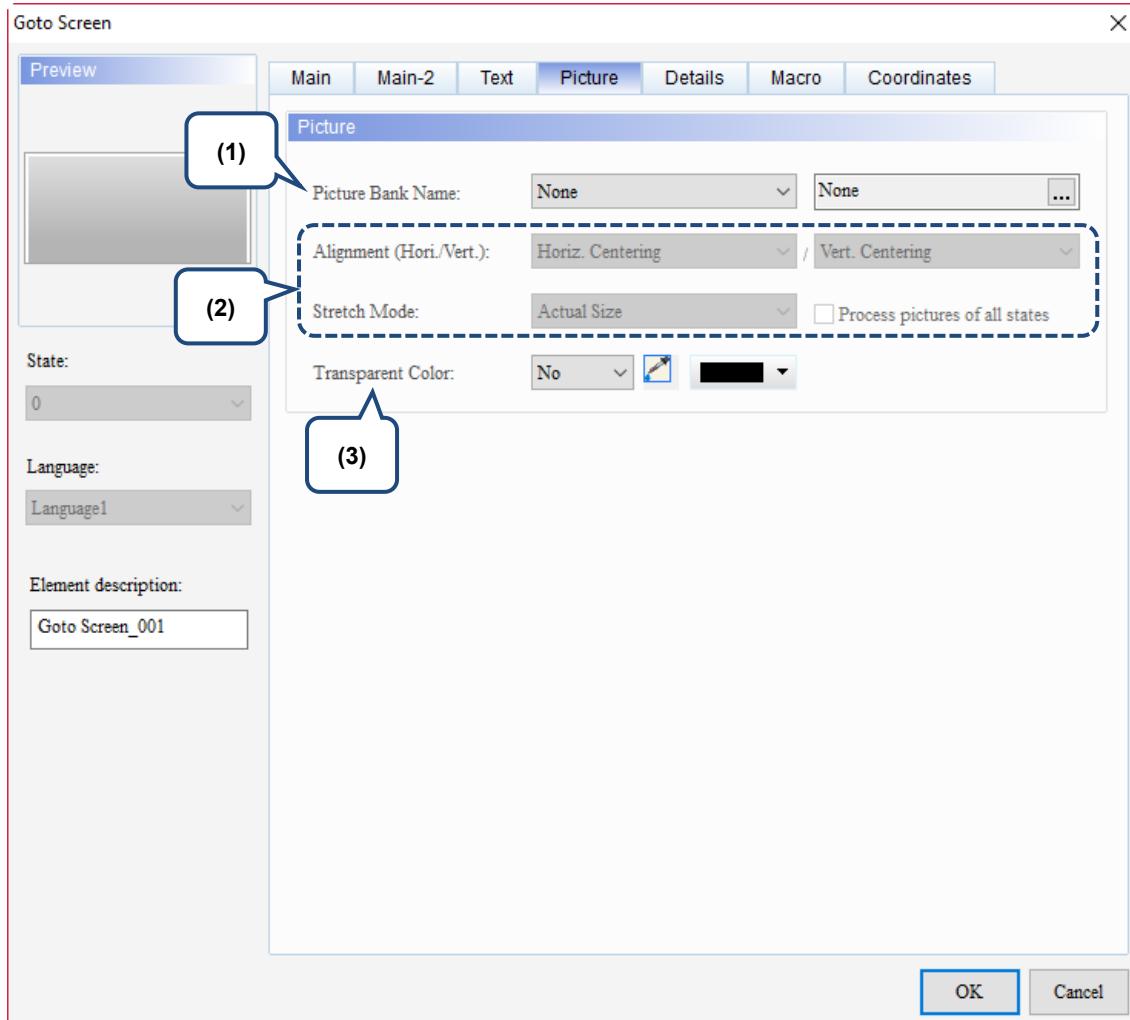
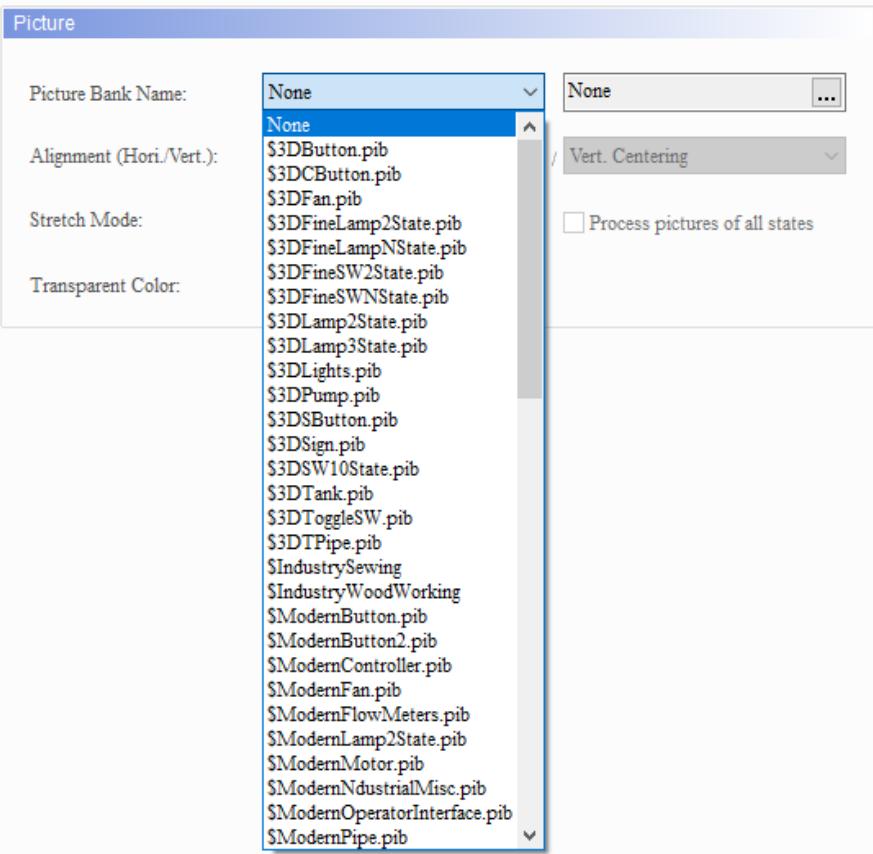
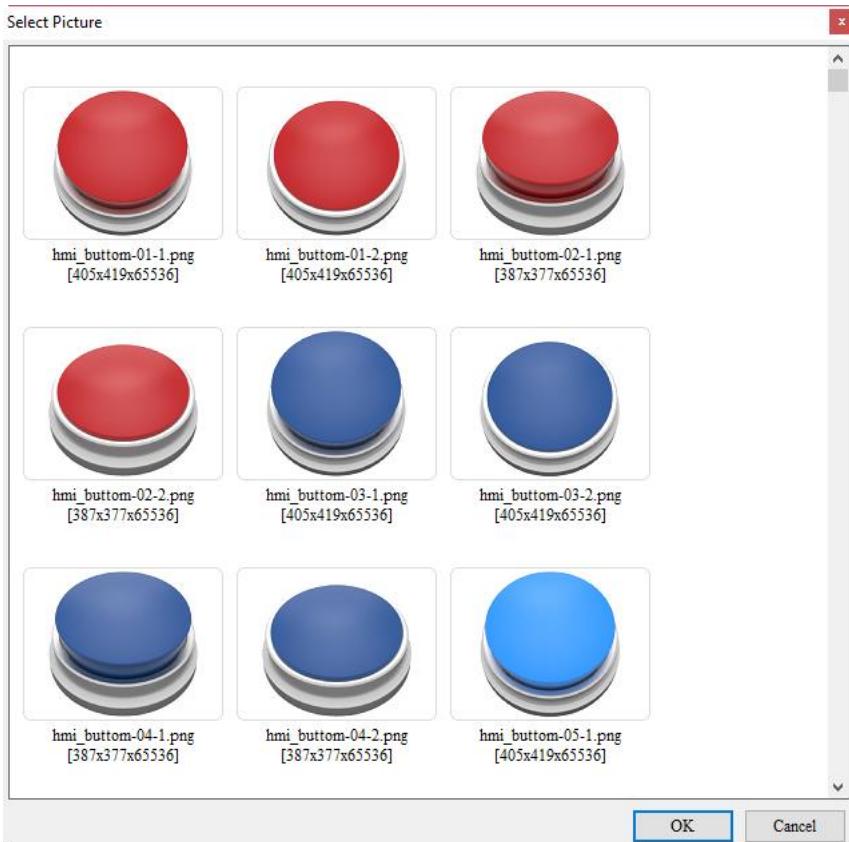
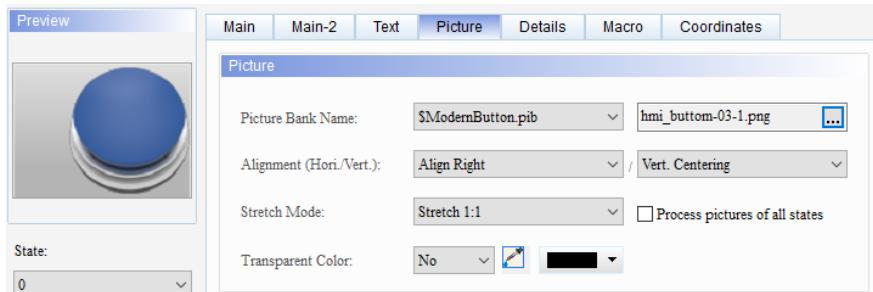


Figure 5.6.6 Picture property page for the Goto Screen element

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No.	Property	Function description
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>Picture</p> <p>Picture Bank Name: None</p> <p>Alignment (Hori./Vert.): Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p><input type="checkbox"/> Process pictures of all states</p>  <p>Select Picture</p> <p>hmi_button-01-1.png [405x419x65536]</p> <p>hmi_button-01-2.png [405x419x65536]</p> <p>hmi_button-02-1.png [387x377x65536]</p> <p>hmi_button-02-2.png [387x377x65536]</p> <p>hmi_button-03-1.png [405x419x65536]</p> <p>hmi_button-03-2.png [405x419x65536]</p> <p>hmi_button-04-1.png [387x377x65536]</p> <p>hmi_button-04-2.png [387x377x65536]</p> <p>hmi_button-05-1.png [405x419x65536]</p> <p>OK Cancel</p>

No.	Property	Function description								
(2)	Alignment	<ul style="list-style-type: none"> <li>You can use the Alignment options to set how pictures are aligned.</li> </ul>  <p>The screenshot shows the 'Picture' tab selected in the top navigation bar. Under the 'Picture' tab, there is a preview window showing a blue button. Below it, the 'State:' dropdown is set to '0'. On the right, the 'Picture Bank Name:' dropdown is set to '\$ModernButton.picb' and the file 'hmi_button-03-1.png' is selected. The 'Alignment (Hori./Vert.)' dropdown is set to 'Align Right' and 'Vert. Centering'. The 'Stretch Mode:' dropdown is set to 'Stretch 1:1'. A checkbox labeled 'Process pictures of all states' is checked. The 'Transparent Color:' dropdown is set to 'No'.</p>								
	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
	<ul style="list-style-type: none"> <li>If you select the check box for <b>Process pictures of all states</b>, it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p>									
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 								

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## ■ Details

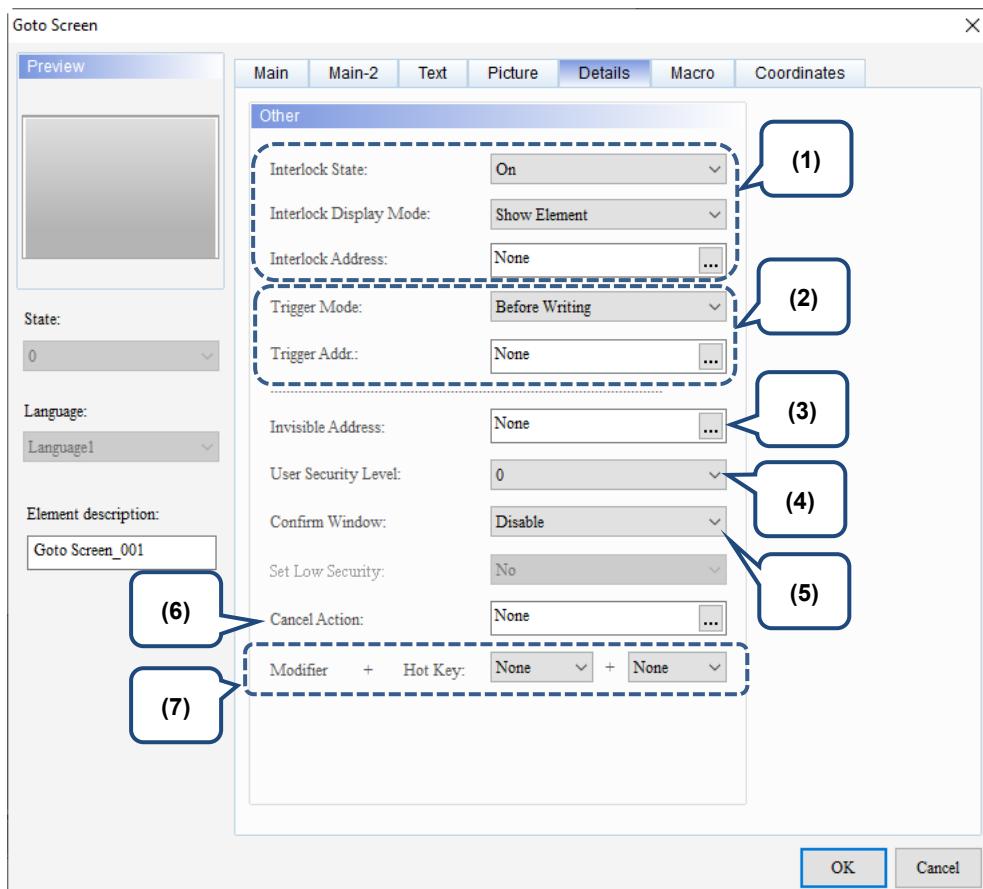
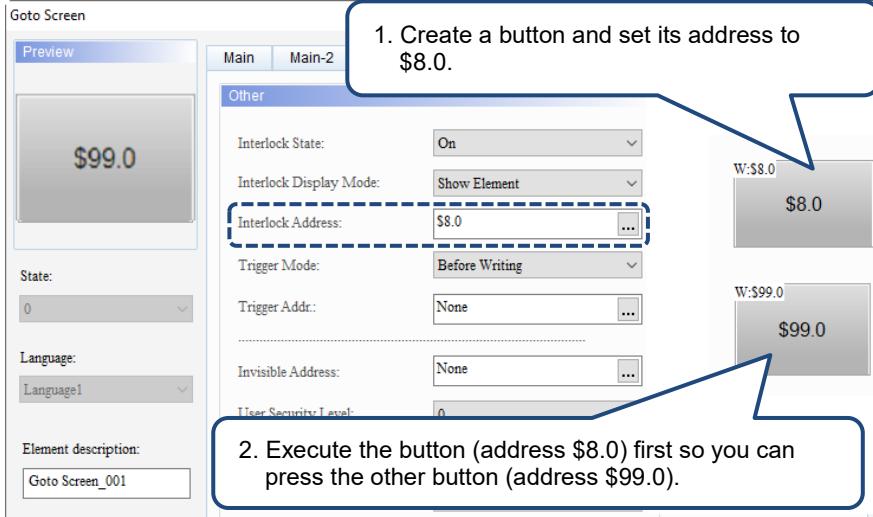
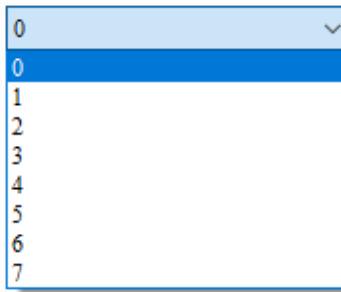
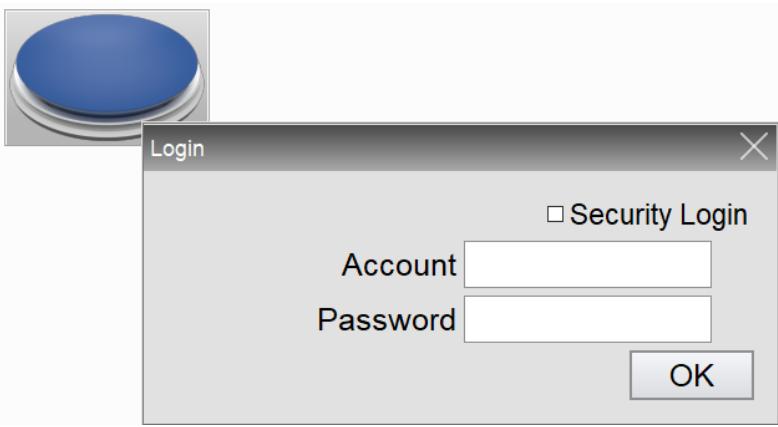
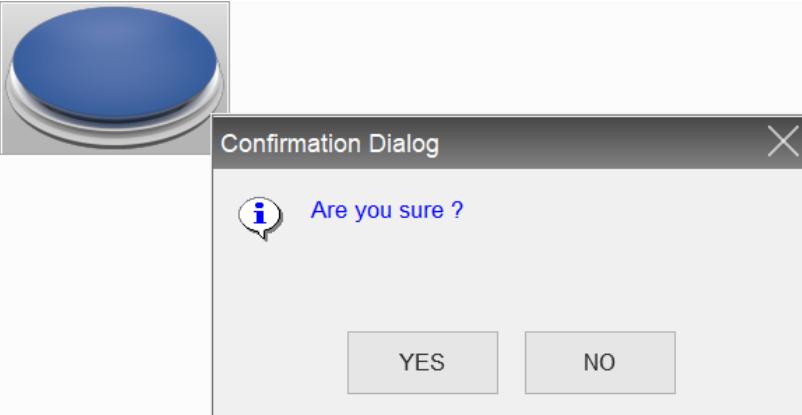


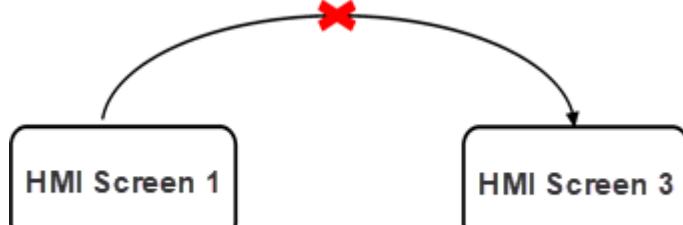
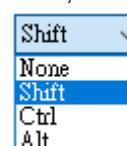
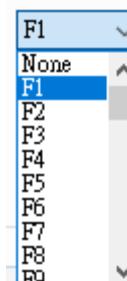
Figure 5.6.7 Details property page for the Goto Screen element

No.	Property	Function description								
(1)	Interlock State / Interlock Address / Interlock Display Mode	<p>■ The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON.</p> <p>■ The following describes how it works:</p> <ol style="list-style-type: none"> <li>1. Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0.</li> <li>2. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.</li> </ol>  <p>■ There are two options for Interlock Display Mode, Show Element and Show Prohibition Symbol.</p> <table border="1"> <tr> <td>Interlock Display Mode:</td> <td>Show Element Show Element (selected) Show Prohibition Symbol</td> </tr> <tr> <td>Interlock Address:</td> <td></td> </tr> <tr> <td>Show Element</td> <td></td> </tr> <tr> <td>Show Prohibition Symbol</td> <td></td> </tr> </table>	Interlock Display Mode:	Show Element Show Element (selected) Show Prohibition Symbol	Interlock Address:		Show Element		Show Prohibition Symbol	
Interlock Display Mode:	Show Element Show Element (selected) Show Prohibition Symbol									
Interlock Address:										
Show Element										
Show Prohibition Symbol										

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No.	Property	Function description							
(2)	Trigger Mode / Trigger Address	<ul style="list-style-type: none"> <li>There are two trigger modes: Before Writing and After Writing.</li> </ul> <table border="1"> <thead> <tr> <th>Trigger type</th><th>Before Writing</th><th>After Writing</th></tr> </thead> <tbody> <tr> <td></td><td>Set the button to ON before changing values.</td><td>The button turns to ON after changing values.</td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>You can create a button element and set the address, and select Before Writing or After Writing to trigger the specified controller Bit address to ON .</li> <li>The Trigger function only turns the controller address to ON, so you need to turn the address to OFF if triggering again is required.</li> </ul> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Flowchart of Before Writing</p> <pre> graph TD     A[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B[Execute [Before Writing]]     B -- "Button triggered ON and numeric written" --&gt; C[Maintained Button]     C -- "50" --&gt; D[ ]   </pre> </div> <div style="text-align: center;"> <p>Flowchart of After Writing</p> <pre> graph TD     A[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B[Execute [Before Writing]]     B -- "Button triggered ON and numeric written" --&gt; C[Maintained Button]     C -- "50" --&gt; D[Execute [After Writing]]   </pre> </div> </div>		Trigger type	Before Writing	After Writing		Set the button to ON before changing values.	The button turns to ON after changing values.
Trigger type	Before Writing	After Writing							
	Set the button to ON before changing values.	The button turns to ON after changing values.							
(3)	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.</p> <table border="1"> <tr> <td style="text-align: center;">Invisible Address is off</td> <td style="text-align: center;"></td> <td style="text-align: center;">Invisible Address \$9.0 OFF</td> </tr> <tr> <td style="text-align: center;">Invisible Address is on</td> <td style="text-align: center; border: 2px dashed black;">Element is invisible</td> <td style="text-align: center;">Invisible Address \$9.0 ON</td> </tr> </table> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Preview</p> <p>State:</p> </div> <div style="width: 60%;"> <p>Main Main-2 Text Picture Details Macro</p> <p>Other</p> <p>Interlock State: On</p> <p>Interlock Address: None</p> <p>Invisible Address: \$9.0</p> </div> </div>		Invisible Address is off		Invisible Address \$9.0 OFF	Invisible Address is on	Element is invisible	Invisible Address \$9.0 ON
Invisible Address is off		Invisible Address \$9.0 OFF							
Invisible Address is on	Element is invisible	Invisible Address \$9.0 ON							

No.	Property	Function description
(4)	User Security Level	<p>User Security Level:</p>  <p>Set Low Security:</p> <p>Min. Press Time (sec):</p> <p>Confirm Window:</p> <ul style="list-style-type: none"> <li>You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element; refer to Section 5.7.2 Password Table Setup).</li> </ul> 
	Set Low Security	<ul style="list-style-type: none"> <li>If you set the Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to input the password for the corresponding security level again.</li> </ul>
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the pressing action after pressing the element.</p> 

No.	Property	Function description
(6)	Cancel Action	<ul style="list-style-type: none"> <li>■ Cancel Action enables you to pause or cancel the Goto Screen action.</li> <li>■ When you set Cancel Action to ON, the Goto Screen button function is invalid; on the other hand, if you set Cancel Action to OFF, the Goto Screen button is valid.</li> </ul> <p>Note: the Goto Screen function is available after the Interlock Address is activated. Cancel Action enables you to cancel the Goto Screen action during its operation. If Cancel Action is set to ON continuously, you cannot change the screen even if the Interlock Address is set to ON.</p> 
(7)	Modifier + Hot Key	<ul style="list-style-type: none"> <li>■ Allows you to use the hot keys on the external keyboard to execute the button.</li> <li>■ The Modifier options include None, Shift, Ctrl, and Alt.</li> </ul>  <ul style="list-style-type: none"> <li>■ The Hot Key options include F1 to F12, English letters A to Z, and number keys 0 to 9.</li> </ul> 

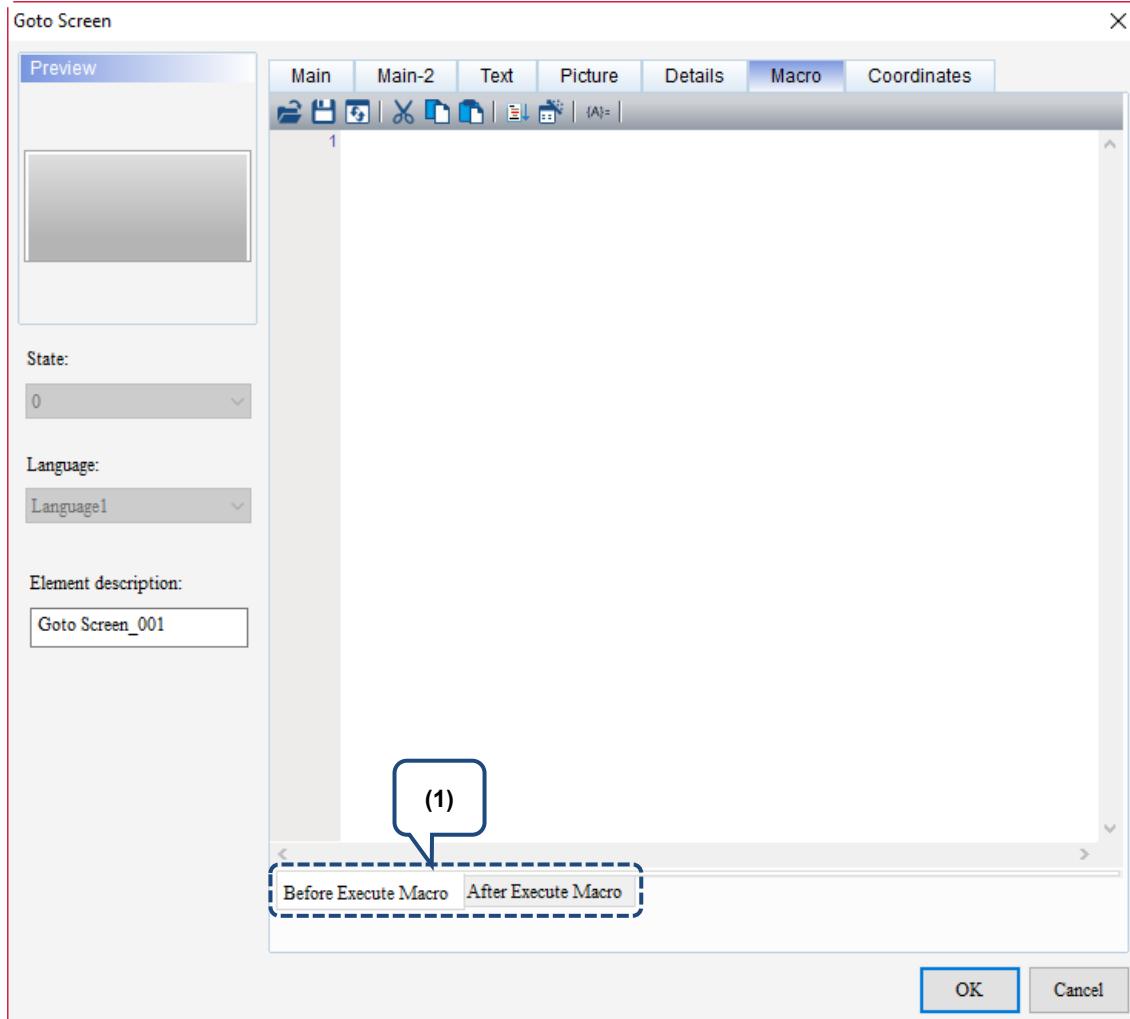
**■ Macro**

Figure 5.6.8 Macro property page for the Goto Screen element

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No.	Property	Function description
Flowcharts of Before / After Execute Macro:		
(1)		<pre> graph TD     subgraph Left [Before Execute Macro]         A1[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B1[Before Execute Macro]         B1 -- "Button triggered ON and numeric written" --&gt; C1[Maintained Button]         C1 -- "Trigger OFF / Input Numeric" --&gt; D1[Before Execute Macro]         D1 -- "Button triggered OFF and numeric written" --&gt; E1[Maintained Button]     end      subgraph Right [After Execute Macro]         A2[Maintained Button] -- "Trigger ON / Input Numeric" --&gt; B2[Before Execute Macro]         B2 -- "Button triggered ON and numeric written" --&gt; C2[Maintained Button]         C2 -- "Trigger OFF / Input Numeric" --&gt; D2[Before Execute Macro]         D2 -- "Button triggered OFF and numeric written" --&gt; E2[Maintained Button]     end      C1 -- "Trigger at next time" --&gt; A2     C2 -- "Trigger at next time" --&gt; A2 </pre> <p>The flowcharts show two scenarios for a maintained button. In the first scenario (Before Execute Macro), the button is triggered ON, followed by a macro execution which writes a value of 50. When triggered OFF, another macro writes a value of 90. In the second scenario (After Execute Macro), the button is triggered ON, followed by a macro writing a value of 50. When triggered OFF, another macro writes a value of 90. Both scenarios involve a delay between the button trigger and the macro execution.</p>
	Before Execute Macro	When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.

## ■ Coordinates

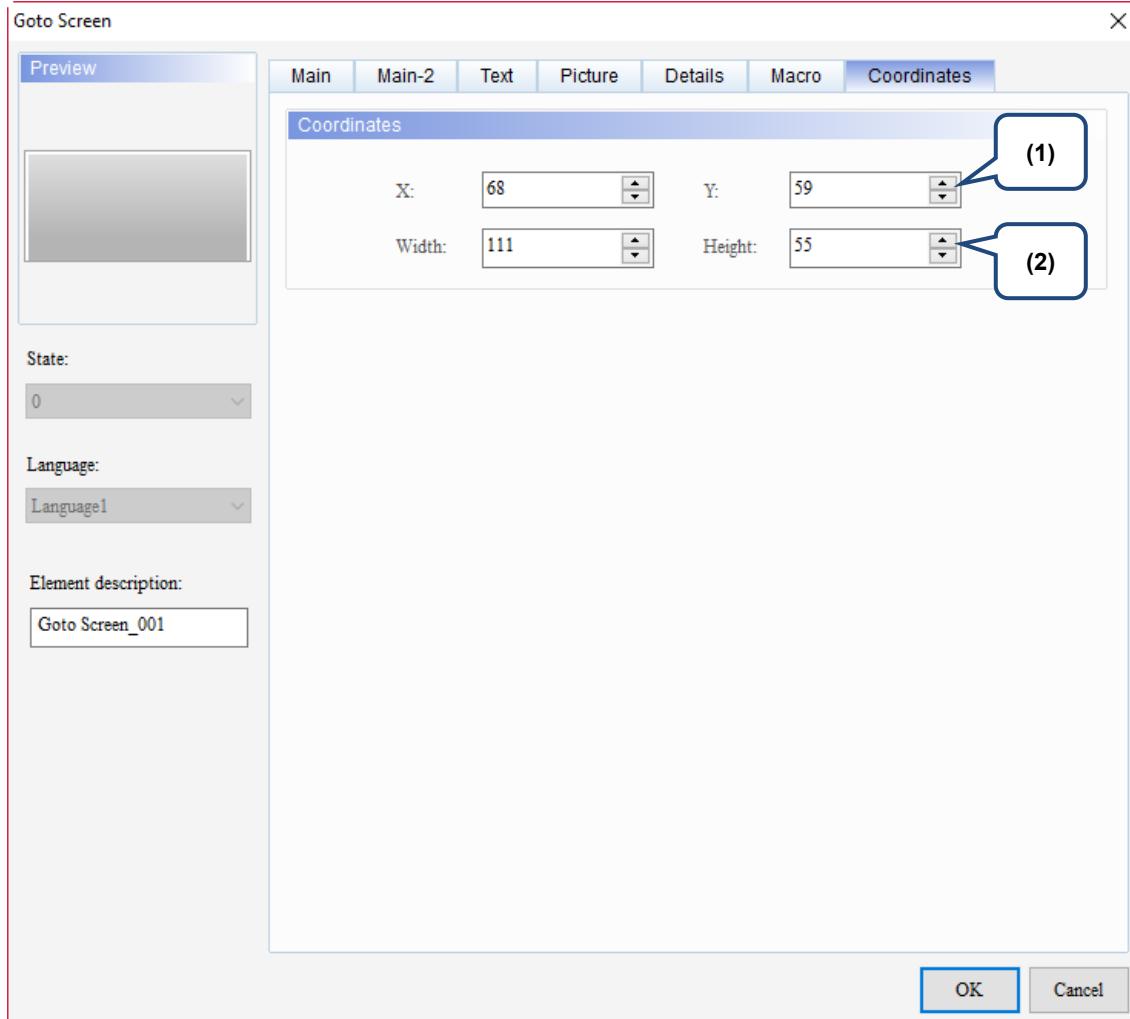


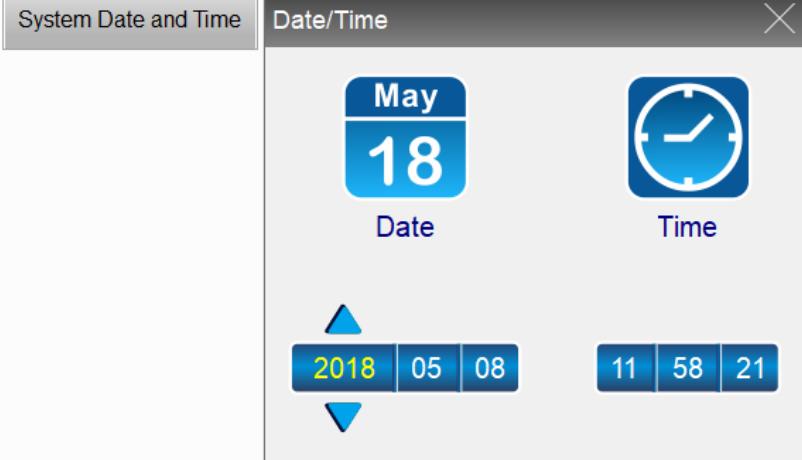
Figure 5.6.9 Coordinates property page for the Goto Screen element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

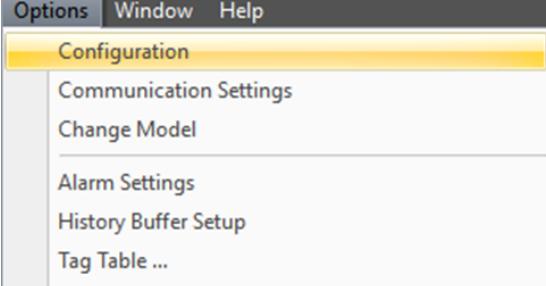
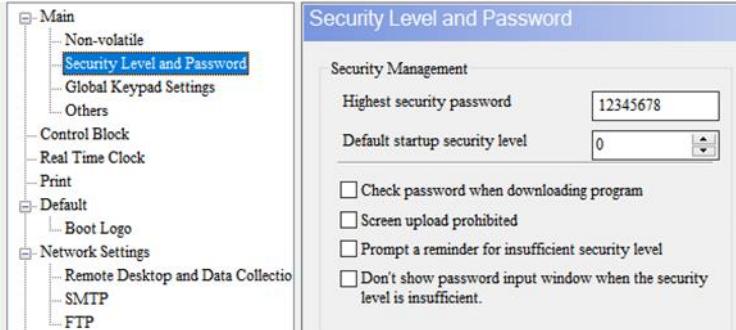
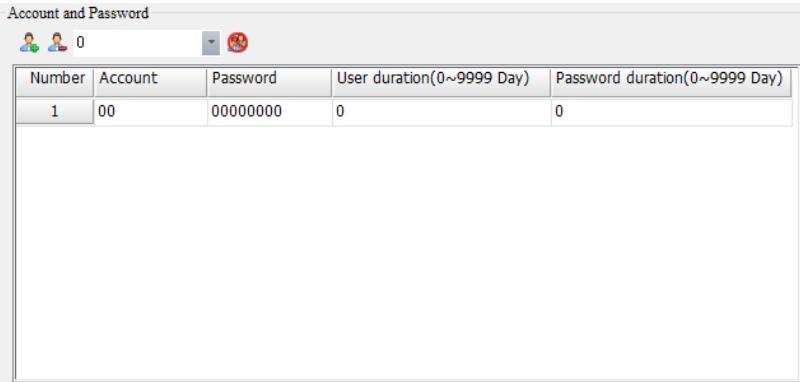
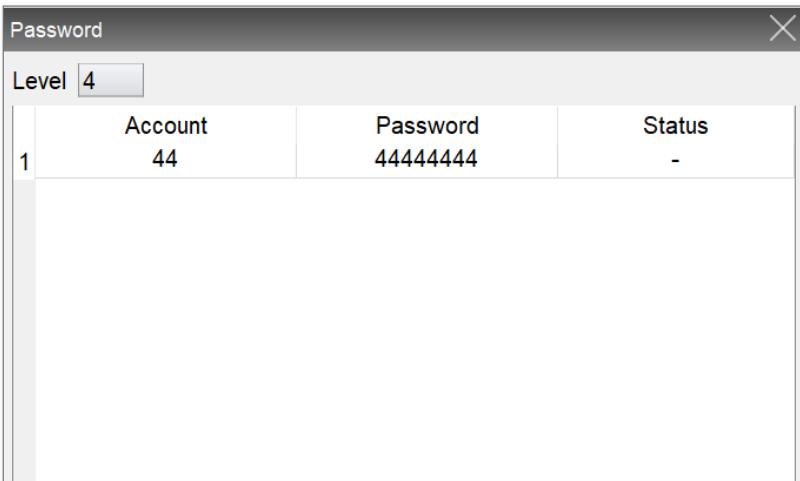
## 5.7 Other elements

There are 14 other button elements, including System Date and Time, Password Table Setup, Enter Password, Contrast Brightness, Set Low Security, System Menu, Print Output, Report List, Screen Capture, Remove Storage, Import/Export Recipe, Calibration, Language Change, and FileSlot Import/Export. The following describes the functions of each button element.

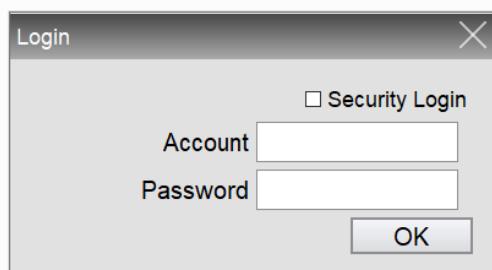
### 5.7.1 System Date and Time

Function	Illustration
You can set the system date and time on the HMI with the <b>System Date and Time</b> button. This function is the same as that of the Date/Time on the HMI system screen.	

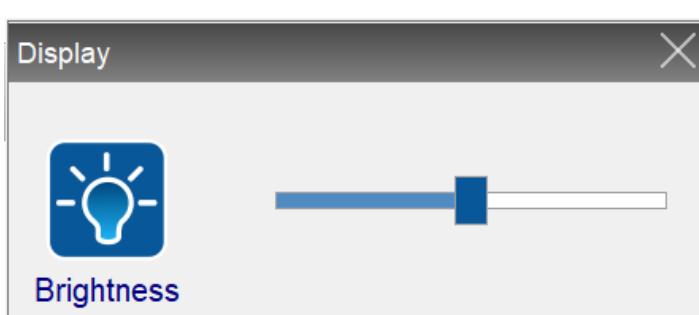
### 5.7.2 Password Table Setup

Function	Illustration
<ul style="list-style-type: none"> <li>■ You can select [Options] &gt; [Configuration] &gt; [Security Level and Password] from the drop-down list box and find the Password Table. The table shows the password settings of each security level. After setting the passwords, download them to the HMI.</li> </ul>	
<ul style="list-style-type: none"> <li>■ You can use the <b>Password Table Setup</b> button when you need to change the Password Table during the HMI operation. The system enables the corresponding level according to the User Security Level defined in the Password Table Setup.</li> </ul>	
<ul style="list-style-type: none"> <li>■ If your User Security Level is lower than the set Security Level, you are unable to open the Password Table and the Enter Password window appears.</li> </ul>	
<ul style="list-style-type: none"> <li>■ Whether the inputted password level is higher than or equivalent to the set Security Level determines if you are able to open the Password Table Setup or not. You are only allowed to change the passwords lower than or equivalent to the current User Security Level after entering the Password Table Setup. You are not allowed to change or view the passwords higher than the current User Security Level.</li> </ul>	 <p style="text-align: center;">Security level = 4</p>

### 5.7.3 Enter Password

Function	Illustration										
<ul style="list-style-type: none"> <li>■ The <b>Enter Password</b> button provides the interface for inputting passwords on the HMI.</li> <li>■ You can click [Options] &gt; [Configuration] &gt; [Security Level and Password], and find the Password Table, and then input your account and password to log in to the corresponding level.</li> </ul>	<div style="text-align: center; margin-bottom: 10px;"> <span style="border: 1px solid #ccc; padding: 2px 10px; border-radius: 5px;">Enter Password</span> </div>  <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p style="margin: 0;">Account and Password</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 10%;">Number</th> <th style="width: 20%;">Account</th> <th style="width: 20%;">Password</th> <th style="width: 20%;">User duration(0~9999 Day)</th> <th style="width: 20%;">Password duration(0~9999 Day)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>00</td> <td>00000000</td> <td>0</td> <td>0</td> </tr> </tbody> </table> </div>	Number	Account	Password	User duration(0~9999 Day)	Password duration(0~9999 Day)	1	00	00000000	0	0
Number	Account	Password	User duration(0~9999 Day)	Password duration(0~9999 Day)							
1	00	00000000	0	0							

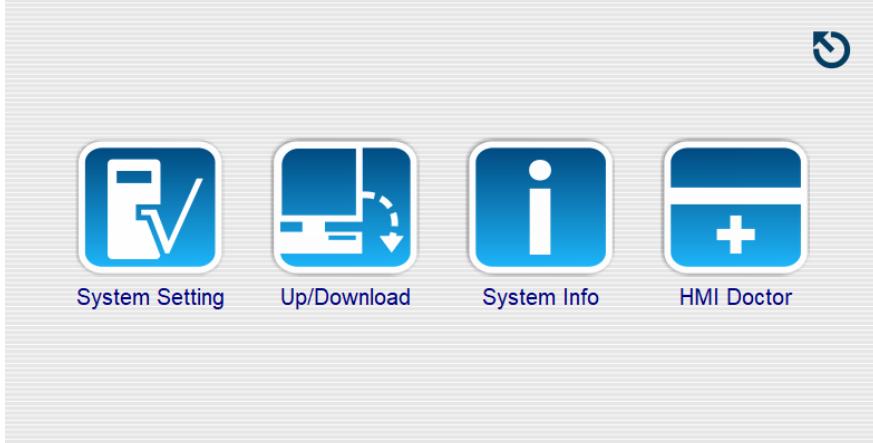
### 5.7.4 Contrast Brightness

Function	Illustration
Adjust the HMI contrast brightness.	

### 5.7.5 Set Low Security

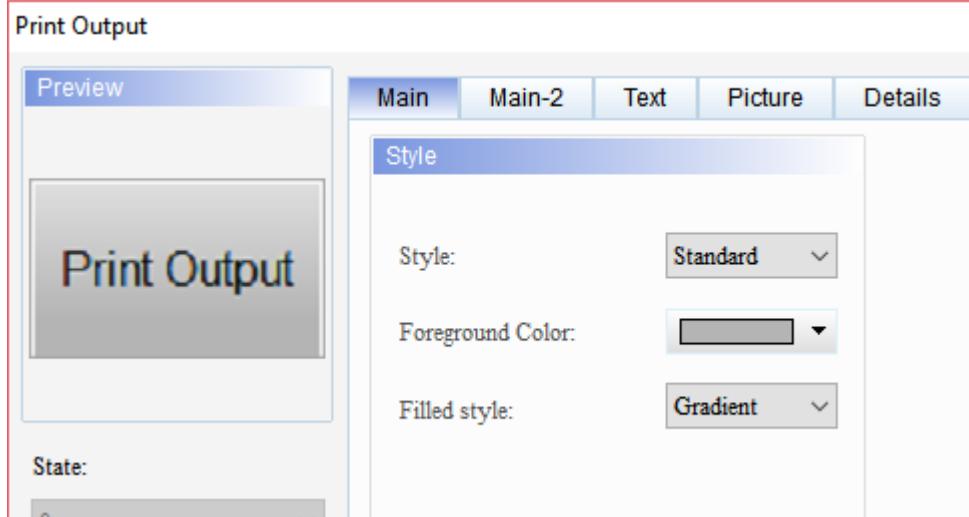
Function
Set the User Security Level to the lowest. You can set the User Security Level for all the DOPSoft elements so that you can protect the system parameters from being tampered or manipulated resulting in system errors.

### 5.7.6 System Menu

Function	Illustration
When you press the <b>System Menu</b> button, the HMI switches to the System Menu screen, as shown on the right-hand side. You can go back to the general HMI execution screen by touching the upper-right corner of the System Menu screen.	 <p>The illustration shows a grid of four icons. From left to right: 1. A blue square with a white 'F' and a white checkmark 'V'. Below it is the text 'System Setting'. 2. A blue square with a white icon of a computer monitor and a downward arrow. Below it is the text 'Up/Download'. 3. A blue square with a large white 'i'. Below it is the text 'System Info'. 4. A blue square with a white plus sign '+'. Below it is the text 'HMI Doctor'.</p>

### 5.7.7 Print Output

Function
If the HMI project has set up a printer, you can perform printing with the <b>Print Output</b> button.



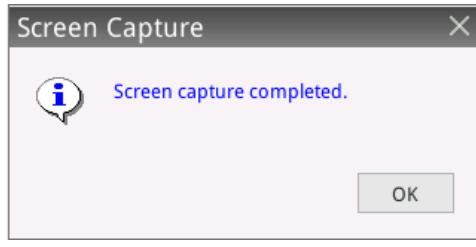
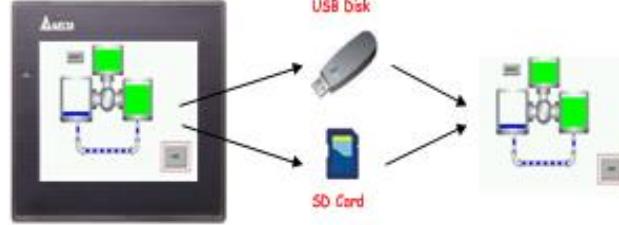
The screenshot shows the 'Print Output' configuration dialog. On the left is a preview window displaying the text 'Print Output' in a stylized font. To the right is a tabbed panel with 'Main' selected, followed by 'Main-2', 'Text', 'Picture', and 'Details'. Under the 'Main' tab, there is a 'Style' section with dropdown menus for 'Style' (set to 'Standard'), 'Foreground Color' (a grey square), and 'Filled style' (set to 'Gradient'). Below these are tabs for 'Main', 'Main-2', 'Text', 'Picture', and 'Details'.

### 5.7.8 Report List

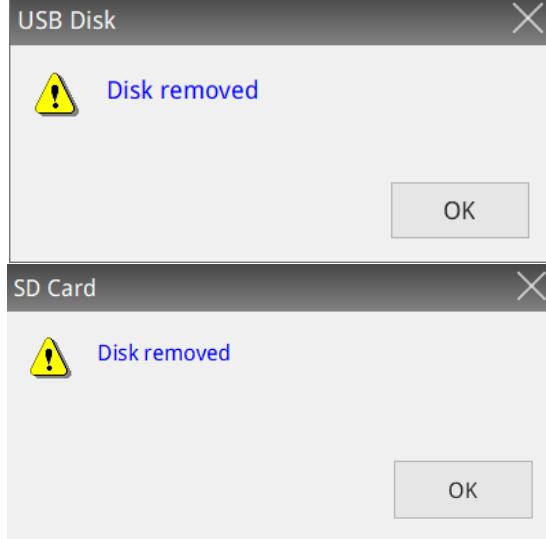
Function	Illustration
<ul style="list-style-type: none"> <li>There are two storage devices for the Report List button: USB Disk and SD.</li> <li>You can select the desired device to export the Report List. Touch the <b>Report List</b> button, and you can output the data to the specified storage device.</li> </ul>	 <p>The screenshot shows a 'Detail' dialog box with a dropdown menu for 'Report Device'. The options are 'USB Disk' and 'SD'. 'USB Disk' is currently selected, indicated by a blue background.</p>

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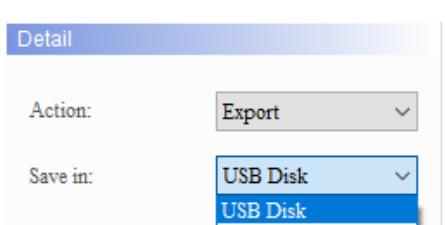
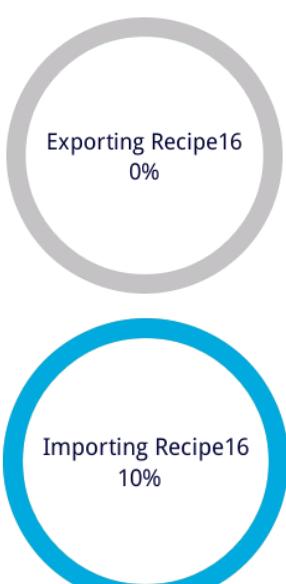
### 5.7.9 Screen Capture

Function	Illustration
<ul style="list-style-type: none"> <li>■ The Screen Capture function enables you to capture the current HMI screen and store it in an external storage device, including USB Disk and SD as shown in Figure (1).</li> <li>■ After you touch the <b>Screen Capture</b> button, the Screen Capture window appears on the HMI to inform you that it is storing the current screen to an external storage device, as shown in Figure (2).</li> <li>■ You can check the files in the external devices after the saving is complete. The HMI stores the file folders by date (yyyy / mm / dd) and the screen files by time (hh / mm / ss).</li> <li>■ The output picture format is .bmp, as shown in Figure (4).</li> </ul>	<p>(1)</p>  <p>(2)</p>  <p>(3)</p>  <p>(4)</p> 

### 5.7.10 Remove Storage

Function	Illustration
<ul style="list-style-type: none"> <li>■ <u>Prevent data loss of the storage device connected to the HMI. You must execute Remove Storage before turning off the HMI, replacing or removing the storage device.</u></li> <li>■ The HMI informs you that the storage device is removed after you execute the <b>Remove Storage</b> button, as shown in Figure (1).</li> <li>■ The HMI supports two types of storage devices: USB Disk and SD, as shown in Figure (2).</li> </ul>	<div style="display: flex; justify-content: space-around; align-items: center;"> <span>(1)</span> <div style="text-align: center;">  </div> <span>(2)</span> <div style="text-align: center;"> <p>Save in:</p> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block;"> <span>SD</span> <span style="margin-left: 10px;">▼</span> </div> <div style="margin-top: 5px; border: 1px solid #ccc; padding: 2px; display: inline-block; width: fit-content;"> <span>USB Disk</span> <span style="margin-left: 10px;">▼</span> </div> <div style="margin-top: 5px; border: 1px solid #ccc; padding: 2px; display: inline-block; width: fit-content;"> <span>SD</span> </div> </div> </div>

### 5.7.11 Import / Export Recipe

Function	Illustration
<ul style="list-style-type: none"> <li>■ You must edit and open the recipe first before executing the <b>Import / Export Recipe</b> button, or the pressing action is invalid.</li> <li>■ You can set the Action of the Import / Export Recipe button to Import or Export, as shown in Figure (1).</li> <li>■ You can set the Save in types, including USB Disk and SD, as shown in Figure (2).</li> <li>■ The HMI informs you that the data importing / exporting is in progress after you touch the <b>Import / Export Recipe</b> button, as shown in Figure (3).</li> <li>■ The exported file format is .CSV, and the HMI stores the files in the default folder HMI-000.</li> </ul>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>(1)</p>  </div> <div style="text-align: center;"> <p>(2)</p>  </div> <div style="text-align: center;"> <p>(3)</p>  </div> </div>

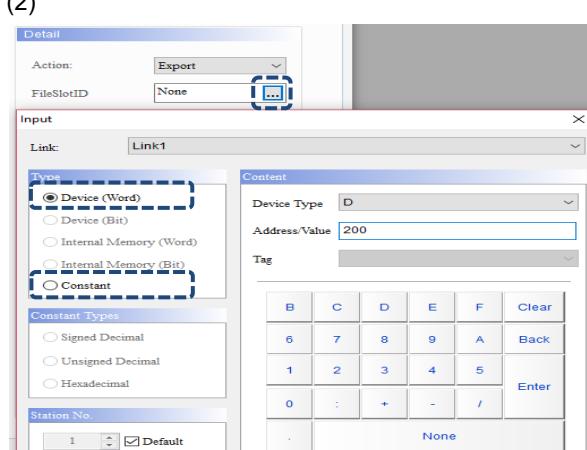
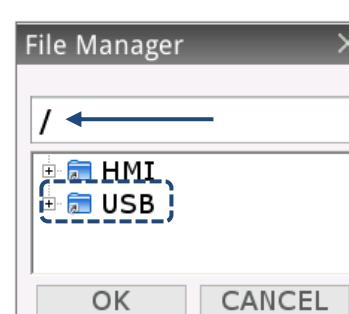
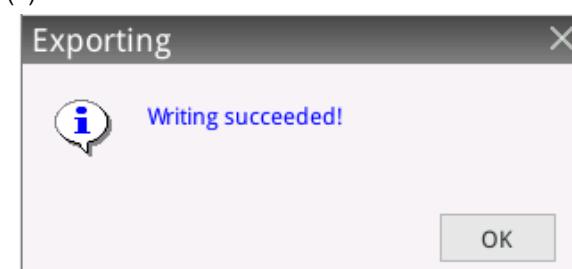
### 5.7.12 Calibration

Function	Illustration
<ul style="list-style-type: none"> <li>■ The Calibration button enables you to perform 5-point calibration.</li> <li>■ After you touch the Calibration button, the HMI immediately enters the Calibration screen, as shown in the figure on the right-hand side.</li> </ul>	<div style="display: flex; align-items: center;">  <span style="margin-left: 10px;">Delta HMI Touch Calibration</span> </div>

### 5.7.13 Language Change

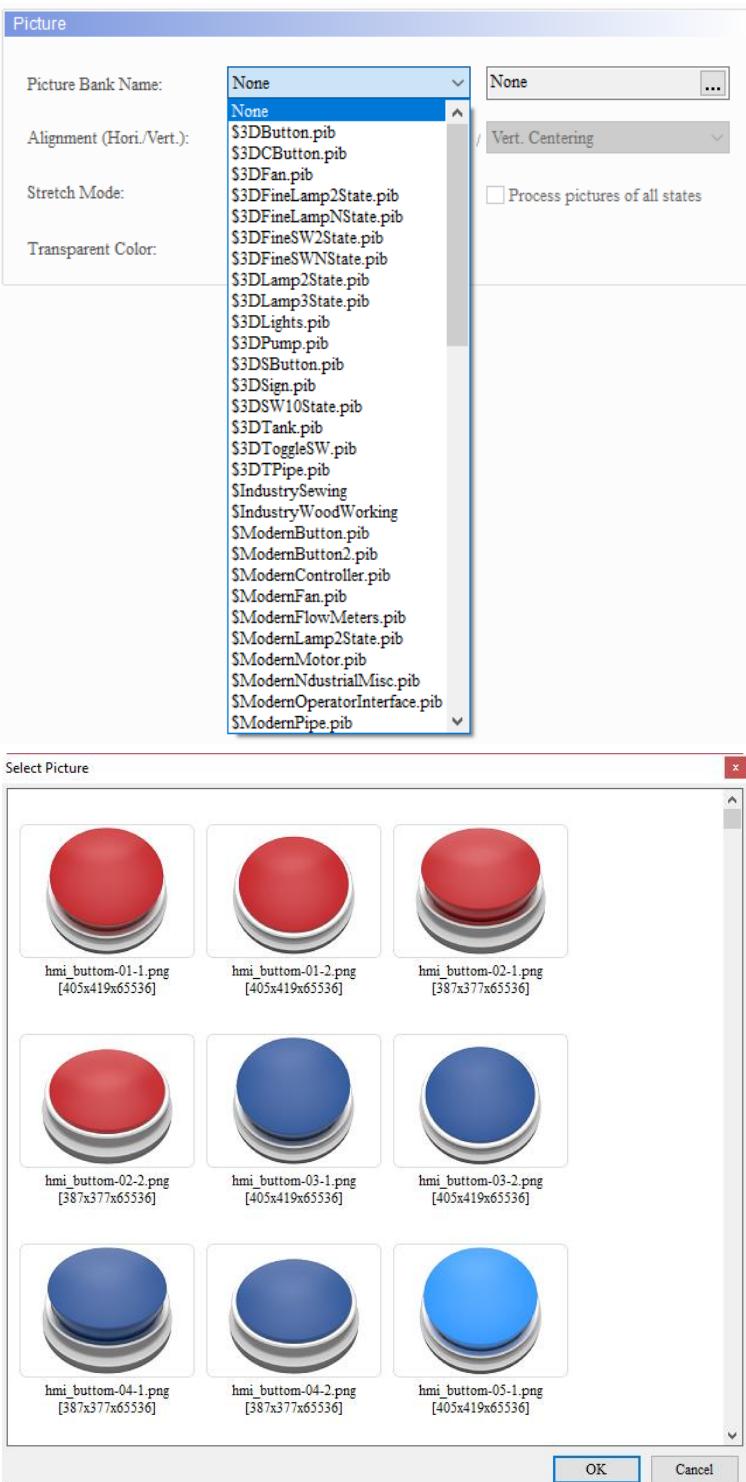
Function	Illustration
	<p>(1)</p> 
<ul style="list-style-type: none"> <li>■ The Language Change button enables you to quickly change the displaying language.</li> <li>■ Set the displaying language to Chinese or English, as shown in Figure (1) on the right-hand side. As shown in Figure (2), when you execute the Language Change button, the HMI displays the data in English when you press 切換至英文 (Change to English); the HMI displays the data in Chinese when you press <b>Change to Chinese</b>, as shown in Figure (3).</li> <li>■ Activate the Multi-language function before using the Language Change button. Refer to Chapter 25 for more details on the Multi-language function.</li> </ul>	<p>(2)</p>  <p>(3)</p> 

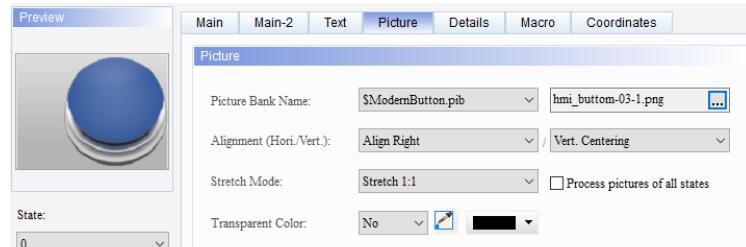
### 5.7.14 Import / Export FileSlot

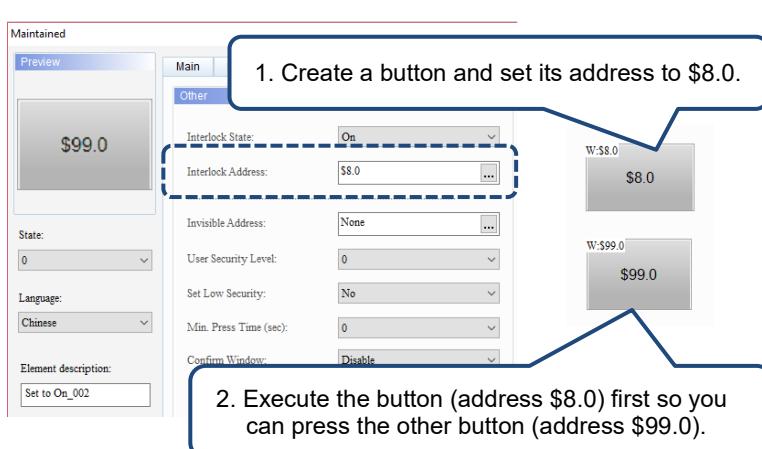
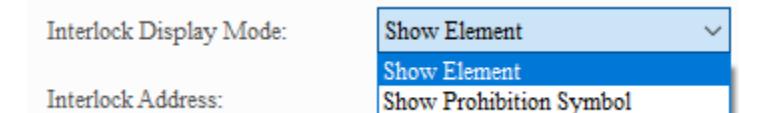
Function	Illustration												
<ul style="list-style-type: none"> <li>■ You must set the count and size of FileSlots before using the <b>Import / Export FileSlot</b> button, or the pressing action is invalid.</li> <li>■ You can set the Action for the <b>Import / Export FileSlot</b> button to Import or Export, as shown in Figure (1) on the right-hand side.</li> <li>■ You need to define the FileSlot ID of the <b>Import / Export FileSlot</b> button, as shown in Figure (2). The FileSlot ID can be a memory address or a constant value.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center; background-color: #cccccc;">Memory usage</th></tr> <tr> <th style="text-align: center;">Variables</th><th style="text-align: center;">Internal memory</th><th style="text-align: center;">PLC Register</th><th style="text-align: center;">Constant</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">FileSlot ID</td><td style="text-align: center;"><input checked="" type="radio"/></td><td style="text-align: center;"><input checked="" type="radio"/></td><td style="text-align: center;"><input checked="" type="radio"/></td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>■ After you press the <b>Import / Export FileSlot</b> button, the File Manager window appears for you to select the import / export position, as shown in Figure (3). Select the external storage device, and then click where the arrow points and enter the filename. After you enter the filename and click ENT, the exporting is complete as shown in Figure (4).</li> <li>■ You need to run the macro FileSlotRead to read the file data into the register after importing FileSlot.</li> </ul>	Memory usage				Variables	Internal memory	PLC Register	Constant	FileSlot ID	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<p>(1)</p>  <p>(2)</p>  <p>(3)</p>  <p>(4)</p> 
Memory usage													
Variables	Internal memory	PLC Register	Constant										
FileSlot ID	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>										

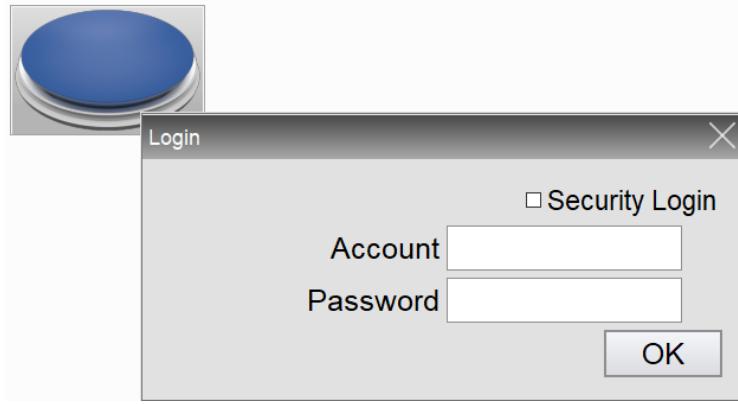
### 5.7.15 Other shared properties of elements

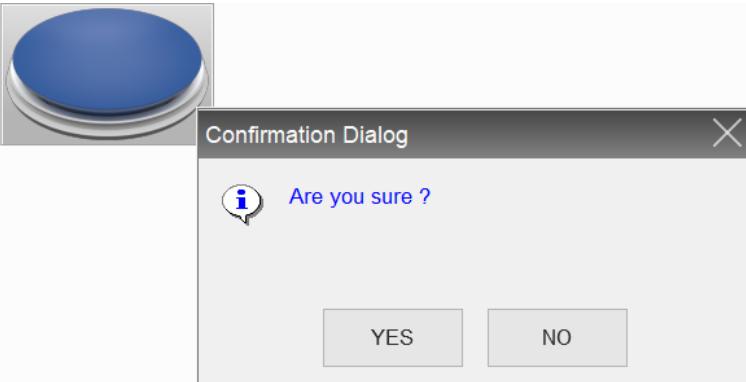
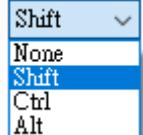
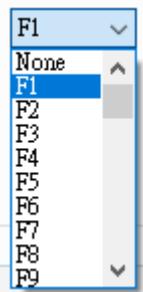
Other shared properties of elements											
Function page	Property	Function description									
Main	Style	<p>The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible								
Foreground Color	<ul style="list-style-type: none"> <li>Set the foreground color of the element.</li> <li>When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ul>										
Text	<p>You can enter the text to be displayed in the text box.</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>台達電子</td> <td>Delta</td> </tr> <tr> <td>1</td> <td>人機介面</td> <td>HMI</td> </tr> </tbody> </table>		State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI
State	Chinese	English									
0	台達電子	Delta									
1	人機介面	HMI									
Text	Text property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text.</p>									
	Edit Multi-language Text	<p>If you have added multi-language text, the Text page allows you to edit multi-language data.</p>									

Other shared properties of elements		
Function page	Property	Function description
Picture	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>The Picture dialog box displays the 'Picture' tab. Under 'Picture Bank Name', a dropdown menu is open, showing a list of available picture banks. The 'None' option is selected. Other options include \$3DButton.pib, \$3DCButton.pib, \$3DFan.pib, and many others listed below. To the right of the dropdown is a preview area showing a red button icon. Below the dropdown is a 'Select Picture' window containing nine thumbnail images of different colored buttons (red, blue, grey). Each thumbnail has a file name and dimensions: hmi_button-01-1.png [405x419x65536], hmi_button-01-2.png [405x419x65536], hmi_button-02-1.png [387x377x65536], hmi_button-02-2.png [387x377x65536], hmi_button-03-1.png [405x419x65536], hmi_button-03-2.png [405x419x65536], hmi_button-04-1.png [387x377x65536], hmi_button-04-2.png [387x377x65536], and hmi_button-05-1.png [405x419x65536]. At the bottom right of the dialog are 'OK' and 'Cancel' buttons.</p>

Other shared properties of elements							
Function page	Property	Function description					
Picture	Alignment	<p>You can use the Alignment options to set how pictures are aligned.</p> 					
	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table> 	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.
Stretch All	Stretch 1:1	Actual Size					
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.					
Transparent Color	<ul style="list-style-type: none"> <li>If you select the check box for <b>Process pictures of all states</b>, it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p>						
	<p>Specify a color in the picture and turn this color into transparent. If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 						

Other shared properties of elements		
Function page	Property	Function description
Details	Interlock State	<p>■ The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON.</p> <p>■ The following describes how it works:</p> <ol style="list-style-type: none"> <li>1. Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0.</li> <li>2. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.</li> </ol>  <p>The screenshot shows the 'Main' tab of the configuration window. A dashed blue box highlights the 'Interlock Address' field containing '\$8.0'. To the right, two buttons are shown: one labeled 'W:\$8.0' with address '\$8.0' and another labeled 'W:\$99.0' with address '\$99.0'. Callouts numbered 1 and 2 point to these respective components.</p>
	Interlock Address	 <p>The screenshot shows the 'Main' tab of the configuration window. A dashed blue box highlights the 'Interlock Address' field containing '\$8.0'. To the right, two buttons are shown: one labeled 'W:\$8.0' with address '\$8.0' and another labeled 'W:\$99.0' with address '\$99.0'. Callouts numbered 1 and 2 point to these respective components.</p>
	Interlock Display Mode	<p>■ The Interlock Display Mode includes two options, Show Element and Show Prohibition Symbol.</p>  <p>The screenshot shows the 'Main' tab of the configuration window. A dropdown menu for 'Interlock Display Mode' has three options: 'Show Element', 'Show Element' (which is selected), and 'Show Prohibition Symbol'. Below the dropdown, there are two preview boxes. The top box, labeled 'Show Element', displays a gray rectangle. The bottom box, labeled 'Show Prohibition Symbol', displays a red prohibition symbol (a circle with a diagonal line).</p>

Shared properties of other elements																					
Function page	Property	Function description																			
Invisible Address	Invisible Address	<p>When the Invisible Address is set to ON, the button element is invisible and you cannot execute its functions.</p> <table border="1"> <tr> <td>Invisible Address is off</td> <td></td> <td>Invisible Address \$9.0 OFF</td> </tr> <tr> <td>Invisible Address is on</td> <td>Element is invisible</td> <td>Invisible Address \$9.0 ON</td> </tr> </table>		Invisible Address is off		Invisible Address \$9.0 OFF	Invisible Address is on	Element is invisible	Invisible Address \$9.0 ON												
Invisible Address is off		Invisible Address \$9.0 OFF																			
Invisible Address is on	Element is invisible	Invisible Address \$9.0 ON																			
 <table border="1"> <tr> <td>Main</td> <td>Main-2</td> <td>Text</td> <td>Picture</td> <td>Details</td> <td>Macro</td> </tr> <tr> <td colspan="6">Other</td> </tr> <tr> <td>Interlock State:</td> <td>On</td> </tr> <tr> <td>Interlock Address:</td> <td>None</td> </tr> <tr> <td>Invisible Address:</td> <td>\$9.0</td> </tr> </table>		Main	Main-2	Text	Picture	Details	Macro	Other						Interlock State:	On	Interlock Address:	None	Invisible Address:	\$9.0		
Main	Main-2	Text	Picture	Details	Macro																
Other																					
Interlock State:	On																				
Interlock Address:	None																				
Invisible Address:	\$9.0																				
Details	User Security Level	<ul style="list-style-type: none"> <li>You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> </ul> <table border="1"> <tr> <td>User Security Level:</td> <td>0</td> </tr> <tr> <td>Set Low Security:</td> <td>0</td> </tr> <tr> <td>Min. Press Time (sec):</td> <td>1</td> </tr> <tr> <td>Confirm Window:</td> <td>2</td> </tr> <tr> <td></td> <td>3</td> </tr> <tr> <td></td> <td>4</td> </tr> <tr> <td></td> <td>5</td> </tr> <tr> <td></td> <td>6</td> </tr> <tr> <td></td> <td>7</td> </tr> </table>		User Security Level:	0	Set Low Security:	0	Min. Press Time (sec):	1	Confirm Window:	2		3		4		5		6		7
User Security Level:	0																				
Set Low Security:	0																				
Min. Press Time (sec):	1																				
Confirm Window:	2																				
	3																				
	4																				
	5																				
	6																				
	7																				
<ul style="list-style-type: none"> <li>After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element; refer to Section 5.7.2 Password Table Setup).</li> </ul> 																					

Shared properties of other elements		
Function page	Property	Function description
	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the pressing action after pressing the element.</p> 
Details	Modifier + Hot Key	<ul style="list-style-type: none"> <li>■ Allows you to use the hot keys on the external keyboard to execute the button.</li> <li>■ The Modifier options include None, Shift, Ctrl, and Alt.</li> </ul>  <ul style="list-style-type: none"> <li>■ The Hot Key options include F1 to F12, English letters A to Z, and number keys 0 to 9.</li> </ul> 

Shared properties of other elements		
Function page	Property	Function description
Macro	Flowcharts of Before / After Execute Macro:	<pre> graph TD     subgraph Left [Left Flowchart]         A[Trigger ON / Input Numeric] --&gt; B[Before Execute Macro]         B --&gt; C[Button triggered ON and numeric written]         C --&gt; D[Maintained Button 50]         D --&gt; E[Trigger OFF / Input Numeric]         E --&gt; F[Before Execute Macro]         F --&gt; G[Button triggered OFF and numeric written]         G --&gt; H[Maintained Button 90]     end     subgraph Right [Right Flowchart]         I[Trigger ON / Input Numeric] --&gt; J[Before Execute Macro]         J --&gt; K[Button triggered ON and numeric written]         K --&gt; L[Maintained Button 50]         L --&gt; M[After Execute Macro]         M --&gt; N[Trigger OFF / Input Numeric]         N --&gt; O[After Execute Macro]         O --&gt; P[Maintained Button 90]     end     C -- "Trigger at next time" --&gt; D     G -- "Trigger at next time" --&gt; H </pre>
	Before Execute Macro	When you touch the button element, the HMI executes the macro commands first, and then executes the button actions. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you touch the button element, the HMI executes the button actions first, and then executes the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.
Coordinates	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
	Width and Height	Set the width and height of the elements.

## 5.8 Multiple actions

The Multiple actions button allows you to execute multiple actions with one single button. You can define the actions to execute when you press, release, or long press the button. You can use this function to replace the complicated programming process of the macro to trigger the button action.

Available button actions in the Multiple actions settings are as follows:

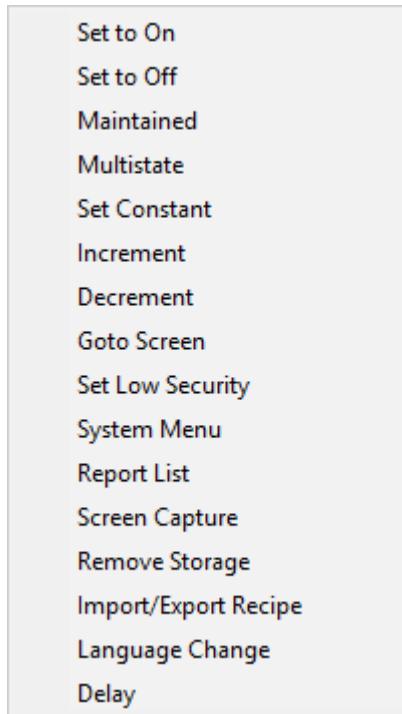


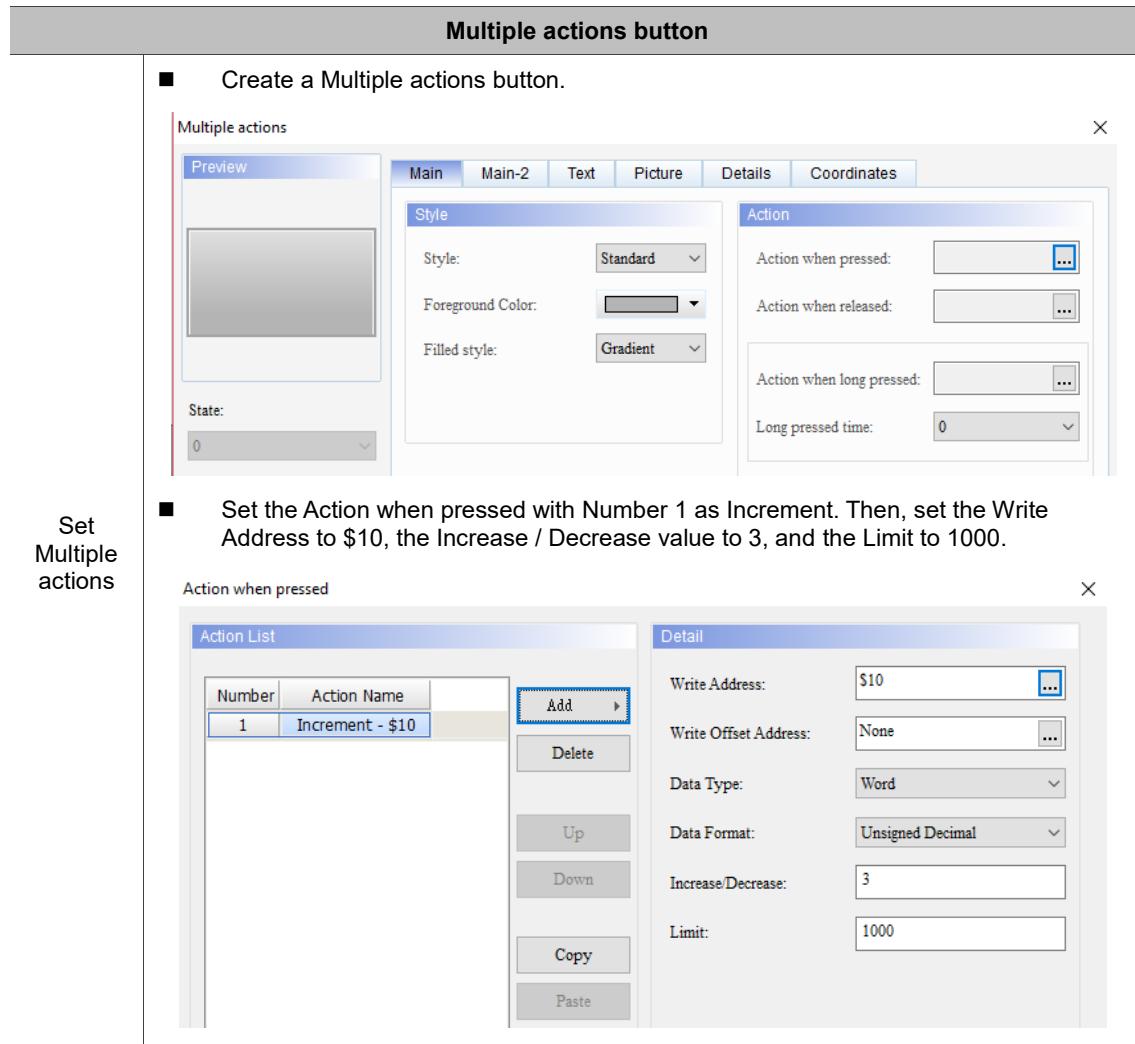
Figure 5.8.1 Button actions available for the Multiple actions button

Note:

1. You can set up to 32 actions for each press, release, and long press, so one Multiple actions button can execute up to 32\*3 actions.
2. The System Menu can only be the last action, meaning you cannot add any actions following the System Menu.
3. One Multiple actions button can only have one page change action, including Goto Screen and Previous Page.
4. If the button action is set with a macro, the execution of the macro is invalid.

Example descriptions for the Multiple actions function are as follows:

Table 5.8.1 Multiple actions button example



**Multiple actions button**

- Set the Action when pressed with Number 2 as Multistate and the Write Address to \$20. The other settings are shown in the following figure.

Action when pressed

Number	Action Name
1	Increment - \$10
2	Multistate - \$20

Detail

Write Address: \$20  
Write Offset Address: None  
Data Type: Word  
Data Format: Unsigned Decimal  
State Counts: 3  
Sequence: Next State

- Set the Action when released to Goto Screen - Screen\_2.

Action when released

Number	Action Name
1	Goto Screen - Screen_2

Detail

Function: Goto Screen  
Goto Screen: Screen\_2  
 Close Subscreen  
(The button is only valid in subscreen)

- Set the Action when long pressed to Set Constant and the Long pressed time to 3 seconds. Set the Write Address to \$30 and the Set value to 5000.

Action when long pressed:

Number	Action Name
1	Set Constant - \$30

Detail

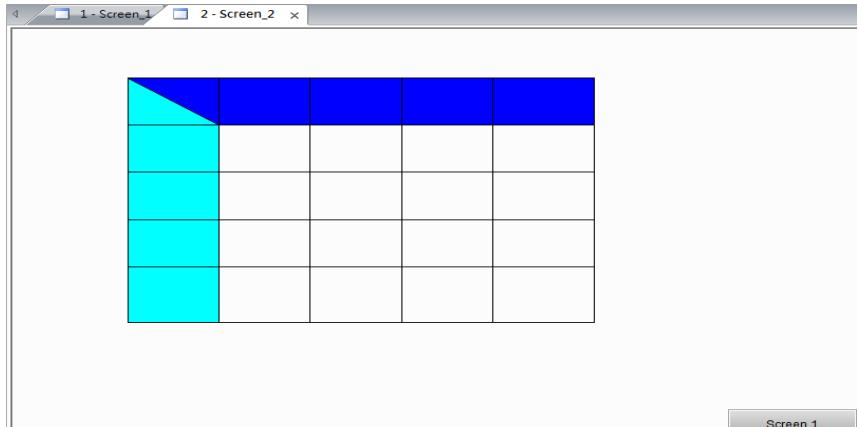
Write Address: \$30  
Write Offset Address: None  
Data Type: Word  
Data Format: Unsigned Decimal  
Set value: 5000

	<p style="text-align: center;"><b>Multiple actions button</b></p> <ul style="list-style-type: none"> <li>■ Create a Numeric Display element which Read Address is \$10 for displaying the changed value after the increment action is executed.</li> </ul> <p><b>Numeric Display</b></p> <table border="1"> <thead> <tr> <th>Main</th> <th>Main-2</th> <th>Text</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td colspan="4"> <b>Memory</b>            Read Address:  <input type="text" value="\$10"/> ...         </td> </tr> <tr> <td colspan="4">           Read Offset Address:  <input type="text" value="None"/> ...         </td> </tr> </tbody> </table>	Main	Main-2	Text	Details	<b>Memory</b> Read Address: <input type="text" value="\$10"/> ...				Read Offset Address: <input type="text" value="None"/> ...																										
Main	Main-2	Text	Details																																	
<b>Memory</b> Read Address: <input type="text" value="\$10"/> ...																																				
Read Offset Address: <input type="text" value="None"/> ...																																				
Set Numeric Display elements	<ul style="list-style-type: none"> <li>■ Create a Numeric Display element which Read Address is \$30 for displaying the changed value after the Set Constant action is executed.</li> </ul> <p><b>Numeric Display</b></p> <table border="1"> <thead> <tr> <th>Main</th> <th>Main-2</th> <th>Text</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td colspan="4"> <b>Memory</b>            Read Address:  <input type="text" value="\$30"/> ...         </td> </tr> <tr> <td colspan="4">           Read Offset Address:  <input type="text" value="None"/> ...         </td> </tr> </tbody> </table>	Main	Main-2	Text	Details	<b>Memory</b> Read Address: <input type="text" value="\$30"/> ...				Read Offset Address: <input type="text" value="None"/> ...																										
Main	Main-2	Text	Details																																	
<b>Memory</b> Read Address: <input type="text" value="\$30"/> ...																																				
Read Offset Address: <input type="text" value="None"/> ...																																				
Set Multistate	<p>Create a Multistate button. Set the Write Address to \$20, State Counts to 3, and the switching sequence (Sequence) to Next State.</p> <table border="1"> <thead> <tr> <th>Main</th> <th>Main-2</th> <th>Text</th> <th>Picture</th> <th>Details</th> <th>Macro</th> <th>Coordinates</th> </tr> </thead> <tbody> <tr> <td colspan="7"> <b>Memory</b>            Write Address:  <input type="text" value="\$20"/> ...         </td> </tr> <tr> <td colspan="7">           Read Address:  <input type="text" value="None"/> ...         </td> </tr> <tr> <td colspan="7">           Write Offset Address:  <input type="text" value="None"/> ...         </td> </tr> <tr> <td colspan="7"> <b>Detail</b>            Data Type: Word            Data Format: Unsigned Decimal            State Counts: 3            Sequence: Next State         </td> </tr> </tbody> </table>	Main	Main-2	Text	Picture	Details	Macro	Coordinates	<b>Memory</b> Write Address: <input type="text" value="\$20"/> ...							Read Address: <input type="text" value="None"/> ...							Write Offset Address: <input type="text" value="None"/> ...							<b>Detail</b> Data Type: Word Data Format: Unsigned Decimal State Counts: 3 Sequence: Next State						
Main	Main-2	Text	Picture	Details	Macro	Coordinates																														
<b>Memory</b> Write Address: <input type="text" value="\$20"/> ...																																				
Read Address: <input type="text" value="None"/> ...																																				
Write Offset Address: <input type="text" value="None"/> ...																																				
<b>Detail</b> Data Type: Word Data Format: Unsigned Decimal State Counts: 3 Sequence: Next State																																				

5

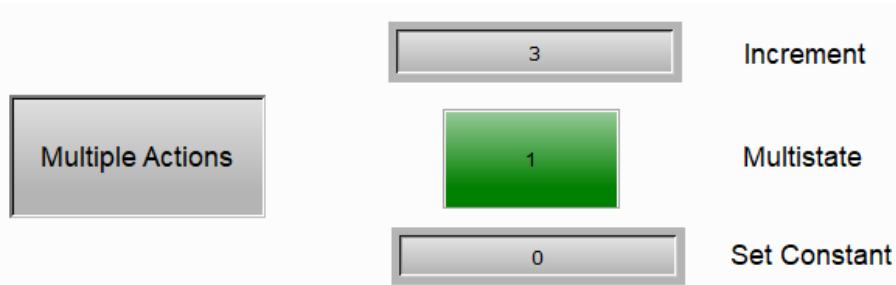
Multiple actions button		
Set the Foreground Color for States 0, 1, and 2.		
State	Foreground Color	
0		0
1		1
2		2

---

Set Multistate	Add Screen_2. Create a Table element and a Goto Screen button which is set to switch to Screen_1.
New Screen	

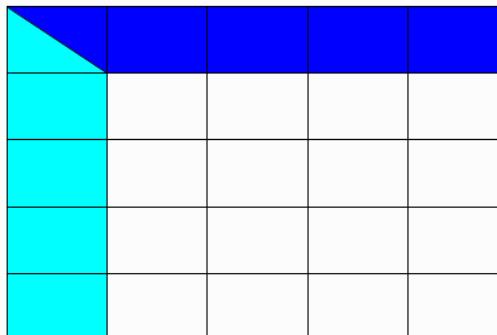
### Multiple actions button

- If you press the **Multiple Actions** button, the Increment and Multistate actions are executed.



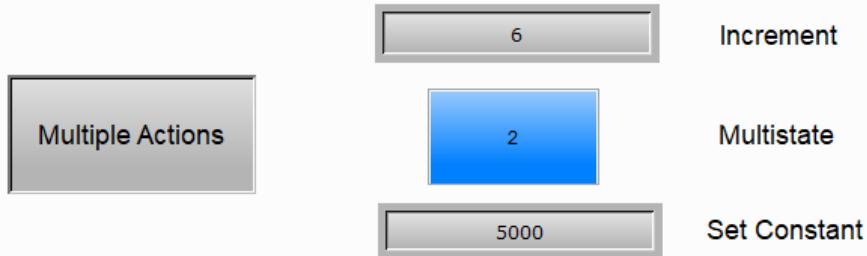
- If you release the **Multiple Actions** button, the Goto Screen action is executed and the HMI screen changes to Screen\_2.

Execution results



Screen 1

- When you change the screen to Screen\_1 and long press the **Multiple Actions** button for 3 seconds, the Set Constant action is executed. Apart from long pressing the button for 3 seconds, you also execute the press action, so the HMI executes both the Increment and Multistate actions.



When you double-click the Multiple actions button, the property page is shown as follows.

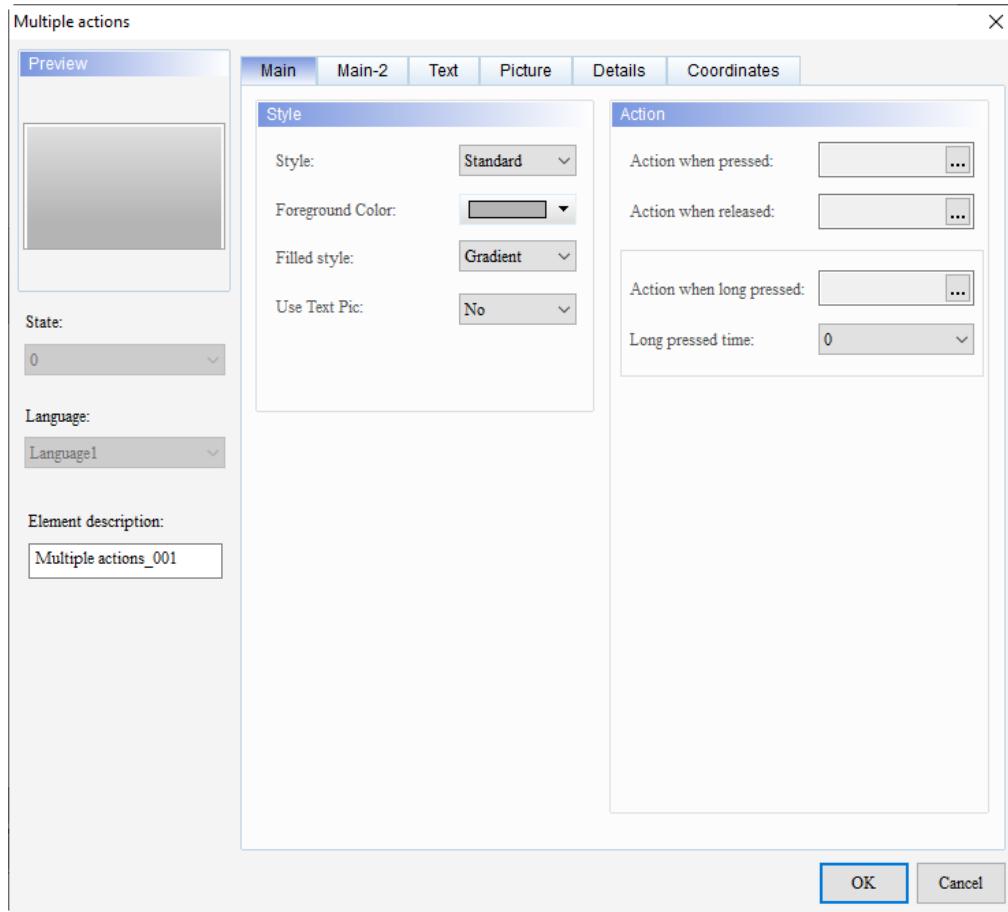


Figure 5.8.2 Properties of Multiple actions

Table 5.8.2 Function page of Multiple actions

Multiple actions button	
Function page	Description
Preview	The Multiple actions button can only view multi-language data display since the multistate property is not available for this element.
Main	Set the Style, Foreground Color, Filled style, and Use Text Pic function. Set the actions when you press, release, and long press the button as well as the long press time.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing options.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color options.
Details	Set the Interlock State, Interlock Address, Interlock Display Mode, Invisible Address, User Security Level, Set Low Security, and Modifier + Hot Key.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

## ■ Main

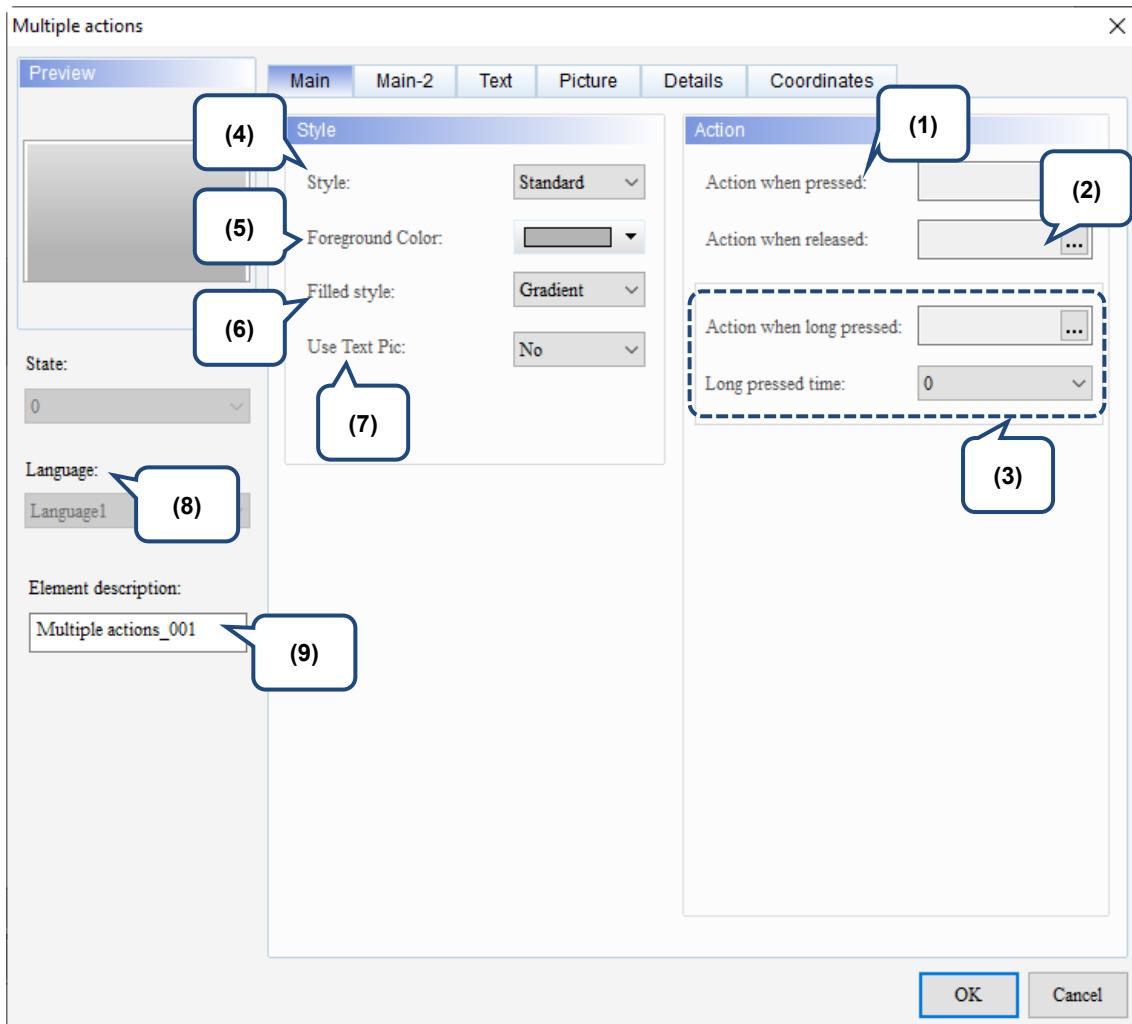
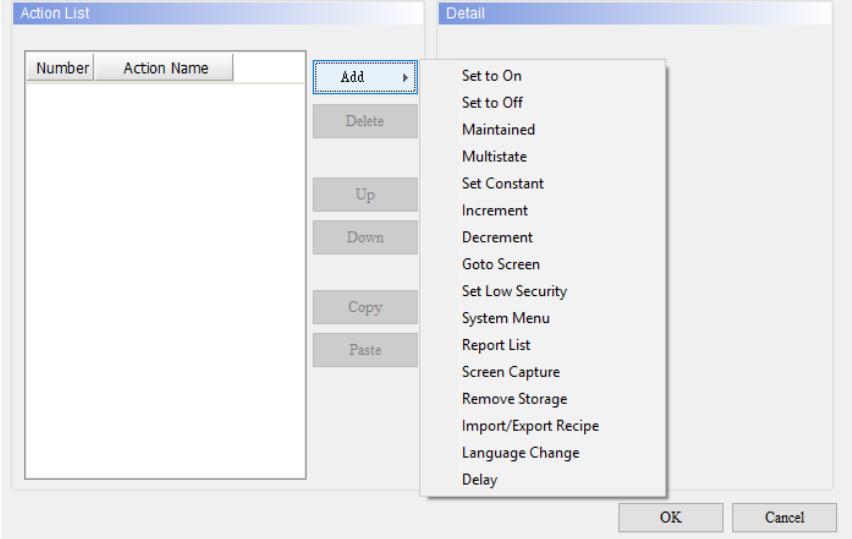
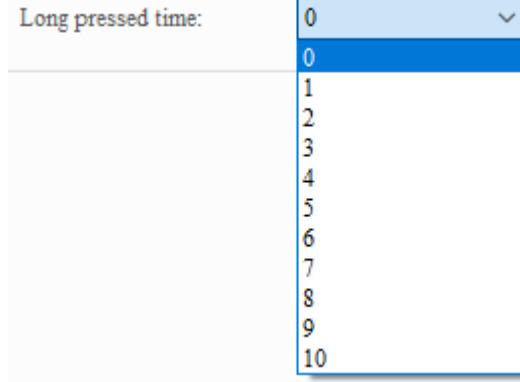
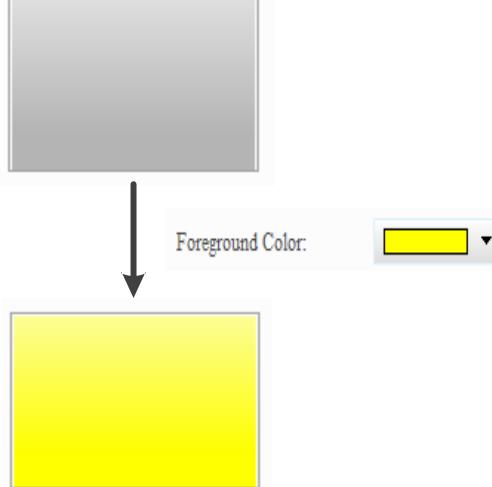
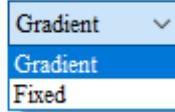
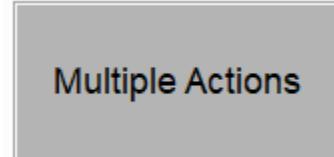
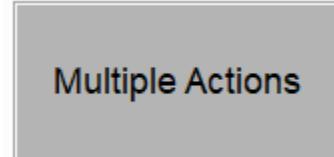
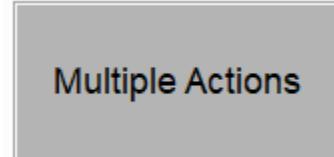
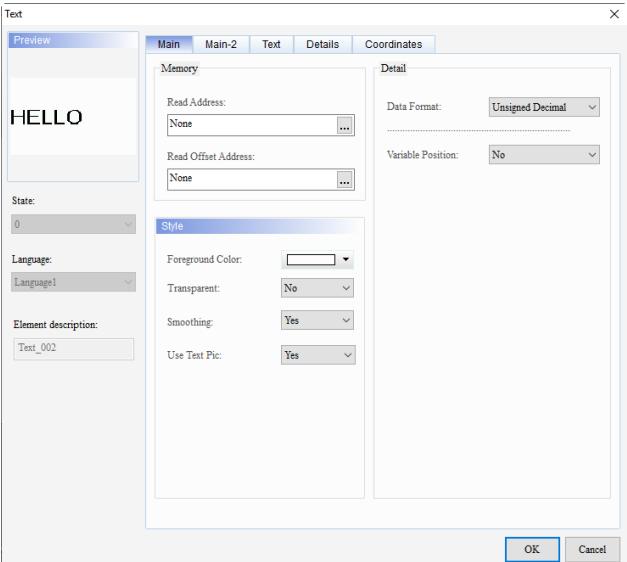
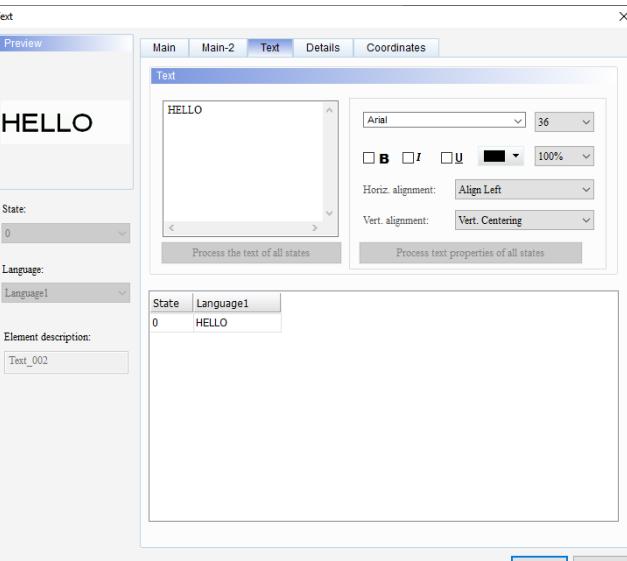


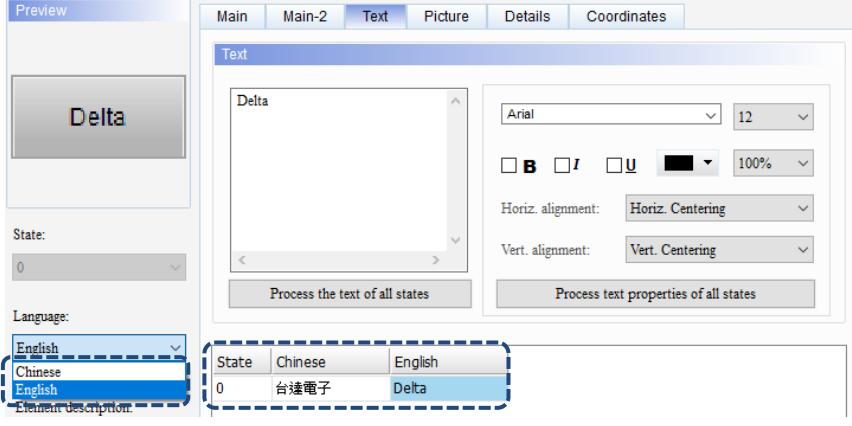
Figure 5.8.3 Main property page for the Multiple actions button element

No.	Property	Function description								
(1)	Action when pressed	<ul style="list-style-type: none"> <li>■ It is the action to execute after you press the Multiple actions button.</li> <li>■ The supported button actions after the button is pressed are shown as follows:</li> </ul> <p>Action when pressed</p>  <p>The screenshot shows the 'Action List' dialog box. On the left is a table with columns 'Number' and 'Action Name'. On the right is a 'Detail' pane containing a list of actions. The actions listed are: Set to On, Set to Off, Maintained, Multistate, Set Constant, Increment, Decrement, Goto Screen, Set Low Security, System Menu, Report List, Screen Capture, Remove Storage, Import/Export Recipe, Language Change, and Delay. At the bottom of the dialog are 'OK' and 'Cancel' buttons.</p>								
(2)	Action when released	<ul style="list-style-type: none"> <li>■ It is the action to execute after you release the Multiple actions button.</li> <li>■ The supported button actions are the same as that of the Action when pressed.</li> </ul>								
	Action when long pressed	<ul style="list-style-type: none"> <li>■ It is the action to execute after you press and hold the Multiple actions button.</li> <li>■ You must set the Long pressed time for the long press button action to work.</li> <li>■ The supported button actions are the same as that of the Action when pressed and Action when released.</li> </ul>								
(3)	Long pressed time	<p>The setting range for Long pressed time is 0 - 10 second(s).</p>  <p>The screenshot shows a dropdown menu with the title 'Long pressed time:'. The menu contains numerical options from 0 to 10, with '0' highlighted in blue. A small dropdown arrow is visible to the right of the menu.</p>								
(4)	Style	<p>The available styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							
										

No.	Property	Function description				
(5)	Foreground Color	<ul style="list-style-type: none"> <li>■ Set the foreground color of the element.</li> <li>■ When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ul>  <p>The diagram illustrates the 'Foreground Color' property. It shows a gray square button at the top. A downward arrow points from this button to a second gray square button below it, which is now yellow. To the right of the buttons is a color picker interface with a yellow square preview and a dropdown menu.</p>				
(6)	Filled style	<p>You can set the Filled style to Gradient or Fixed.</p> <p>Filled style:</p>  <p>A screenshot of a dropdown menu titled 'Filled style'. The menu contains three options: 'Gradient', 'Gradient' (which is highlighted), and 'Fixed'.</p> <table border="1"> <tr> <td>Gradient</td> <td>Fixed (Solid)</td> </tr> <tr> <td></td> <td></td> </tr> </table> <p>The table compares two button styles. The left column, labeled 'Gradient', shows a button with a gray-to-yellow gradient fill and the text 'Multiple Actions'. The right column, labeled 'Fixed (Solid)', shows a button with a uniform gray fill and the same text.</p>	Gradient	Fixed (Solid)		
Gradient	Fixed (Solid)					
						

## 5

No.	Property	Function description				
(7)	Use Text Pic Create Text element	<p>Unlike the DOP-B series models using pictures to present all texts, the DOP-100 series models present directly with the texts. Therefore, if the language you use for the element is not yet supported by the PC, it is possible to cause missing characters and garbled texts when the element is displayed on the HMI. To have the text display effect be the same as that on the DOP-B models, the Use Text Pic function is added for the Text, Button, and General Message Display elements. Refer to the following examples.</p> <p style="text-align: center;"><b>Use Text Pic function</b></p> <ul style="list-style-type: none"> <li>■ Create a Text element and go to the [Main] tab to set the Use Text Pic function.</li> </ul>  <p>Note: if you use the DOPSoft 4.00.06 version to open a DOP-B project, the Use Text Pic function is enabled (Yes) by default. If you add a DOP-100 project, then the Use Text Pic function is disabled (No) by default.</p> <ul style="list-style-type: none"> <li>■ Go to the [Text] tab, and type the text and set its font.</li> </ul> 				
	Execution result	<ul style="list-style-type: none"> <li>■ After creating the element, download it to the HMI.</li> <li>■ The following table shows the results of using and not using the Use Text Pic function.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Use Text Pic is Yes</th> <th style="text-align: center;">Use Text Pic is No</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; font-size: 2em;">HELLO</td> <td style="text-align: center; font-size: 2em;">HELLO</td> </tr> </tbody> </table>	Use Text Pic is Yes	Use Text Pic is No	HELLO	HELLO
Use Text Pic is Yes	Use Text Pic is No					
HELLO	HELLO					

No.	Property	Function description																																																																																
(8)	Language	<p>If you have set the language data, you can edit the properties of the displayed text with the Language setting of the element.</p> 																																																																																
(9)	Element description	<p>Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so that you know what actions have been done.</p> <table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25
Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																											
1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0																																																																											
2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1																																																																											
3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4																																																																											
4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1																																																																											
5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0																																																																											
6	13:38:22	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	0	1																																																																											
7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0																																																																											
8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8																																																																											
9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25																																																																											

5

5

## ■ Main-2

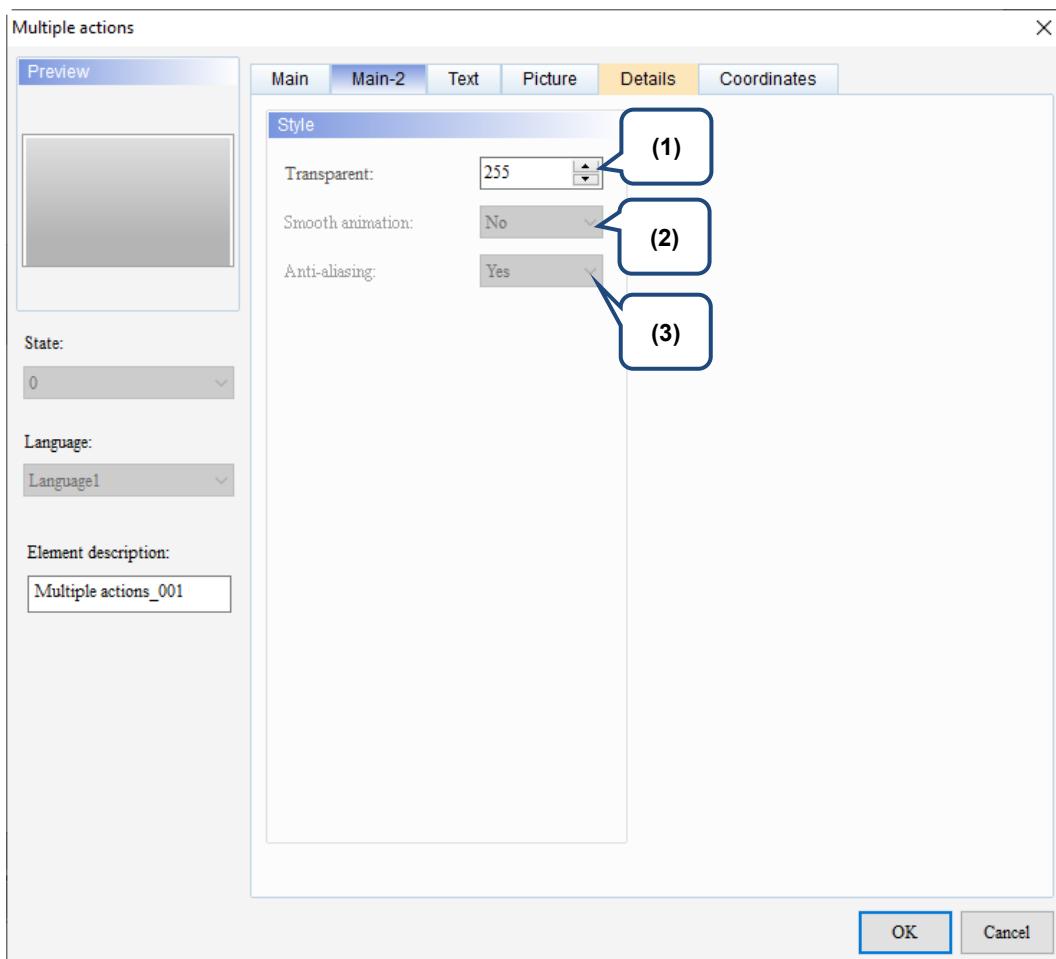


Figure 5.8.4 Main-2 property page for the Multiple actions button element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

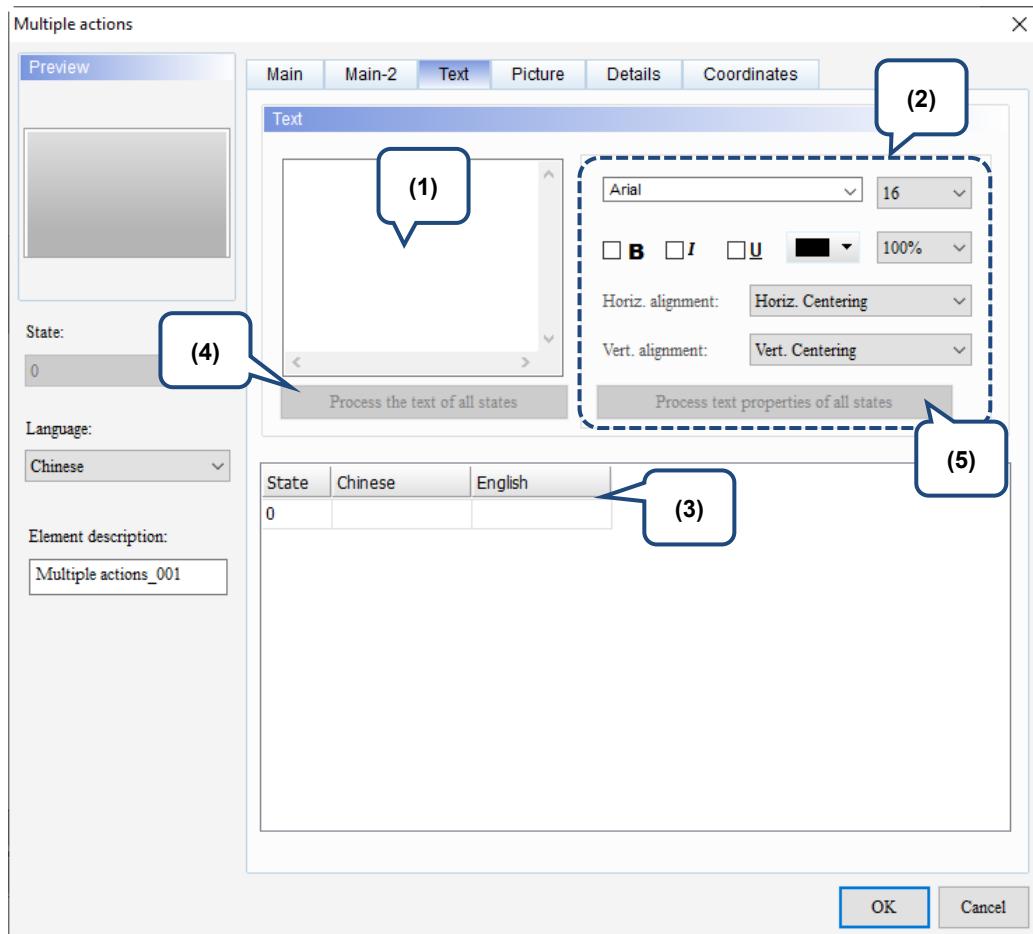
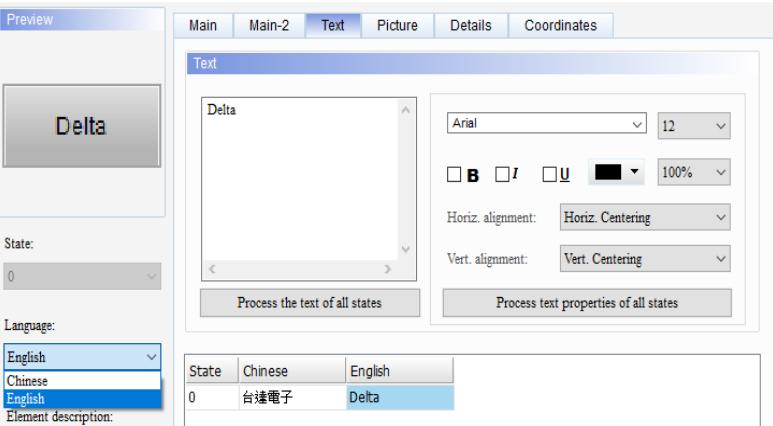


Figure 5.8.5 Text property page for the Multiple actions button element

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No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to be displayed in the text box.</li> </ul> 
		<ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and inputting the text.</li> </ul>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the text property setting results.
(3)	Edit Multi-language Text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	This function is not supported as this element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as this element does not have multiple states.

## ■ Picture

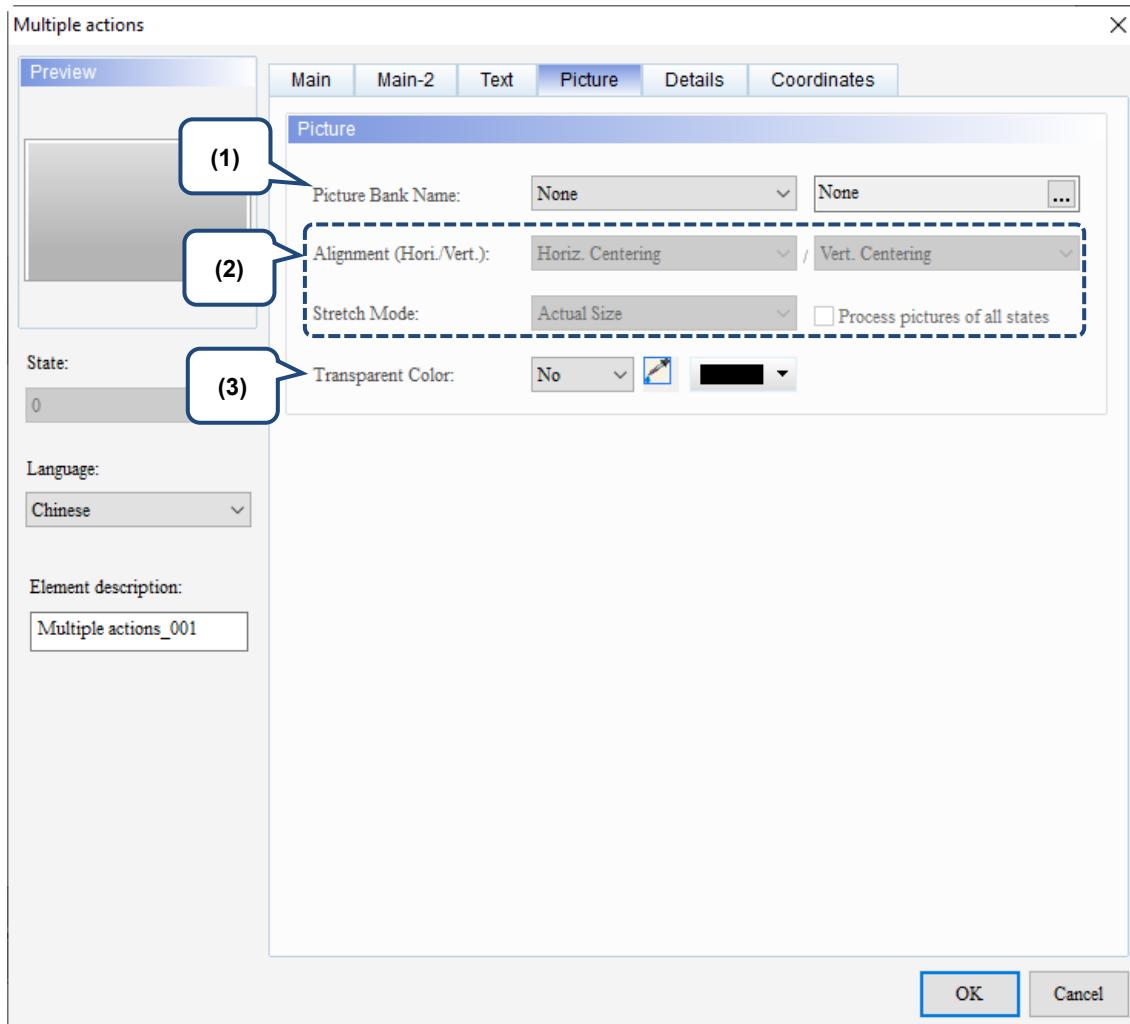
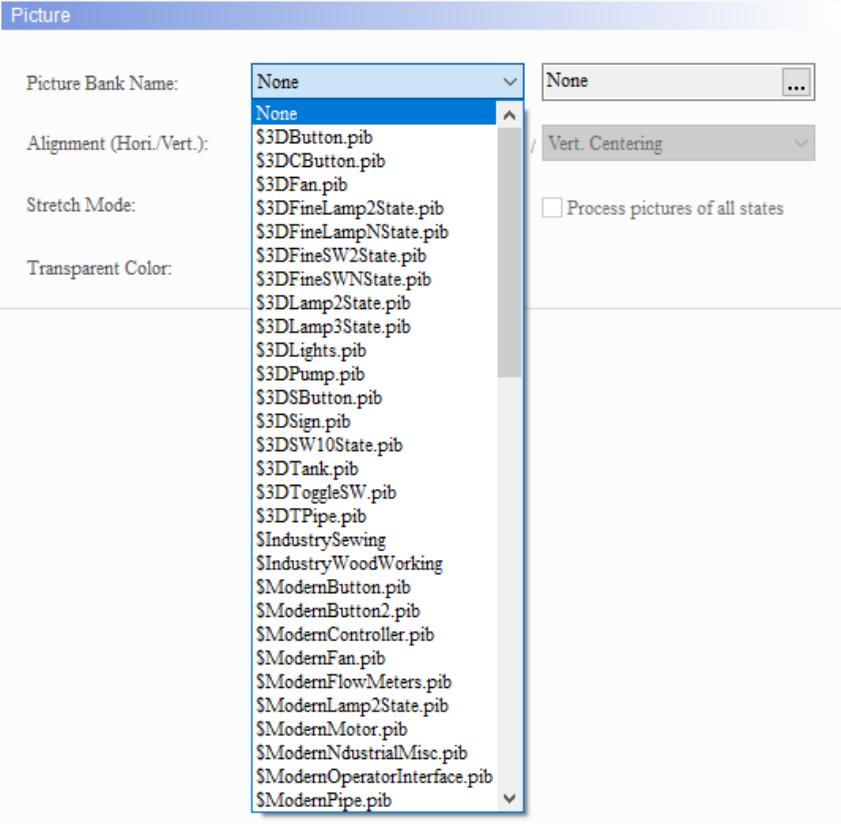
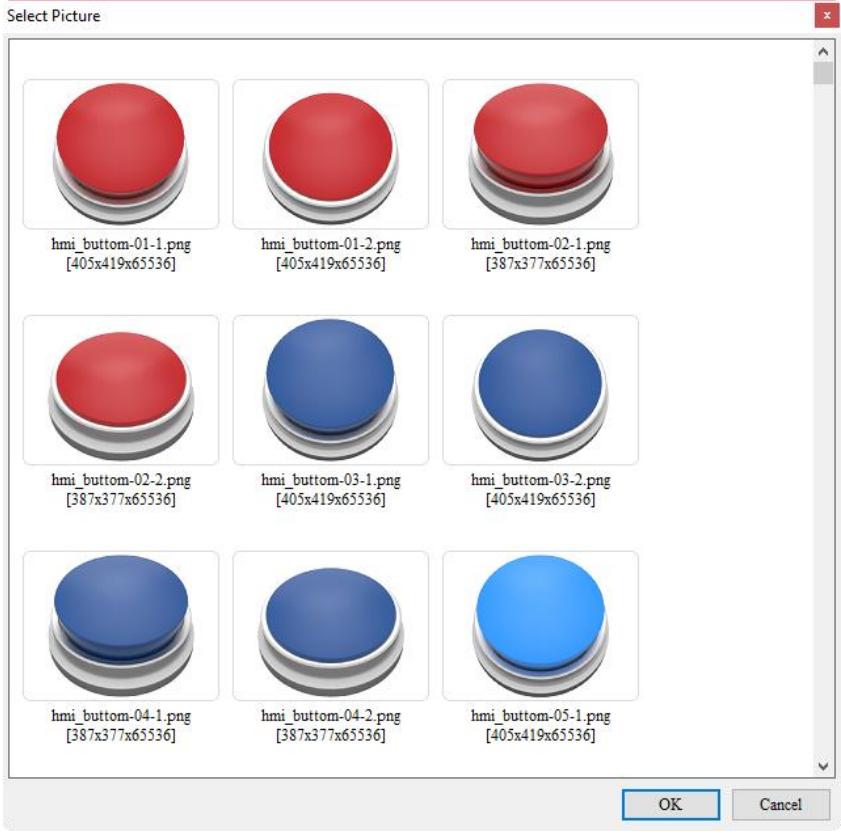
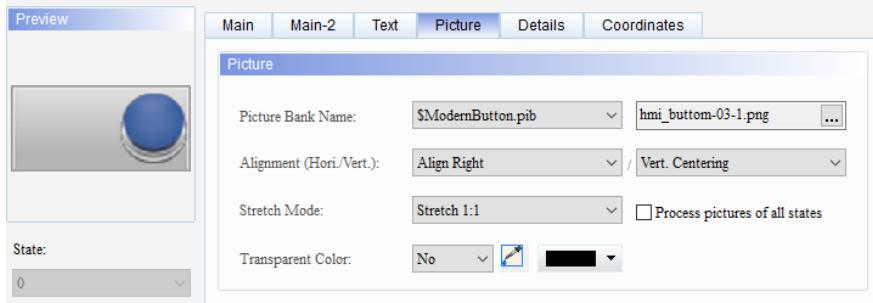


Figure 5.8.6 Picture property page for the Multiple actions button element

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No.	Property	Function description									
(1)	Picture Bank Name	<p>The default for Picture Bank Name is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>Picture</p> <p>Picture Bank Name: <input type="button" value="None"/> <input type="button" value="..."/></p> <p>Alignment (Hori./Vert.): <input type="button" value="Vert. Centering"/></p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <ul style="list-style-type: none"> <li>\$None</li> <li>\$3DButton.pib</li> <li>\$3DCButton.pib</li> <li>\$3DFan.pib</li> <li>\$3DFineLamp2State.pib</li> <li>\$3DFineLampNState.pib</li> <li>\$3DFineSW2State.pib</li> <li>\$3DFineSWNState.pib</li> <li>\$3DLamp2State.pib</li> <li>\$3DLamp3State.pib</li> <li>\$3DLights.pib</li> <li>\$3DPump.pib</li> <li>\$3DSButton.pib</li> <li>\$3DSign.pib</li> <li>\$3DSW10State.pib</li> <li>\$3DTank.pib</li> <li>\$3DToggleSW.pib</li> <li>\$3DTPipe.pib</li> <li>\$IndustrySewing</li> <li>\$IndustryWoodWorking</li> <li>\$ModernButton.pib</li> <li>\$ModernButton2.pib</li> <li>\$ModernController.pib</li> <li>\$ModernFan.pib</li> <li>\$ModernFlowMeters.pib</li> <li>\$ModernLamp2State.pib</li> <li>\$ModernMotor.pib</li> <li>\$ModernIndustrialMisc.pib</li> <li>\$ModernOperatorInterface.pib</li> <li>\$ModernPipe.pib</li> </ul>  <p>Select Picture</p> <table border="1"> <tbody> <tr> <td> hmi_button-01-1.png [405x419x65536]</td> <td> hmi_button-01-2.png [405x419x65536]</td> <td> hmi_button-02-1.png [387x377x65536]</td> </tr> <tr> <td> hmi_button-02-2.png [387x377x65536]</td> <td> hmi_button-03-1.png [405x419x65536]</td> <td> hmi_button-03-2.png [405x419x65536]</td> </tr> <tr> <td> hmi_button-04-1.png [387x377x65536]</td> <td> hmi_button-04-2.png [387x377x65536]</td> <td> hmi_button-05-1.png [405x419x65536]</td> </tr> </tbody> </table> <p>OK Cancel</p>	 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]	 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]	 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]
 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]									
 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]									
 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]									

No.	Property	Function description									
	Alignment	<p>You can use the Alignment options to set how pictures are aligned.</p> 									
(2)	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>If you select the check box for <b>Process pictures of all states</b>, it assumes that the elements have multiple states and some pictures do not fill the full element display area. You can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size									
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent. If you select the  Transparent Color icon and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 									

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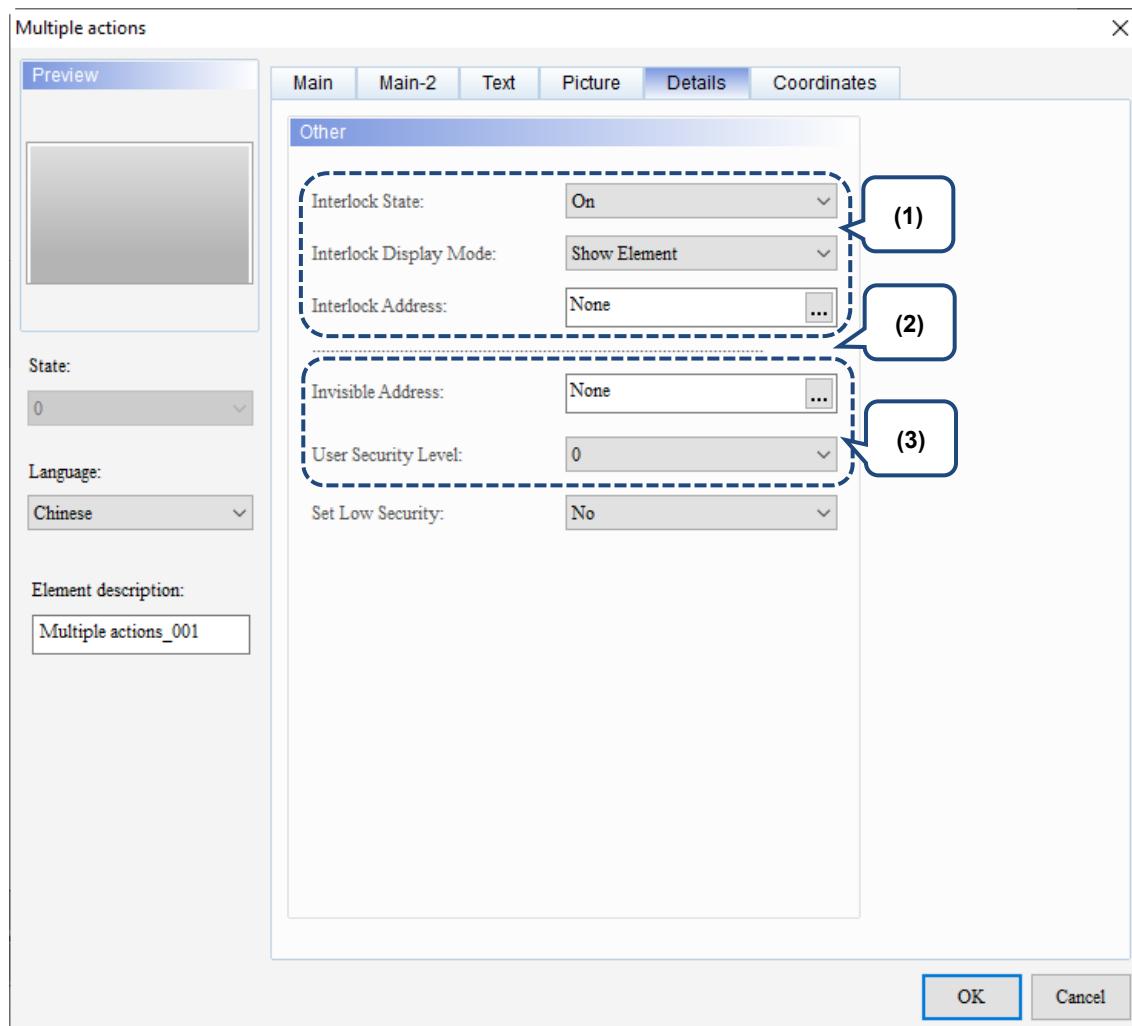
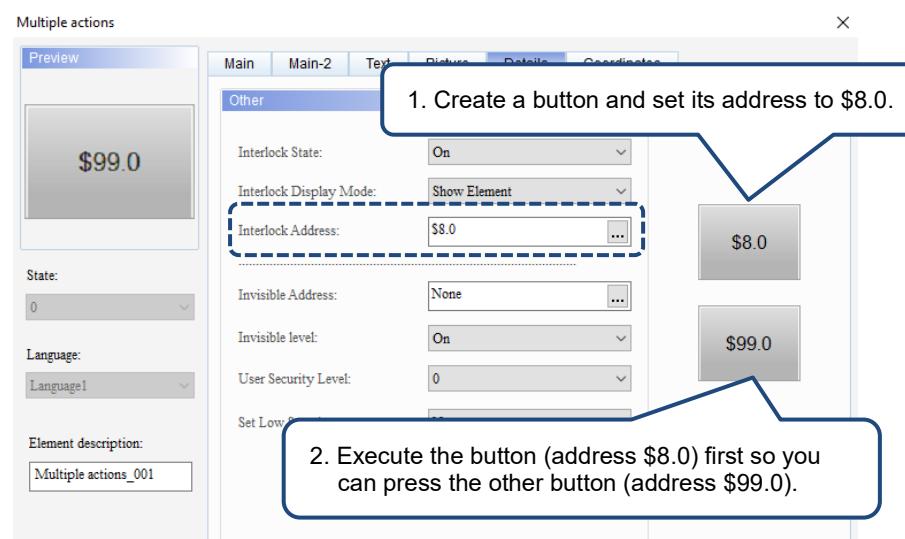
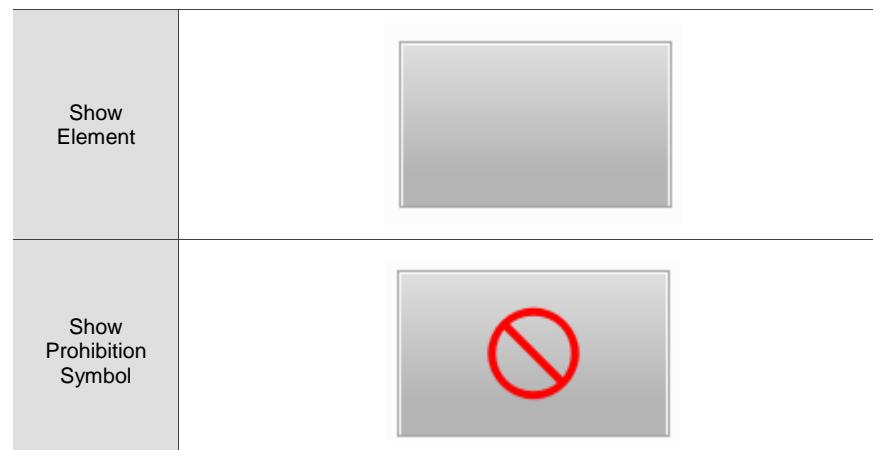
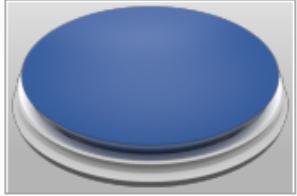
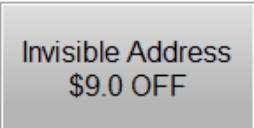
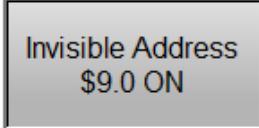
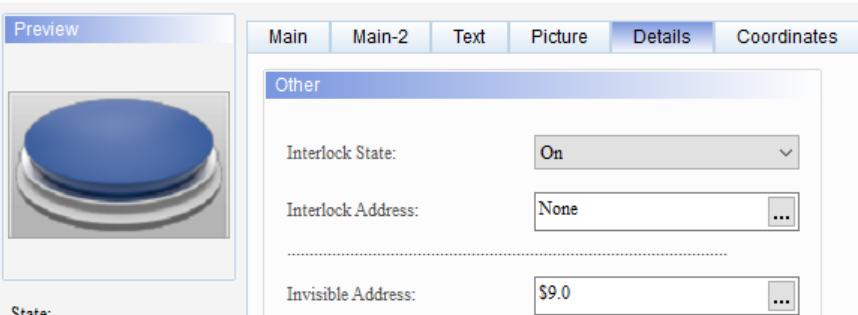
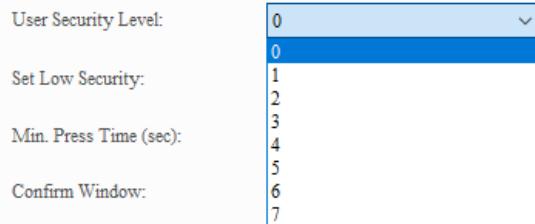
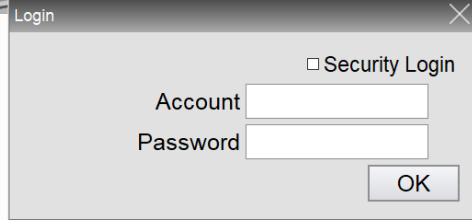
**■ Details**

Figure 5.8.7 Details property page for the Multiple actions button element

No.	Property	Function description				
(1)	Interlock State	<p>■ The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to OFF, it means the Interlock Address is operable when the Interlock State is OFF; on the other hand, if the Interlock State is set to ON, the Interlock Address is operable when the Interlock State is ON.</p> <p>■ The following describes how it works:</p> <ol style="list-style-type: none"> <li>1. Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the button which address is \$99.0.</li> <li>2. Before having the button which address is \$99.0 to operate, you have to press the button which address is \$8.0 to validate the button action which address is \$99.0.</li> </ol> 				
	Interlock Address					
	Interlock Display Mode	<p>■ The Interlock Display Mode includes two options, Show Element and Show Prohibition Symbol.</p> <table border="1"> <tr> <td style="text-align: right;">Interlock Display Mode:</td> <td>Show Element</td> </tr> <tr> <td style="text-align: right;">Interlock Address:</td> <td>Show Element Show Prohibition Symbol</td> </tr> </table> 	Interlock Display Mode:	Show Element	Interlock Address:	Show Element Show Prohibition Symbol
Interlock Display Mode:	Show Element					
Interlock Address:	Show Element Show Prohibition Symbol					

## 5

No.	Property	Function description	
(2)	Invisible Address	When the Invisible Address is set to ON, the button element is invisible and you cannot enable its functions.	 
		Invisible Address is on Element is invisible	
			
(3)	User Security Level	<ul style="list-style-type: none"> <li>You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password through the Password Table Setup element; refer to Section 5.7.2 Password Table Setup).</li> </ul> 	
	Set Low Security	If you set the Set Low Security to Yes, each time you input the password, the HMI sets the security level to the lowest. The next time you press the element, the HMI asks you to enter the password for the corresponding security level again.	 

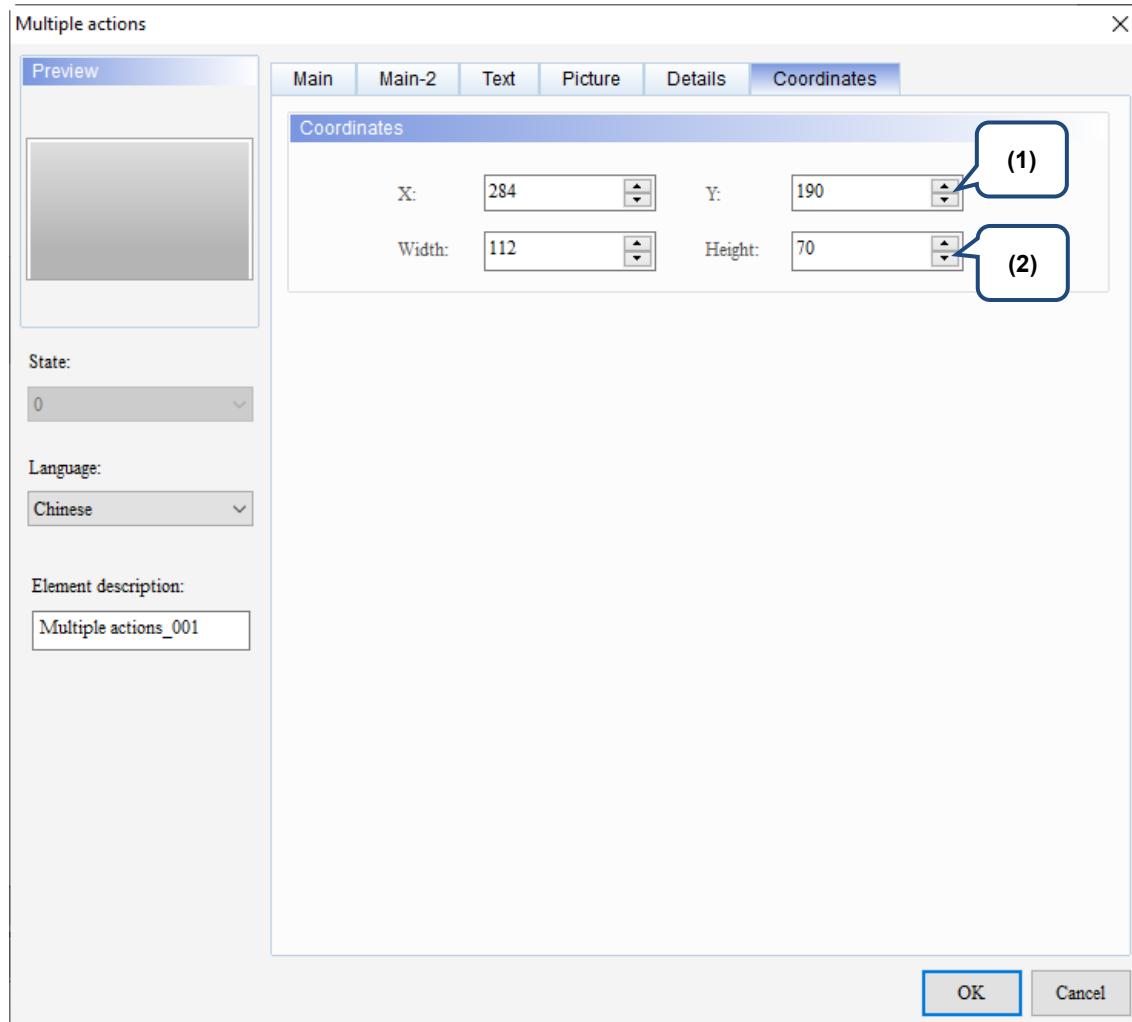
**■ Coordinates**

Figure 5.8.8 Coordinates property page for the Multiple actions button element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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# 6

## Meter

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This chapter introduces the usage and setting details for the Meter elements.

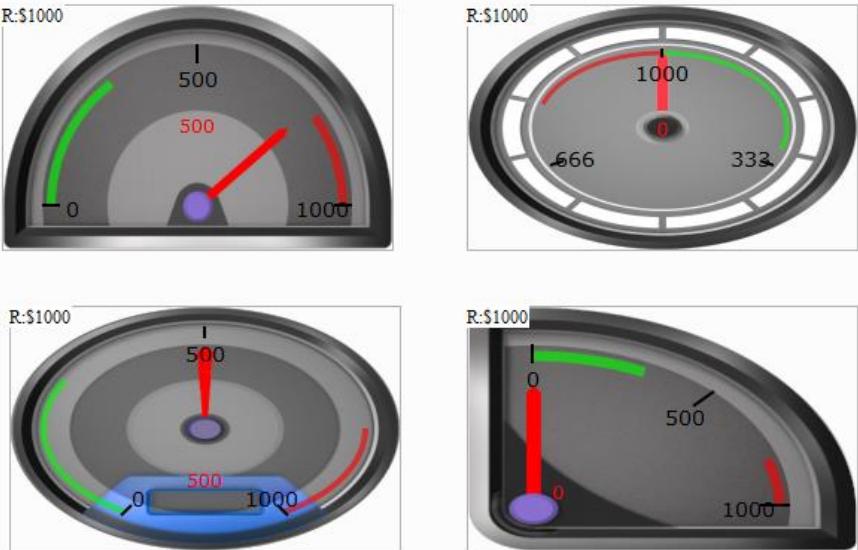
6.1 Meter(1) / Meter(2) / Meter(3) / Meter(4)..... 6-2

## 6.1 Meter(1) / Meter(2) / Meter(3) / Meter(4)

The DOPSoft provides four styles of meters to display the measuring values of the set addresses as well as to show whether the value reaches the target value or exceeds the upper or lower limit. In addition, you can define the memory addresses for the target value and upper and lower limits to make the application more flexible so it meets your requirements. You can also specify the colors for the lower limit, upper limit, and target value for easier identification. Further, the Meter elements support the Smooth animation and Anti-aliasing functions that make the display smoother and more delicate.

Refer to the following example descriptions.

Table 6.1.1 Meter example

Meter(1) / Meter(2) / Meter(3) / Meter(4)									
Read Address	<p>Create Meter(1), Meter(2), Meter(3), and Meter(4) elements and set their read addresses to \$1000 respectively.</p> 								
Data Type	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Word</td><td style="padding: 5px;">Unsigned Decimal</td><td style="padding: 5px;">0</td><td style="padding: 5px;">1000</td></tr> </table>	Word	Unsigned Decimal	0	1000				
Word	Unsigned Decimal	0	1000						
Detail settings	<p><b>Detail</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Data Type</td><td style="padding: 5px;">Word</td></tr> <tr> <td style="padding: 5px;">Data Format</td><td style="padding: 5px;">Unsigned Decimal</td></tr> <tr> <td style="padding: 5px;">Minimum</td><td style="padding: 5px;">0</td></tr> <tr> <td style="padding: 5px;">Maximum</td><td style="padding: 5px;">1000</td></tr> </table>	Data Type	Word	Data Format	Unsigned Decimal	Minimum	0	Maximum	1000
Data Type	Word								
Data Format	Unsigned Decimal								
Minimum	0								
Maximum	1000								

Meter(1) / Meter(2) / Meter(3) / Meter(4)				
Range	Low Limit property		High Limit property	
	Low Range Color	Low Range value	High Range Color	High Range value
		300		800
Clock Macro	<pre>*[&amp;Clock Macro] 1 \$1000 = \$1000 + 5 2 IF \$1000 &gt; 1000 3 \$1000 = 0 4 ENDIF</pre>			
Execution results	<p>After finishing editing the screens, download them to the HMI. Then, the HMI executes the program in the Clock Macro and displays the accumulation results on the Meter elements with the corresponding addresses.</p>			

Meter(1), Meter(2), Meter(3), and Meter(4) are the same in functions except the styles; therefore, the following section introduces only Meter(1).

When you double-click the Meter element, the property page is shown as follows.

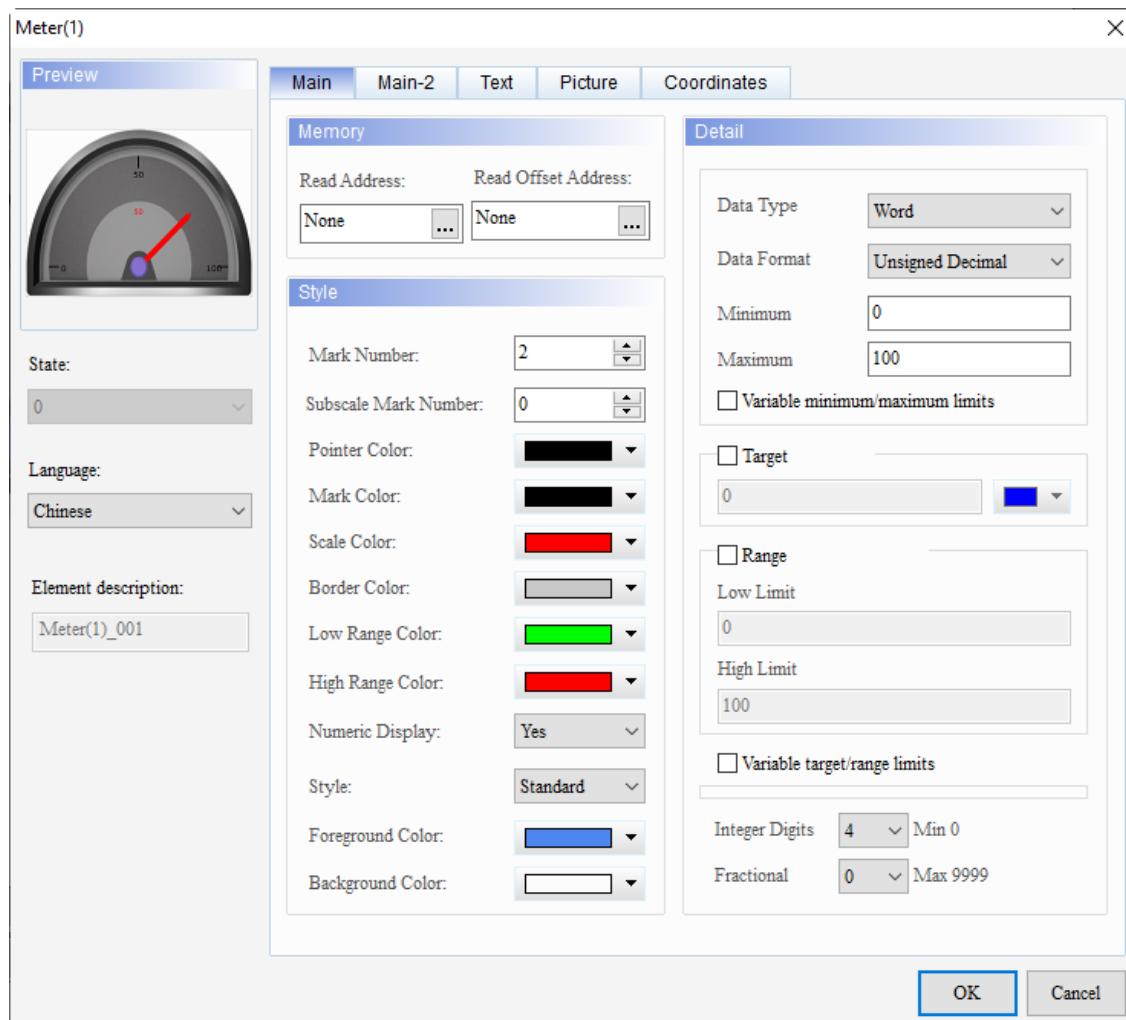


Figure 6.1.1 Properties of Meter

Table 6.1.2 Function page of Meter

Meter(1) / Meter(2) / Meter(3) / Meter(4)	
Function page	Content description
Preview	Meter elements are only for viewing multi-language data display but do not support multiple states.
Main	<p>Set the Read Address, Read Offset Address, Style, Foreground Color, and Background Color.</p> <p>Set the Mark Number, Subscale Mark Number, Pointer Color, Mark Color, Scale Color, Border Color, Low Range Color, High Range Color, and Numeric Display.</p> <p>Set the Data Type, Data Format, and Minimum / Maximum input value of the element, and select the check box for <b>Variable minimum/maximum limits</b>.</p> <p>Set whether to display the target value and its color, select the check boxes for <b>Range</b> and <b>Variable target/range limits</b>, and set the Integer Digits and Fractional.</p>
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, Limit Ranges Transparent, Target Value Transparent, Value Color, and Minify the scale.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set to Picture Bank Mode or Template Pattern.
Coordinates	Set the X and Y coordinates, width, and height of the element.

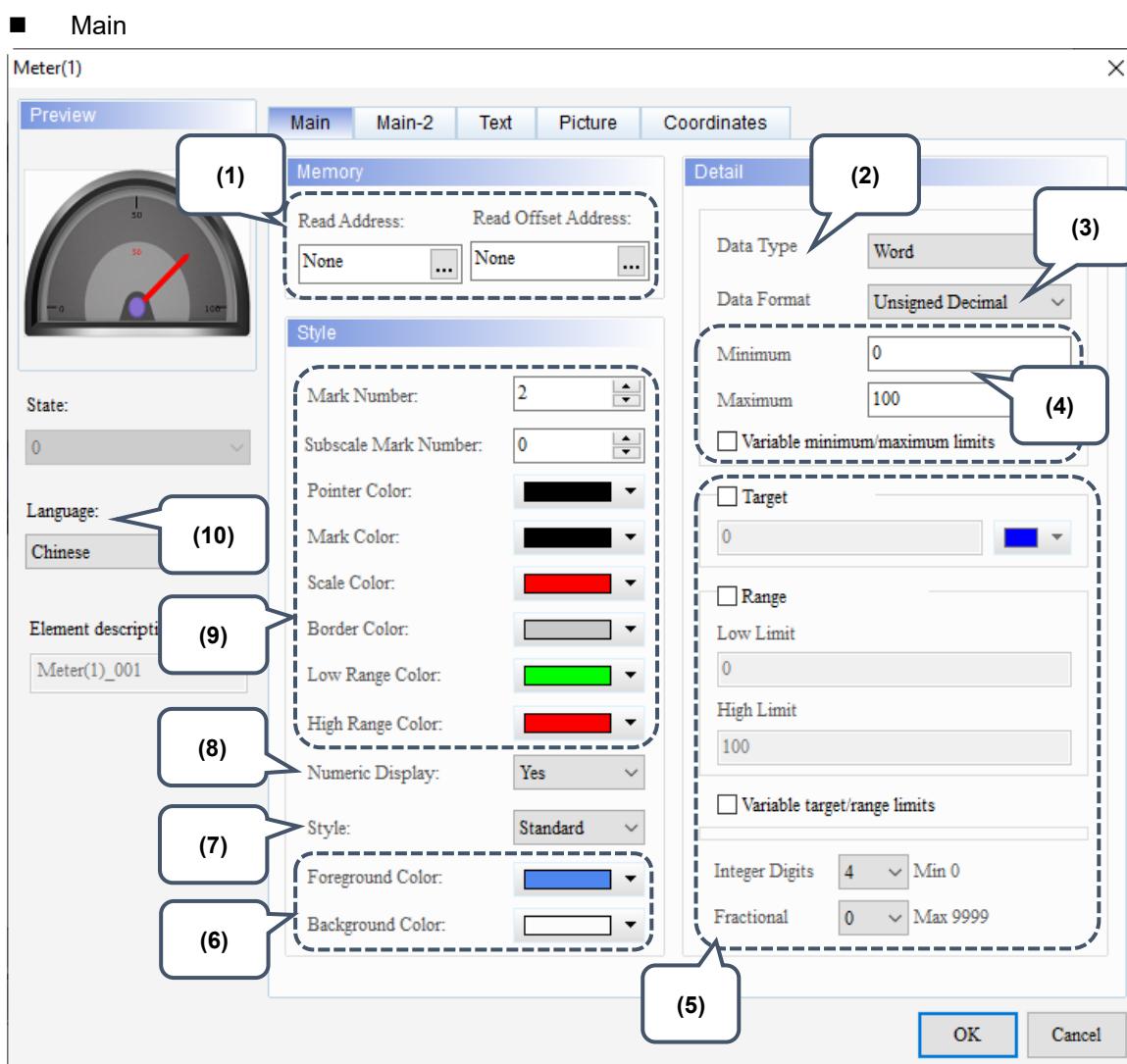
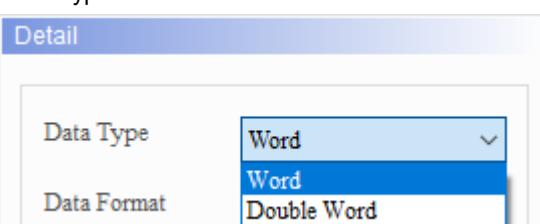
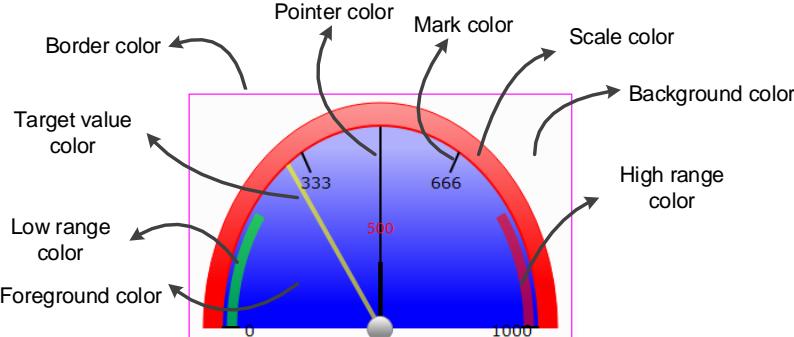
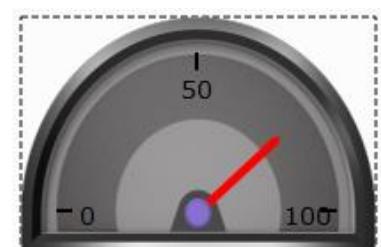
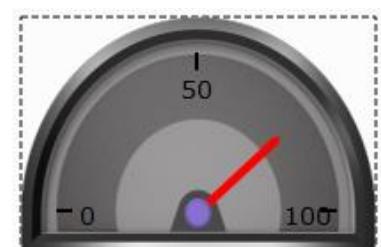
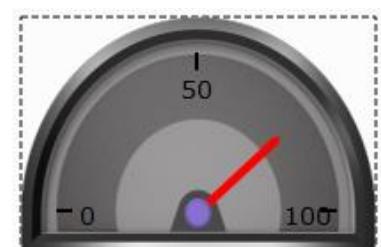


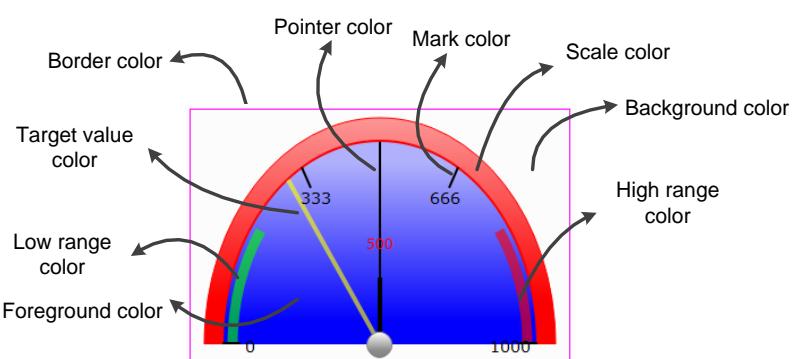
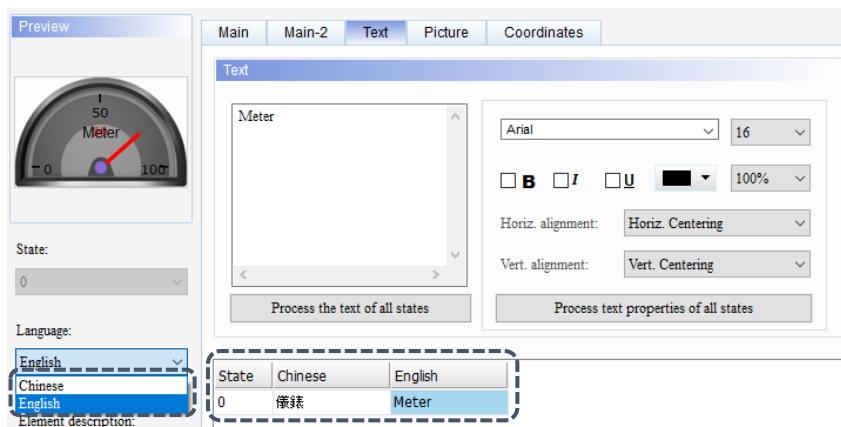
Figure 6.1.2 Main property page for the Meter elements

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>You can choose the internal memory or the controller register address. The input memory type must be Word.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	<p>There are two data types: Word and Double Word.</p> 

No.	Property	Function description																													
(3)	Data Format	<ul style="list-style-type: none"> <li>■ When the Data Type is Word, the supported data formats are as follows:</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p style="margin: 0;">Detail</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Data Type</td> <td style="width: 85%;"> <input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Word"/> </td> </tr> <tr> <td>Data Format</td> <td> <input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Unsigned Decimal"/>   <small>BCD Signed BCD Signed Decimal Unsigned Decimal</small> </td> </tr> <tr> <td>Minimum</td> <td></td> </tr> <tr> <td>Maximum</td> <td></td> </tr> </table> </div>	Data Type	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Word"/>	Data Format	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Unsigned Decimal"/> <small>BCD Signed BCD Signed Decimal Unsigned Decimal</small>	Minimum		Maximum																						
Data Type	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Word"/>																														
Data Format	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Unsigned Decimal"/> <small>BCD Signed BCD Signed Decimal Unsigned Decimal</small>																														
Minimum																															
Maximum																															
(4)	Minimum / maximum input value	<ul style="list-style-type: none"> <li>■ When the Data Type is Double Word, the supported data formats are as follows:</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p style="margin: 0;">Detail</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Data Type</td> <td style="width: 85%;"> <input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Double Word"/> </td> </tr> <tr> <td>Data Format</td> <td> <input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Unsigned Decimal"/>   <small>BCD Signed BCD Signed Decimal Unsigned Decimal</small> </td> </tr> <tr> <td>Minimum</td> <td></td> </tr> <tr> <td>Maximum</td> <td></td> </tr> </table> </div> <p>The allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.</p> <div style="border: 1px solid #ccc; width: 100%; border-collapse: collapse; margin-top: 10px;"> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #f2f2f2;"> <th style="padding: 2px;">Data Type</th><th style="padding: 2px;">Data Format</th><th style="padding: 2px;">Allowable range</th></tr> </thead> <tbody> <tr> <td rowspan="4" style="text-align: center; padding: 2px;">Word</td><td style="padding: 2px;">BCD</td><td style="padding: 2px;">0 to 9999</td></tr> <tr> <td style="padding: 2px;">Signed BCD</td><td style="padding: 2px;">-999 to +9999</td></tr> <tr> <td style="padding: 2px;">Signed Decimal</td><td style="padding: 2px;">-32768 to +32767</td></tr> <tr> <td style="padding: 2px;">Unsigned Decimal</td><td style="padding: 2px;">0 to 65535</td></tr> <tr> <td rowspan="4" style="text-align: center; padding: 2px;">Double Word</td><td style="padding: 2px;">BCD</td><td style="padding: 2px;">0 to 99999999</td></tr> <tr> <td style="padding: 2px;">Signed BCD</td><td style="padding: 2px;">-9999999 to +9999999</td></tr> <tr> <td style="padding: 2px;">Signed Decimal</td><td style="padding: 2px;">-2147483648 to +2147483647</td></tr> <tr> <td style="padding: 2px;">Unsigned Decimal</td><td style="padding: 2px;">0 to 4294967295</td></tr> </tbody> </table> </div>	Data Type	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Double Word"/>	Data Format	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Unsigned Decimal"/> <small>BCD Signed BCD Signed Decimal Unsigned Decimal</small>	Minimum		Maximum		Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Double Word	BCD	0 to 99999999	Signed BCD	-9999999 to +9999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295
Data Type	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Double Word"/>																														
Data Format	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="Unsigned Decimal"/> <small>BCD Signed BCD Signed Decimal Unsigned Decimal</small>																														
Minimum																															
Maximum																															
Data Type	Data Format	Allowable range																													
Word	BCD	0 to 9999																													
	Signed BCD	-999 to +9999																													
	Signed Decimal	-32768 to +32767																													
	Unsigned Decimal	0 to 65535																													
Double Word	BCD	0 to 99999999																													
	Signed BCD	-9999999 to +9999999																													
	Signed Decimal	-2147483648 to +2147483647																													
	Unsigned Decimal	0 to 4294967295																													
	Variable minimum/maximum limits	<ul style="list-style-type: none"> <li>■ When this check box is selected, you can define the memory addresses to dynamically change the displayed maximum and minimum values.</li> <li>■ When this check box is not selected, you can only enter constant values in the Minimum and Maximum fields to define the maximum and minimum values for the Meter element.</li> </ul>																													

No.	Property	Function description	
(5)	Display Format	Target	If the <b>Variable target/range limits</b> check box is not selected, you can only enter a constant value to define the displaying target value on the meter. You can also specify the displaying color.
		Range	The Range includes the lower and upper limits. Like the case of the Target display, if the <b>Variable target/range limits</b> check box is not selected, you can only enter constant values to define the lower and upper limits of the meter.
		Variable target/range limits	If it is selected, you can define the memory addresses to dynamically change the displaying target value, and the lower and upper limit values.
		Integer Digits	You can set the displaying number of integer digits and the number of decimal places.
		Fractional (Digits)	
(6)	Foreground Color and Background Color	<ul style="list-style-type: none"> <li>■ Set the element foreground and background colors.</li> <li>■ The element foreground color setting is only available for the Picture Bank mode of the Picture page.</li> </ul>	
			
(7)	Style (element style)	The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.	
		Standard	Raised
(8)	Numeric Display	Sunken	
		Transparent	
		<p>Display the value currently acquired by the meter.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 10px;">Numeric Display is set to Yes</td> <td style="text-align: center; padding: 10px;">  </td> </tr> </table>	
Numeric Display is set to Yes			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 10px;">Numeric Display is set to No</td> <td style="text-align: center; padding: 10px;">  </td> </tr> </table>		Numeric Display is set to No	
Numeric Display is set to No			

6

No.	Property	Function description
6		
(9)	Style property	Mark Number The minimum mark number must be no less than 1 and the maximum is up to 10.
		Subscale Mark Number The minimum subscale number can be 0 and the maximum is up to 99.
		Pointer Color You can define the pointer color to be displayed. Pointer color setting is only available for the Picture Bank Mode of the Picture page.
		Mark Color You can define the mark color to be displayed.
		Scale Color You can define the scale color to be displayed. Scale color setting is only available for the Picture Bank Mode of the Picture page.
		Border Color You can define the border color to be displayed.
		Low Range Color You can define the low range color to be displayed.
		High Range Color You can define the high range color to be displayed.
(10)	Language	When you have set the language data, you can edit the properties of the displayed text with the Language setting of the element. 

## ■ Main-2

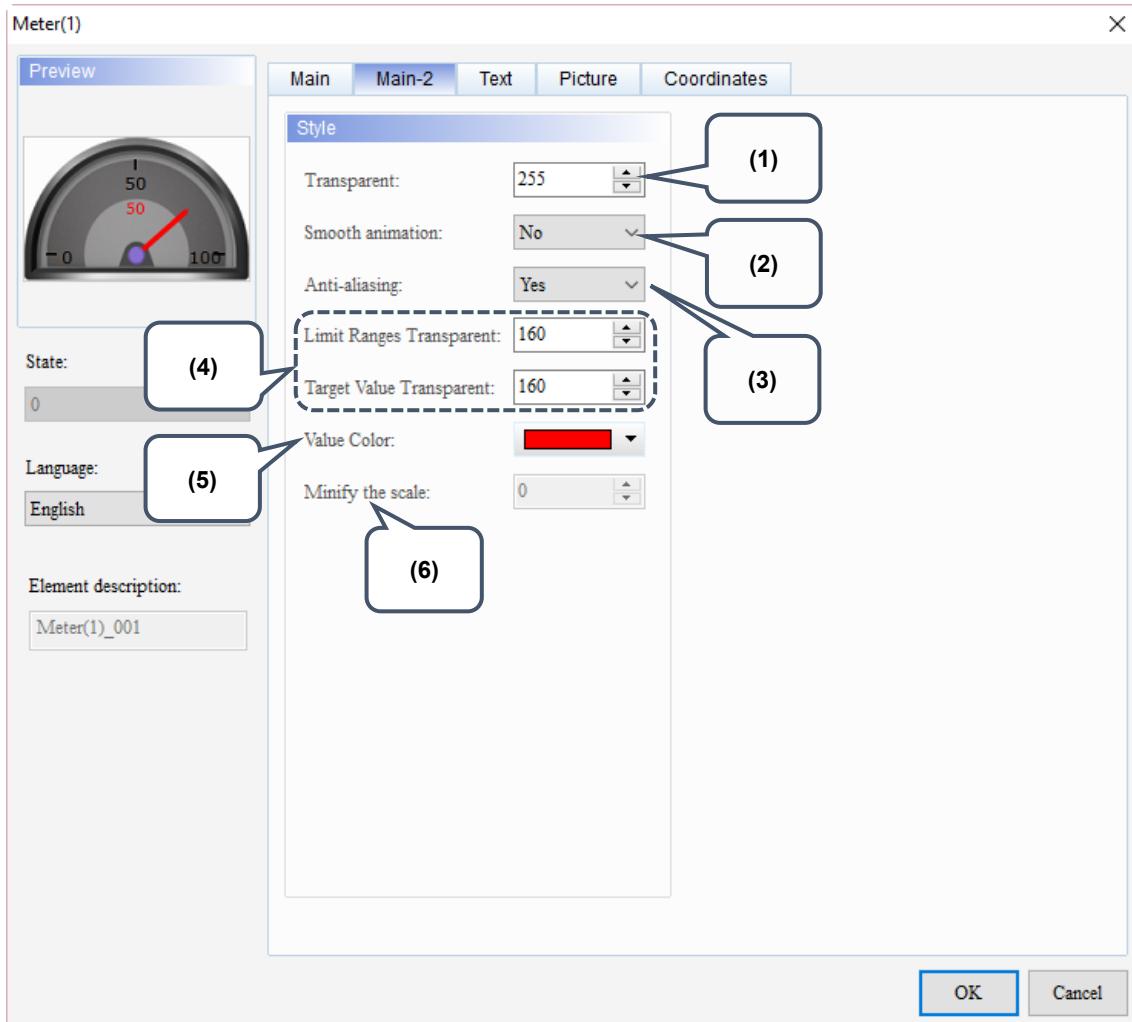
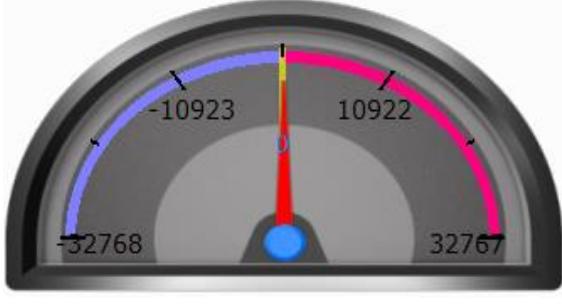
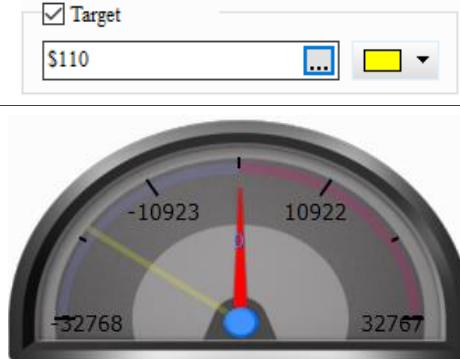
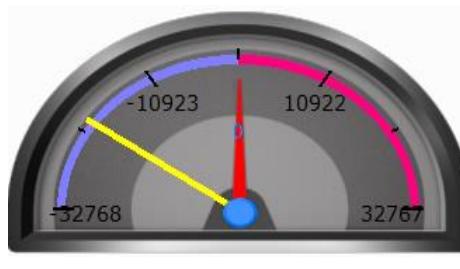
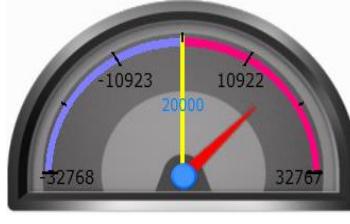
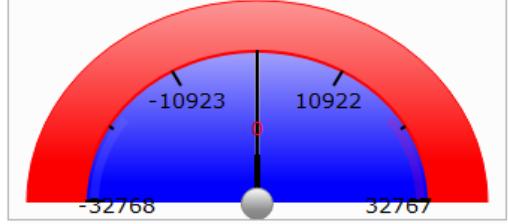
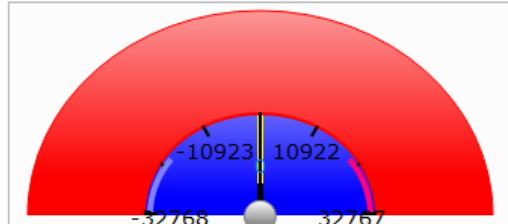


Figure 6.1.3 Main-2 property page for the Meter elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When this function is enabled, the pointer motion becomes smoother.

## 6

No.	Property	Function description				
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When this function is enabled, the element display becomes more delicate without jagged edges.				
		<p>Anti-aliasing is set to Yes</p> 				
(4)	Limit Ranges Transparent	<p>You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.</p> <table> <tr> <td>Limit Ranges Color</td> <td>Low Range Color: <input type="color"/></td> </tr> <tr> <td></td> <td>High Range Color: <input type="color"/></td> </tr> </table>	Limit Ranges Color	Low Range Color: <input type="color"/>		High Range Color: <input type="color"/>
Limit Ranges Color	Low Range Color: <input type="color"/>					
	High Range Color: <input type="color"/>					
<p>Limit Ranges Transparent is set to 50</p> 						
		<p>Limit Ranges Transparent is set to 255</p> 				

No.	Property	Function description		
(4)	Target Value Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.	<div style="display: flex; align-items: center;"> <div style="flex: 1; padding-right: 10px;">Target value color</div> <div style="border: 1px solid #ccc; padding: 2px; border-radius: 4px;"> <input checked="" type="checkbox"/> Target           <div style="margin-top: 5px; border: 1px solid #ccc; padding: 2px; width: 150px; height: 18px; background-color: transparent;"></div> <div style="display: flex; justify-content: space-between; width: 150px;"> <span>\$110</span> <span style="border: 1px solid #ccc; padding: 0 5px;">...</span> <span style="border: 1px solid #ccc; padding: 0 5px; background-color: yellow;">...</span> </div> </div> </div>	
		Target Value Transparent is set to 50		
		Target Value Transparent is set to 255		
(5)	Value Color	Display the value currently acquired by the meter.		
		<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Value Color:</p>  </div> <div style="text-align: center;"> <p>Value Color:</p>  </div> </div>		
(6)	Minify the scale	<ul style="list-style-type: none"> <li>■ This function is only available for the Picture Bank Mode in the Picture page.</li> <li>■ The Minify the scale setting range is 0 - 8.</li> <li>■ The greater the value, the longer the distance from the scale mark to the meter edge.</li> </ul>		
		Minify the scale is set to 3		
		Minify the scale is set to 8		

6

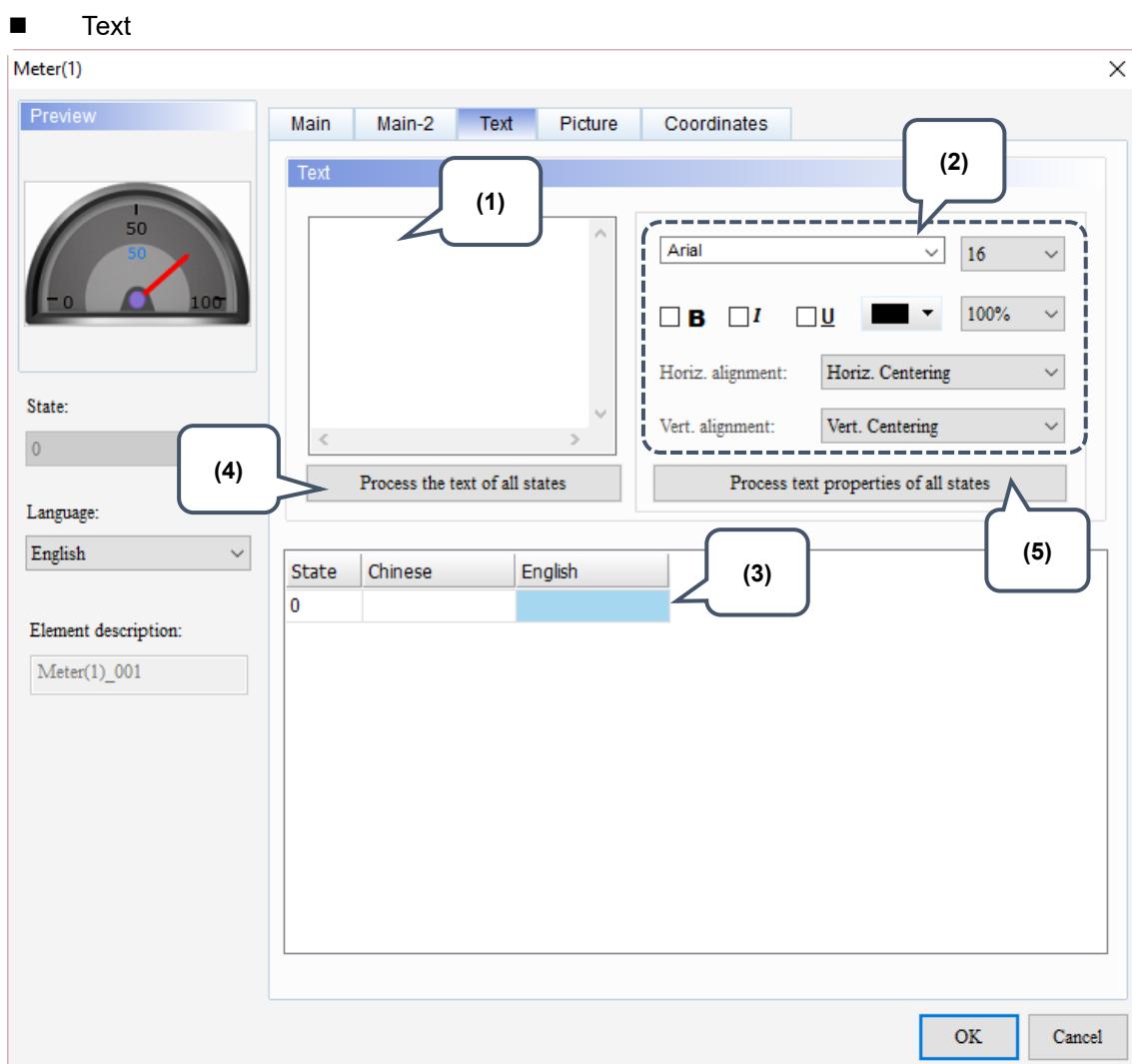
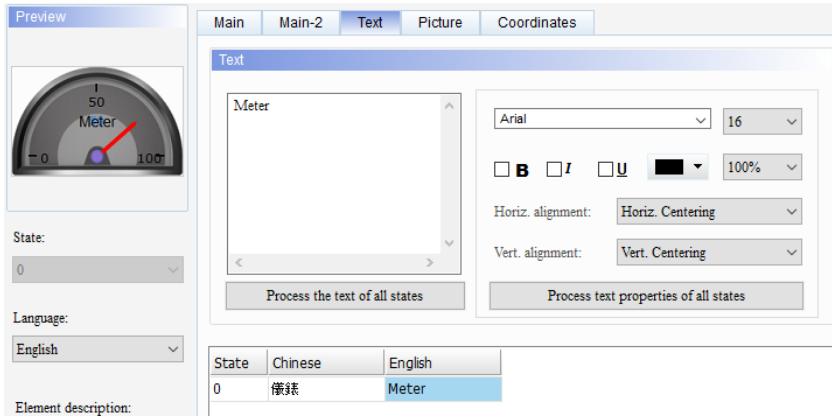
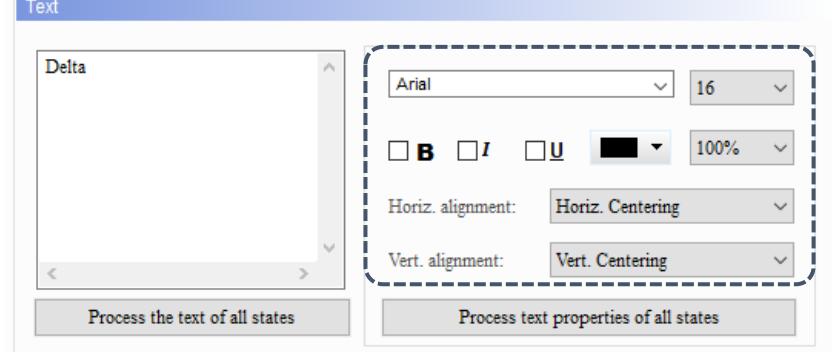
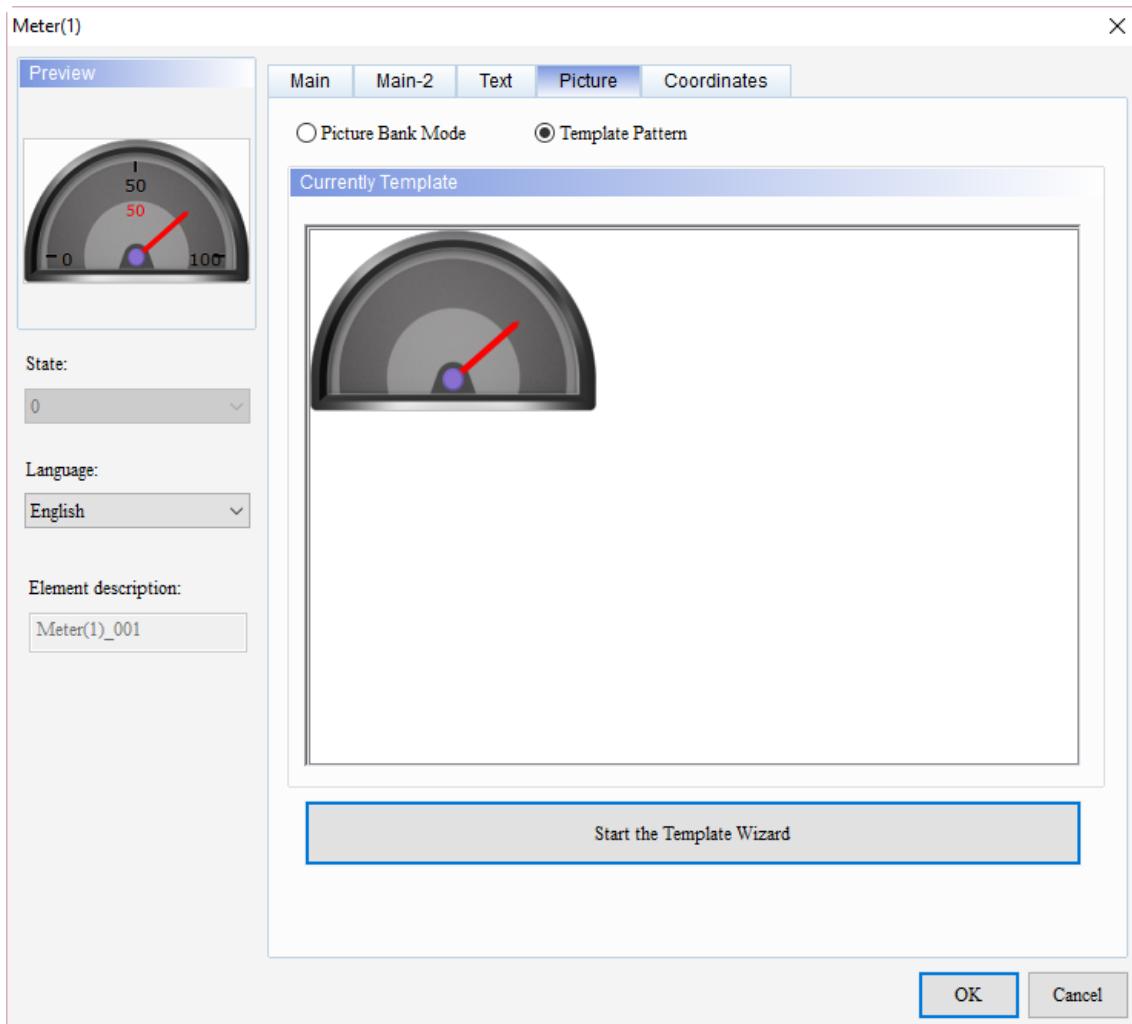


Figure 6.1.4 Text property page for the Meter elements

No.	Property	Function description						
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to be displayed in this text box.</li> </ul>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>儀表</td> <td>Meter</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key on the keyboard to start editing and entering the text.</li> </ul>	State	Chinese	English	0	儀表	Meter
State	Chinese	English						
0	儀表	Meter						
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the text property setting results.						
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.						
(4)	Process the text of all states	<ul style="list-style-type: none"> <li>This function batch changes all the texts into the text contents of the state you selected.</li> <li>Meter elements do not support multiple states, so this function is unavailable</li> </ul>						
(5)	Process text properties of all states	<ul style="list-style-type: none"> <li>This function batch changes all the text properties based on the state you selected.</li> <li>Items included in the text property are shown in the following figure.</li> </ul>  <ul style="list-style-type: none"> <li>Meter elements do not support multiple states, so this function is unavailable.</li> </ul>						

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**■ Picture**

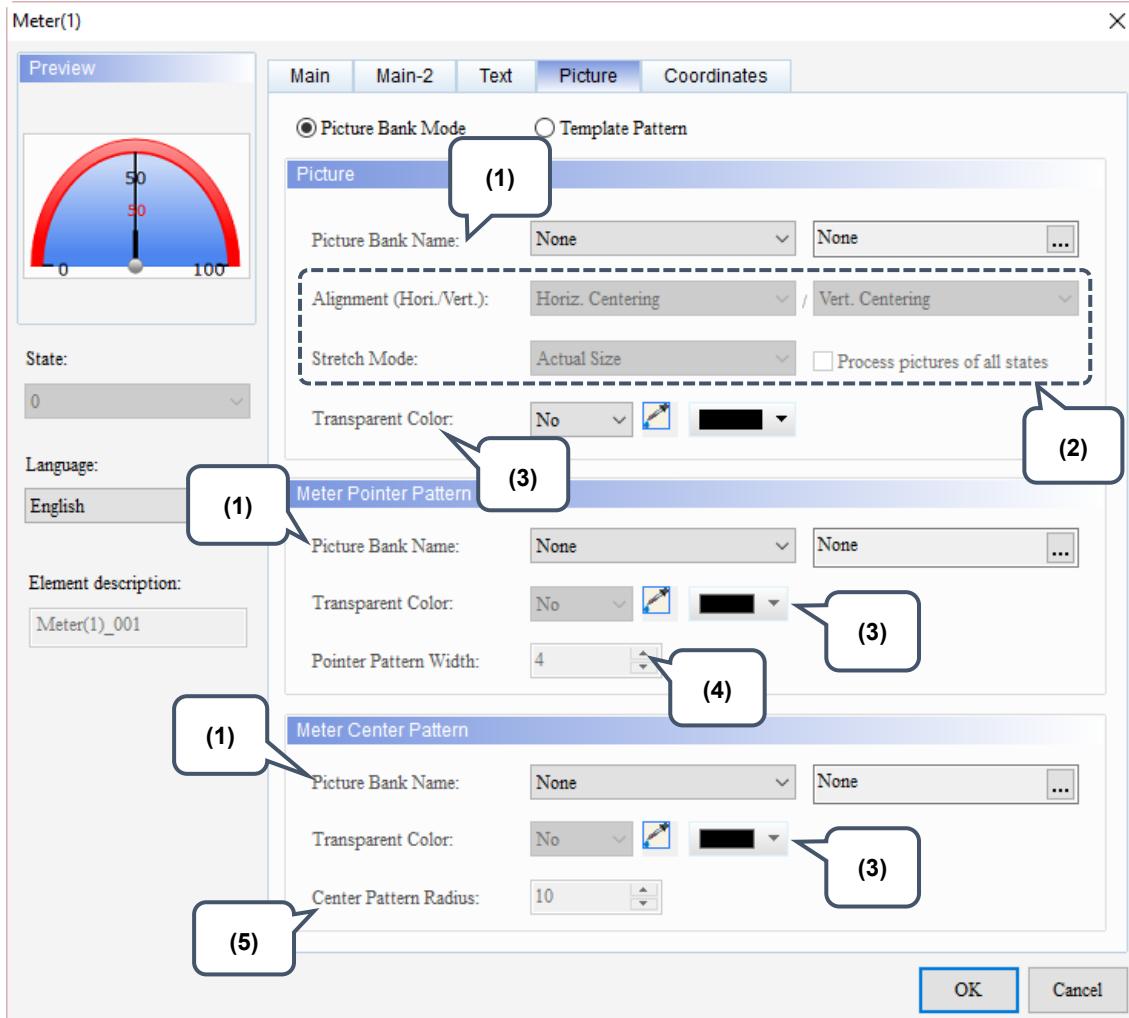


Figure 6.1.5 Picture property page for the Meter elements

The Picture page contains two modes, Template Pattern and Picture Bank Mode. When you create meter elements, the default is the Template Pattern mode, but you can select the display mode as required.

6

In Template Pattern mode, you can use the Template Wizard to define the meter template.

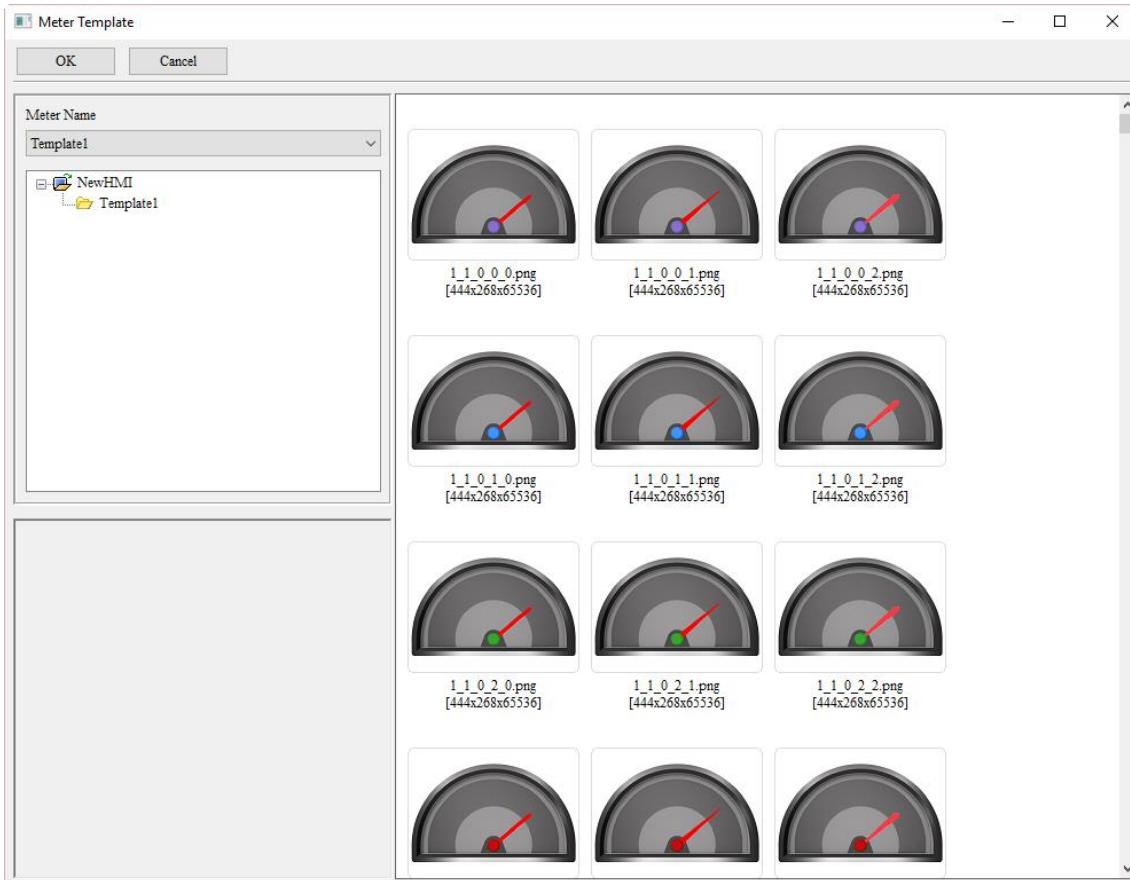
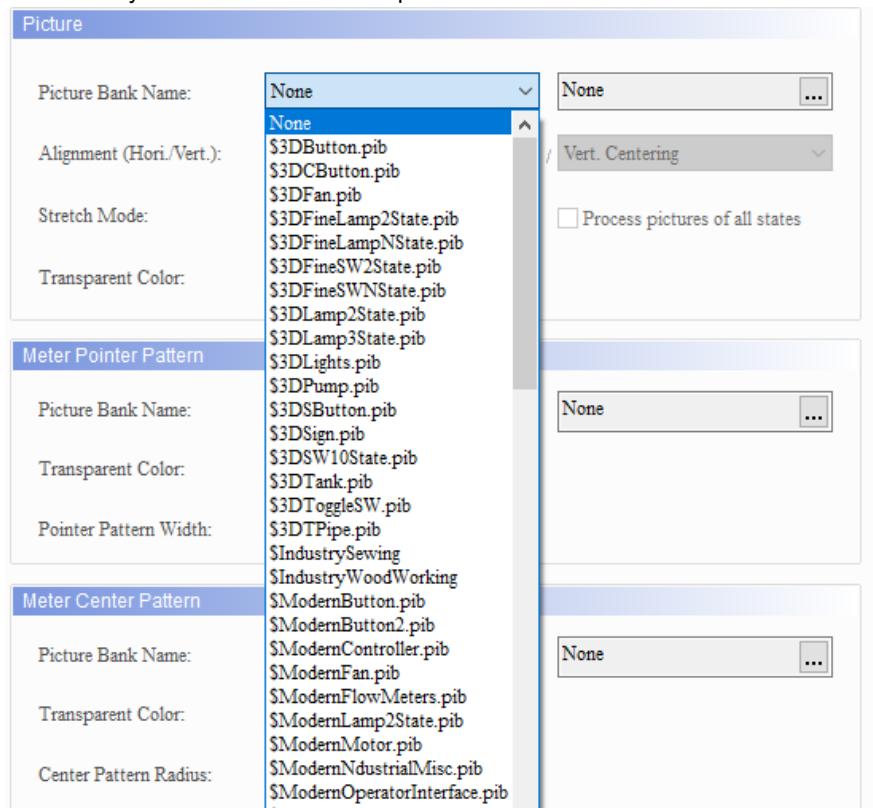
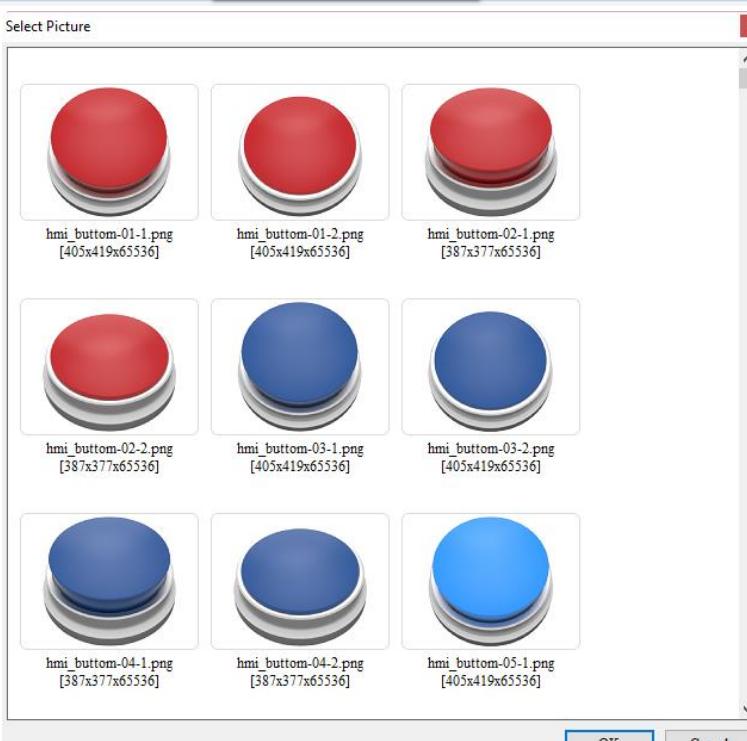
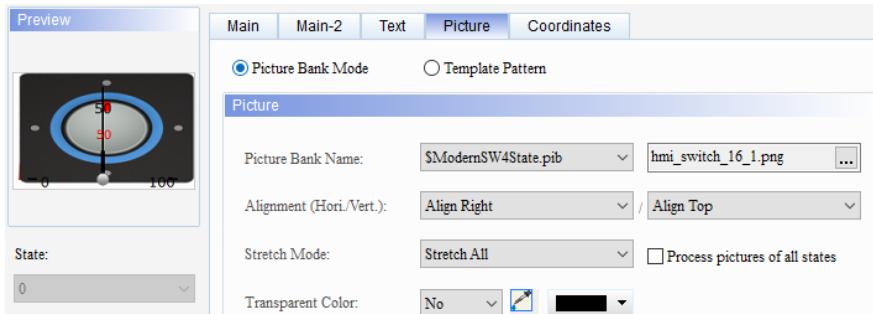
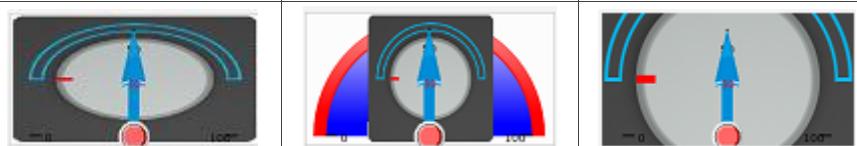


Figure 6.1.6 Meter element patterns - Template Wizard

No.	Property	Function description
(1)	Picture Bank Name	<ul style="list-style-type: none"> <li>The default for Picture Bank Name is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</li> <li>The Meter provides patterns of meters, meter pointers, and meter centers, which you can choose from the picture bank.</li> </ul>  

6

No.	Property	Function description						
	Alignment	<p>You can use the Alignment options to set how pictures are aligned.</p> 						
(2)	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center; padding: 2px;">Stretch All</th> <th style="text-align: center; padding: 2px;">Stretch 1:1</th> <th style="text-align: center; padding: 2px;">Actual Size</th> </tr> <tr> <td style="text-align: center; padding: 2px;"></td> <td style="text-align: center; padding: 2px;"></td> <td style="text-align: center; padding: 2px;"></td> </tr> </table> <p>If you select Stretch All, the picture fills the full element display area.</p> <p>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</p> <p>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</p>  <ul style="list-style-type: none"> <li>Assuming that the element has multiple states and some pictures do not fill the full element display area, if you select the check box for <b>Process pictures of all states</b>, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size			
Stretch All	Stretch 1:1	Actual Size						
(3)	Transparent Color	<ul style="list-style-type: none"> <li>Specify a color in the picture and turn this color into transparent.</li> <li>If you select the Transparent Color icon  and click the white part on the calendar, the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</li> </ul> <p style="text-align: center;">Foreground Color: </p> 						
(4)	Pointer Pattern Width	The default is 4. The setting range is 1 - 21.						
(5)	Center Pattern Radius	The default is 10. The setting range is 1 - 53.						

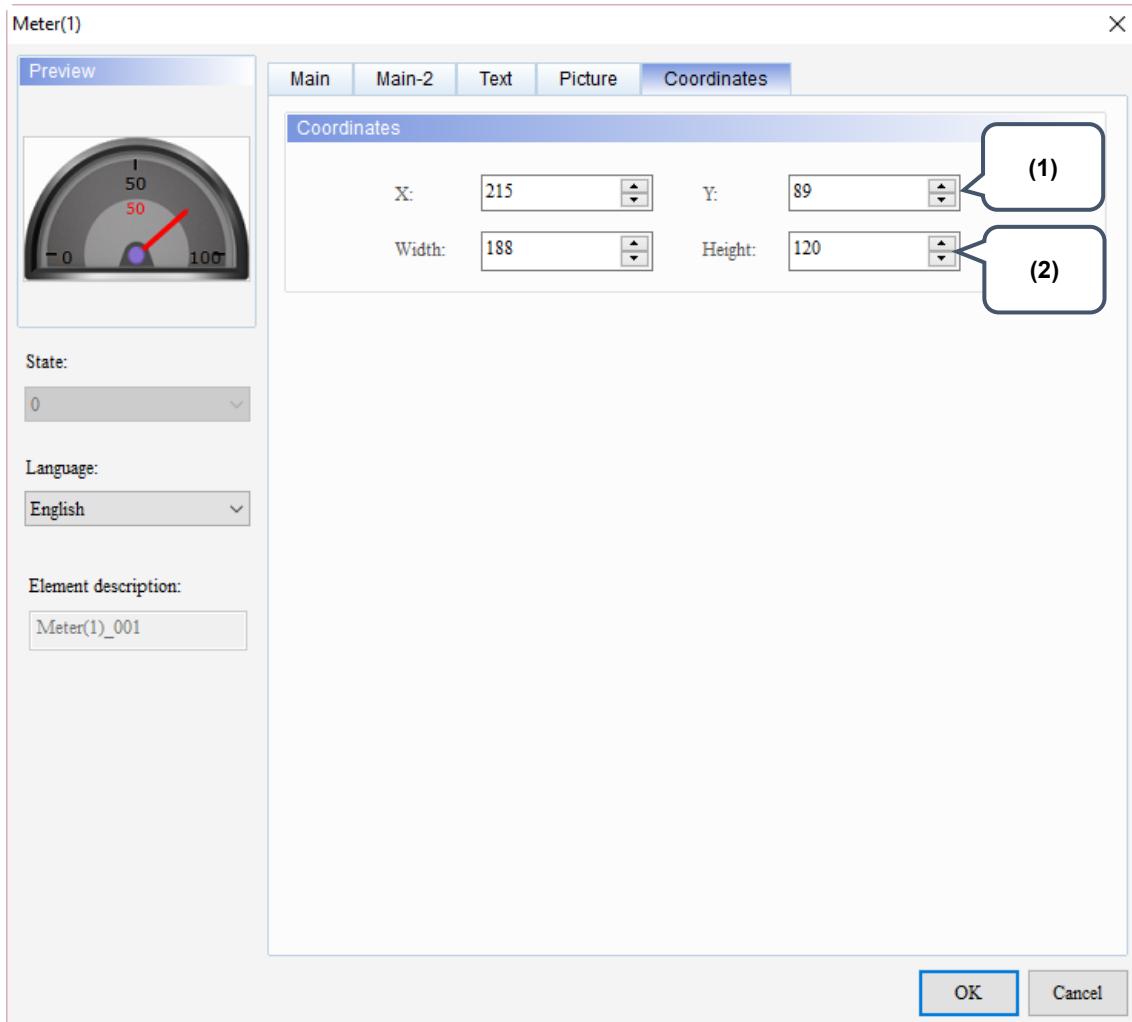
**■ Coordinates**

Figure 6.1.7 Coordinates property page for the Meter elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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# 6

# 7

## Bar Chart

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This chapter provides the usage and setting details for the Bar elements.

7.1 Normal bar .....	7-2
7.2 Differential bar .....	7-13

## 7.1 Normal bar

The Normal bar element displays the register values corresponding to the read addresses from minimum to maximum on the HMI. Like the case of Meter elements, you can define the memory addresses for the target value, and the upper and lower limits of the Normal bar elements, making the application more flexible and meet user requirements. You can also set the colors for the lower limit, upper limit, and target values to easily identify them with the set colors, as shown in Table 7.1.1. Refer to the following example descriptions.

Table 7.1.1 Normal bar element - identifying the upper and lower limits with colors

Using colors to identify the upper and lower limits				
	Low Range Color	Foreground Color	High Range Color	Background Color
Example (1)		100 200 300 400 500 		
			 ↑ Current value	
			 ↑ Lower limit	
			 ↑ Upper limit	
Example (2)		100 200 300 400 500 	  ----- ----- ----- -----	
			 ↑ Lower limit	
			 ↑ Current value	
			 ↑ Upper limit	
Example (3)		100 200 300 400 500 	  ----- ----- ----- -----	
			 ↑ Lower limit	
			 ↑ Upper limit	
			 ↑ Current value	

Table 7.1.2 Normal bar element example

Normal bar				
Read Address	\$1000			
Detail settings	Data Type	Data Format	Minimum	Maximum
	Word	Unsigned Decimal	0	1000
Target	Target color		Target value	
			500	
Range	Low Limit property		High Limit property	
	Low Range Color	Low Range value	High Range Color	High Range value
Clock Macro	*[&Clock Macro] *[Clock Macro] 1 \$1000 = \$1000 + 5 2 IF \$1000 > 1000 3 \$1000 = 0 4 ENDIF			
Example diagram of Normal bar element				
Execution results	 Value < 300: displays in green		 Value > 800: displays in red	
After editing the screen, download it to the HMI. Next, the HMI executes the program in the Clock Macro and displays the accumulation results on the Normal bar elements with the corresponding addresses.				

When you double-click the Normal bar element, the property page is shown as follows.

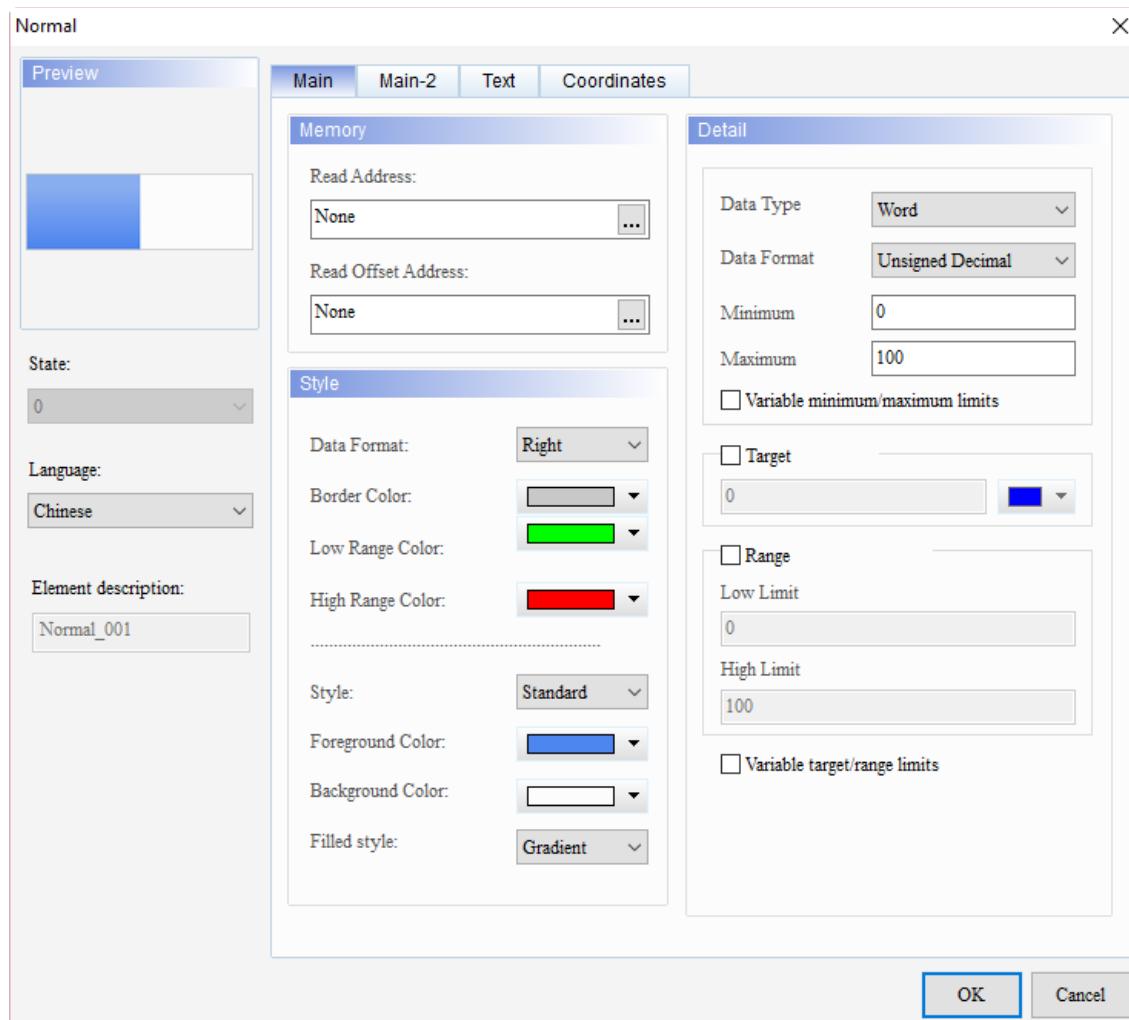


Figure 7.1.1 Properties of the Normal bar element

Table 7.1.3 Function page of Normal bar

Normal bar	
Function page	Description
Preview	Normal bar elements can only view multi-language data display and do not support multiple states.
Main	<ul style="list-style-type: none"> <li>■ Set the Read Address, Read Offset Address, Style, Foreground Color, Background Color, and Filled style.</li> <li>■ Set the Data Format, Border Color, Low Range Color, and High Range Color.</li> <li>■ Set the Data Type, Data Format, and Minimum / Maximum input value of the element, and select the check box for <b>Variable minimum/maximum limits</b>.</li> <li>■ Set whether to display the target value and select the check boxes for <b>Range</b> and <b>Variable target/range limits</b>.</li> </ul>
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Target Value Style.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Coordinates	Set the X and Y coordinates, width, and height of the element.

## ■ Main

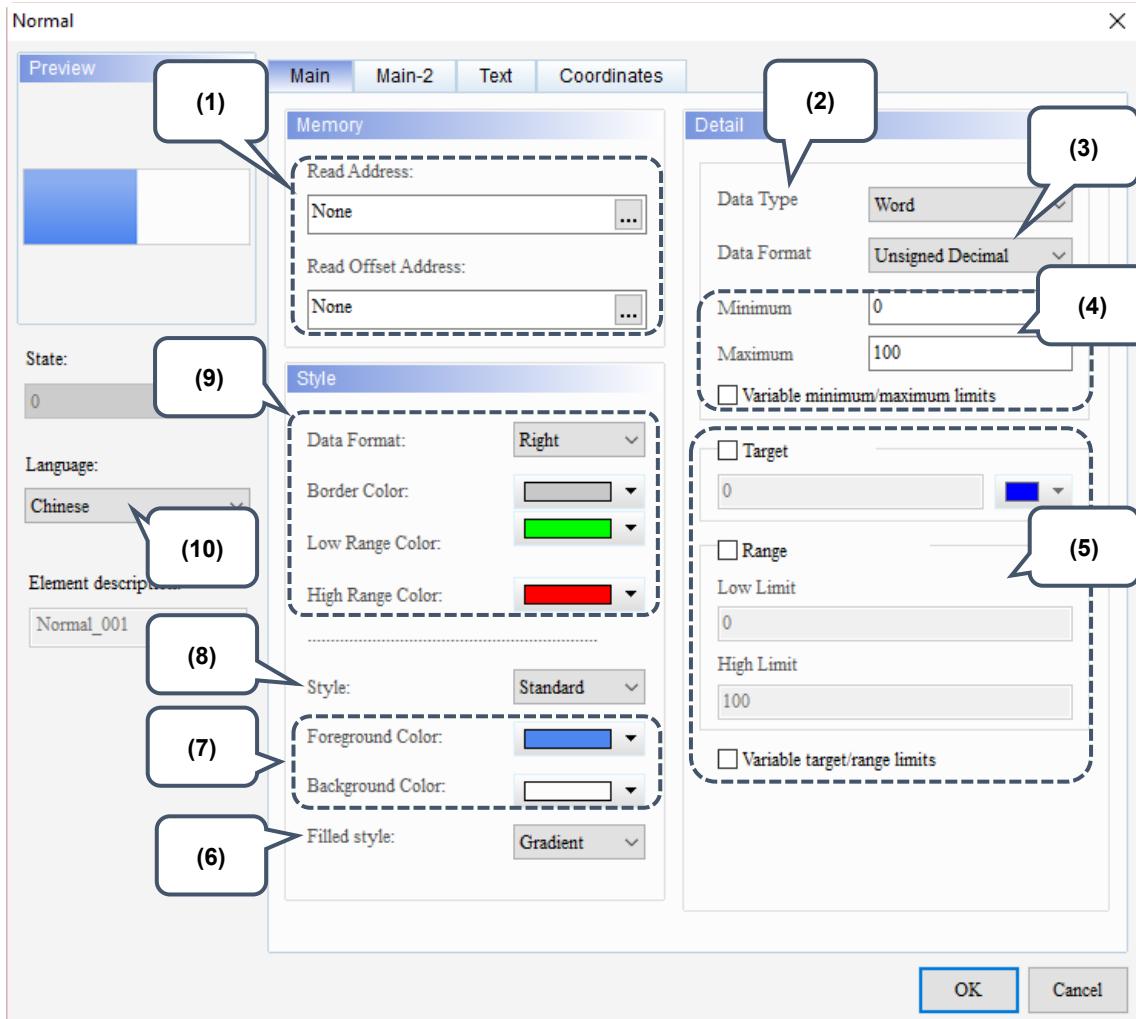
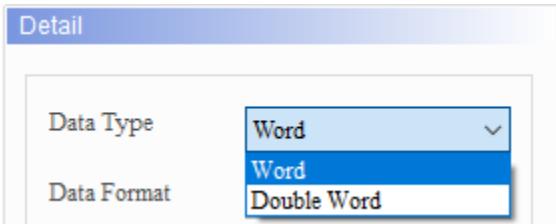
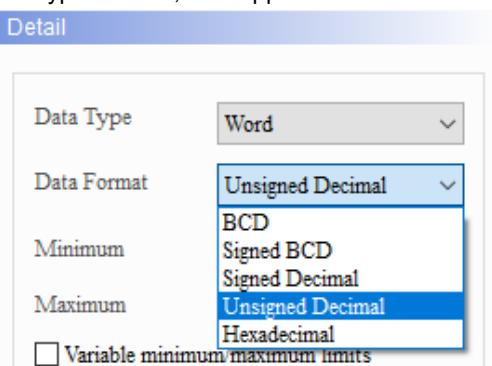
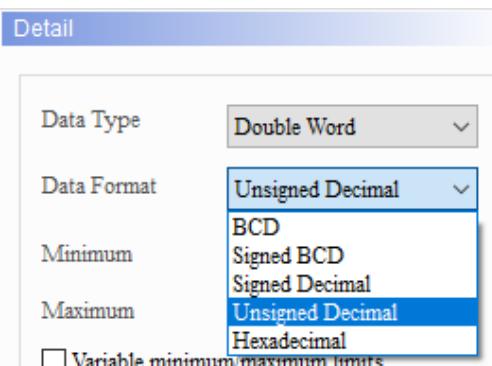
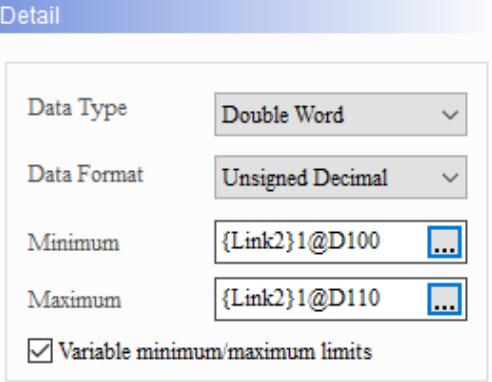
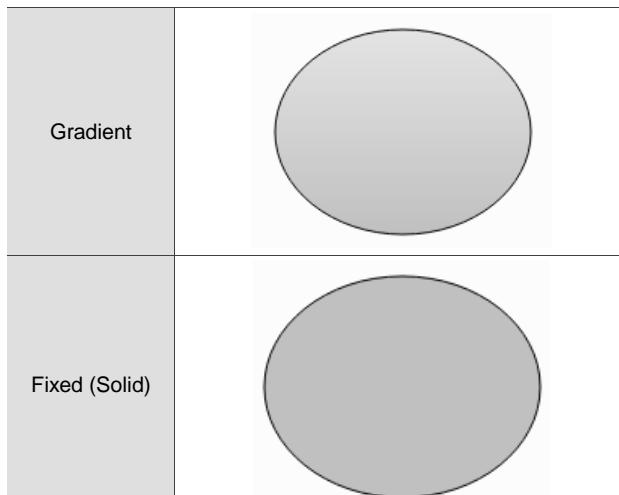
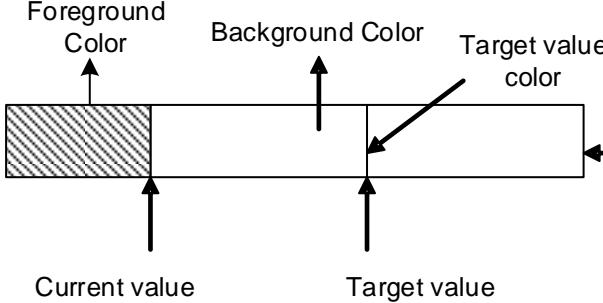
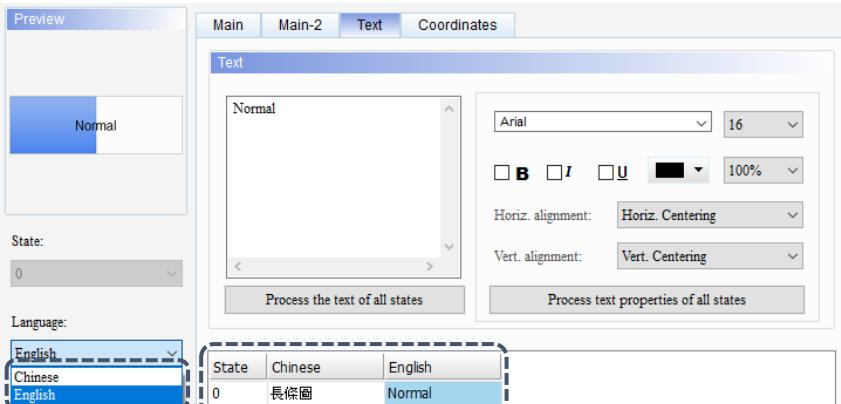
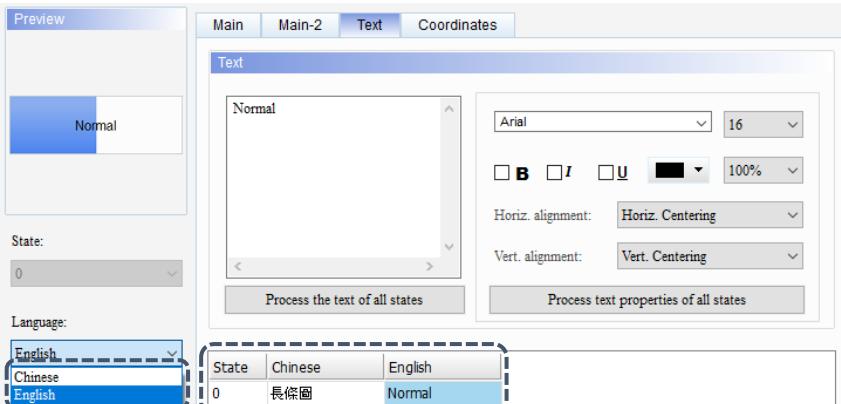


Figure 7.1.2 Main property page for the Normal bar element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>You can select the internal memory address or the controller register address.</li> <li>The input memory type has to be Word.</li> </ul>
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	<p>There are two data types: Word and Double Word.</p> 

No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> <li>When the Data Type is Word, the supported data formats are as follows:</li> </ul> 																									
	Minimum / Maximum input value	<ul style="list-style-type: none"> <li>When the Data Type is Double Word, the supported data formats are as follows:</li> </ul> 																									
(4)	Variable minimum/maximum limits	<p>The allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-99999999 to +99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFFFFFF</td> </tr> </tbody> </table> <p>Select this check box to set the memory addresses for the Minimum and Maximum values. Then, write the required values to the addresses.</p> 	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hexadecimal	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-99999999 to +99999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295	Hexadecimal	0 to 0xFFFFFFFF
Data Type	Data Format	Allowable range																									
Word	BCD	0 to 9999																									
	Signed BCD	-999 to +9999																									
	Signed Decimal	-32768 to +32767																									
	Unsigned Decimal	0 to 65535																									
	Hexadecimal	0 to 0xFFFF																									
Double Word	BCD	0 to 99999999																									
	Signed BCD	-99999999 to +99999999																									
	Signed Decimal	-2147483648 to +2147483647																									
	Unsigned Decimal	0 to 4294967295																									
	Hexadecimal	0 to 0xFFFFFFFF																									

No.	Property	Function description							
(5)	Display format	Target	If the <b>Variable target/range limits</b> check box is not selected, you can only enter a constant value to define the displaying target value on the Normal bar. You can also specify the displaying color.						
		Range	The Range includes the lower and upper limits. Like the case of the Target display, if the <b>Variable target/range limits</b> check box is not selected, you can only enter constant values to define the lower and upper limits of the Normal bar.						
		Variable target/range limits	If it is selected, you can define the memory addresses to dynamically change the displaying target value, and the lower and upper limit values.						
		Integer Digits	You can set the displaying number of integer digits and the number of decimal places.						
		Fractional (Digits)							
(6)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> 							
(7)	Foreground Color and Background Color	<p>Set the element foreground and background colors.</p> 							
(8)	Style (element style)	<p>The available element styles are Standard, Raised, and Sunken. You can change the appearance of the element with this setting.</p> <table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken				
Standard	Raised	Sunken							
									

No.	Property	Function description				
		Data format	Left	Right	Top	Bottom
(9)	Style property	Border Color				
		Low Range Color				
		High Range Color				
		When you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.				
(10)	Language					

## ■ Main-2

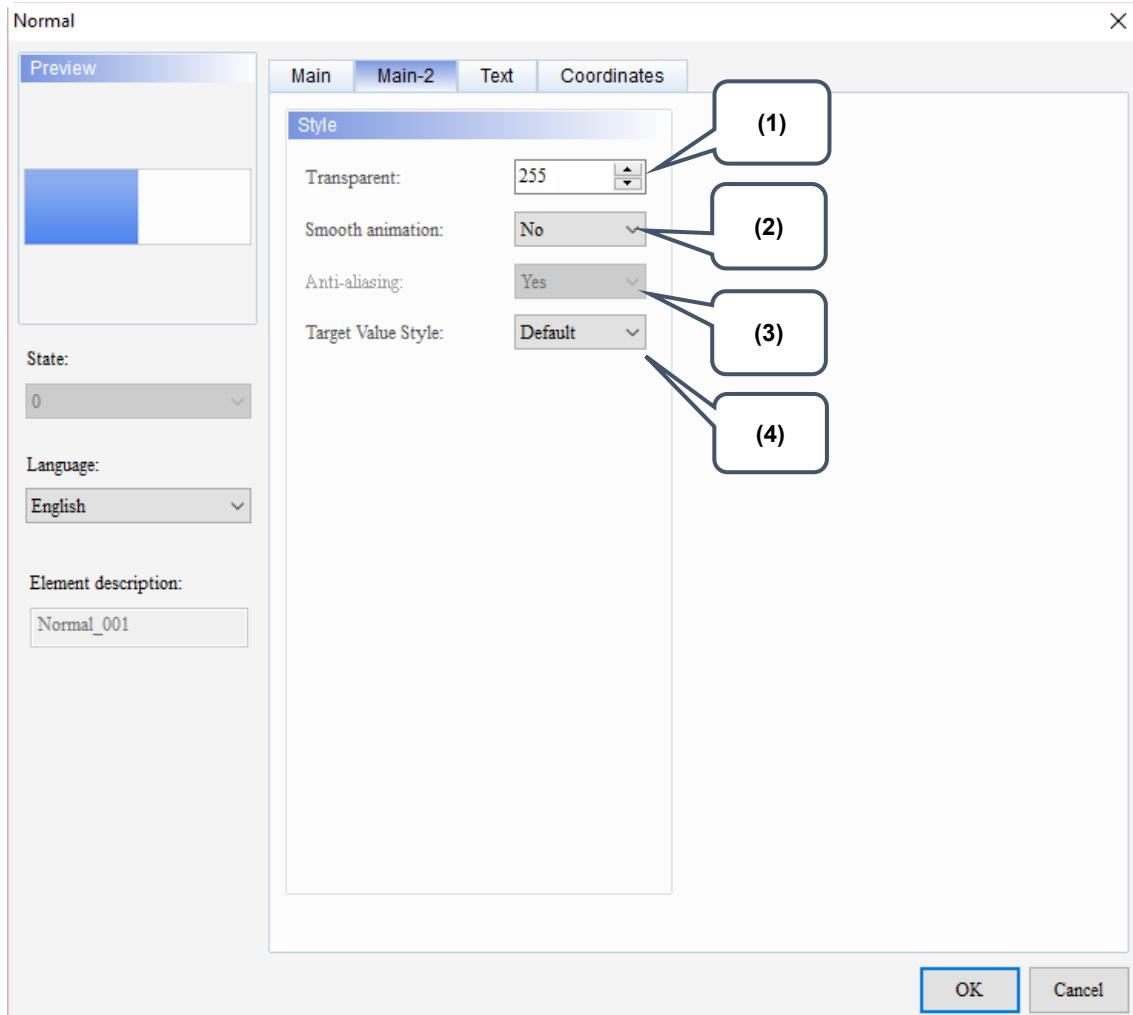


Figure 7.1.3 Main-2 property page for the Normal bar element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is available for this element. When this function is enabled, the element display becomes smoother.				
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.				
(4)	Target Value Style	<p>There are two display styles for the target value, Default and Style 1.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">Default</td> <td style="border-left: none; padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">Style 1</td> <td style="border-left: none; padding: 5px;"></td> </tr> </table>	Default		Style 1	
Default						
Style 1						

## ■ Text

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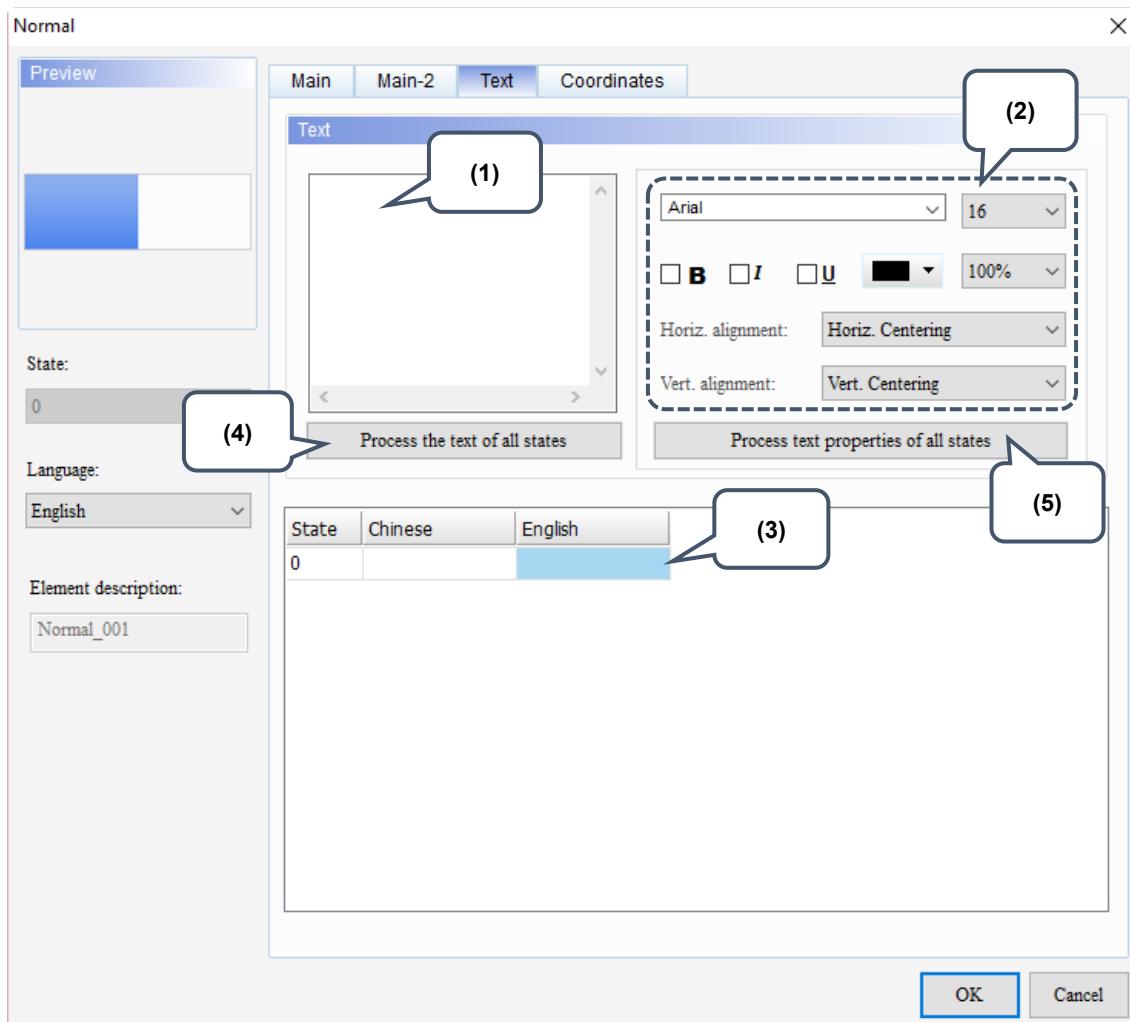
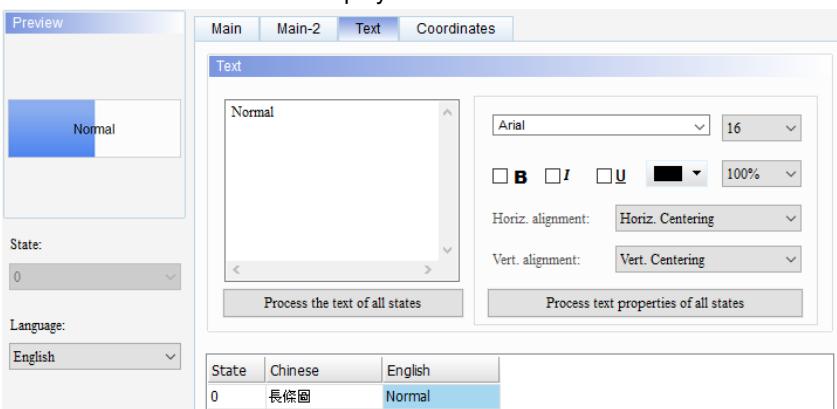
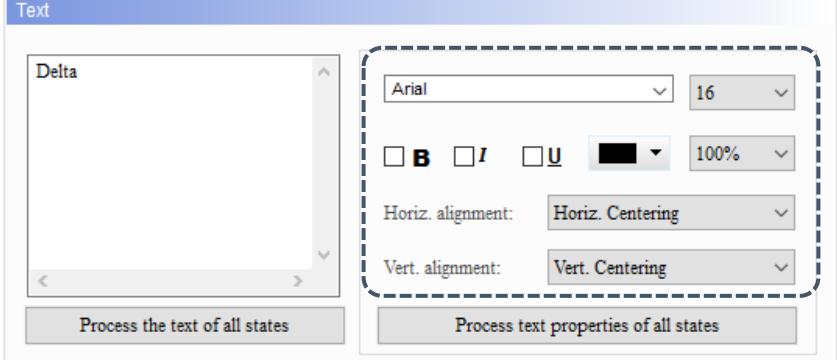


Figure 7.1.4 Text property page for the Normal bar element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul>  <p>The screenshot shows the 'Text' properties dialog. It includes a preview window showing a blue square labeled 'Normal'. Below it are settings for 'State' (0) and 'Language' (English). The main panel contains text input fields for 'Normal' state, with 'Font' set to Arial and 'Size' to 16. There are also checkboxes for bold (B), italic (I), underline (U), and a color swatch set to black at 100%. Alignment options include 'Horiz. alignment: Horiz. Centering' and 'Vert. alignment: Vert. Centering'. At the bottom are buttons for 'Process the text of all states' and 'Process text properties of all states'. A table below the main panel shows language mappings: State 0 (Chinese) is mapped to English (Normal).</p>
(2)	Text property	<ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key to start editing and entering the text.</li> </ul>
(3)	Edit multi-language text	If you have added multi-language data, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<ul style="list-style-type: none"> <li>This function batch changes all the texts into the text contents of the state you selected.</li> <li>Normal bar elements do not support multiple states, so this function is unavailable.</li> </ul>
(5)	Process text properties of all states	<ul style="list-style-type: none"> <li>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</li> </ul>  <p>The screenshot shows the 'Text' properties dialog for the 'Delta' state. It features a preview window for 'Delta' and a main panel with text input fields for 'Delta' state, identical to the first screenshot. A dashed red box highlights the font selection dropdown ('Arial'), font size dropdown ('16'), and the bold/italic/underline/align controls. Below these controls are 'Horiz. alignment: Horiz. Centering' and 'Vert. alignment: Vert. Centering'. At the bottom are buttons for 'Process the text of all states' and 'Process text properties of all states'.</p> <ul style="list-style-type: none"> <li>Normal bar elements do not support multiple states, so this function is not available.</li> </ul>

## ■ Coordinates

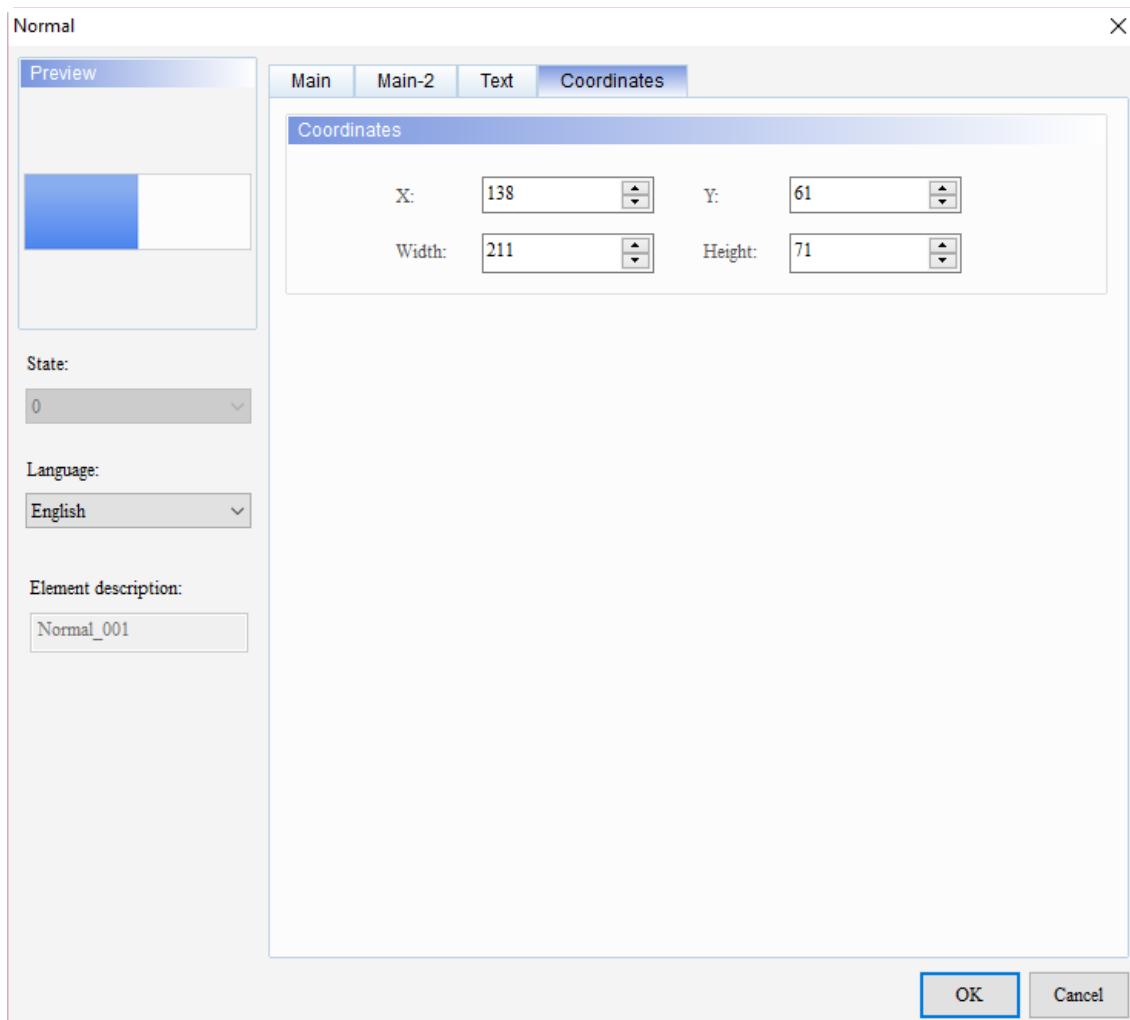


Figure 7.1.5 Coordinates property page for the Normal bar element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 7.2 Differential bar

The Differential bar displays the deviation between the value of the read address and the set target value on the HMI. Like the case of Normal bar elements, you can define the memory addresses for the target value, and the upper and lower limits of the Differential bar elements, making the application more flexible and meet user requirements, as shown in Table 7.2.1.

Table 7.2.1 Differential bar element - identifying the upper and lower limits with colors

Using colors to identify the upper and lower limits				
	Low Range Color	Foreground Color	High Range Color	Background Color
Example (1)		<p>100      200      300      400      500</p>	<p>Current value</p> <p>Range value</p> <p>Range value</p> <p>Deviation</p>	
Example (2)		<p>100      200      300      400      500</p>	<p>Current value</p> <p>Range value</p> <p>Range value</p> <p>Deviation</p>	
Example (3)		<p>100      200      300      400      500</p>	<p>Range value</p> <p>Range value</p> <p>Deviation</p> <p>Current value</p>	

Table 7.2.2 Differential bar element example

Differential bar										
	Differential bar element		Numeric Entry element							
Read Address	Read Address R:\$444	\$444	Write Address W:\$444	\$444						
Detail settings	Data Type Word	Data Format Unsigned Decimal	Minimum 0	Maximum 100						
Display Deviation	Deviation color 	Deviation value 25	Target value 50							
Example diagram of Differential bar element	<p style="text-align: center;">Foreground Color      Background Color</p> <p style="text-align: center;">Current value      Deviation</p>									
Execution results	<p>Compile and download the edited screen to the HMI. Then, enter the deviation value to the Numeric Entry element, and the Differential bar displays the deviation according to the input value.</p> <table border="1"> <tr> <td>When the value is within the range of <math>\pm 25</math>, it displays in deep red.</td> <td></td> <td></td> </tr> <tr> <td>When the value is out of the range of <math>\pm 25</math>, it displays in the foreground color.</td> <td></td> <td></td> </tr> </table>				When the value is within the range of $\pm 25$ , it displays in deep red.			When the value is out of the range of $\pm 25$ , it displays in the foreground color.		
When the value is within the range of $\pm 25$ , it displays in deep red.										
When the value is out of the range of $\pm 25$ , it displays in the foreground color.										

When you double-click the Differential bar element, the property page is shown as follows.

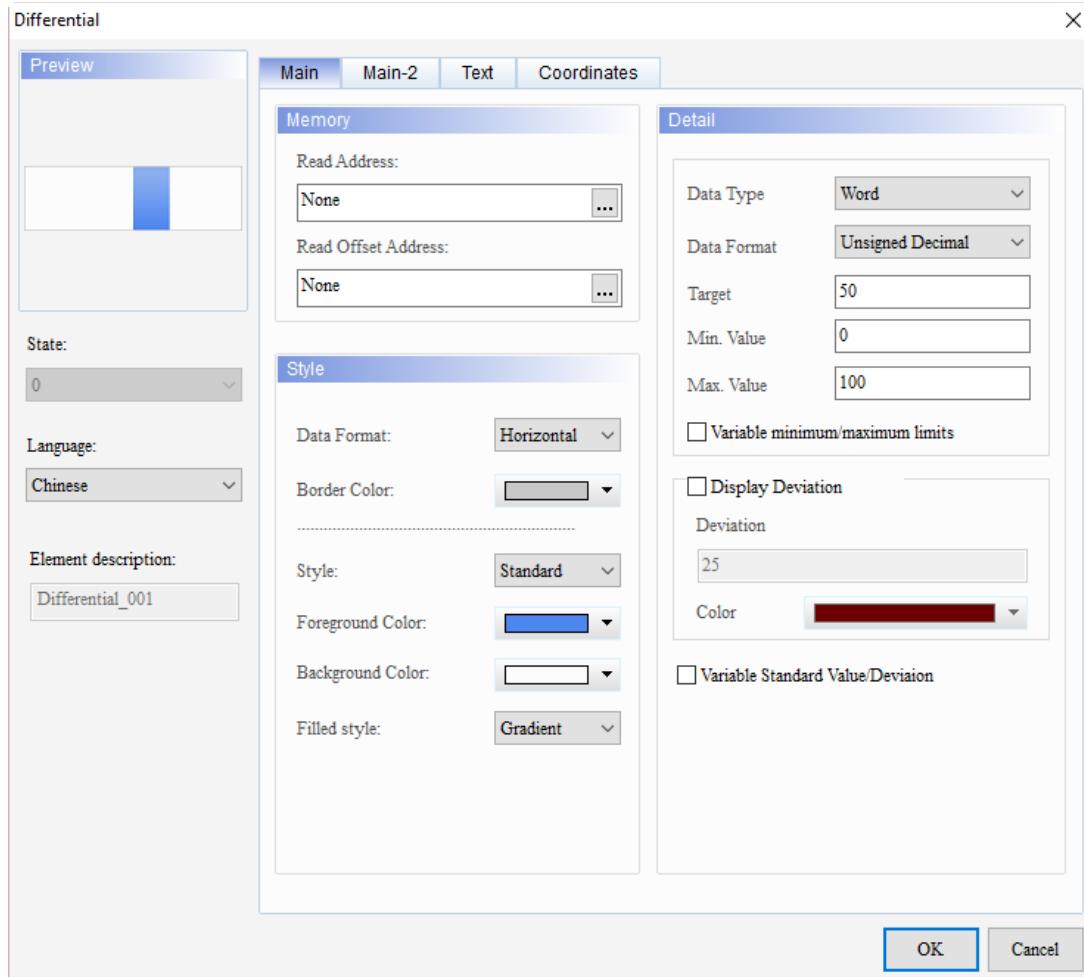


Figure 7.2.1 Properties of the Differential bar element

Table 7.2.3 Function page of Differential bar

Differential bar	
Function page	Description
Preview	Differential bar elements can only view multi-language data display and do not support multiple states.
Main	<ul style="list-style-type: none"> <li>■ Set the Read Address, Read Offset Address, Style, Foreground Color, Background Color, and Filled style.</li> <li>■ Set the Data Format and Border Color.</li> <li>■ Set the Data Type, Data Format, Target value, Minimum / Maximum input value of the element, and select the check box for <b>Variable minimum/maximum limits</b>.</li> <li>■ Set whether to display the deviation value and its color, and select the check box for <b>Variable Standard Value/Deviation</b>.</li> </ul>
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

## ■ Main

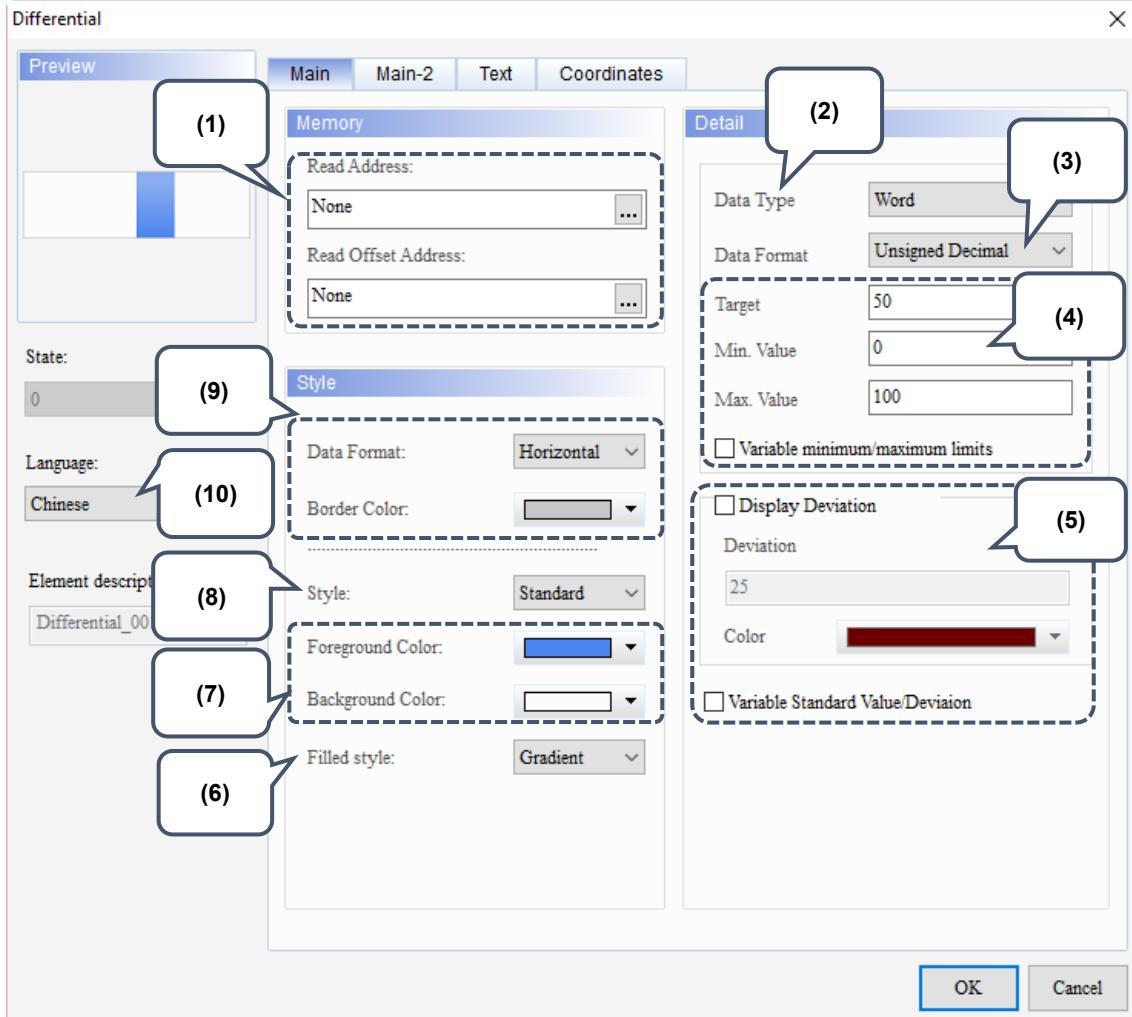
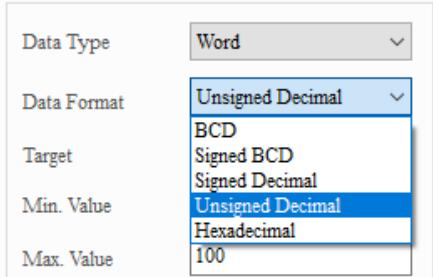
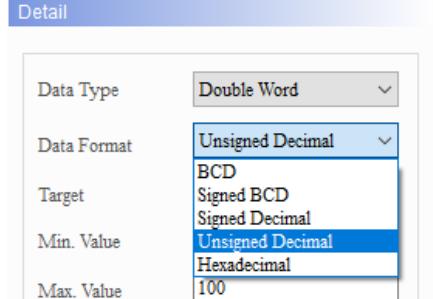
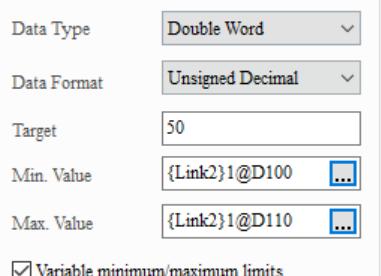


Figure 7.2.2 Main property page for the Differential bar element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>You can choose internal memory address or controller register address. The input memory type has to be Word.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	<p>There are two data types: Word and Double Word.</p>

No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> <li>When the Data Type is Word, the supported data formats are as follows:</li> </ul> <p><b>Detail</b></p>  <table border="1"> <tr><td>Data Type</td><td>Word</td></tr> <tr><td>Data Format</td><td>Unsigned Decimal</td></tr> <tr><td>Target</td><td></td></tr> <tr><td>Min. Value</td><td></td></tr> <tr><td>Max. Value</td><td>100</td></tr> </table> <ul style="list-style-type: none"> <li>When the Data Type is Double Word, the supported data formats are as follows:</li> </ul> <p><b>Detail</b></p>  <table border="1"> <tr><td>Data Type</td><td>Double Word</td></tr> <tr><td>Data Format</td><td>Unsigned Decimal</td></tr> <tr><td>Target</td><td></td></tr> <tr><td>Min. Value</td><td></td></tr> <tr><td>Max. Value</td><td>100</td></tr> </table>	Data Type	Word	Data Format	Unsigned Decimal	Target		Min. Value		Max. Value	100	Data Type	Double Word	Data Format	Unsigned Decimal	Target		Min. Value		Max. Value	100					
Data Type	Word																										
Data Format	Unsigned Decimal																										
Target																											
Min. Value																											
Max. Value	100																										
Data Type	Double Word																										
Data Format	Unsigned Decimal																										
Target																											
Min. Value																											
Max. Value	100																										
(4)	Minimum / Maximum input value	<p>The allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th><th>Data Format</th><th>Allowable range</th></tr> </thead> <tbody> <tr> <td rowspan="5">Word</td><td>BCD</td><td>0 to 9999</td></tr> <tr><td>Signed BCD</td><td>-999 to +9999</td></tr> <tr><td>Signed Decimal</td><td>-3278 to +32767</td></tr> <tr><td>Unsigned Decimal</td><td>0 to 65535</td></tr> <tr><td>Hexadecimal</td><td>0 to 0xFFFF</td></tr> <tr> <td rowspan="5">Double Word</td><td>BCD</td><td>0 to 99999999</td></tr> <tr><td>Signed BCD</td><td>-99999999 to +99999999</td></tr> <tr><td>Signed Decimal</td><td>-2147483648 to +2147483647</td></tr> <tr><td>Unsigned Decimal</td><td>0 to 4294697295</td></tr> <tr><td>Hexadecimal</td><td>0 to 0xFFFFFFFF</td></tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-3278 to +32767	Unsigned Decimal	0 to 65535	Hexadecimal	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-99999999 to +99999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294697295	Hexadecimal	0 to 0xFFFFFFFF
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	Hexadecimal	0 to 0xFFFFFFFF																									
	Variable minimum/maximum limits	<p>Select this check box to set the addresses for the Minimum and Maximum values. Then, write the required values to the addresses.</p> <p><b>Detail</b></p>  <table border="1"> <tr><td>Data Type</td><td>Double Word</td></tr> <tr><td>Data Format</td><td>Unsigned Decimal</td></tr> <tr><td>Target</td><td>50</td></tr> <tr><td>Min. Value</td><td>{Link2}1@D100</td></tr> <tr><td>Max. Value</td><td>{Link2}1@D110</td></tr> <tr><td><input checked="" type="checkbox"/> Variable minimum/maximum limits</td><td></td></tr> </table>	Data Type	Double Word	Data Format	Unsigned Decimal	Target	50	Min. Value	{Link2}1@D100	Max. Value	{Link2}1@D110	<input checked="" type="checkbox"/> Variable minimum/maximum limits														
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Max. Value	{Link2}1@D110																										
<input checked="" type="checkbox"/> Variable minimum/maximum limits																											
(5)	Display Deviation	<table border="1"> <tr> <td>Deviation</td><td>If the <b>Variable Standard Value/Deviation</b> check box is not selected, you can only input a constant value to define the deviation value of the Differential bar element. You can also set the displaying color of the deviation which lies within the range.</td></tr> <tr> <td>Variable Standard Value/Deviation</td><td>If it is selected, you can define the memory addresses to dynamically change the displaying target value and deviation value.</td></tr> </table>	Deviation	If the <b>Variable Standard Value/Deviation</b> check box is not selected, you can only input a constant value to define the deviation value of the Differential bar element. You can also set the displaying color of the deviation which lies within the range.	Variable Standard Value/Deviation	If it is selected, you can define the memory addresses to dynamically change the displaying target value and deviation value.																					
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Variable Standard Value/Deviation	If it is selected, you can define the memory addresses to dynamically change the displaying target value and deviation value.																										

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No.	Property	Function description						
(6)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <p>Gradient</p> <p>Fixed (Solid)</p>						
(7)	Foreground Color and Background Color	<p>Set the element foreground and background colors.</p> <p>Foreground Color      Background Color</p> <p>Border Color</p> <p>Current value      Deviation</p>						
(8)	Style (element style)	<p>The available element styles are Standard, Raised, and Sunken. You can change the appearance of the element with this setting.</p> <table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken			
Standard	Raised	Sunken						
(9)	Style property	<table border="1"> <tr> <td>Data format</td> <td>Horizontal</td> <td>Vertical</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> <p>Border Color</p> <p>You can set the border color to be displayed.</p>	Data format	Horizontal	Vertical			
Data format	Horizontal	Vertical						
(10)	Language	<p>When you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.</p> <p>Preview</p> <p>Main Main-2 Text Coordinates</p> <p>Differential</p> <p>Arial 16</p> <p>B I U 100%</p> <p>Horiz. alignment: Horiz. Centering</p> <p>Vert. alignment: Vert. Centering</p> <p>Process the text of all states</p> <p>Process text properties of all states</p> <p>State: 0</p> <p>Language: English Chinese English</p> <p>Element description: Differential</p>						

## ■ Main-2

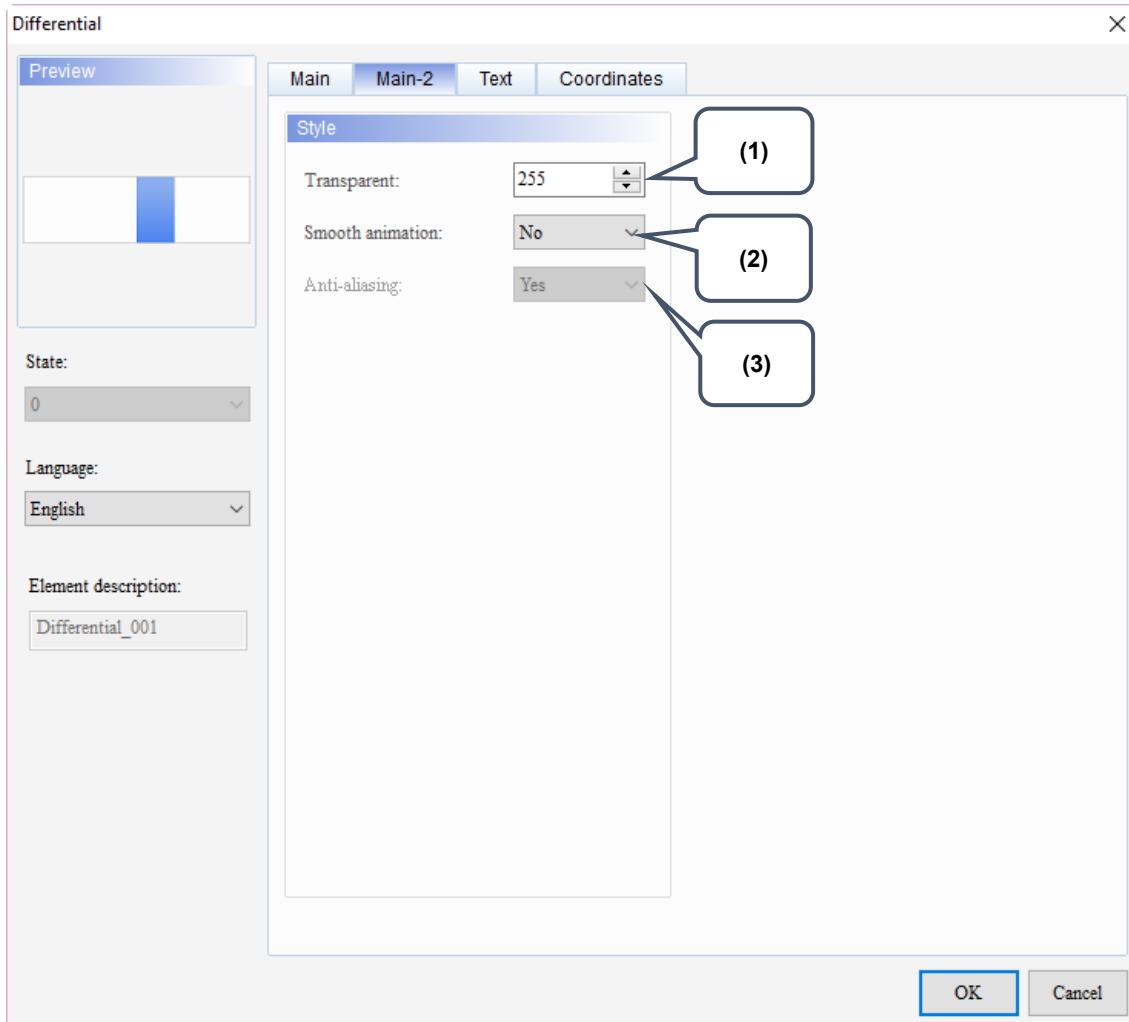


Figure 7.2.3 Main-2 property page for the Differential bar element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When this function is enabled, the element display becomes smoother.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

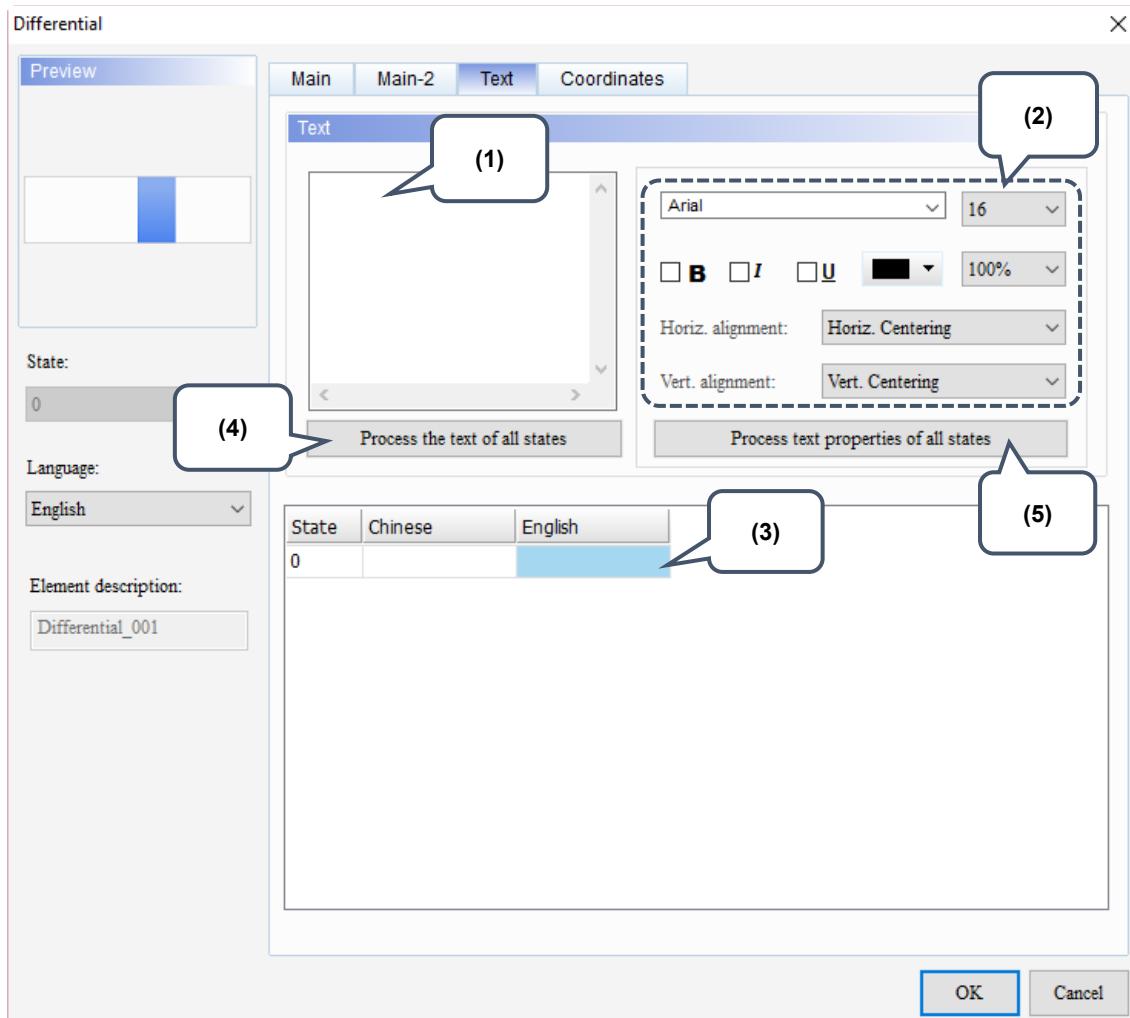
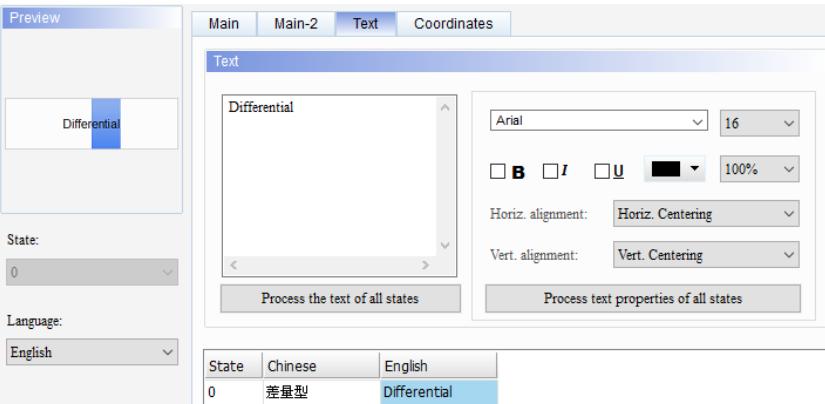
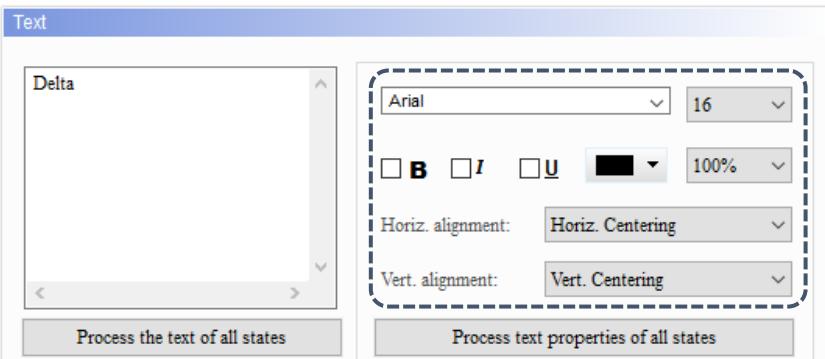


Figure 7.2.4 Text property page for the Differential bar element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul>  <p>The screenshot shows the 'Text' page with a preview window displaying the word 'Differential'. Below it are settings for State (0), Language (English), and a tab bar with State, Chinese, English, and 0 (差量型). On the right, there are controls for font (Arial, 16pt), bold/italic/underline, color, zoom (100%), horizontal alignment (Horiz. Centering), vertical alignment (Vert. Centering), and buttons for processing text across states.</p> <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key to start editing and entering the text.</li> </ul>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the Text property setting results.
(3)	Edit multi-language text	If you have added multi-language data, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<ul style="list-style-type: none"> <li>This function batch changes all the texts into the text contents of the state you selected.</li> <li>Differential bar elements do not support multiple states, so this function is unavailable.</li> </ul>
(5)	Process text properties of all states	<ul style="list-style-type: none"> <li>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</li> </ul>  <p>The screenshot shows the 'Text' page with a preview window displaying the word 'Delta'. Below it are settings for font (Arial, 16pt), bold/italic/underline, color, zoom (100%), horizontal alignment (Horiz. Centering), vertical alignment (Vert. Centering), and buttons for processing text across states. A dashed box highlights the 'Vert. alignment' dropdown set to 'Vert. Centering'.</p> <ul style="list-style-type: none"> <li>Differential bar elements do not support multiple states, so this function is unavailable.</li> </ul>

## ■ Coordinates

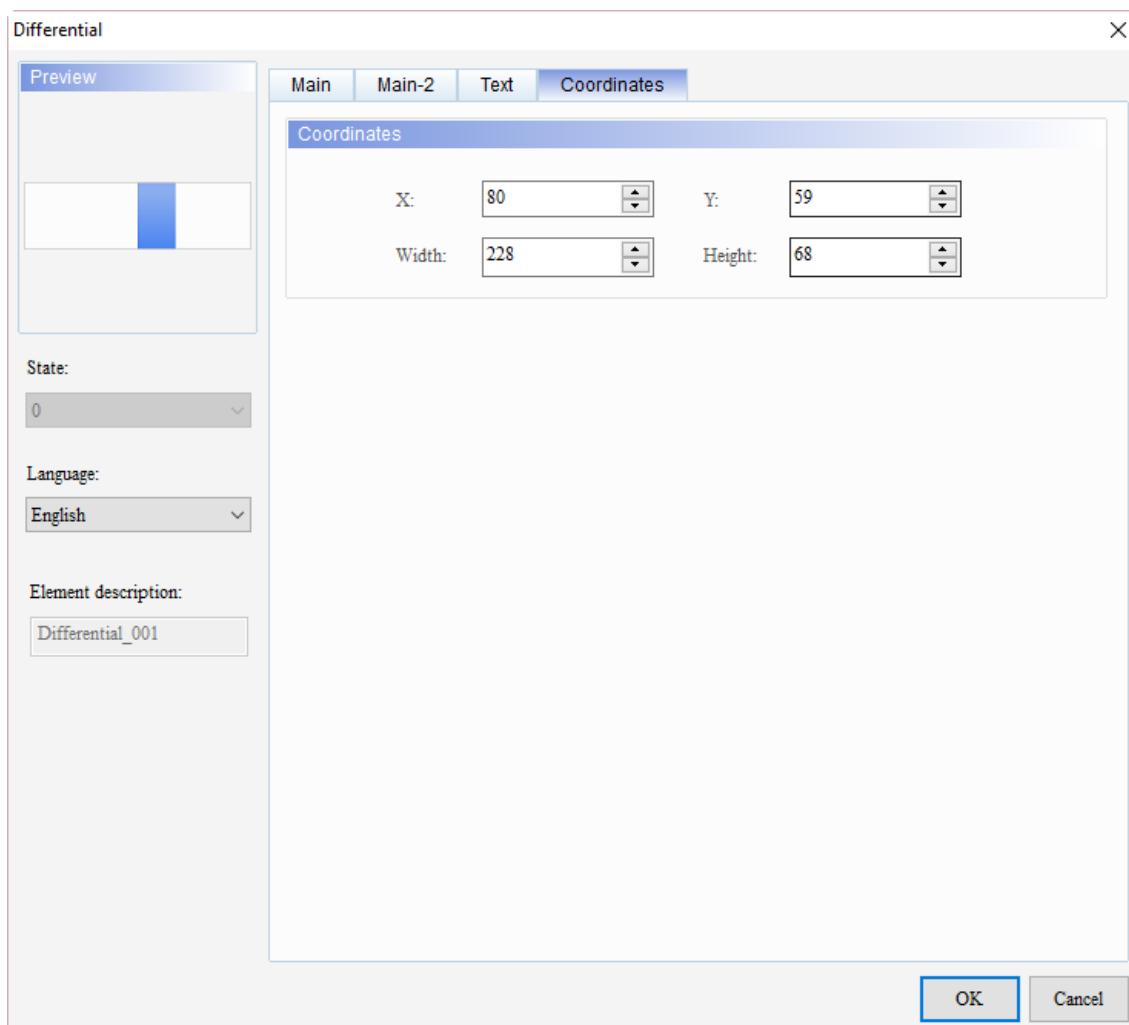


Figure 7.2.5 Coordinates property page for the Differential bar element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

# 8

## Pipe Chart

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This chapter provides the usage and setting details for the Pipe elements.

8.1	Pipe(1) / Pipe(2).....	8-2
8.2	Pipe(3) / Pipe(4) / Pipe(5).....	8-14
8.3	Pipe(6) / Pipe(7).....	8-19

## 8.1 Pipe(1) / Pipe(2)

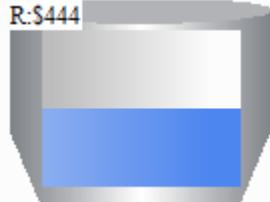
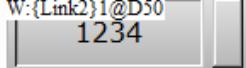
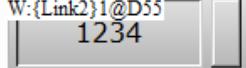
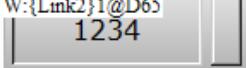
Pipe(1) and Pipe(2) differ in shapes but are the same in functions. The introduction of Pipe(1) is as follows. The software displays the Target value, lower limit, and upper limit set in the register corresponding to the read address on the Pipe element . Like the case of the Bar elements, you can define the memory addresses for the target value, lower and upper limits of the Pipe(1) element, making the application more flexible and meet user requirements, as shown in Table 8.1.1. You can set different colors for the lower limit, upper limit, and target value so users can easily identify them with the set colors.

Table 8.1.1 Pipe(1) / Pipe(2) elements - identifying the upper and lower limits with colors

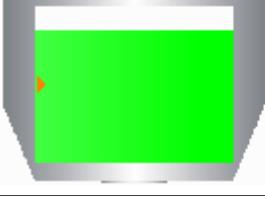
Using colors to identify the upper and lower limits				
	Low Range Color	Water Level Color	High Range Color	Cylinder Color
Example (1)				
Example (2)				
Example (3)				

The diagram illustrates three examples of Pipe(1) / Pipe(2) elements. Each example shows a cylinder with a current value bar and its upper and lower limits. In Example 1, the current value is solid black, the upper limit is white, and the lower limit is black. In Example 2, the current value is diagonal hatching, the upper limit is white, and the lower limit is black. In Example 3, the current value is horizontal stripes, the upper limit is diagonal hatching, and the lower limit is black.

Table 8.1.2 Pipe(1) element example

Pipe(1)				
	Pipe(1) element		Numeric Entry element	
Read Address	Read Address	\$444	Write Address	\$444
				
Detail settings	Data Type	Data Format	Minimum	Maximum
	Word	Unsigned Decimal	0	100
Select the check boxes for <b>Target</b> , <b>Range</b> , and <b>Variable target/range limits</b>	Target color		Target value	
			{Link2}1@D50	
	Low Limit property		High Limit property	
	Low Range Color	Low Range value	High Range Color	High Range value
		{Link2}1@D55		{Link2}1@D65
Create Numeric Entry elements	Numeric Entry element		Numeric Entry element	
	Write Address	{Link2}1@D50	Write Address	{Link2}1@D55
	Target Value		Low Limit Value	
				
	High Limit Value			

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Pipe(1)			
	Target Value	Low Limit Value	High Limit Value
Execution results	Target	<p>Enter 50 for Target Value and the displaying color is orange.</p> 	
	Low Limit	<p>Enter 15 for \$444, which is smaller than the Low Limit Value of 20, so the displaying color is yellow.</p>  15	
	High Limit	<p>Enter 85 for \$444, which is greater than the High Limit Value of 80, so the displaying color is green.</p>  85	

When you double-click the Pipe(1) element, the property page is shown as follows.

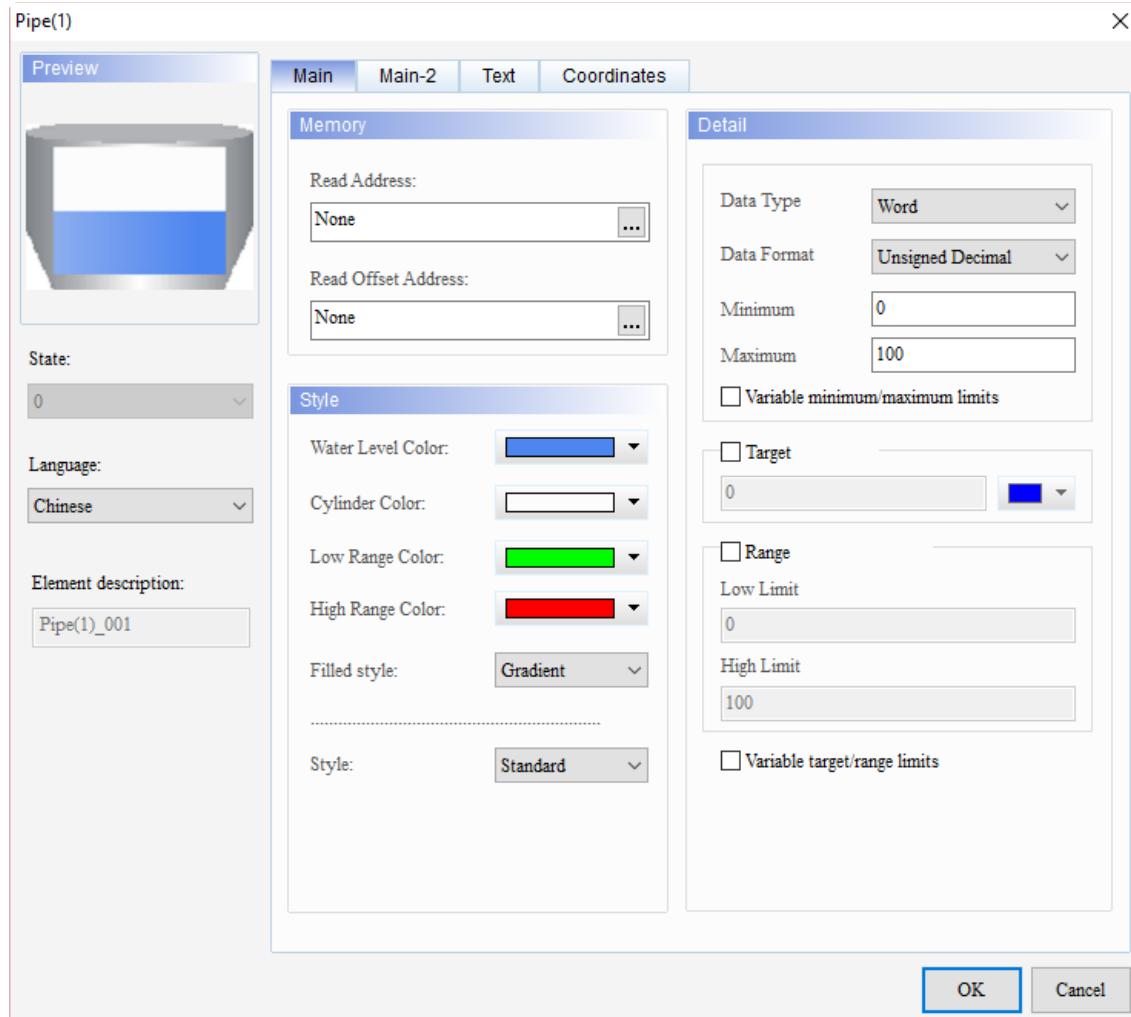


Figure 8.1.1 Properties of Pipe(1) element

Table 8.1.3 Function page of Pipe(1)

Pipe(1)	
Function page	Description
Preview	Pipe elements are only for viewing multi-language data display and do not support multiple states.
Main	Set the Read Address, Read Offset Address, and Style of the element. Set the Water Level Color, Cylinder Color, Low Range Color, High Range Color, and Filled style. Set the Data Type, Data Format, Minimum / Maximum input value for the element, and select the check box for <b>Variable minimum/maximum limits</b> . Set whether to display the target value and its color, and select the check boxes for <b>Range</b> and <b>Variable target/range limits</b> .
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Target Value Style.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

8

## ■ Main

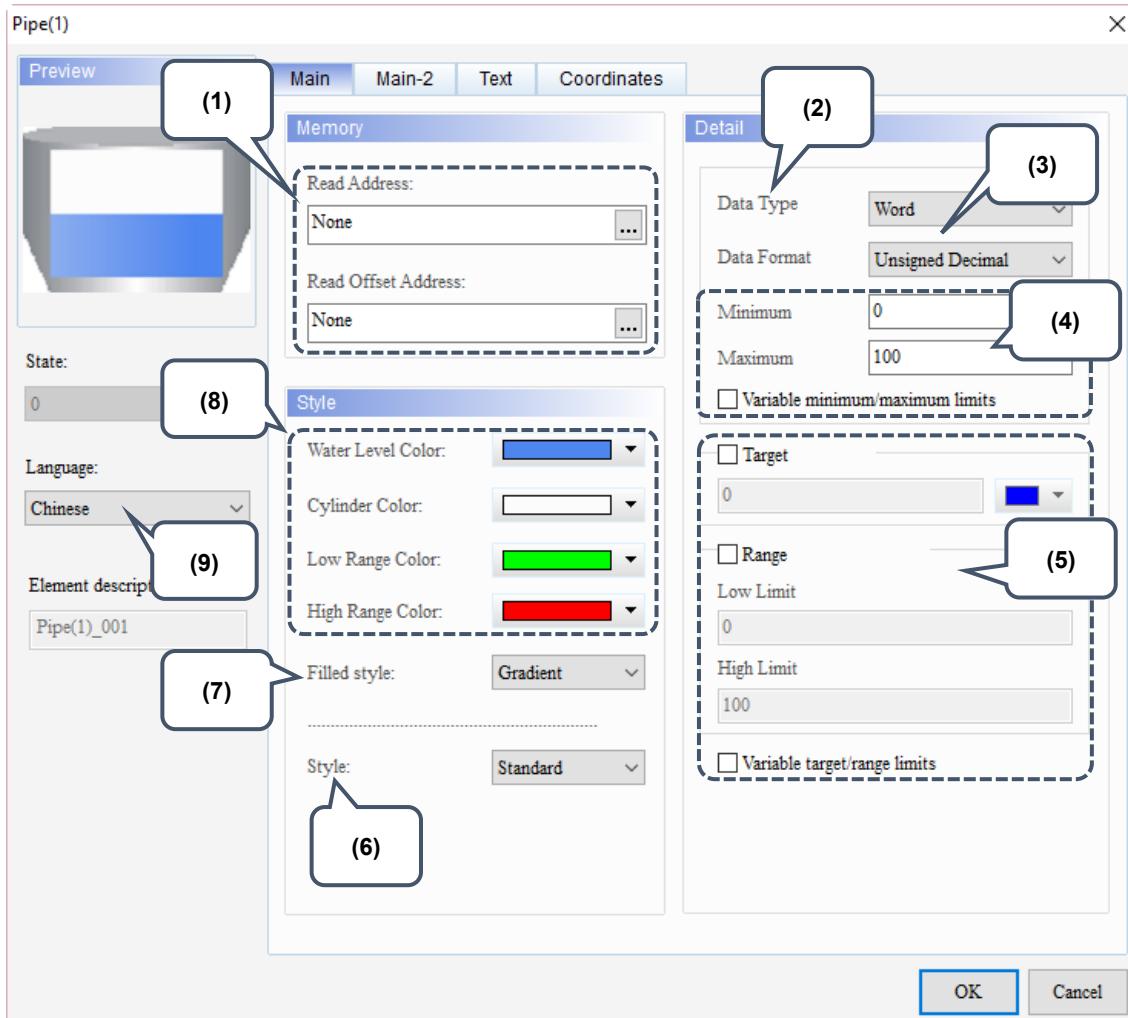
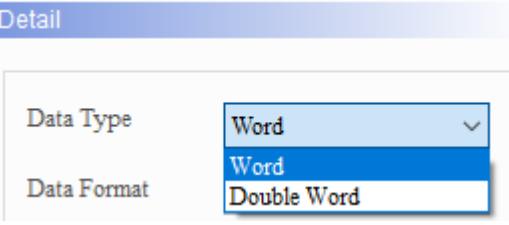
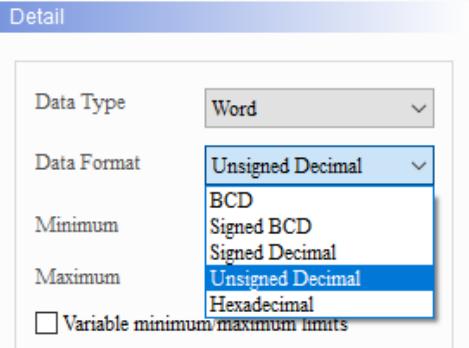
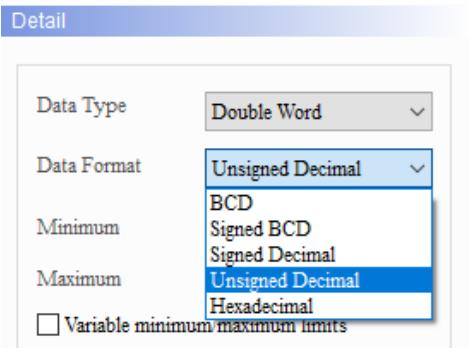
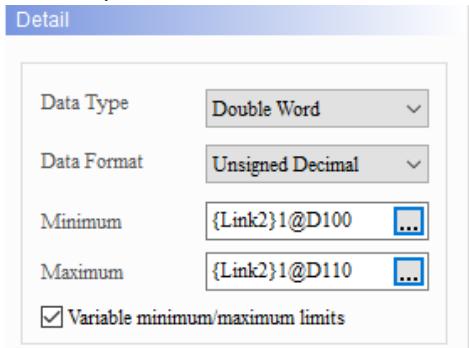
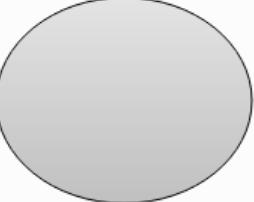
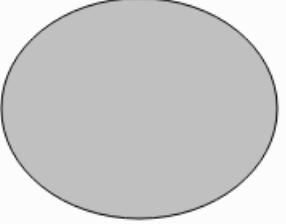
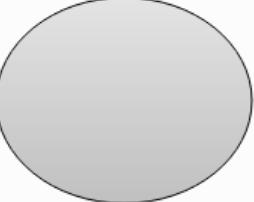
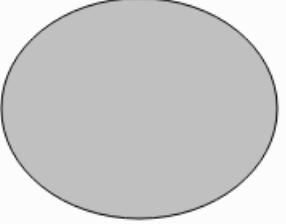
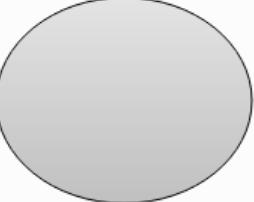
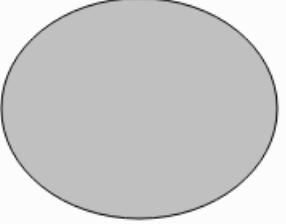
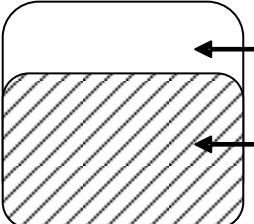


Figure 8.1.2 Main property page for the Pipe(1) element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>You can choose internal memory address or controller register address. The input memory type has to be Word.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	<p>There are two data types: Word and Double Word.</p> 

No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> <li>When the Data Type is Word, the supported Data Formats are as follows:</li> </ul> 																									
		<ul style="list-style-type: none"> <li>When the Data Type is Double Word, the supported data formats are as follows:</li> </ul> 																									
(4)	Minimum / Maximum input value	<p>The allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-99999999 to +99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFFFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hexadecimal	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-99999999 to +99999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295	Hexadecimal	0 to 0xFFFFFFFF
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	Hexadecimal	0 to 0xFFFF																									
Double Word	BCD	0 to 99999999																									
	Signed BCD	-99999999 to +99999999																									
	Signed Decimal	-2147483648 to +2147483647																									
	Unsigned Decimal	0 to 4294967295																									
	Hexadecimal	0 to 0xFFFFFFFF																									
	Variable minimum/maximum limits	<p>Select this check box to set the addresses for the Minimum and Maximum values. Then, write the required values to the addresses.</p> 																									

No.	Property	Function description									
(5)	Display format	Target	If the <b>Variable target/range limits</b> check box is not selected, you can only enter a constant value to define the displaying target value on the pipe chart. You can also specify the displaying color.								
		Range	The Range includes the lower and upper limits. Like the case of the Target display, if the <b>Variable target/range limits</b> check box is not selected, you can only enter constant values to define the lower and upper limits of the pipe chart.								
		Variable target/range limits	If it is selected, you can define the memory addresses to dynamically change the displaying target value, and the lower and upper limit values.								
(6)	Style (element style)	The available element styles are Standard and Rotation 180. You can change the appearance of the element with this setting.									
		<table border="1" style="width: 100%; text-align: center;"> <tr> <td>Standard</td> <td>Rotation180</td> </tr> </table> 		Standard	Rotation180						
Standard	Rotation180										
(7)	Filled style	The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.									
		<table border="1" style="width: 100%; text-align: center;"> <tr> <td>Gradient</td> <td></td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>			Gradient		Fixed (Solid)				
Gradient											
Fixed (Solid)											
(8)	Style property	 <p>Cylinder Color</p> <p>Water Level Color</p>									
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Water Level Color</td> <td>You can define the Water Level Color to be displayed.</td> </tr> <tr> <td>Cylinder Color</td> <td>You can define the Cylinder Color to be displayed.</td> </tr> <tr> <td>Low Range Color</td> <td>You can define the low range color to be displayed. Refer to Table 8.1.1.</td> </tr> <tr> <td>High Range Color</td> <td>You can define the high range color to be displayed. Refer to Table 8.1.1.</td> </tr> </table>		Water Level Color	You can define the Water Level Color to be displayed.	Cylinder Color	You can define the Cylinder Color to be displayed.	Low Range Color	You can define the low range color to be displayed. Refer to Table 8.1.1.	High Range Color	You can define the high range color to be displayed. Refer to Table 8.1.1.
Water Level Color	You can define the Water Level Color to be displayed.										
Cylinder Color	You can define the Cylinder Color to be displayed.										
Low Range Color	You can define the low range color to be displayed. Refer to Table 8.1.1.										
High Range Color	You can define the high range color to be displayed. Refer to Table 8.1.1.										

No.	Property	Function description						
(9)	Language	<p>When you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.</p> <p>Preview</p> <p>Main Main-2 Text Coordinates</p> <p>Text</p> <p>Pipe</p> <p>Arial 16</p> <p><input type="checkbox"/> B <input type="checkbox"/> I <input type="checkbox"/> U <input type="checkbox"/> <span style="color: black;">100%</span></p> <p>Horiz. alignment: Horiz. Centering</p> <p>Vert. alignment: Vert. Centering</p> <p>Process the text of all states Process text properties of all states</p> <table border="1"><thead><tr><th>State</th><th>Chinese</th><th>English</th></tr></thead><tbody><tr><td>0</td><td>管状圆</td><td>Pipe</td></tr></tbody></table>	State	Chinese	English	0	管状圆	Pipe
State	Chinese	English						
0	管状圆	Pipe						

8

## ■ Main-2

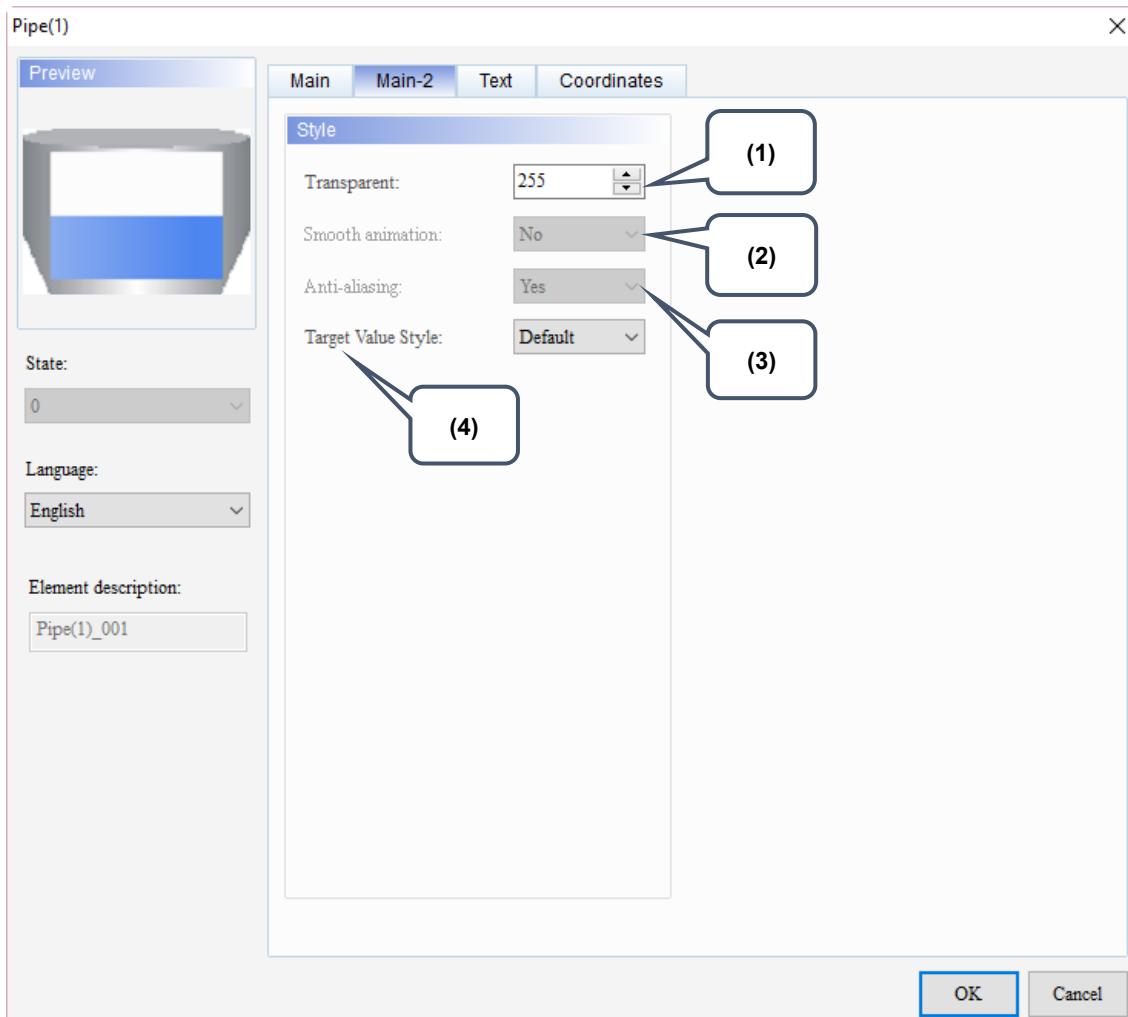


Figure 8.1.3 Main-2 property page for the Pipe(1) element

No.	Property	Function description								
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.								
(2)	Smooth animation	The Smooth animation function is not available for this element.								
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.								
(4)	Target Value Style	<p>There are two display styles for the target value, Default and Style 1.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">Default</td> <td style="background-color: blue; width: 40%; height: 40px;"></td> <td style="width: 20px;"></td> <td style="width: 40%; height: 40px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">Style 1</td> <td style="background-color: blue; width: 40%; height: 40px;"></td> <td style="width: 20px; vertical-align: middle; text-align: center;"> </td> <td style="width: 40%; height: 40px;"></td> </tr> </table>	Default				Style 1			
Default										
Style 1										

## ■ Text

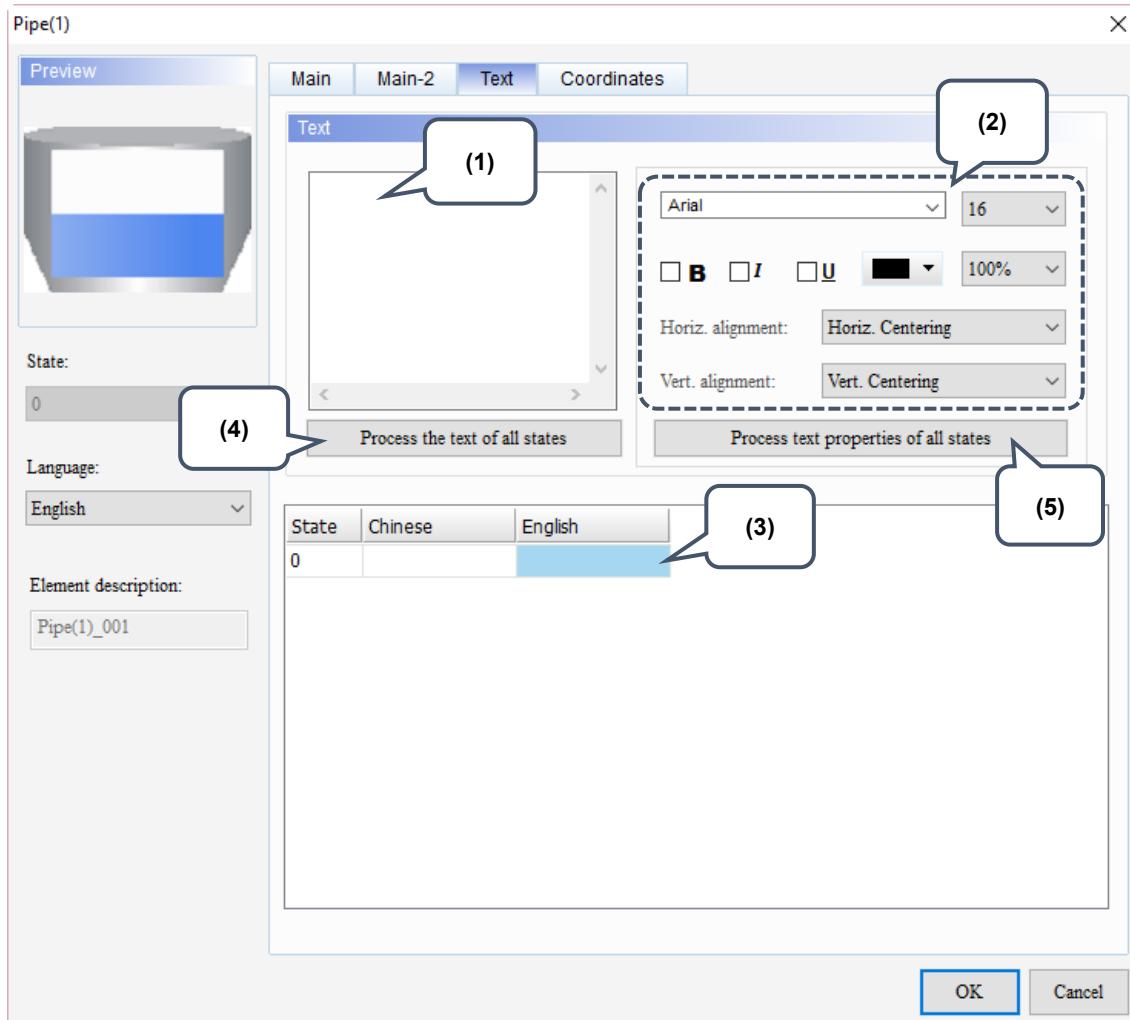
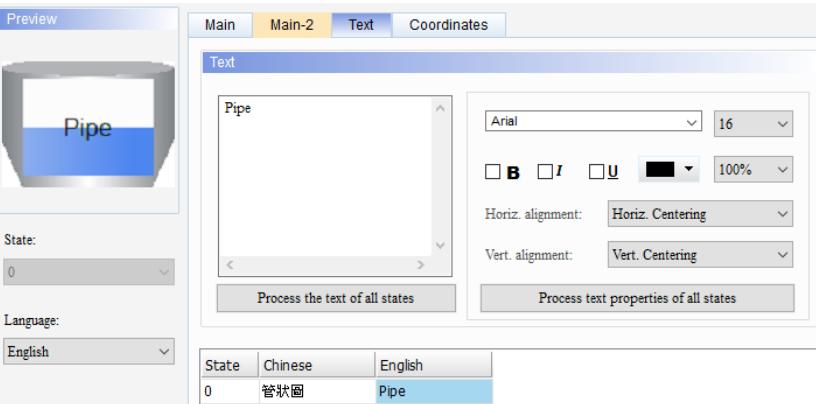
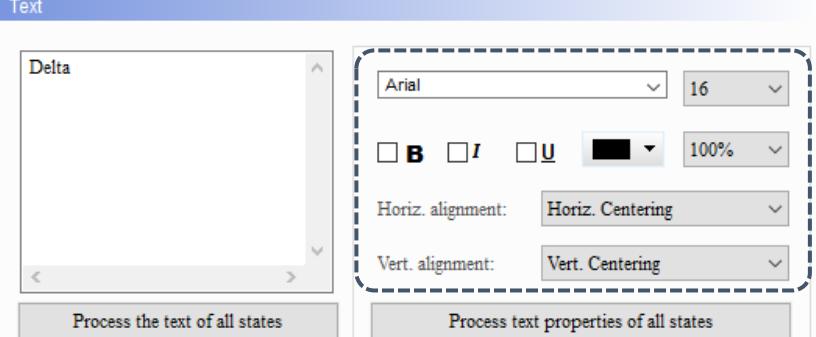


Figure 8.1.4 Text property page for the Pipe(1) element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul>  <p>The screenshot shows the Text page interface. It includes a Preview section with a 3D pipe model containing the text "Pipe". Below it are dropdown menus for State (0) and Language (English). A table at the bottom maps Chinese characters (管状圖) to English words (Pipe). On the right, there's a main panel with font settings (Arial, 16pt), bold/italic/underline checkboxes, and alignment options (Horiz. alignment: Horiz. Centering, Vert. alignment: Vert. Centering). Buttons for "Process the text of all states" and "Process text properties of all states" are also present.</p>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	<ul style="list-style-type: none"> <li>This function batch changes all the texts into the text contents of the state you selected.</li> <li>Pipe(1) / Pipe(2) elements do not support multiple states, so this function is unavailable.</li> </ul>
(5)	Process text properties of all states	<ul style="list-style-type: none"> <li>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</li> </ul>  <p>The screenshot shows the Text page interface again. It includes a preview of a "Delta" symbol and its properties. A dashed box highlights the font settings (Arial, 16pt) and alignment options (bold/italic/underline checkboxes, 100% zoom, Horiz. alignment: Horiz. Centering, Vert. alignment: Vert. Centering). Buttons for "Process the text of all states" and "Process text properties of all states" are also present.</p> <ul style="list-style-type: none"> <li>Pipe(1) and Pipe(2) elements do not support multiple states, so this function is unavailable.</li> </ul>

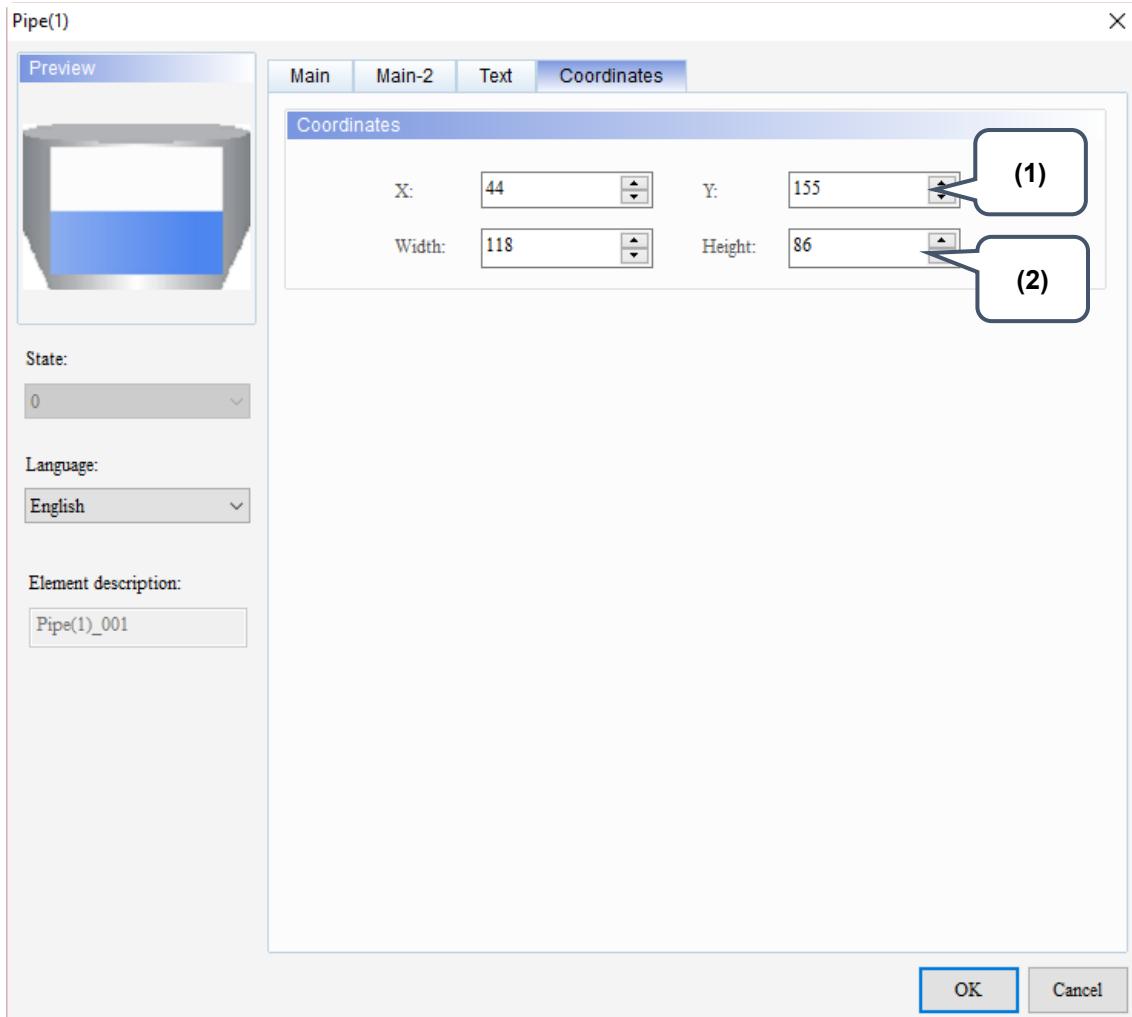
**■ Coordinates**

Figure 8.1.5 Coordinates property page for the Pipe(1) element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 8.2 Pipe(3) / Pipe(4) / Pipe(5)

Pipe(3) / Pipe(4) / Pipe(5) are mainly for connecting Pipe(1) / Pipe(2) / Pipe(6) / Pipe(7).

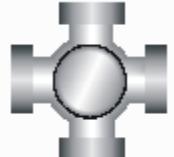
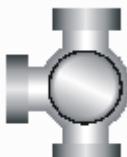
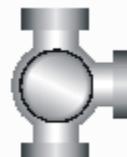
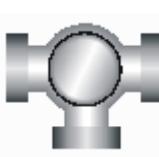
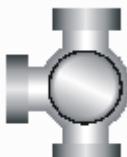
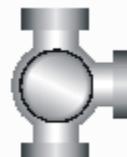
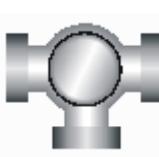
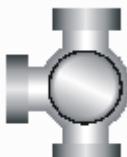
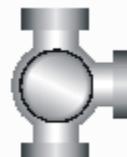
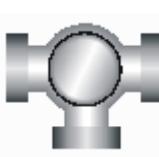
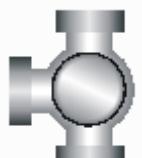
Therefore, these three pipe charts have no parameters for read / write addresses or numeric value setting. You can only set the displaying pipe diameter and rotation angle.

Table 8.2.1 Function page of Pipe(3) / Pipe(4) / Pipe(5)

Pipe(3) / Pipe(4) / Pipe(5)	
Function page	Description
Preview	These three elements are mainly for connecting to other pipe charts; they have only one state without multi-language text for editing.
Main	Set the Pipe Diameter and Style of the element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates of the element.

■ Main

Table 8.2.2 Display style of Pipe(3) / Pipe(4) / Pipe(5)

Main property page of Pipe(3) / Pipe(4) / Pipe(5)											
	<p>The Pipe Diameter ranges from 1 to 5.</p> <p>Pipe(3)</p> 										
Pipe(3)	<p>Preview</p> <p>Main Main-2 Coordinates</p> <p>Style</p> <p>Pipe Diameter:</p> <table border="1"> <tr><td>2</td></tr> <tr><td>1</td></tr> <tr><td>2</td></tr> <tr><td>3</td></tr> <tr><td>4</td></tr> <tr><td>5</td></tr> </table> <p>State:</p> <p>0</p>			2	1	2	3	4	5		
2											
1											
2											
3											
4											
5											
	<ul style="list-style-type: none"> <li>■ The Pipe Diameter ranges from 1 to 5.</li> <li>■ The available element styles are Standard, Rotation 90, Rotation 180, and Rotation 270. You can change the appearance of the element with this setting.</li> </ul> <table border="1"> <tr> <td>Standard</td> <td>Rotation 90</td> <td>Rotation 180</td> <td>Rotation 270</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>			Standard	Rotation 90	Rotation 180	Rotation 270				
Standard	Rotation 90	Rotation 180	Rotation 270								
											
Pipe(4)	<p>Pipe(4)</p> 										
	<p>Preview</p> <p>Main Main-2 Coordinates</p> <p>Style</p> <p>Pipe Diameter:</p> <p>2</p> <p>Style:</p> <table border="1"> <tr><td>Standard</td></tr> <tr><td>Standard</td></tr> <tr><td>Rotation 90</td></tr> <tr><td>Rotation 180</td></tr> <tr><td>Rotation 270</td></tr> </table> <p>State:</p> <p>0</p>			Standard	Standard	Rotation 90	Rotation 180	Rotation 270			
Standard											
Standard											
Rotation 90											
Rotation 180											
Rotation 270											

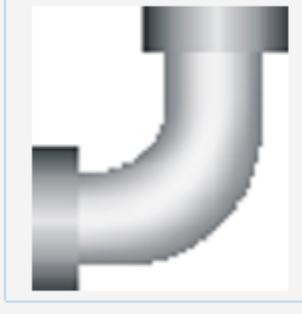
8

**Main property page of Pipe(3) / Pipe(4) / Pipe(5)**

■ The Pipe Diameter ranges from 1 to 5.  
■ The available element styles are Standard, Rotation 90, Rotation 180, and Rotation 270. You can change the appearance of the element with this setting.

Standard	Rotation 90	Rotation 180	Rotation 270
			

Pipe(5)  


Pipe(5)  
  
Main Main-2 Coordinates  
Style  
Pipe Diameter: 2  
Style: Standard  
Standard  
Rotation 90  
Rotation 180  
Rotation 270  
State: 0

## ■ Main-2

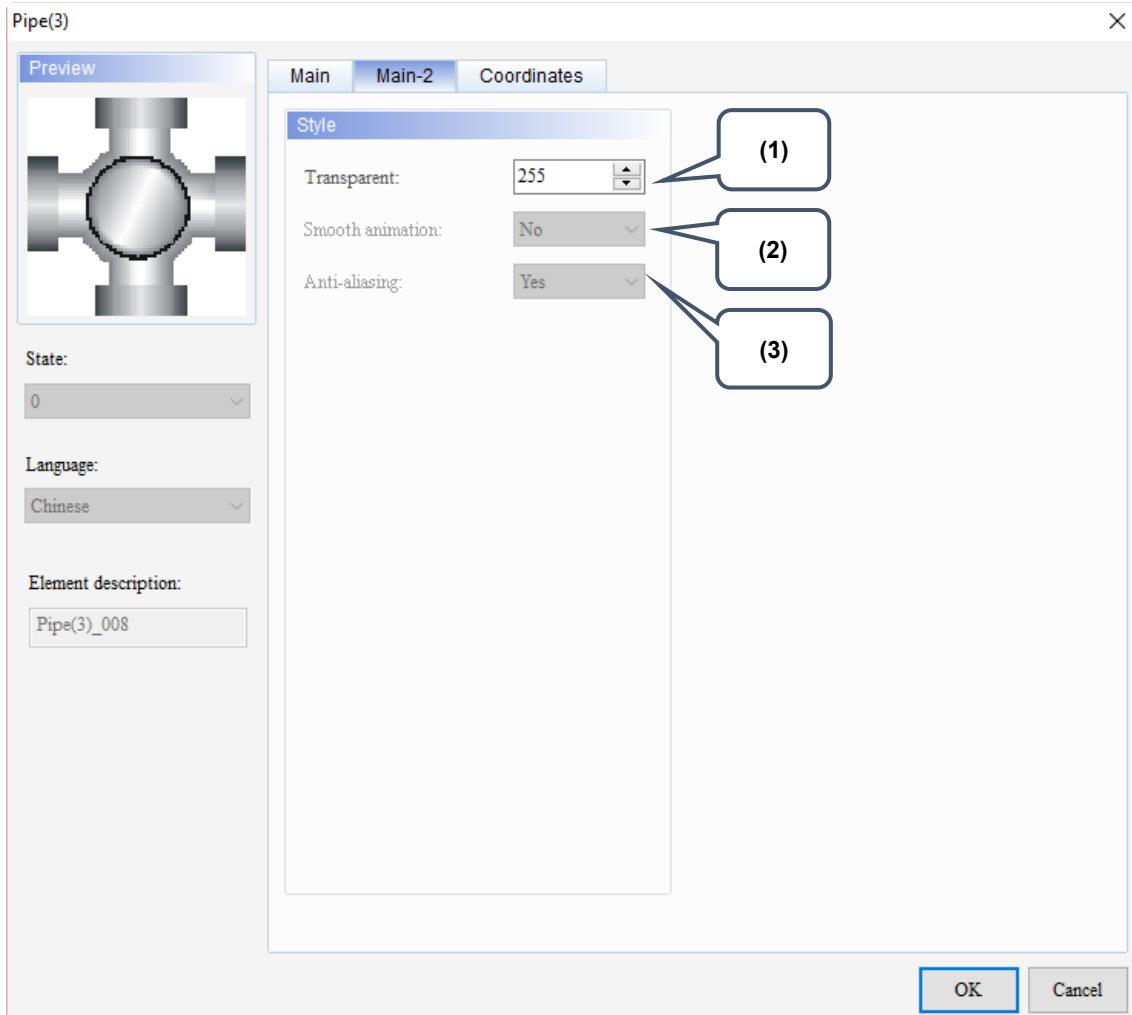


Figure 8.2.1 Main-2 property page for the Pipe(3) / Pipe(4) / Pipe(5) elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When this function is enabled, the element display becomes smoother.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

8

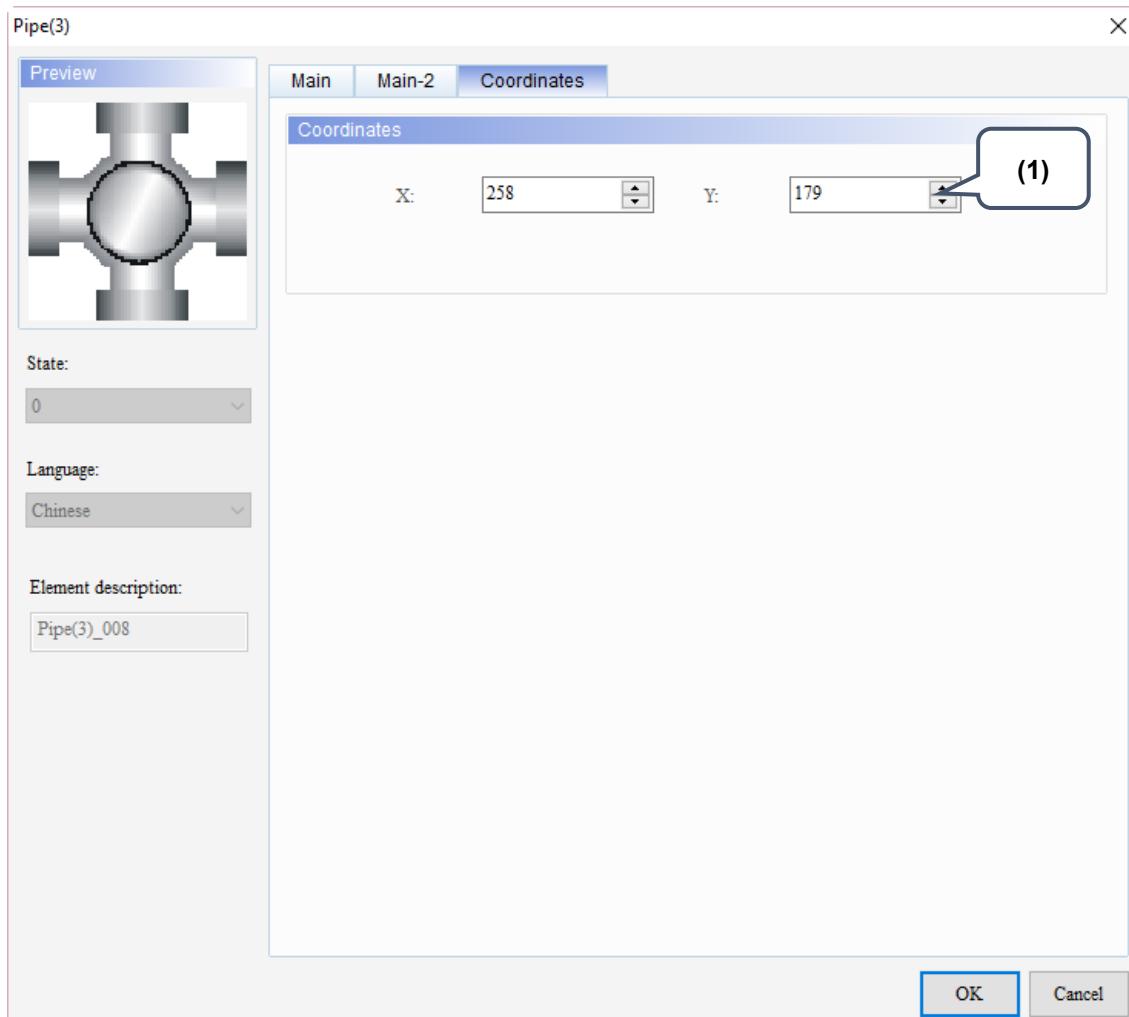
**■ Coordinates**

Figure 8.2.2 Coordinates property page for the Pipe(3) / Pipe(4) / Pipe(5) elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.

## 8.3 Pipe(6) / Pipe(7)

Pipe(6) and Pipe(7) can be used to connect to other Pipe elements. You can set the read addresses for these elements to set the water flow direction and cursor color.

Table 8.3.1 Function page of Pipe(6) / Pipe(7)

Pipe(6) / Pipe(7)	
Function page	Description
Preview	Pipe(6) and Pipe(7) elements are for controlling the water flow direction and have only one state without multi-language for editing.
Main	Set the Read Address, Pipe Diameter, Variable Color, and Flow Cursor Color.
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Flow Cursor Type options.
Coordinates	Set the X and Y coordinates of the element.

**■ Main**

Table 8.3.2 Display style of Pipe(6) / Pipe(7)

8

**Main property page of Pipe(6) / Pipe(7)**

■ Set the Read Address; you can set the water flow direction with this address.

**Pipe(6)**

Preview	Main	Main-2	Coordinates
<b>Memory</b>			
Read Address:	2		
\$77	...		
Read Offset Address:	None		
<b>Style</b>			
Pipe Diameter:	2		
Variable Color:	No		
Flow Cursor Color:	<input type="color" value="#0000ff"/>		

---

**Pipe(6)**

Water flow direction	Right → Left	Read Address = 1
	Left → Right	Read Address = 2

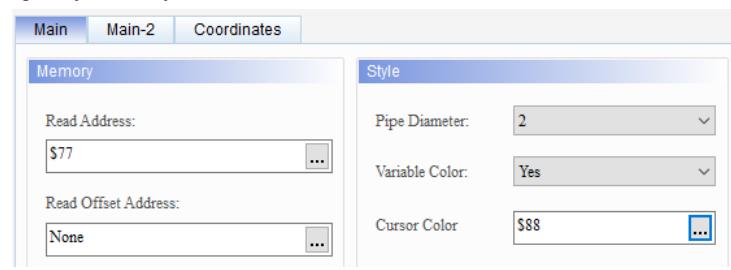
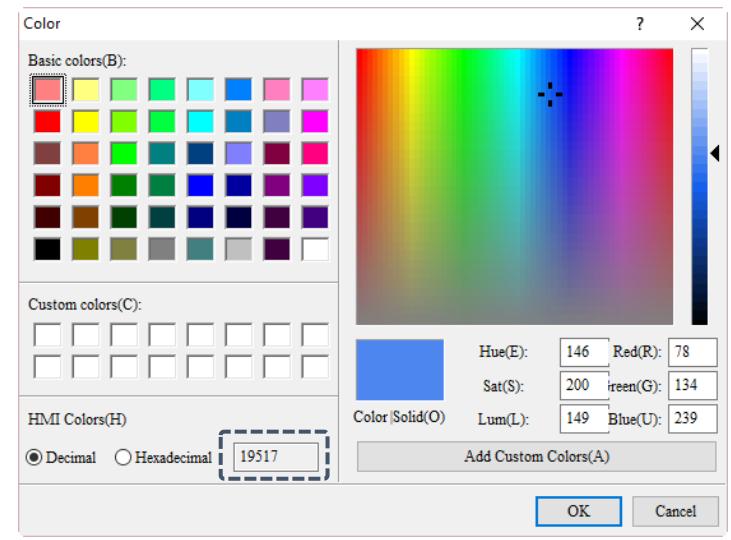
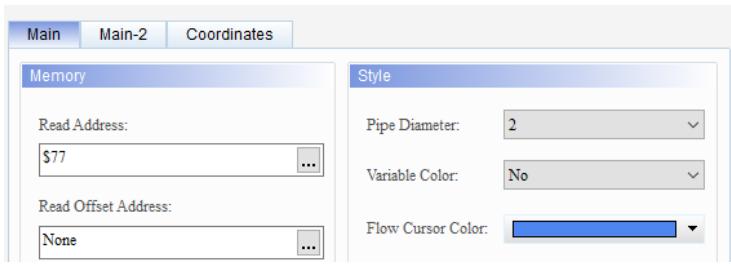
---

**Pipe(7)**

Water flow direction	Top → Bottom	Read Address = 2
	Bottom → Top	Read Address = 1

---

■ The Pipe Diameter ranges from 1 to 5.  
■ If Variable Color is Yes, it means you can set the Flow Cursor Color.

Main property page of Pipe(6) / Pipe(7)	
 <b>Pipe(6)</b>  <b>Pipe(7)</b>	<p>When you select Yes, it means the Cursor Color address is a variable, which can be changed dynamically.</p>  <p>The colors corresponding to the values are shown in the following figure.</p> 
<p>Variable Color is set to Yes</p>	<p>When you select No, it means the Cursor Color address is fixed.</p> 

8

## ■ Main-2

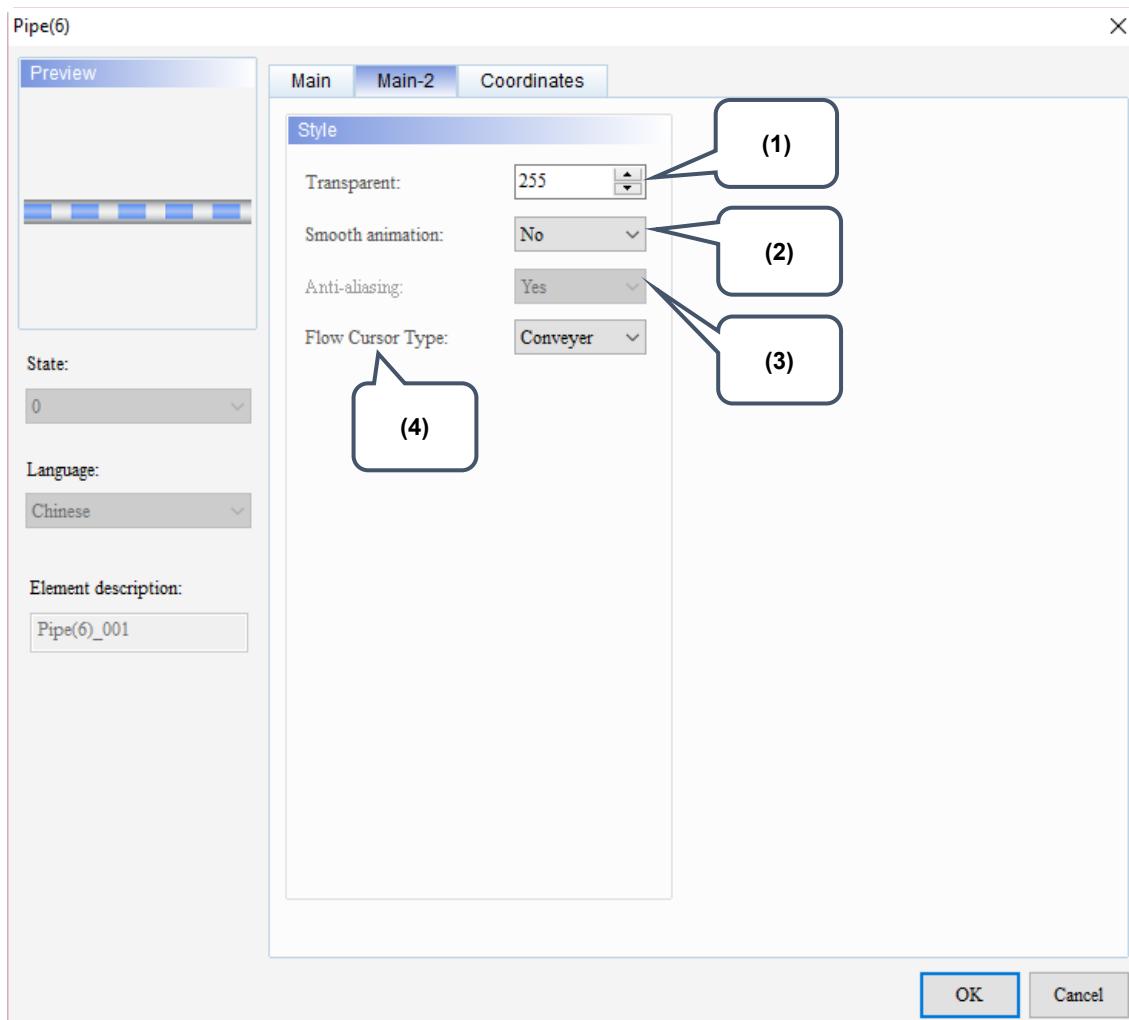


Figure 8.3.1 Main-2 property page for the Pipe(6) / Pipe(7) elements

No.	Property	Function description						
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.						
(2)	Smooth animation	The Smooth animation function is available for this element. When this function is enabled, the element display becomes smoother.						
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.						
(4)	Flow Cursor Type	<p>The available types include Conveyer, Bubble, and Arrow.</p> <table border="1"> <tr> <td>Conveyer</td> <td></td> </tr> <tr> <td>Bubble</td> <td></td> </tr> <tr> <td>Arrow</td> <td></td> </tr> </table>	Conveyer		Bubble		Arrow	
Conveyer								
Bubble								
Arrow								

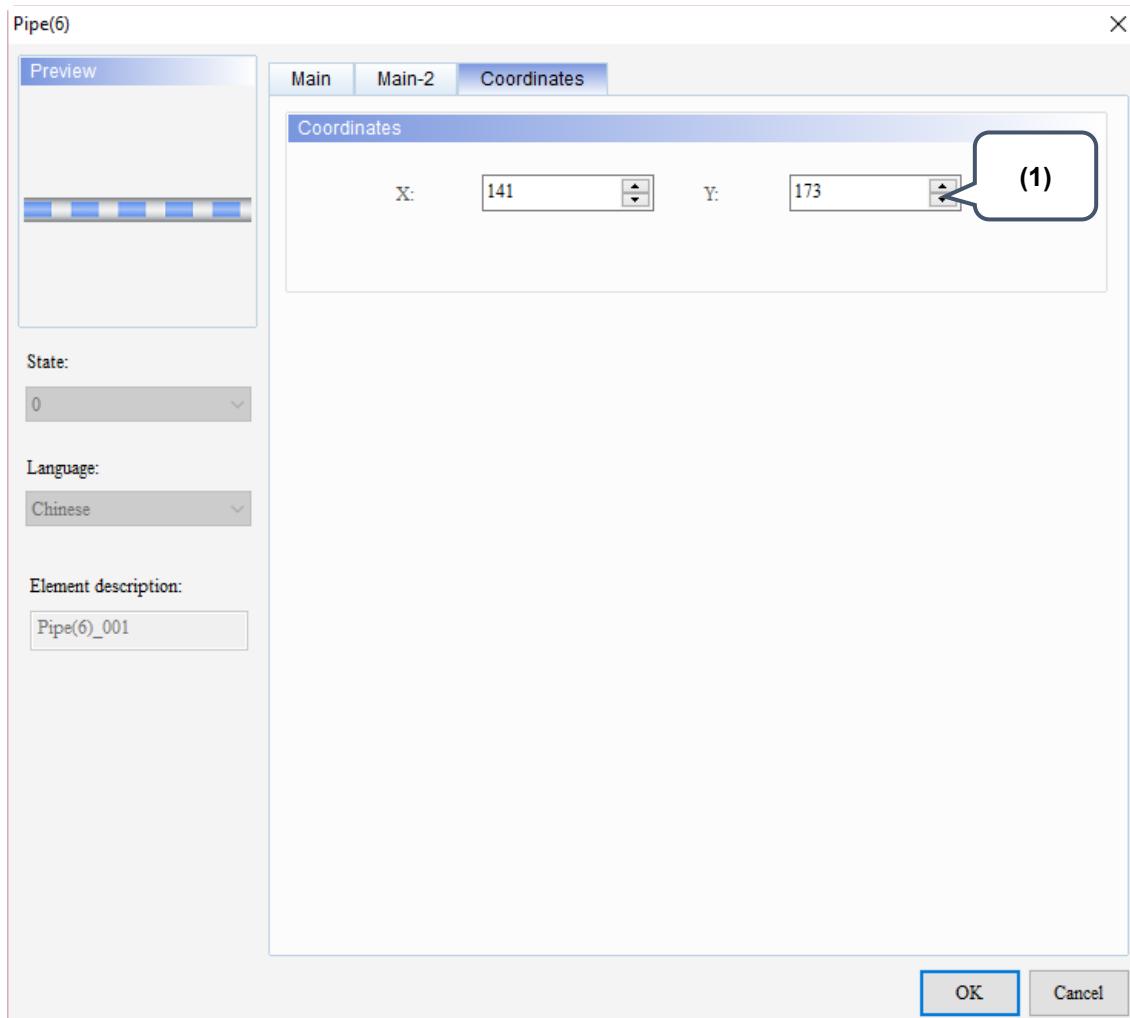
**■ Coordinates**

Figure 8.3.2 Coordinates property page for the Pipe(6) / Pipe(7) elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.

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# 9

## Pie Chart

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This chapter provides the usage and setting details for the Pie elements.

9.1 Pie(1) / Pie(2) / Pie(3) / Pie(4)..... 9-2

## 9.1 Pie(1) / Pie(2) / Pie(3) / Pie(4)

The only difference among elements Pie(1), Pie(2), Pie(3), and Pie(4) is the shape; all other functions are the same. The introduction for Pie(1) is as follows. The software displays the Target value, lower limit, and upper limit set in the register corresponding to the read address on the Pie element. Pie(1) elements are the same as the Meter elements; you can define the memory address for the target value and upper / lower limits to make the application more flexible so it meets users' requirements. You can also set the colors for the lower limit, upper limit, and target for easier identification and viewing.

Table 9.1.1 User-defined display format for Pie(1) element

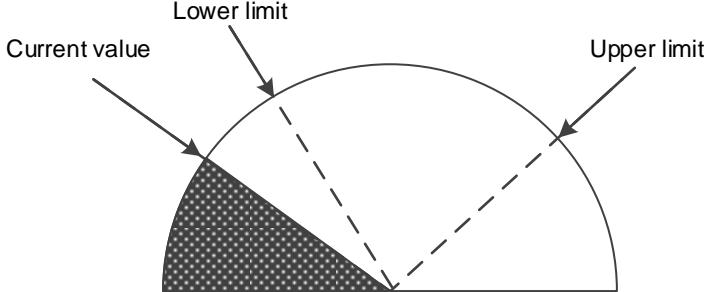
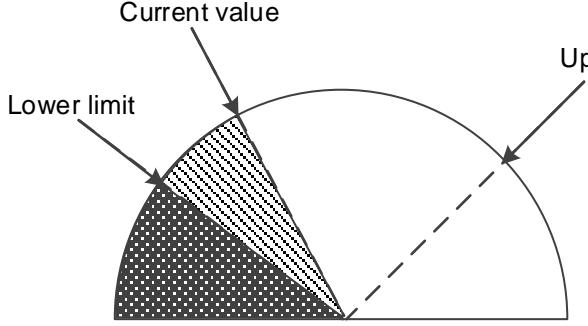
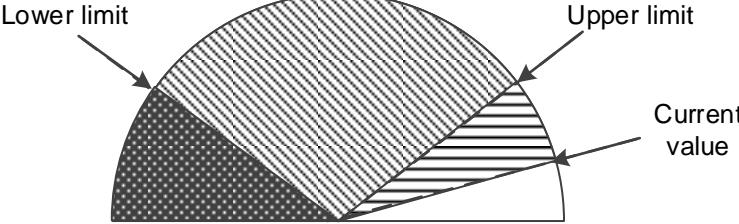
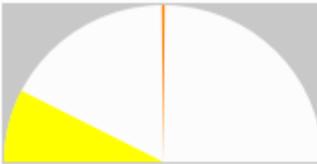
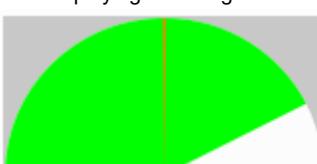
Using colors to identify the upper and lower limits				
	Low range color	Foreground color	High range color	Background color
				
Example 1	 <p>A pie chart divided into three segments. The bottom-left segment is filled with a black dotted pattern and labeled 'Lower limit'. The top-right segment is unfilled (white) and labeled 'Upper limit'. The middle segment, which represents the current value, is filled with diagonal hatching and labeled 'Current value'.</p>			
Example 2	 <p>A pie chart divided into three segments. The bottom-left segment is filled with a dark gray dotted pattern and labeled 'Lower limit'. The top-right segment is unfilled (white) and labeled 'Upper limit'. The middle segment, which represents the current value, is filled with horizontal lines and labeled 'Current value'.</p>			
Example 3	 <p>A pie chart divided into three segments. The bottom-left segment is filled with a black dotted pattern and labeled 'Lower limit'. The top-right segment is unfilled (white) and labeled 'Upper limit'. The middle segment, which represents the current value, is filled with diagonal hatching and labeled 'Current value'.</p>			

Table 9.1.2 Pie(1) element example

Pie(1)				
	Pie(1) element		Numeric Entry element	
	Read Address	\$444	Write Address	\$444
Read Address	R:\$444		W:\$444	
Detail settings	Data Type Word	Data Format Unsigned Decimal	Minimum 0	Maximum 100
Select the check boxes for Target, Range, and Variable target/range limits	Target value color 		Target value {Link2}1@D50	
	Low Limit property Low Range Color 		High Limit property High Range Color 	
Create Numeric Entry elements	Numeric Entry element Write Address {Link2}1@D50	Numeric Entry element Write Address {Link2}1@D55	Numeric Entry element Write Address {Link2}1@D65	
	Target Value 		Low Limit Value 	
Pie(1) element diagram example				

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Pie(1)				
		Target Value	Low Limit Value	High Limit Value
Execution results	Target	50		Enter 50 for Target Value and the displaying color is orange.
	Low Limit	15		Enter 15 for \$444, which is smaller than the Low Limit Value of 20, so the displaying color is yellow.
	High Limit	85		Enter 85 for \$444, which is greater than the High Limit Value of 80, so the displaying color is green.

When you double-click the Pie(1) element, the property page is shown as follows.

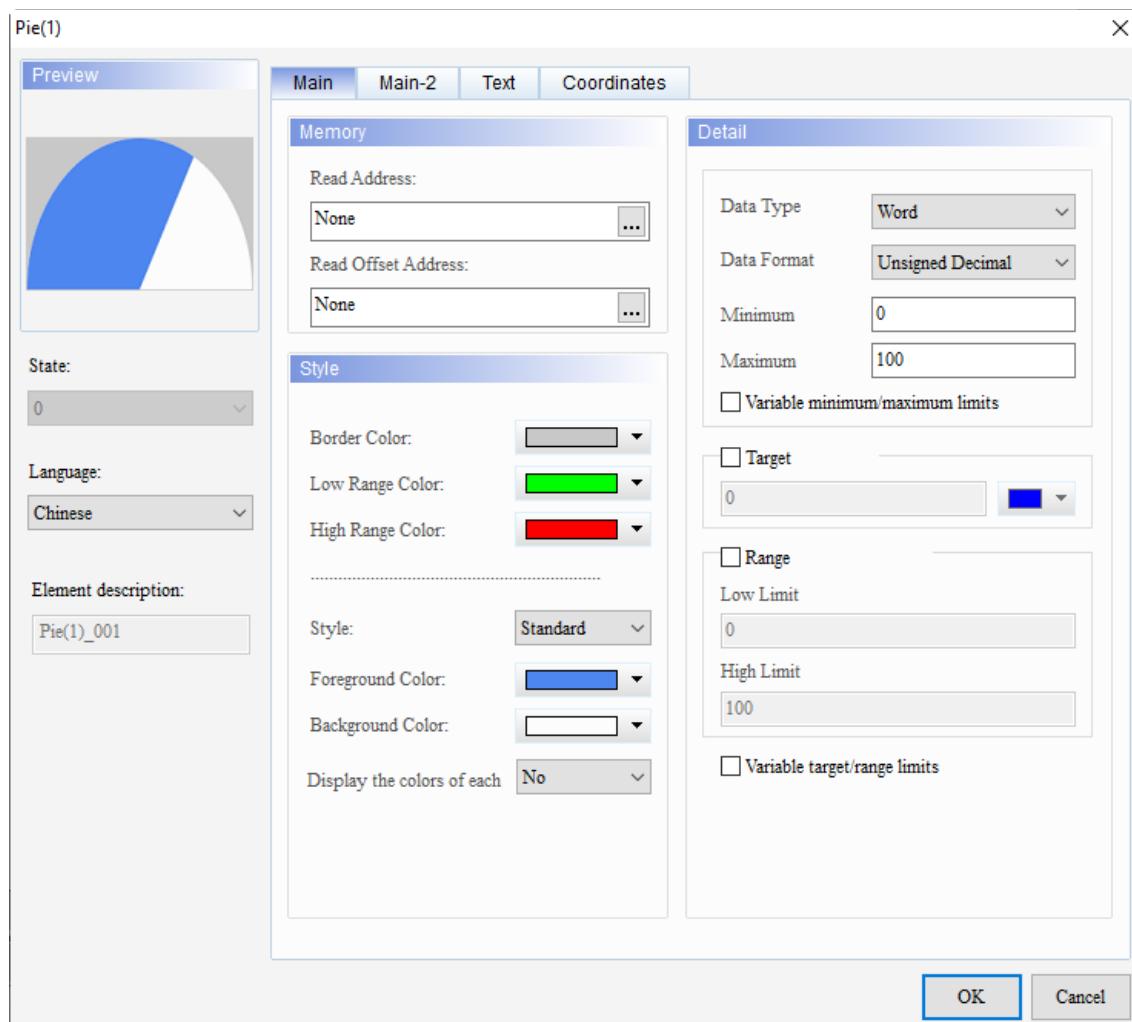


Figure 9.1.1 Properties of Pie(1) element

Table 9.1.3 Function page of Pie(1)

Pie(1)	
Function Page	Description
Preview	Pie elements are only for viewing multi-language data display and do not support multiple states.
Main	Set the Read Address, Read Offset Address, Style, Foreground Color, and Background Color. Set the Border Color, Low Range Color, and High Range Color. Set the Data Type, Data Format, and Minimum / Maximum input value for the element, and select the check box for <b>Variable minimum/maximum limits</b> . Set whether to display the target value and its color, and select the check boxes for <b>Range</b> and <b>Variable target/range limits</b> .
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Target Value Style.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

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## ■ Main

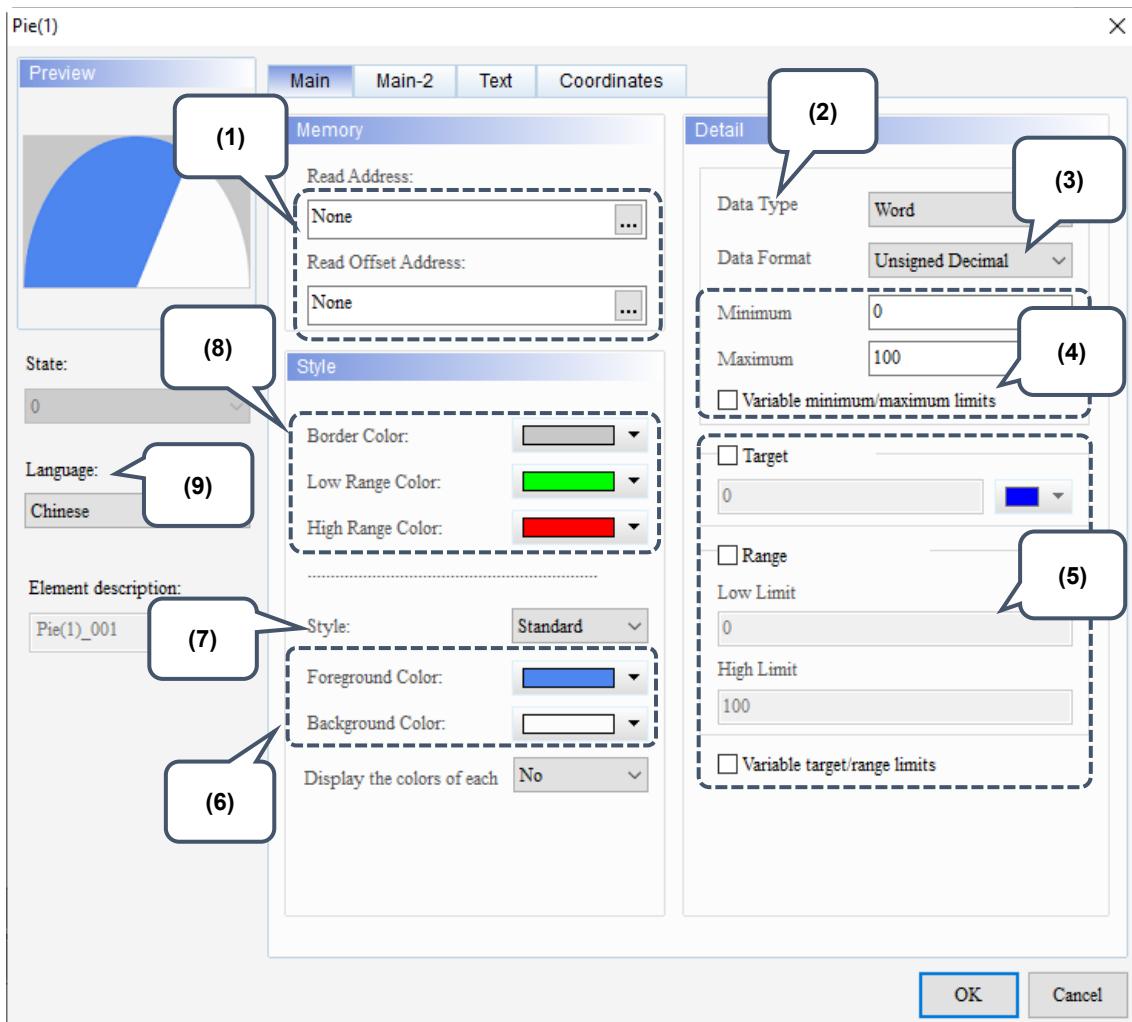
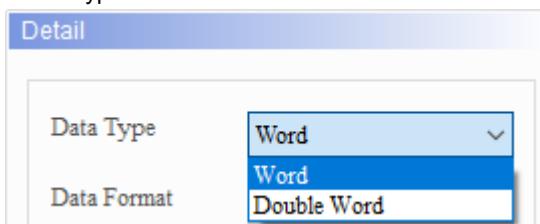
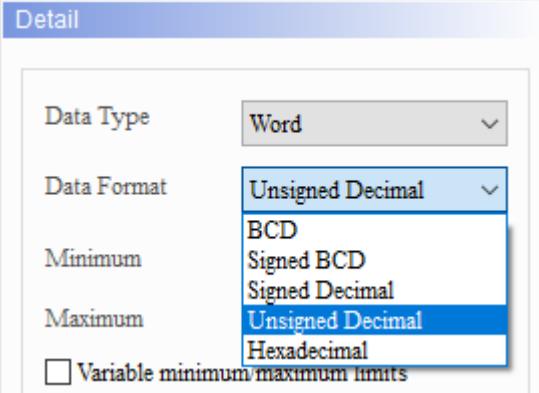
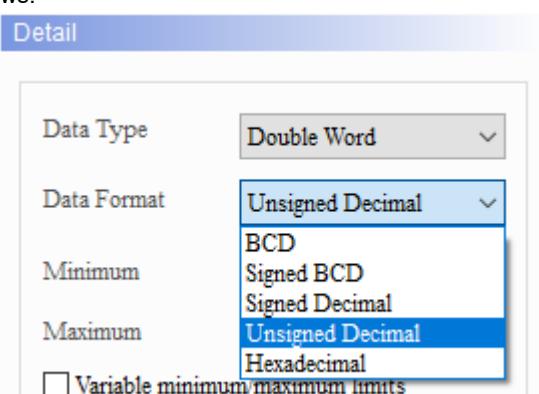
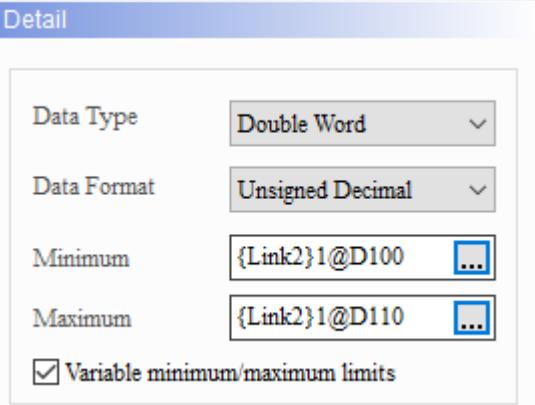
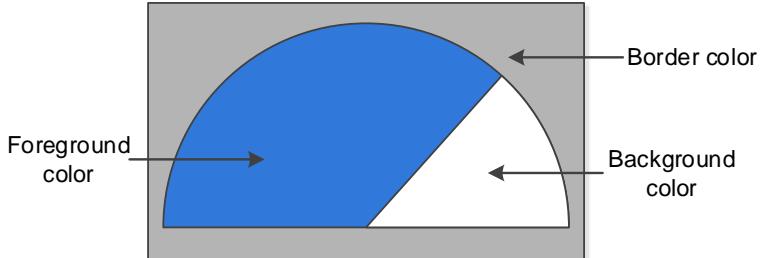


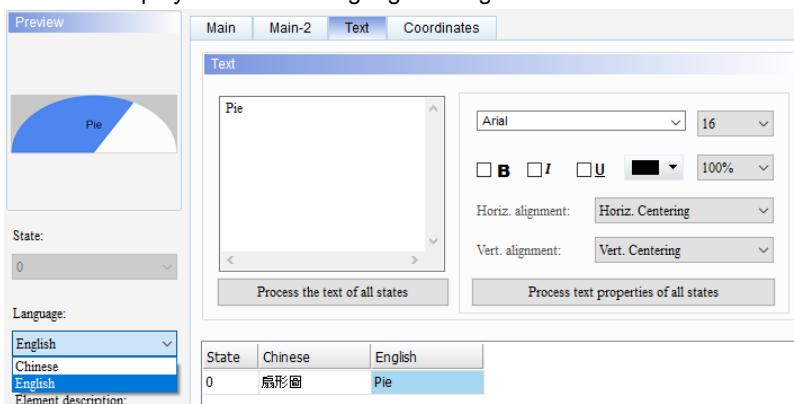
Figure 9.1.2 Main property page for the Pie(1) element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>You can choose internal memory address or controller register address. The input memory type has to be Word.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for detail.</li> </ul>
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Type	<p>There are two data types: Word and Double Word.</p> 

No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> <li>■ When the Data Type is Word, the supported Data Formats are as follows:</li> </ul>  <ul style="list-style-type: none"> <li>■ When the Data Type is Double Word, the supported Data Formats are as follows:</li> </ul> 																									
(4)	Minimum / Maximum input value	<p>The allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to +99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hexadecimal</td> <td>0 to 0xFFFFFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hexadecimal	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-9999999 to +99999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295	Hexadecimal	0 to 0xFFFFFFFF
Data Type	Data Format	Allowable range																									
Word	BCD	0 to 9999																									
	Signed BCD	-999 to +9999																									
	Signed Decimal	-32768 to +32767																									
	Unsigned Decimal	0 to 65535																									
	Hexadecimal	0 to 0xFFFF																									
Double Word	BCD	0 to 99999999																									
	Signed BCD	-9999999 to +99999999																									
	Signed Decimal	-2147483648 to +2147483647																									
	Unsigned Decimal	0 to 4294967295																									
	Hexadecimal	0 to 0xFFFFFFFF																									

9

No.	Property	Function description									
(4)	Variable minimum/ maximum limits	<p>Select this check box to set the addresses for the Minimum and Maximum values. Then, write the required values to the addresses.</p> 									
(5)	Display Format	Target	If the <b>Variable target/range limits</b> check box is not selected, you can only enter a constant value to define the displaying target value on the pie chart. You can also specify the displaying color.								
		Range	The Range includes the lower and upper limits. Like the case of the Target display, if the <b>Variable target / range limits</b> check box is not selected, you can only enter constant values to define the lower and upper limits of the pie chart.								
		Variable target/range limits	If it is selected, you can define the memory addresses to dynamically change the displaying target value, and the lower and upper limit values.								
(6)	Foreground Color Background Color	<p>Set the element foreground and background colors.</p> 									
(7)	Style (element style)	<p>The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent								
(8)	Style property	Border Color	You can define the border color to display. Refer to the foreground and background colors of the element.								
		Low Range Color	You can define the low range color to display. Refer to Table 9.1.1.								
		High Range Color	You can define the high range color to display. Refer to Table 9.1.1.								

No.	Property	Function description						
(9)	Language	<p>When you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.</p>  <table border="1"><thead><tr><th>State</th><th>Chinese</th><th>English</th></tr></thead><tbody><tr><td>0</td><td>扇形圖</td><td>Pie</td></tr></tbody></table>	State	Chinese	English	0	扇形圖	Pie
State	Chinese	English						
0	扇形圖	Pie						

9

## ■ Main-2

9

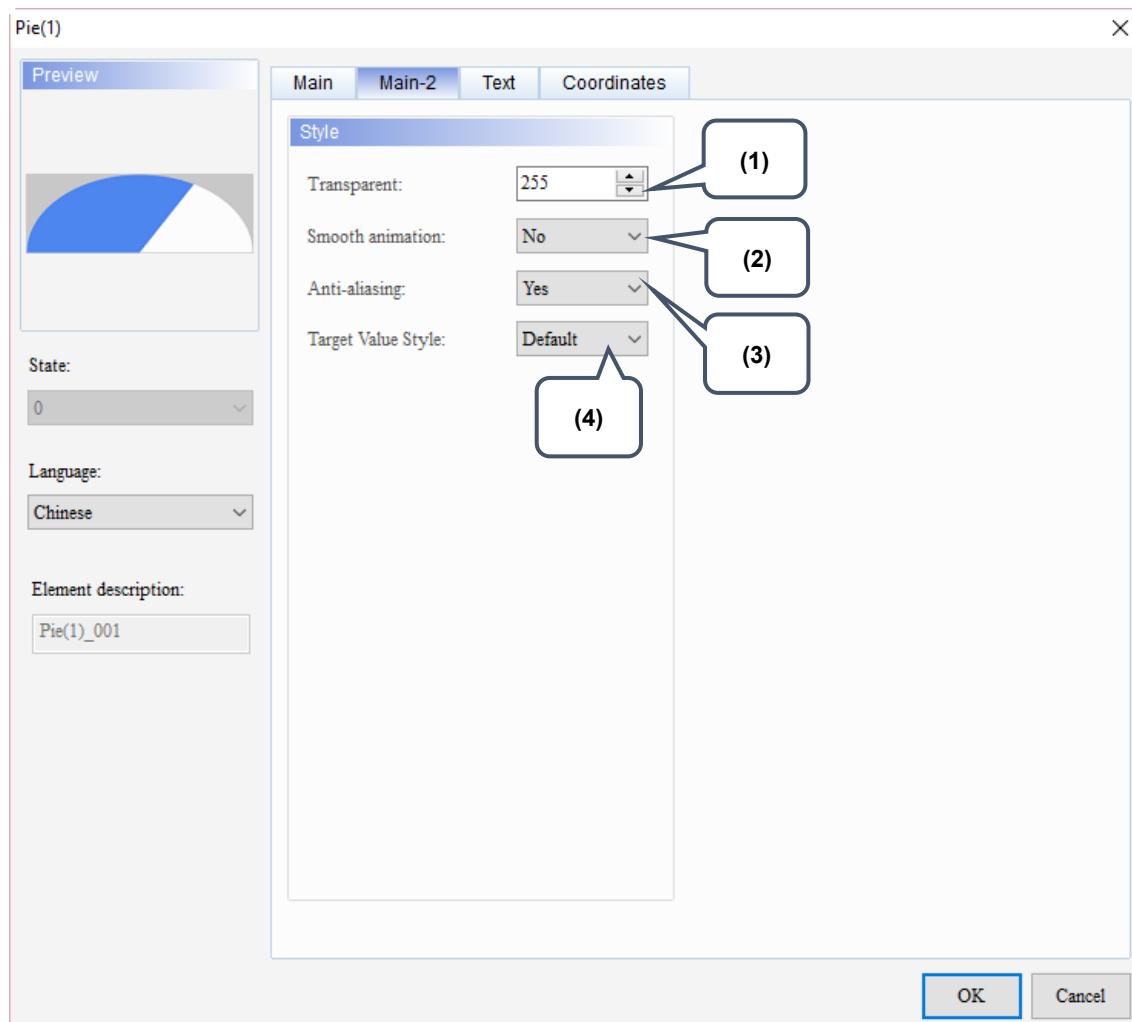


Figure 9.1.3 Main-2 property page for the Pie(1) element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is available for this element. When this function is enabled, the element display becomes smoother.				
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.				
(4)	Target Value Style	<p>There are two display styles for the target value, Default and Style 1.</p> <table border="1"> <tr> <td>Default</td> <td></td> </tr> <tr> <td>Style 1</td> <td></td> </tr> </table>	Default		Style 1	
Default						
Style 1						

9

## ■ Text

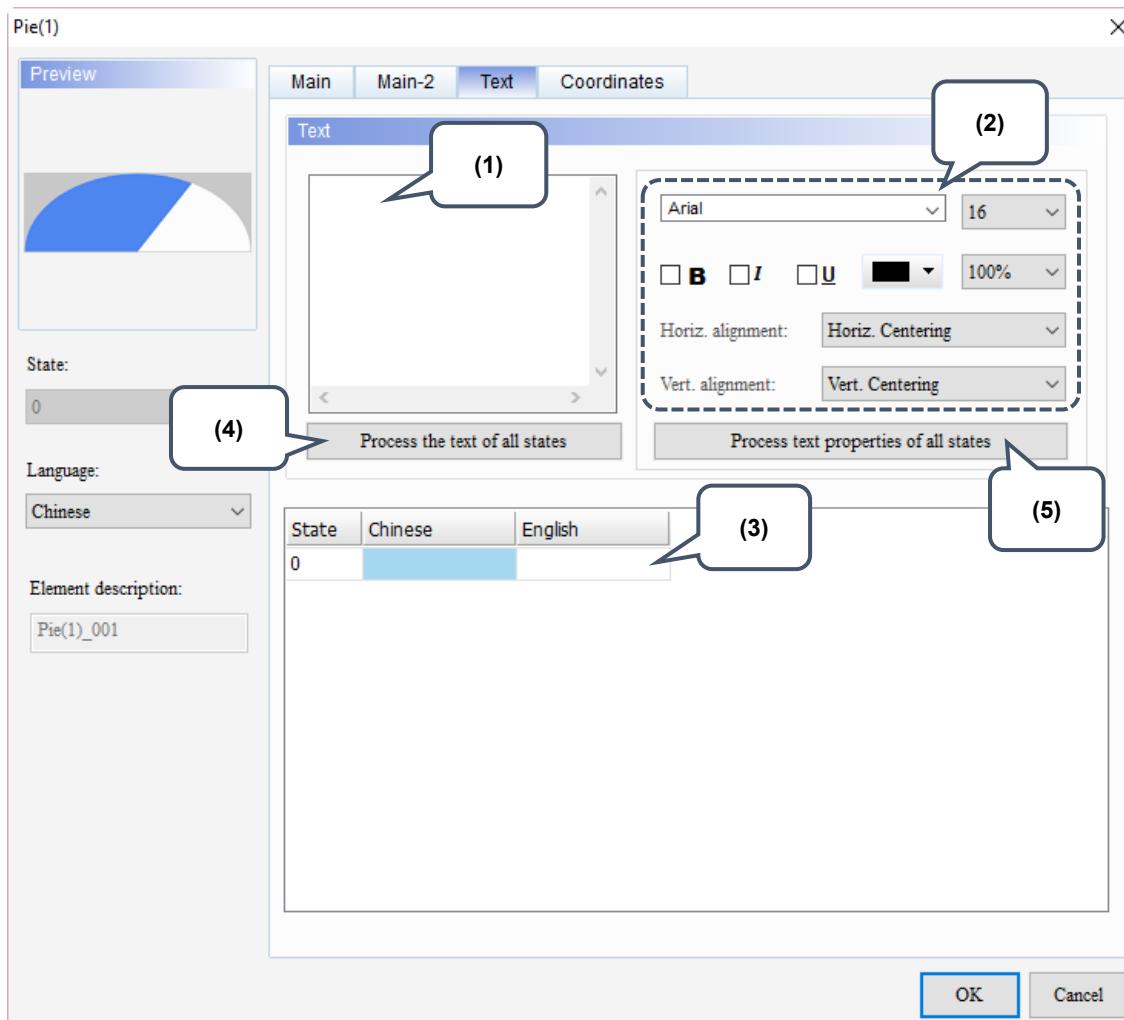
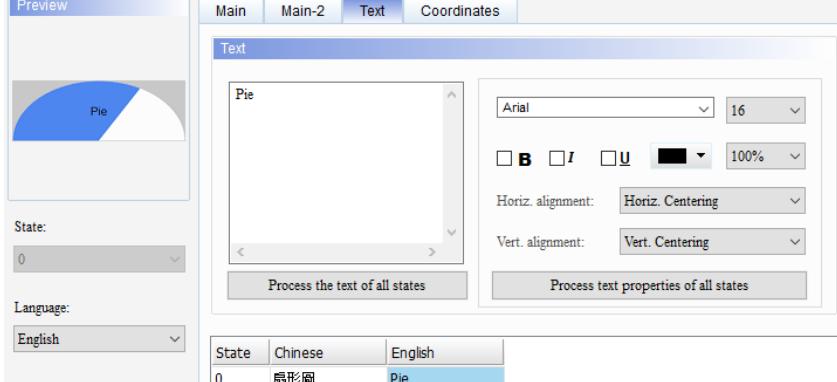
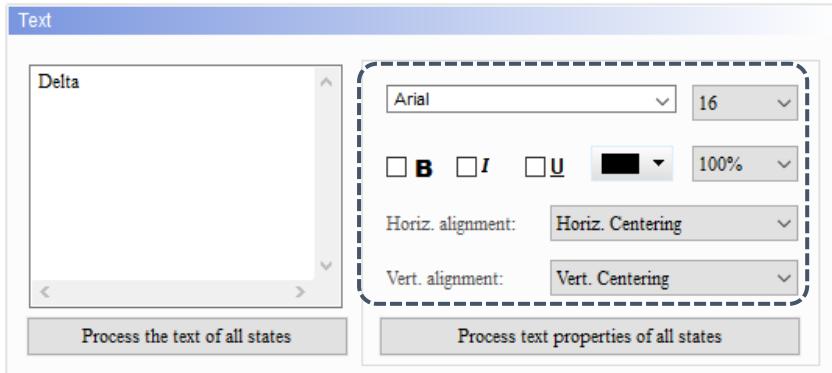


Figure 9.1.4 Text property page for the Pie(1) element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul>  <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key to start editing and entering the text.</li> </ul>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit multi-language data.

No.	Property	Function description
(4)	Process the text of all states	<ul style="list-style-type: none"> <li>■ This function batch changes all the texts into the text contents of the state you selected.</li> <li>■ Pie elements do not support multiple states, so this function is not available.</li> </ul>
(5)	Process text properties of all states	<ul style="list-style-type: none"> <li>■ This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</li> </ul>  <p>The screenshot shows the 'Text' dialog box with a 'Delta' text area. To the right, there are font settings: Arial, 16pt, bold, italic, underline, color (black), size (100%), horizontal alignment (Horiz. Centering), and vertical alignment (Vert. Centering). Below the text area are two buttons: 'Process the text of all states' and 'Process text properties of all states'.</p> <ul style="list-style-type: none"> <li>■ Pie elements do not support multiple states, so this function is not available.</li> </ul>

9

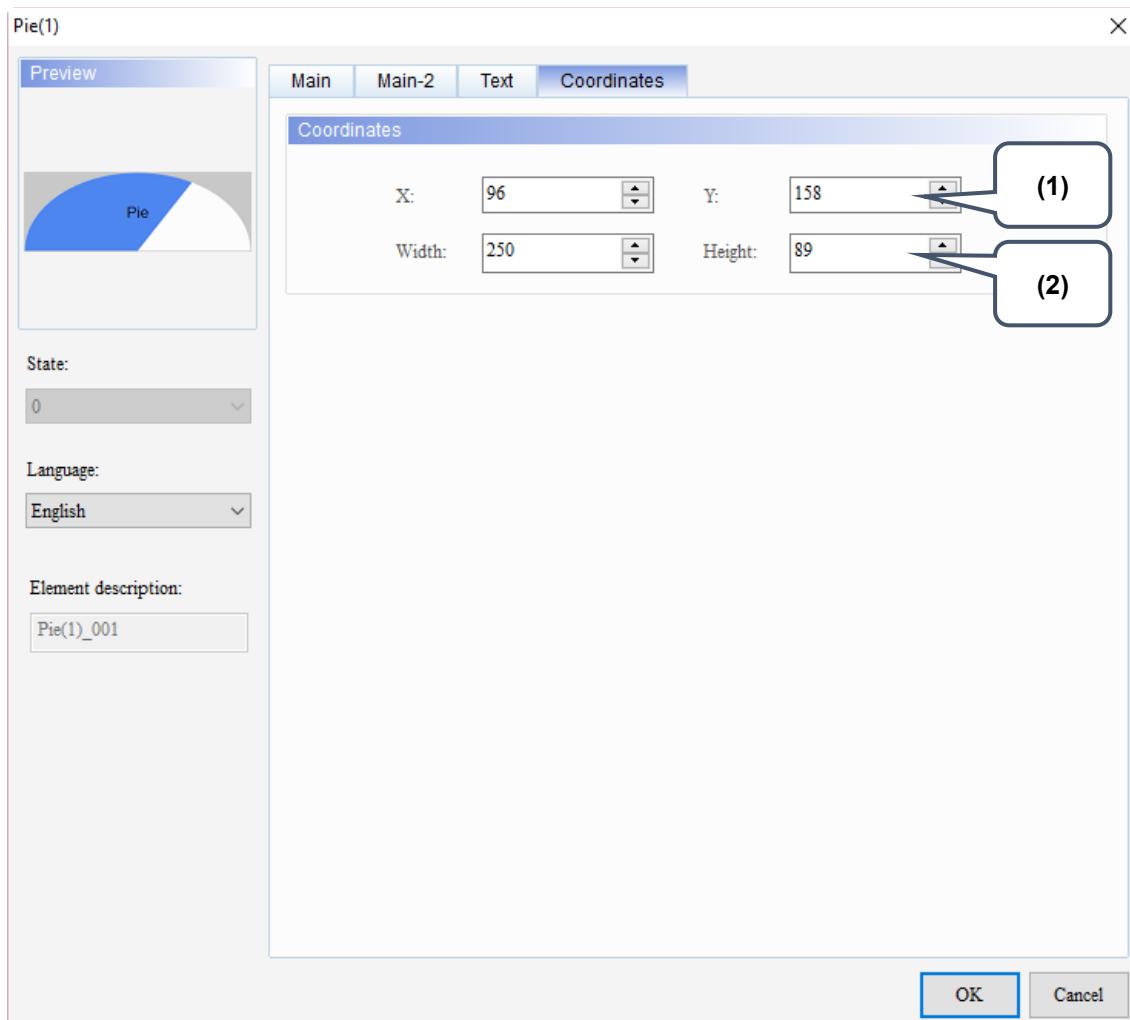
**■ Coordinates**

Figure 9.1.5 Coordinates property page for the Pie(1) element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

# Indicator 10

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This chapter provides the usage and setting details for the Indicator elements.

10.1 Multistate Indicator.....	10-2
10.2 Range Indicator.....	10-20
10.3 Simple Indicator .....	10-36

## 10.1 Multistate Indicator

The Multistate Indicator is for displaying the state of a given address. No matter the element uses Bit, LSB, or Word as the Data Type, once the HMI reads the memory address, the indicator prompts a change of state. You can also use different settings to have the Multistate Indicator change its light or display the corresponding messages to notify the users about the change of state value. With such notifications, checking the message for each state becomes easier.

The indicator can set to display ON and OFF states.

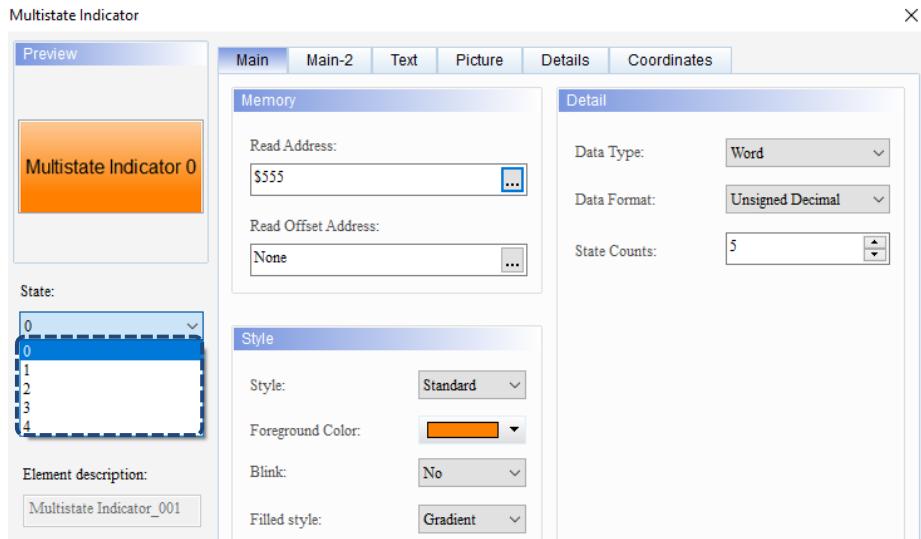
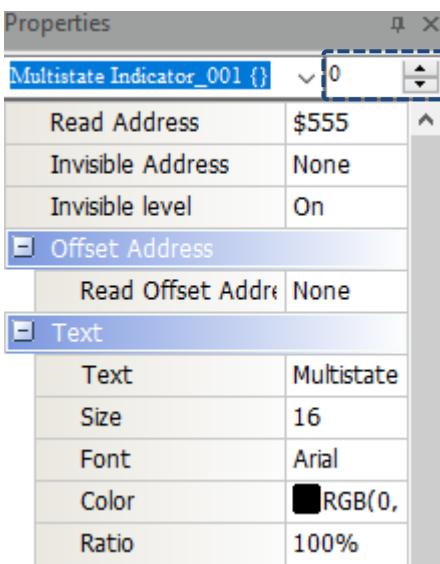


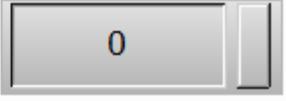
You can also set the pictures and colors to indicate each state.



Refer to Table 10.1.1 for the Multistate Indicator example.

Table 10.1.1 Multistate Indicator example

Multistate Indicator														
	Multistate Indicator element	Numeric Entry element												
Read Address	Read Address R:\$555 	\$555	Write Address W:\$555 	\$555										
Detail settings	Data Type: Word Data Format: Unsigned Decimal State Counts: 5													
Set Foreground Color	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>State 0</th> <th>State 1</th> <th>State 2</th> <th>State 3</th> <th>State 4</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				State 0	State 1	State 2	State 3	State 4					
State 0	State 1	State 2	State 3	State 4										
														
Multistate Indicator diagram example	<ul style="list-style-type: none"> <li>Double-click the element to view the diagram of each state. In this example, the State Counts is set to 5, so the state values are 0 - 4, as shown in the blue mark in the following figure.</li> </ul>  <ul style="list-style-type: none"> <li>You can also go to the upper right corner in the Properties window of the element to switch the state.</li> </ul> 													

<b>Multistate Indicator</b>											
Execution results	<ul style="list-style-type: none"><li>After you download the element, the Multistate Indicator initial state is 0. Next, enter a value to the Numeric Entry element.</li></ul>										
	 										
	<ul style="list-style-type: none"><li>Input the values 0 - 4 in sequence and you can see the results.</li></ul>										
	<table border="1"><thead><tr><th>Value = 0</th><th>Value = 1</th><th>Value = 2</th><th>Value = 3</th><th>Value = 4</th></tr></thead><tbody><tr><td>Multistate Indicator 0</td><td>Multistate Indicator 1</td><td>Multistate Indicator 2</td><td>Multistate Indicator 3</td><td>Multistate Indicator 4</td></tr></tbody></table>	Value = 0	Value = 1	Value = 2	Value = 3	Value = 4	Multistate Indicator 0	Multistate Indicator 1	Multistate Indicator 2	Multistate Indicator 3	Multistate Indicator 4
Value = 0	Value = 1	Value = 2	Value = 3	Value = 4							
Multistate Indicator 0	Multistate Indicator 1	Multistate Indicator 2	Multistate Indicator 3	Multistate Indicator 4							

The Multistate Indicator supports four data types, as shown in the Table 10.1.2. To add or reduce the number of states, you can simply increase or decrease the number of State Counts in the Properties window.

Table 10.1.2 Data Type of Multistate Indicator

Multistate Indicator														
Data Type	State Counts	Memory Address												
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p> <div style="background-color: #e0f2ff; padding: 5px; margin-top: 5px;"> <b>Detail</b> <div style="margin-top: 10px;"> <table> <tr> <td>Data Type:</td> <td>Word</td> </tr> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td>State Counts:</td> <td>256</td> </tr> </table> </div> </div>	Data Type:	Word	Data Format:	Unsigned Decimal	State Counts:	256	<p>If the Data Type is Word, the memory address is in units of Word.</p>						
Data Type:	Word													
Data Format:	Unsigned Decimal													
State Counts:	256													
LSB / LSB (Support State 0)	<p>LSB is to first convert the data in the register to binary data, and then use the lowest non-zero bit to determine the current state of the object. If the Data Type is LSB, you can set 1 to 16 states except for State 0.</p> <div style="background-color: #e0f2ff; padding: 5px; margin-top: 5px;"> <b>Detail</b> <div style="margin-top: 10px;"> <table> <tr> <td>Data Type:</td> <td>LSB</td> </tr> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td>State Counts:</td> <td>16</td> </tr> </table> </div> <p>To display State 0, select LSB (Support State 0) for the Data Type.</p> <div style="background-color: #e0f2ff; padding: 5px; margin-top: 5px;"> <b>Detail</b> <div style="margin-top: 10px;"> <table> <tr> <td>Data Type:</td> <td>LSB</td> </tr> <tr> <td>Data Format:</td> <td>Bit Word LSB <b>LSB (Support State 0)</b></td> </tr> <tr> <td>State Counts:</td> <td>16</td> </tr> </table> </div> <p>If you selected LSB, the element is black when the state is 0.</p>  </div> </div>	Data Type:	LSB	Data Format:	Unsigned Decimal	State Counts:	16	Data Type:	LSB	Data Format:	Bit Word LSB <b>LSB (Support State 0)</b>	State Counts:	16	<p>When the Data Type is either LSB or LSB (Support State 0), the memory address is in units of Word.</p>
Data Type:	LSB													
Data Format:	Unsigned Decimal													
State Counts:	16													
Data Type:	LSB													
Data Format:	Bit Word LSB <b>LSB (Support State 0)</b>													
State Counts:	16													

Multistate Indicator																																																													
Data Type	State Counts		Memory Address																																																										
LSB / LSB (Support State 0)	<p>The examples in the following table show how the state value is determined with the lowest non-zero bit of the binary value converted from a decimal value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.</p> <table border="1"> <thead> <tr> <th>Decimal</th><th>Binary</th><th>State value</th></tr> </thead> <tbody> <tr> <td>0</td><td><b>0000000000000000</b></td><td><u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u></td></tr> <tr> <td>1</td><td>0000000000000001</td><td>The lowest non-zero bit is bit 0, State = 1.</td></tr> <tr> <td>2</td><td>0000000000000010</td><td>The lowest non-zero bit is bit 1, State = 2.</td></tr> <tr> <td><b>3</b></td><td><b>0000000000000011</b></td><td><b>The lowest non-zero bit is bit 0, State = 1.</b></td></tr> <tr> <td>4</td><td>00000000000000100</td><td>The lowest non-zero bit is bit 2, State = 3.</td></tr> <tr> <td><b>7</b></td><td><b>00000000000000111</b></td><td><b>The lowest non-zero bit is bit 0, State = 1.</b></td></tr> <tr> <td>8</td><td>00000000000001000</td><td>The lowest non-zero bit is bit 3, State = 4.</td></tr> <tr> <td>16</td><td>00000000000010000</td><td>The lowest non-zero bit is bit 4, State = 5.</td></tr> <tr> <td>32</td><td>0000000000100000</td><td>The lowest non-zero bit is bit 5, State = 6.</td></tr> <tr> <td>64</td><td>0000000001000000</td><td>The lowest non-zero bit is bit 6, State = 7.</td></tr> <tr> <td>128</td><td>0000000010000000</td><td>The lowest non-zero bit is bit 7, State = 8.</td></tr> <tr> <td>256</td><td>0000000100000000</td><td>The lowest non-zero bit is bit 8, State = 9.</td></tr> <tr> <td>512</td><td>0000001000000000</td><td>The lowest non-zero bit is bit 9, State = 10.</td></tr> <tr> <td>1024</td><td>0000010000000000</td><td>The lowest non-zero bit is bit 10, State = 11.</td></tr> <tr> <td>2048</td><td>0000100000000000</td><td>The lowest non-zero bit is bit 11, State = 12.</td></tr> <tr> <td>4096</td><td>0001000000000000</td><td>The lowest non-zero bit is bit 12, State = 13.</td></tr> <tr> <td>8192</td><td>0010000000000000</td><td>The lowest non-zero bit is bit 13, State = 14.</td></tr> <tr> <td>16384</td><td>0100000000000000</td><td>The lowest non-zero bit is bit 14, State = 15.</td></tr> <tr> <td>32768</td><td>1000000000000000</td><td>The lowest non-zero bit is bit 15, State = 16.</td></tr> </tbody> </table>	Decimal	Binary	State value	0	<b>0000000000000000</b>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<b>3</b>	<b>0000000000000011</b>	<b>The lowest non-zero bit is bit 0, State = 1.</b>	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.	<b>7</b>	<b>00000000000000111</b>	<b>The lowest non-zero bit is bit 0, State = 1.</b>	8	00000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	00000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.	4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.
Decimal	Binary	State value																																																											
0	<b>0000000000000000</b>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>																																																											
1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.																																																											
2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.																																																											
<b>3</b>	<b>0000000000000011</b>	<b>The lowest non-zero bit is bit 0, State = 1.</b>																																																											
4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.																																																											
<b>7</b>	<b>00000000000000111</b>	<b>The lowest non-zero bit is bit 0, State = 1.</b>																																																											
8	00000000000001000	The lowest non-zero bit is bit 3, State = 4.																																																											
16	00000000000010000	The lowest non-zero bit is bit 4, State = 5.																																																											
32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.																																																											
64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.																																																											
128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.																																																											
256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.																																																											
512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.																																																											
1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.																																																											
2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.																																																											
4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.																																																											
8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.																																																											
16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.																																																											
32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.																																																											
<p>If the Data Type is Bit, you can set only 2 states.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>Detail</b> </div> <table> <tr> <td>Data Type:</td> <td>Bit</td> </tr> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td>State Counts:</td> <td>2</td> </tr> </table>			Data Type:	Bit	Data Format:	Unsigned Decimal	State Counts:	2																																																					
Data Type:	Bit																																																												
Data Format:	Unsigned Decimal																																																												
State Counts:	2																																																												
Bit	<p>If the Data Type is Bit, the memory address is in units of Bit.</p>																																																												

When you double-click the Multistate Indicator, the property page is shown as follows.

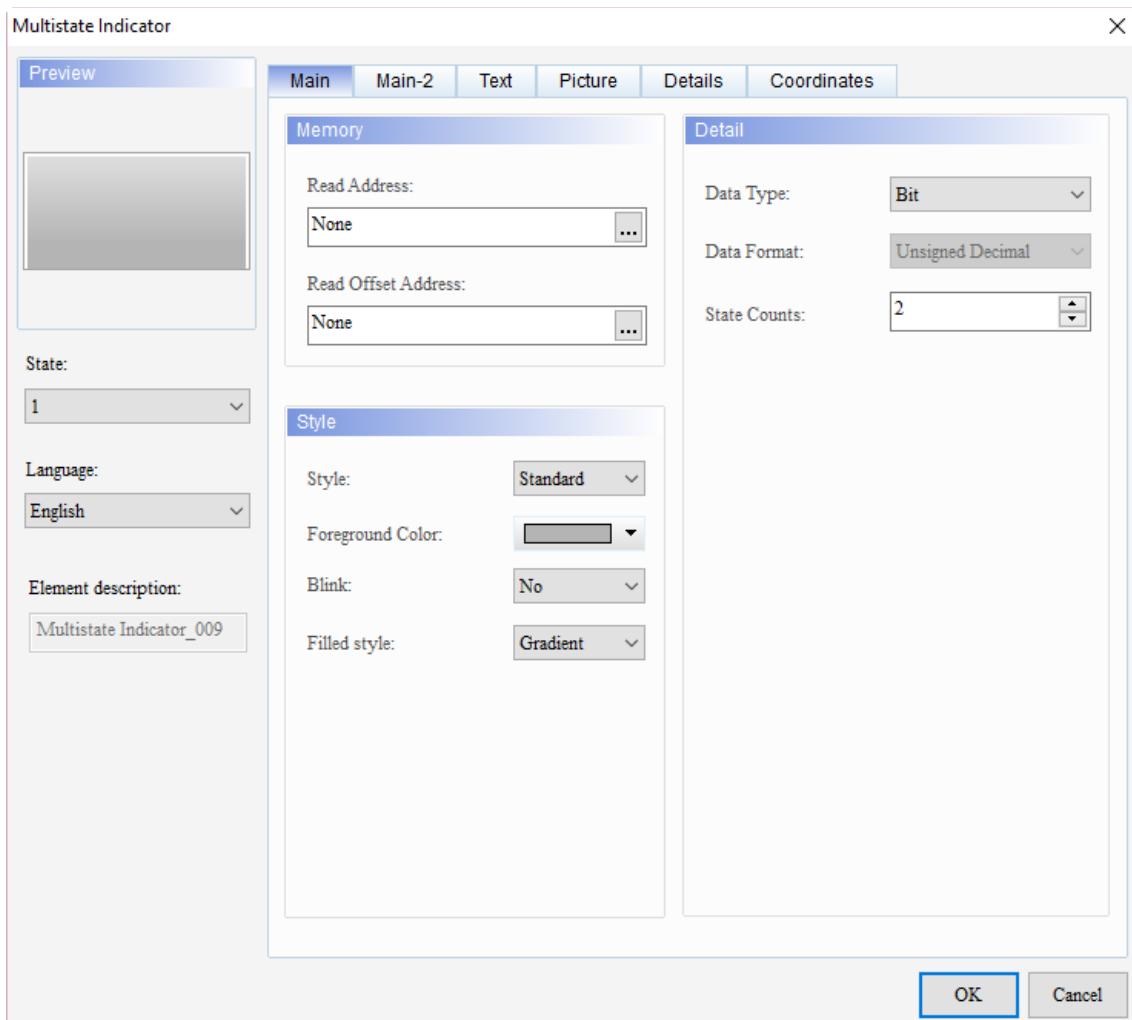


Figure 10.1.1 Properties of Multistate Indicator

Table 10.1.3 Function page of Multistate Indicator

Multistate Indicator	
Function page	Description
Preview	You can view multistate values and multi-language display data of the element.
Main	Set the Read Address, Read Offset Address, Style, Foreground Color, Blink, and Filled style. Set the Data Type, Data Format, and State Counts.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the element.

## ■ Main

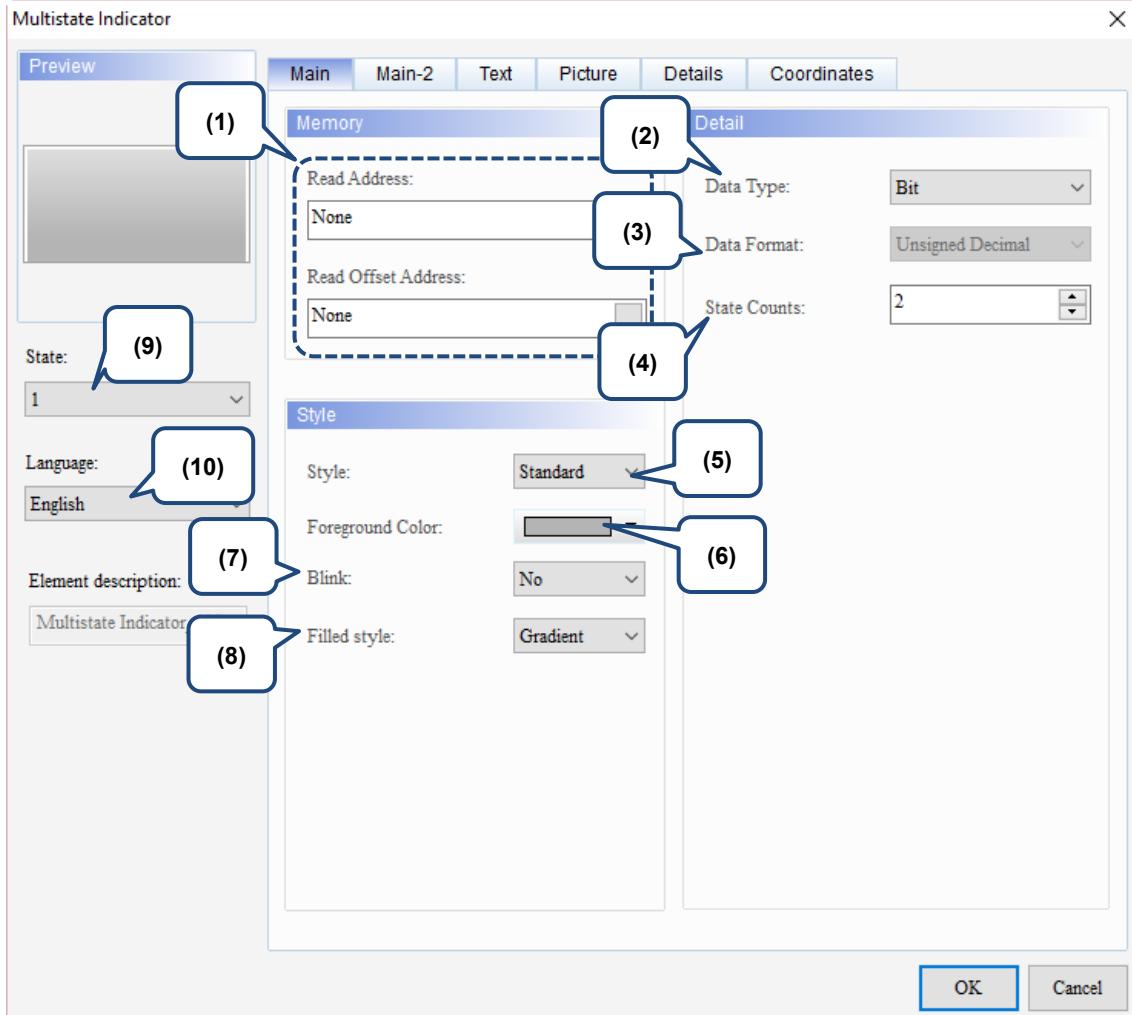
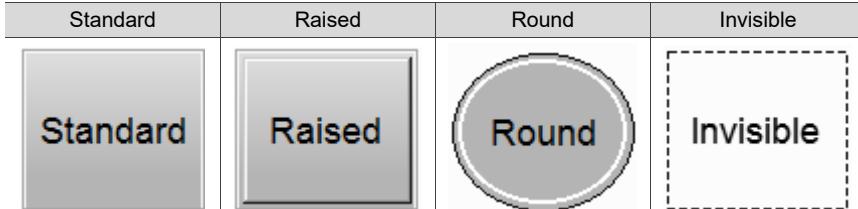
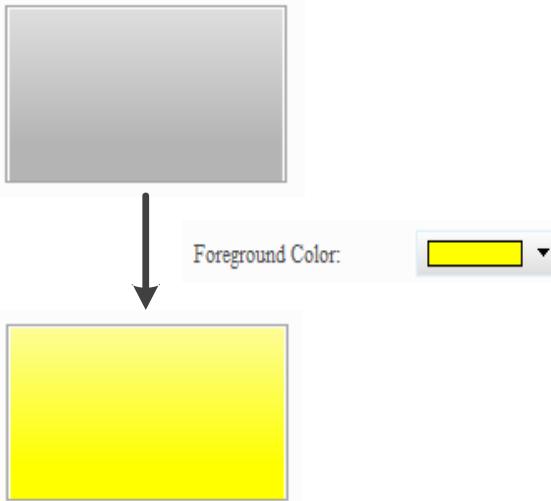
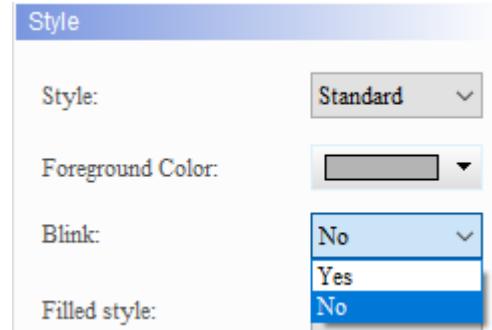
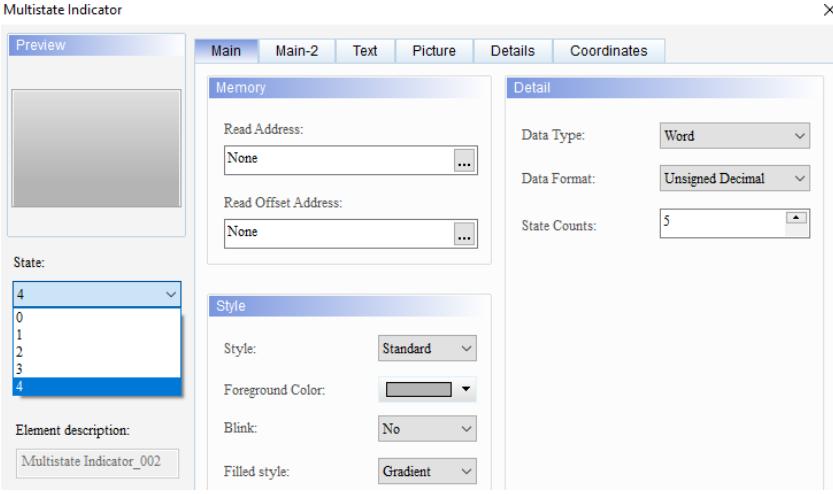
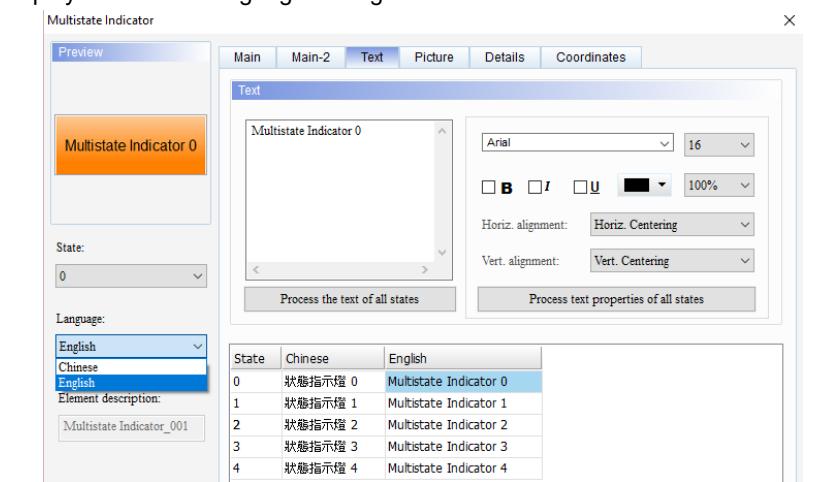


Figure 10.1.2 Main property page for the Multistate Indicator element

No.	Property	Function description												
(1)	Read Address	<ul style="list-style-type: none"> <li>You can choose the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 10.1.2.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>												
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.												
(2)	Data Type	There are four data types, Bit, Word, LSB, and LSB (Support State 0). Refer to Table 10.1.2 for more details.												
(3)	Data Format	<ul style="list-style-type: none"> <li>You can select the Data Format only when the Data Type is Word.</li> <li>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</li> </ul> <p>Detail</p> <table border="1"> <tr> <td>Data Type:</td> <td>Word</td> </tr> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td></td> <td>BCD</td> </tr> <tr> <td></td> <td>Signed Decimal</td> </tr> <tr> <td></td> <td>Unsigned Decimal</td> </tr> <tr> <td></td> <td>Hexadecimal</td> </tr> </table>	Data Type:	Word	Data Format:	Unsigned Decimal		BCD		Signed Decimal		Unsigned Decimal		Hexadecimal
Data Type:	Word													
Data Format:	Unsigned Decimal													
	BCD													
	Signed Decimal													
	Unsigned Decimal													
	Hexadecimal													

No.	Property	Function description
(4)	State Counts	Set the total state count of the Multistate Indicators. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), you can set 17 states; and if the Data Type is Bit, you can set only 2 states. Refer to Table 10.1.2 for more details.
(5)	Style	The available element styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting. 
(6)	Foreground Color	<ul style="list-style-type: none"> <li>Set the element foreground color.</li> <li>When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ul> 
(7)	Blink	Set whether the indicator blinks when it switches between states; the blink color is the contrast color of the element foreground color. 

No.	Property	Function description		
(8)	Filled style	The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.		
		Gradient		
(9)	State	By switching the State, you can preview or change the settings of each state of the element.		
				
(10)	Language	If you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.		
				

## ■ Main-2

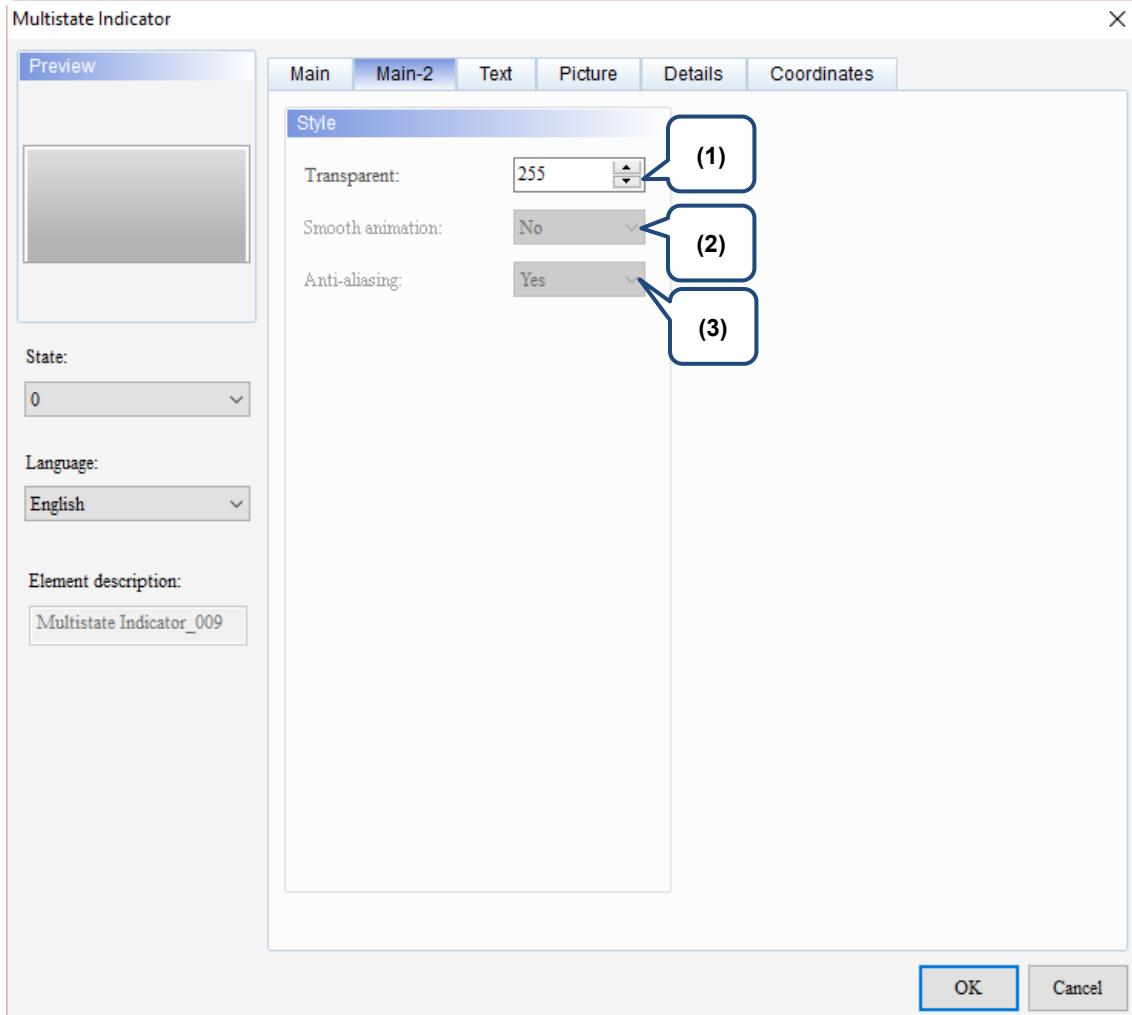


Figure 10.1.3 Main-2 property page for the Multistate Indicator element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

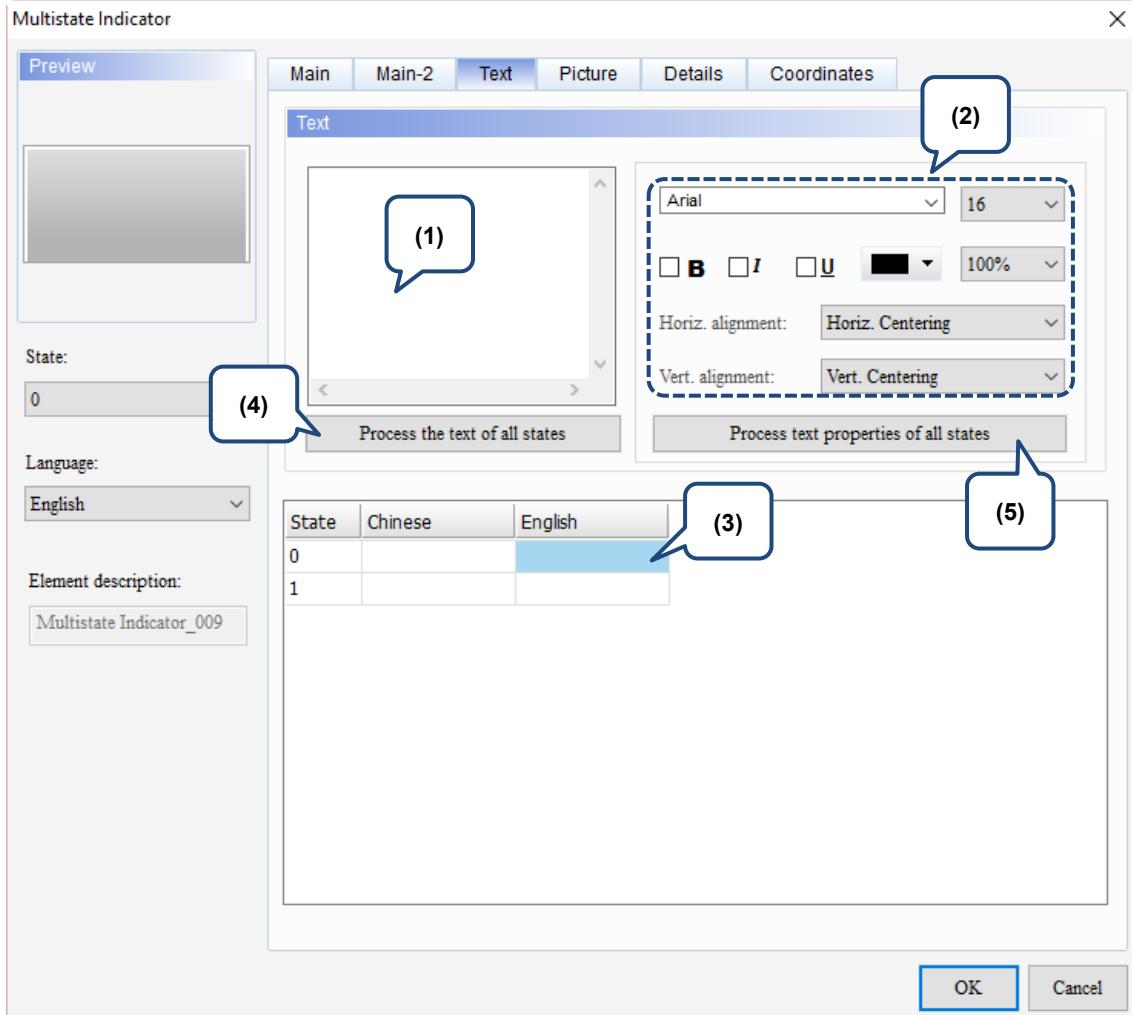
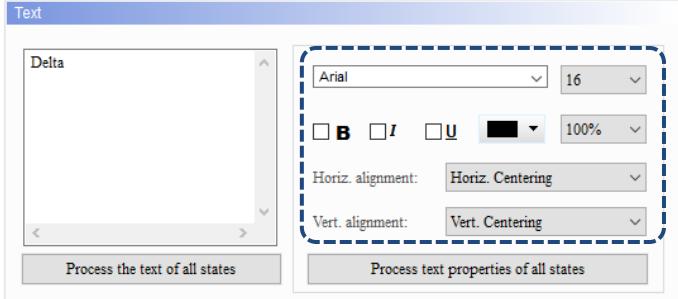
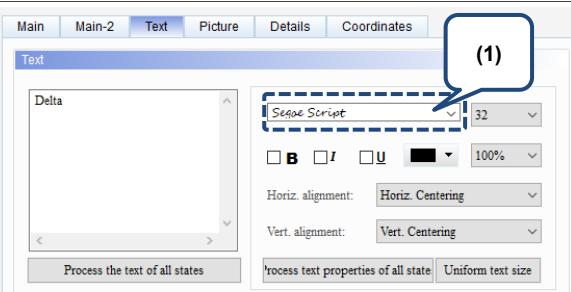
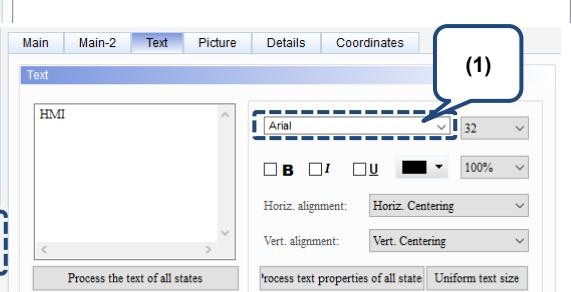
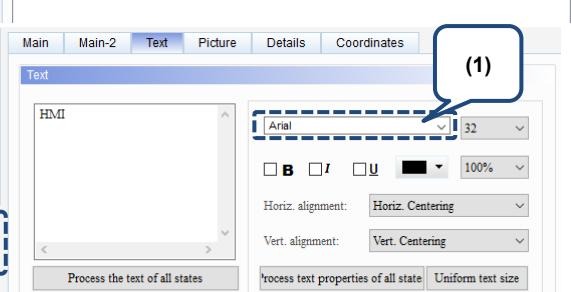
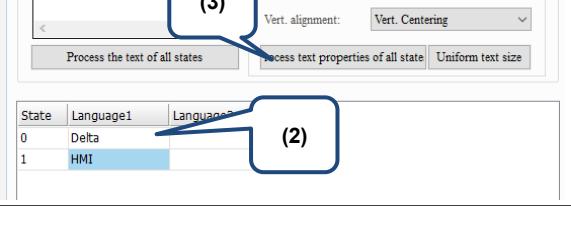
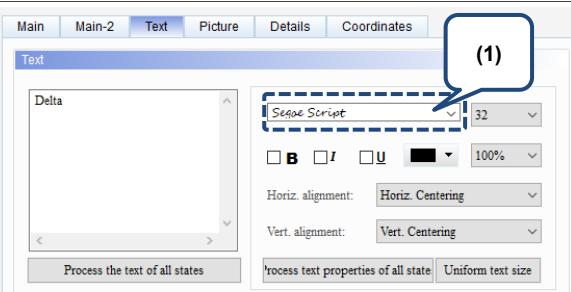
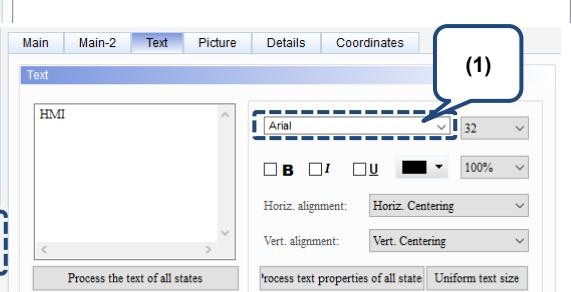
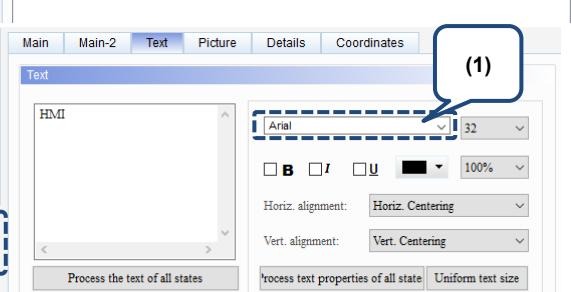
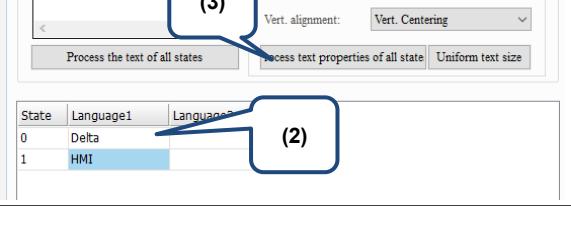
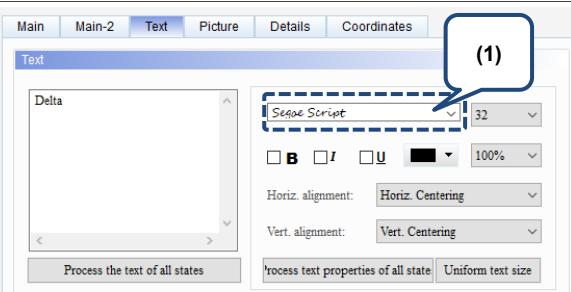
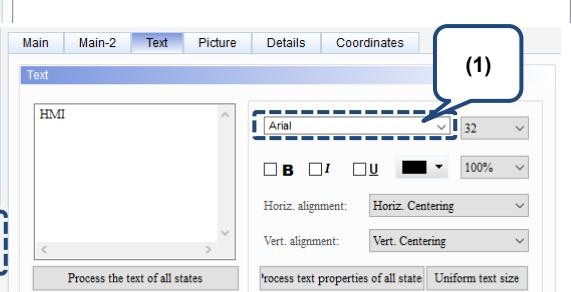
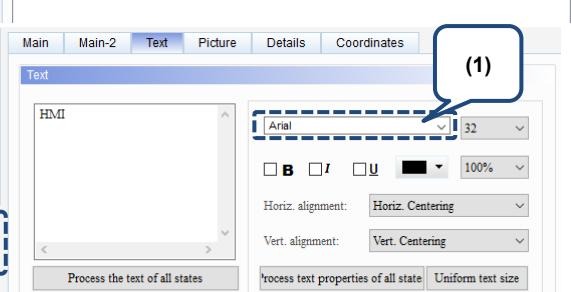
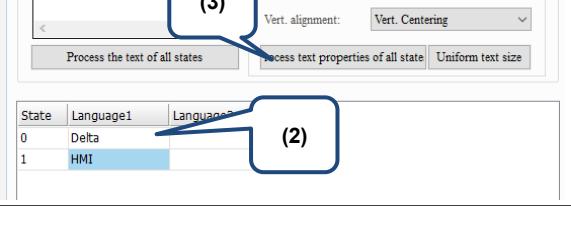


Figure 10.1.4 Text property page for the Multistate Indicator element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul>
(2)	Text	<ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key to start editing and entering the text.</li> </ul> <p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the Text property setting results.</p>

No.	Property	Function description																		
(3)	Edit multi-language text	If you have added multi-language data, the Text page allows you to edit multi-language data.																		
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. The example and setting steps are as follows.</p> <ol style="list-style-type: none"> <li>1. Enter the text "123" for State 0 and "234" for State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process the text of all states</b>, and the text of State 1 is changed to "123".</li> </ol> <p>Before</p> <table border="1"> <thead> <tr> <th>State</th> <th>Language1</th> <th>Language2</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>123</td> <td></td> </tr> <tr> <td>1</td> <td>234</td> <td></td> </tr> </tbody> </table> <p>After</p> <table border="1"> <thead> <tr> <th>State</th> <th>Language1</th> <th>Language2</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>123</td> <td></td> </tr> <tr> <td>1</td> <td>123</td> <td>123</td> </tr> </tbody> </table>	State	Language1	Language2	0	123		1	234		State	Language1	Language2	0	123		1	123	123
State	Language1	Language2																		
0	123																			
1	234																			
State	Language1	Language2																		
0	123																			
1	123	123																		

10

No.	Property	Function description				
(5)	Process text properties of all states	<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>  <p>The example and setting steps are as follows:</p> <ol style="list-style-type: none"> <li>1. Enter the text "Delta" for State 0 and "HMI" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process text properties of all states</b> and the text font of State 1 is changed to Segoe Script.</li> </ol> <table border="1"> <tr> <td>   Before         </td> <td>    <b>(1)</b>     <b>(1)</b> </td> </tr> </table> <table border="1"> <tr> <td>   After         </td> <td>    <b>(3)</b>     <b>(2)</b> </td> </tr> </table>	 Before	 <b>(1)</b>  <b>(1)</b>	 After	 <b>(3)</b>  <b>(2)</b>
 Before	 <b>(1)</b>  <b>(1)</b>					
 After	 <b>(3)</b>  <b>(2)</b>					

## ■ Picture

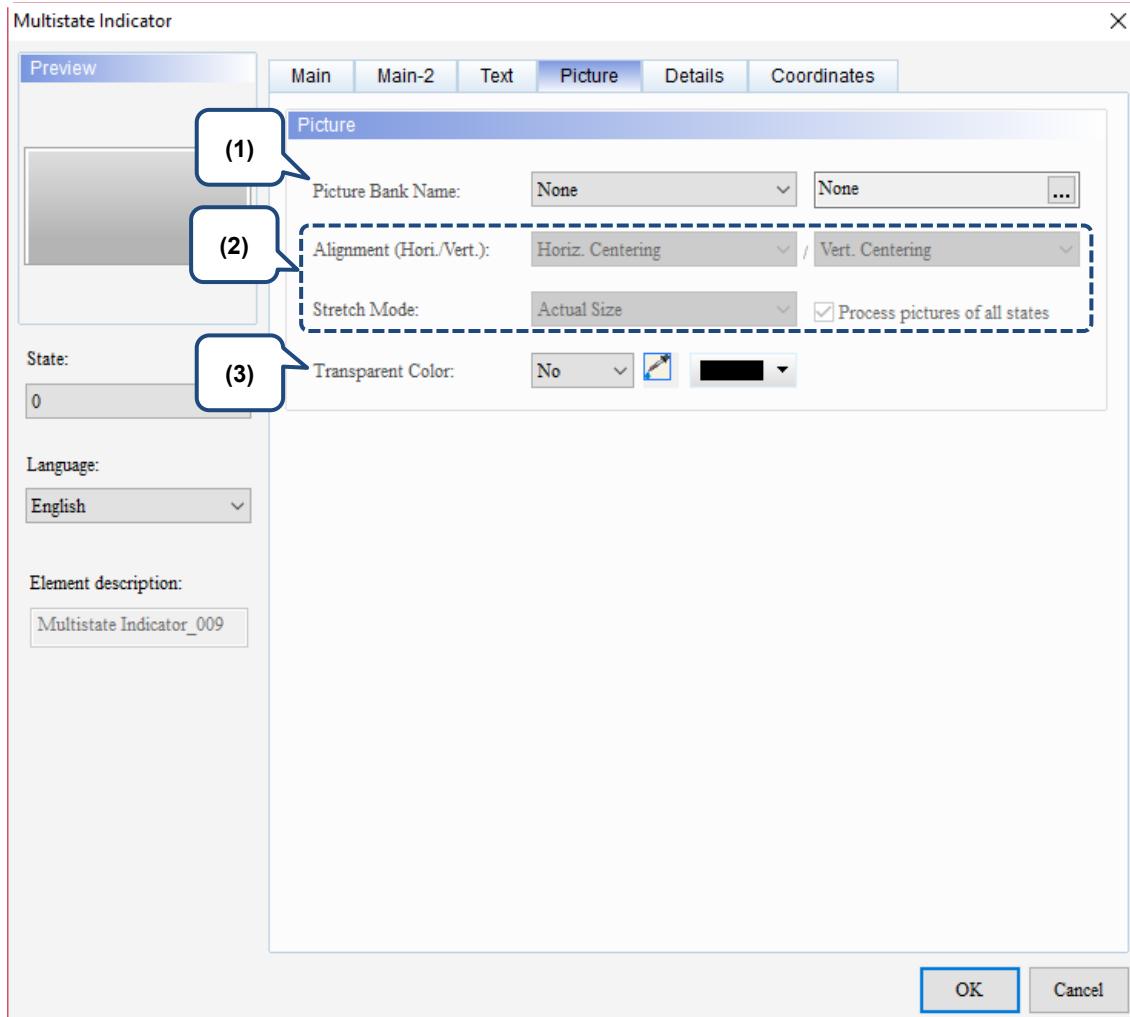
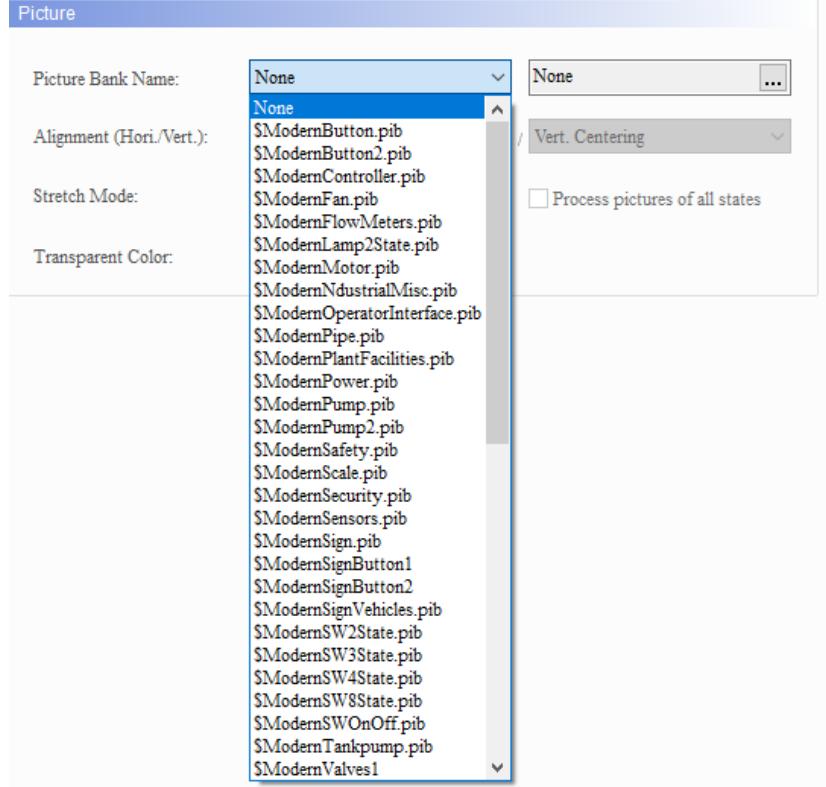
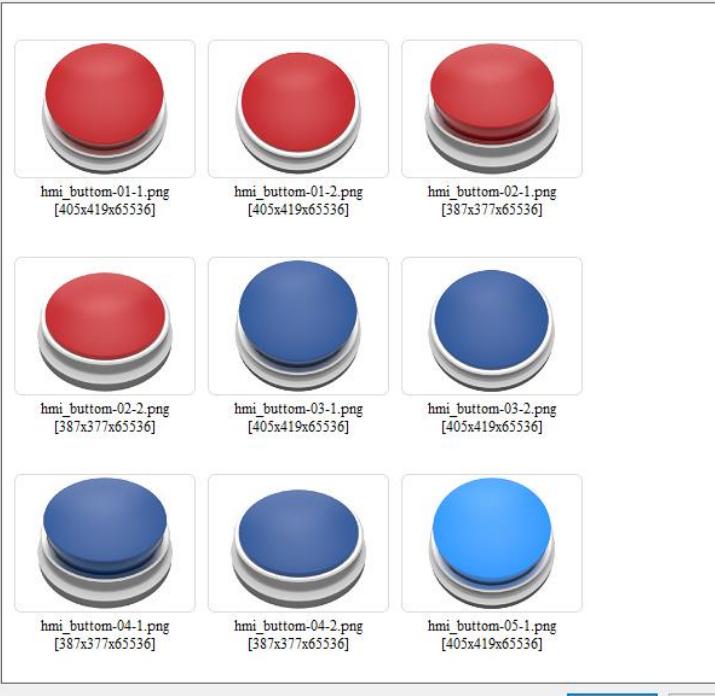
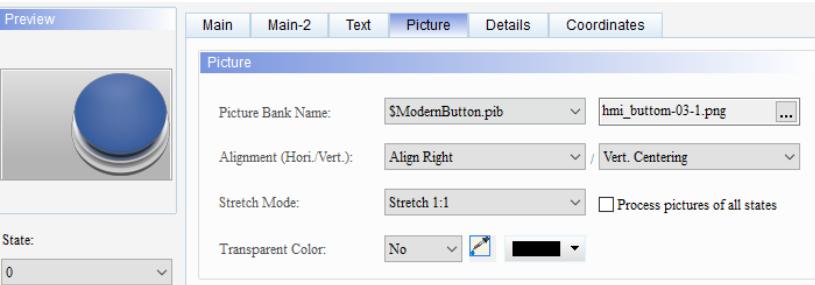


Figure 10.1.5 Picture property page for the Multistate Indicator element

No.	Property	Function description									
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>Picture</p> <p>Picture Bank Name: None</p> <p>None \$ModernButton.pib \$ModernButton2.pib \$ModernController.pib \$ModernFan.pib \$ModernFlowMeters.pib \$ModernLamp2State.pib \$ModernMotor.pib \$ModernIndustrialMisc.pib \$ModernOperatorInterface.pib \$ModernPipe.pib \$ModernPlantFacilities.pib \$ModernPower.pib \$ModernPump.pib \$ModernPump2.pib \$ModernSafety.pib \$ModernScale.pib \$ModernSecurity.pib \$ModernSensors.pib \$ModernSign.pib \$ModernSignButton1 \$ModernSignButton2 \$ModernSignVehicles.pib \$ModernSW2State.pib \$ModernSW3State.pib \$ModernSW4State.pib \$ModernSW8State.pib \$ModernSWOnOff.pib \$ModernTankpump.pib \$ModernValves1</p> <p>Alignment (Hori./Vert.): Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p><input type="checkbox"/> Process pictures of all states</p> <p>OK Cancel</p> <p>Select Picture</p>  <table border="1"> <tbody> <tr> <td> hmi_button-01-1.png [405x419x65536]</td> <td> hmi_button-01-2.png [405x419x65536]</td> <td> hmi_button-02-1.png [387x377x65536]</td> </tr> <tr> <td> hmi_button-02-2.png [387x377x65536]</td> <td> hmi_button-03-1.png [405x419x65536]</td> <td> hmi_button-03-2.png [405x419x65536]</td> </tr> <tr> <td> hmi_button-04-1.png [387x377x65536]</td> <td> hmi_button-04-2.png [387x377x65536]</td> <td> hmi_button-05-1.png [405x419x65536]</td> </tr> </tbody> </table> <p>OK Cancel</p>	 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]	 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]	 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]
 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]									
 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]									
 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]									

No.	Property	Function description					
(2)	Alignment	<ul style="list-style-type: none"> <li>You can use the alignment options to set how pictures are aligned.</li> </ul>  <p>The screenshot shows the 'Picture' tab of the properties dialog. It includes fields for 'Picture Bank Name' (\$ModernButton.pib), 'Alignment (Hori./Vert.)' (Align Right / Vert. Centering), 'Stretch Mode' (Stretch 1:1), and 'Transparent Color' (No). There is also a preview window showing a blue button.</p>					
	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table> 	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.
Stretch All	Stretch 1:1	Actual Size					
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.					
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 					

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## ■ Details

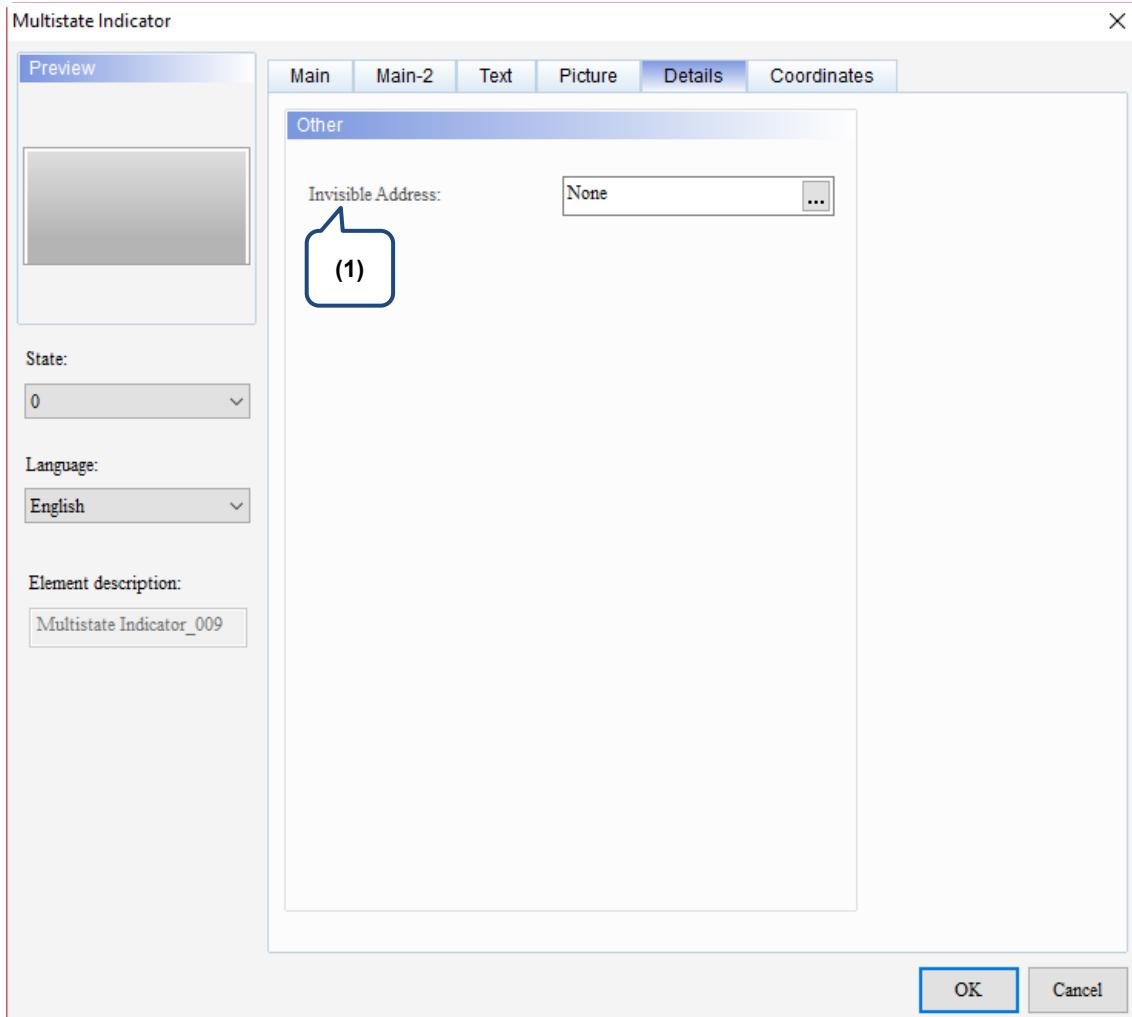


Figure 10.1.6 Details property page for the Multistate Indicator element

No.	Property	Function description						
(1)	Invisible Address	When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.						
		<table border="1"> <tr> <td>Invisible Address is Off</td> <td></td> <td>Invisible Address \$9.0 OFF</td> </tr> <tr> <td>Invisible Address is On</td> <td style="border: 2px dashed blue; padding: 5px;">Element is invisible</td> <td>Invisible Address \$9.0 ON</td> </tr> </table>	Invisible Address is Off		Invisible Address \$9.0 OFF	Invisible Address is On	Element is invisible	Invisible Address \$9.0 ON
Invisible Address is Off		Invisible Address \$9.0 OFF						
Invisible Address is On	Element is invisible	Invisible Address \$9.0 ON						

## ■ Coordinates

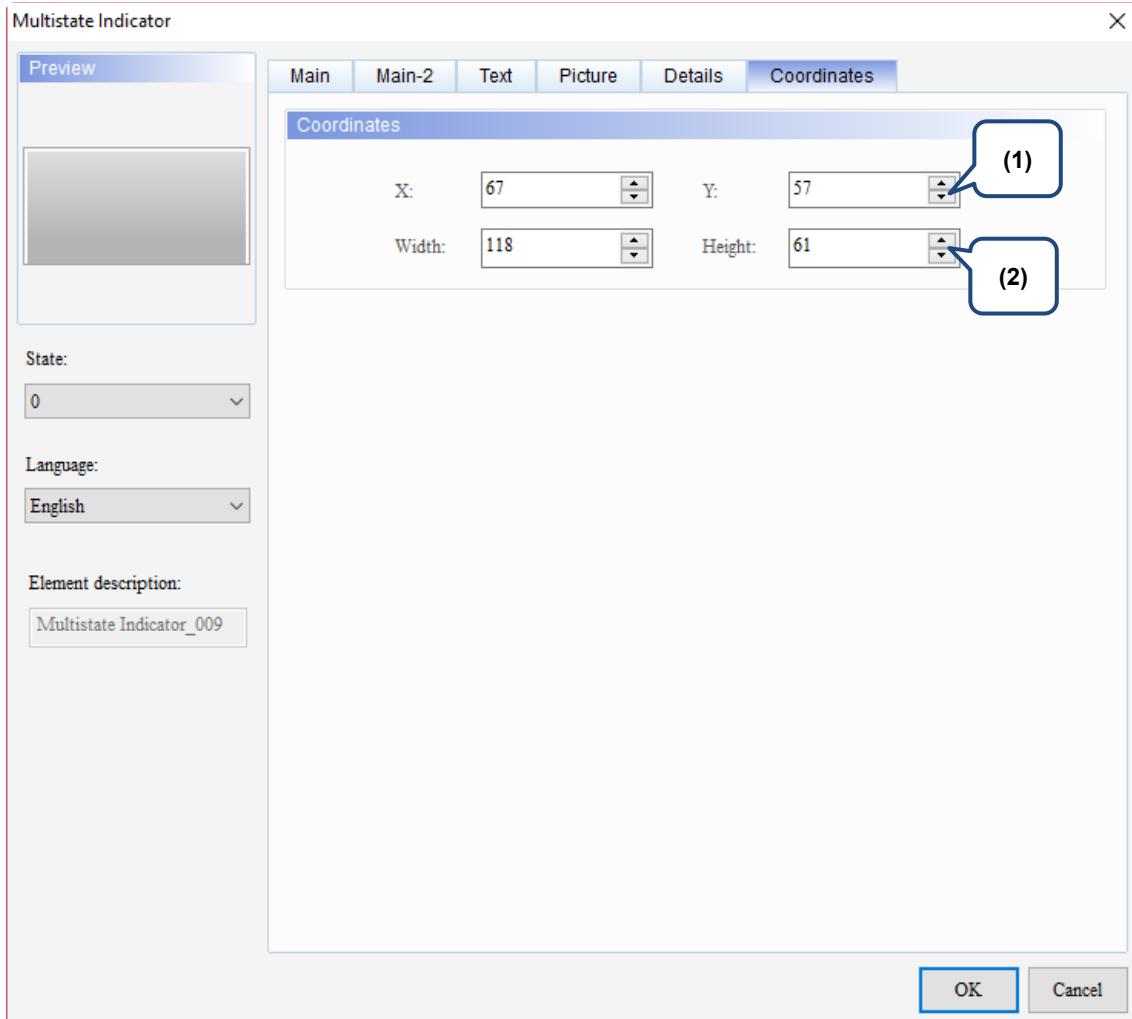


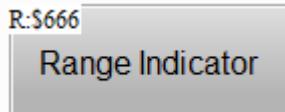
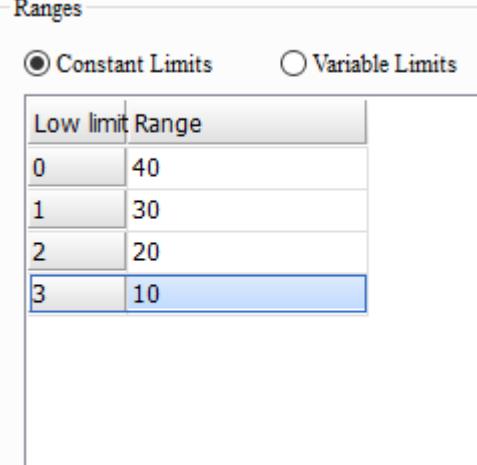
Figure 10.1.7 Coordinates property page for the Multistate Indicator element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

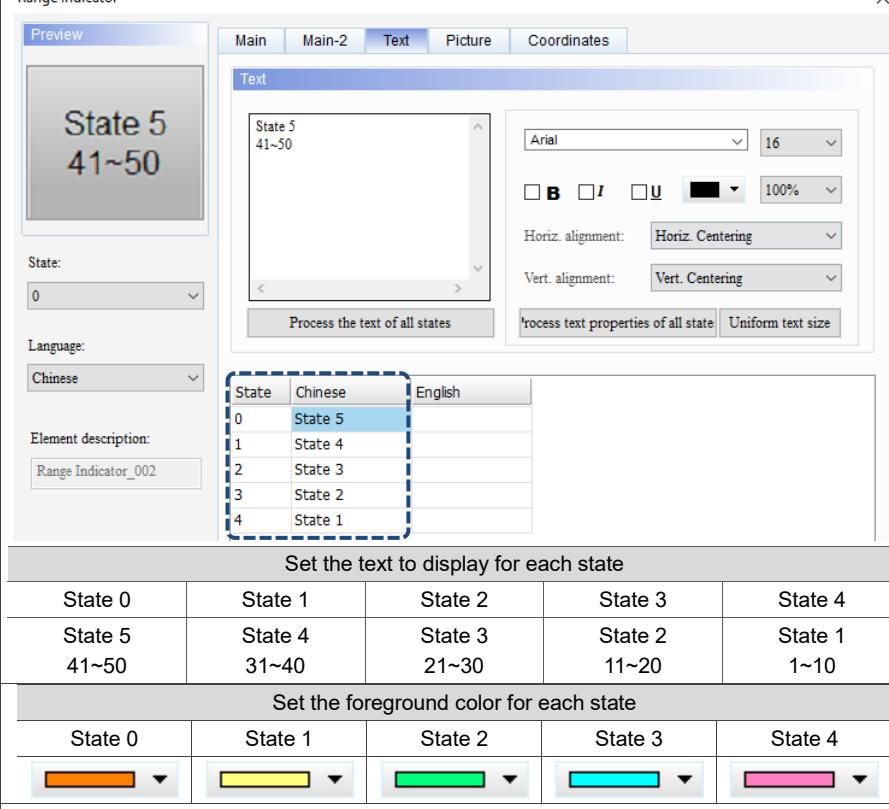
## 10.2 Range Indicator

The Range Indicator is the same as the Multistate Indicator. Their function is to display the state of a given address. The element displays different states according to the range values corresponding to the read address values. Refer to Table 10.2.1 for the Range Indicator example.

Table 10.2.1 Range Indicator example

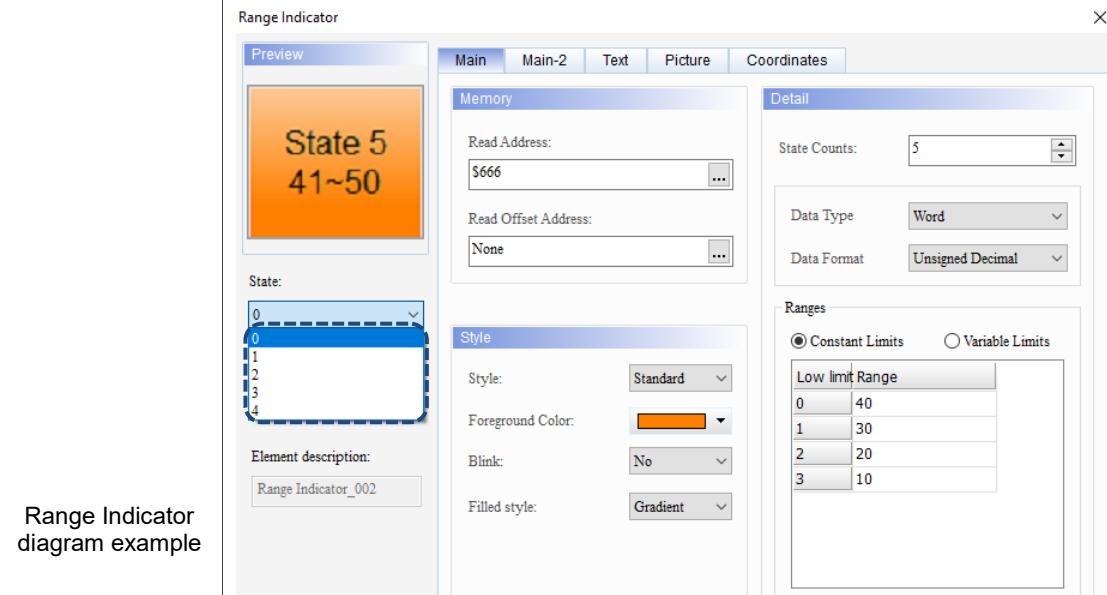
Range Indicator												
	Range Indicator element											
Read Address	Read Address	\$666										
												
Detail settings	<p>Data Type: Word Data Format: Unsigned Decimal State Counts: 5</p>											
Ranges	 <p><b>Ranges</b></p> <p><input checked="" type="radio"/> Constant Limits    <input type="radio"/> Variable Limits</p> <table border="1"><thead><tr><th>Low limit</th><th>Range</th></tr></thead><tbody><tr><td>0</td><td>40</td></tr><tr><td>1</td><td>30</td></tr><tr><td>2</td><td>20</td></tr><tr><td>3</td><td>10</td></tr></tbody></table>		Low limit	Range	0	40	1	30	2	20	3	10
Low limit	Range											
0	40											
1	30											
2	20											
3	10											

10

Range Indicator																			
<p>Input text in the Text property page</p>	 <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>State</th><th>Chinese</th><th>English</th></tr> </thead> <tbody> <tr><td>0</td><td>State 5 41~50</td><td></td></tr> <tr><td>1</td><td>State 4 31~40</td><td>State 3 21~30</td></tr> <tr><td>2</td><td>State 3 21~30</td><td>State 2 11~20</td></tr> <tr><td>3</td><td>State 2 11~20</td><td>State 1 1~10</td></tr> <tr><td>4</td><td>State 1 1~10</td><td></td></tr> </tbody> </table>	State	Chinese	English	0	State 5 41~50		1	State 4 31~40	State 3 21~30	2	State 3 21~30	State 2 11~20	3	State 2 11~20	State 1 1~10	4	State 1 1~10	
State	Chinese	English																	
0	State 5 41~50																		
1	State 4 31~40	State 3 21~30																	
2	State 3 21~30	State 2 11~20																	
3	State 2 11~20	State 1 1~10																	
4	State 1 1~10																		
<p>Foreground Color</p>	Set the foreground color for each state																		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">State 0</td><td style="width: 20%;">State 1</td><td style="width: 20%;">State 2</td><td style="width: 20%;">State 3</td><td style="width: 20%;">State 4</td></tr> <tr> <td></td><td></td><td></td><td></td><td></td></tr> </table>	State 0	State 1	State 2	State 3	State 4													
State 0	State 1	State 2	State 3	State 4															
																			
<p>Clock Macro</p>	<p>Go to [Options] &gt; [Clock Macro] to input the following macro command.</p> <pre> [&amp;Clock Macro] [File] [Save] [New] [Cut] [Copy] [Paste] [Delete] [Find] [Replace] [Properties] [Clock Macro] 1 \$666 = \$666 + 1 2 IF \$666 == 50 3 \$666 = 0 4 ENDIF </pre>																		

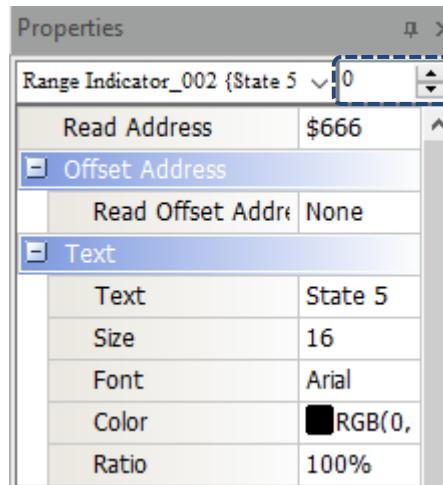
### Range Indicator

- Double-click the element to view the diagram of each state. In this example, the State Counts is set to 5, so the state values are 0 - 4, as shown in the blue mark in the following figure.



Range Indicator  
diagram example

- You can also go to the upper right corner in the Properties window of the element to switch the state.



After you compile and download the screen data to the HMI, the Range Indicator displays the value range of each state on the element based on the range value set in the read address.

Execution results	Execution result of each state				
	State 0	State 1	State 2	State 3	State 4
	State 5 41~50	State 4 31~40	State 3 21~30	State 2 11~20	State 1 1~10

When you double-click the Range Indicator, the property page is shown as follows.

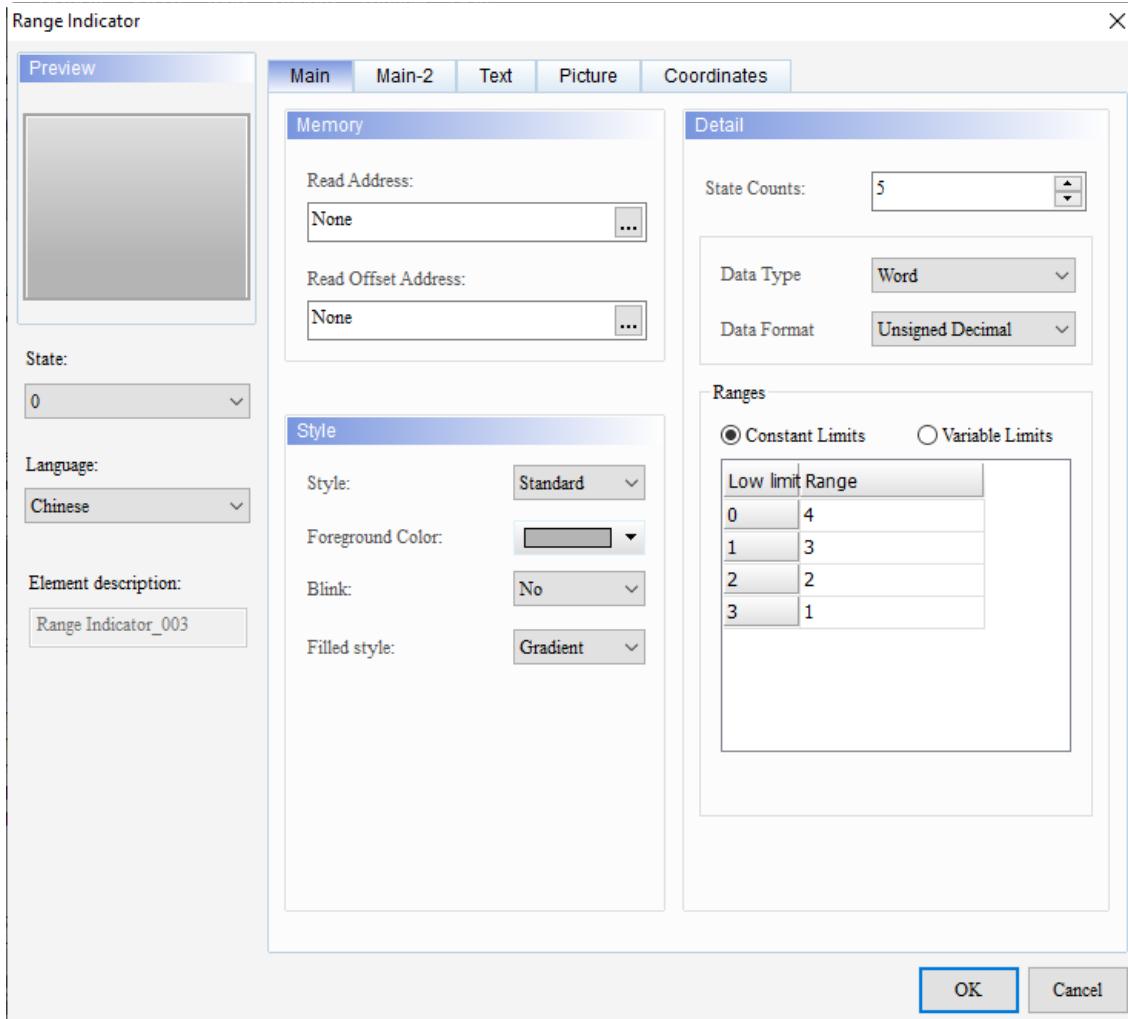


Figure 10.2.1 Properties of Range Indicator

Table 10.2.2 Function page of Range Indicator

Range Indicator	
Function page	Description
Preview	You can view the multistate values and multi-language display data of the element.
Main	Set the Read Address and Read Offset Address. Set the Style, Foreground Color, Blink, and Filled style of the element. Set the State Counts, Data type, Data Format, Ranges (Constant Limits or Variable Limits), and select the <b>Continuous Address</b> check box.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Coordinates	Set the X and Y coordinates, width, and height of the element.

## ■ Main

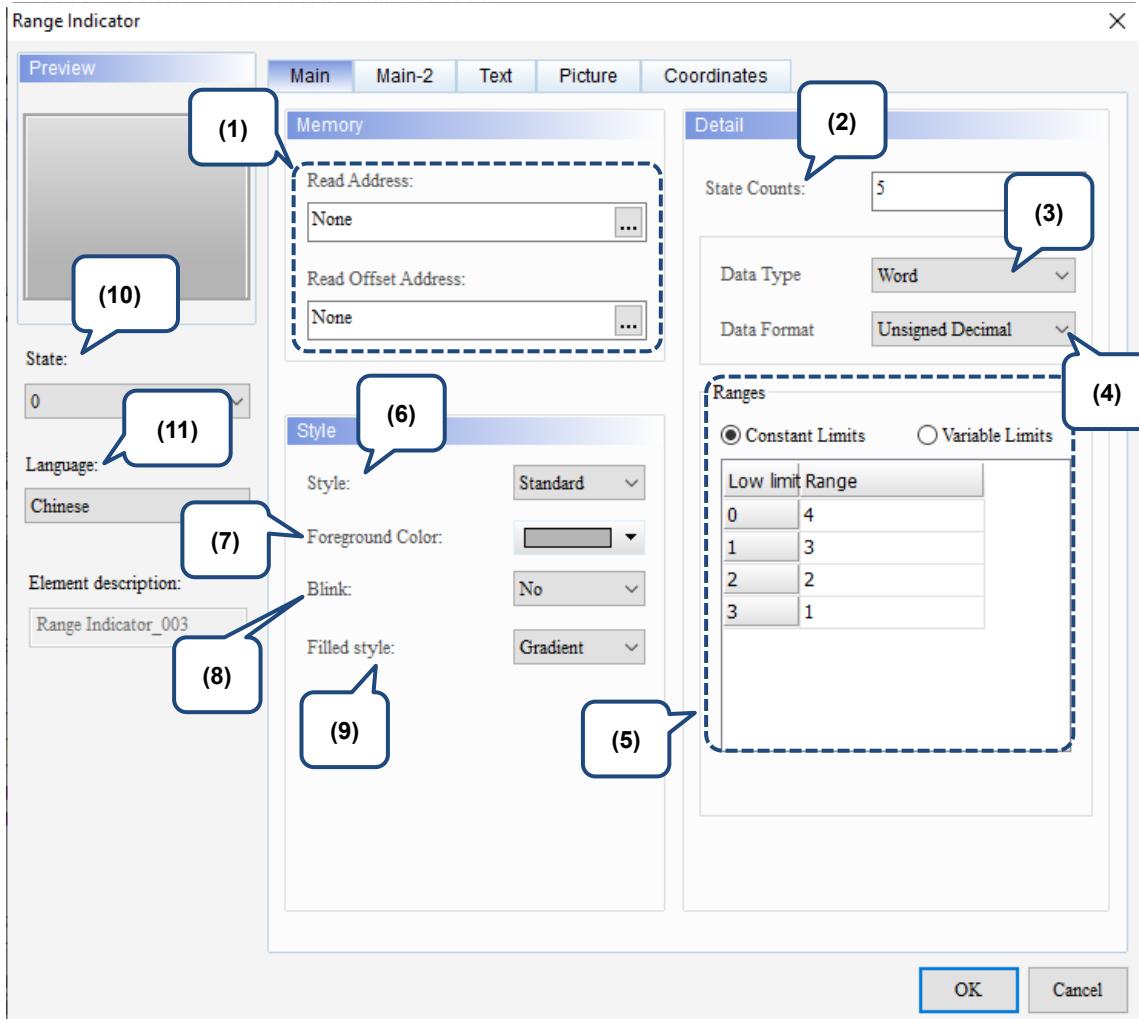
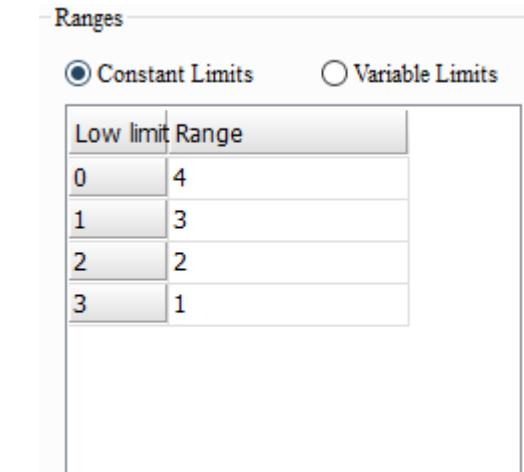
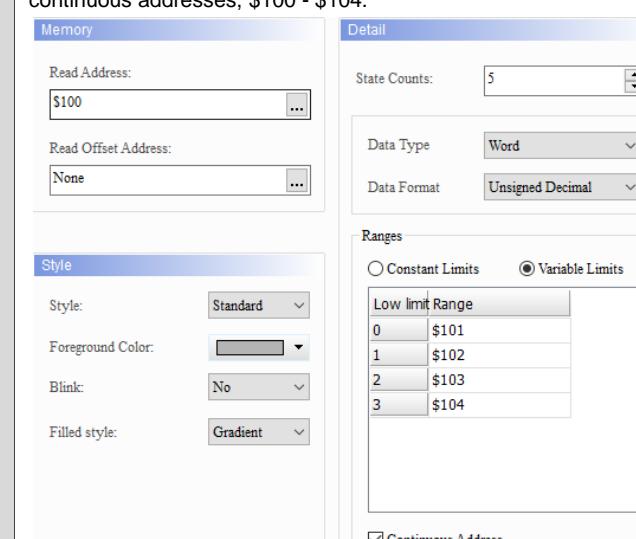
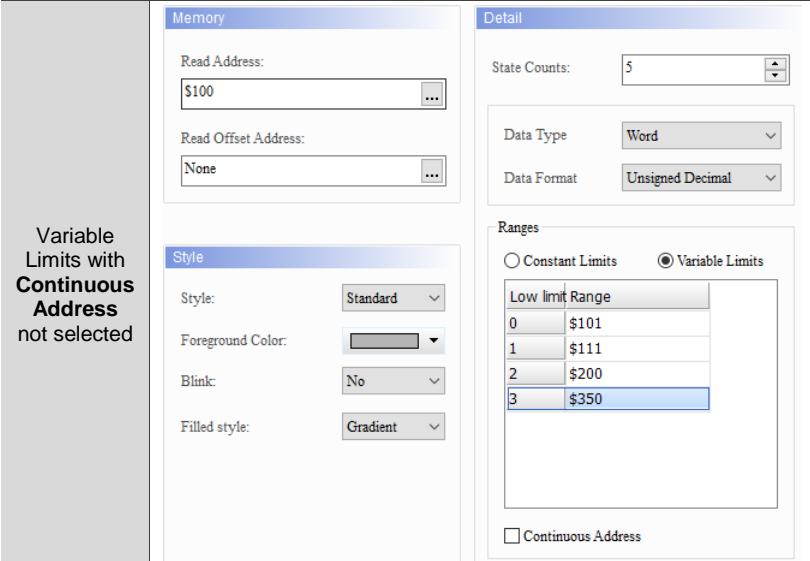
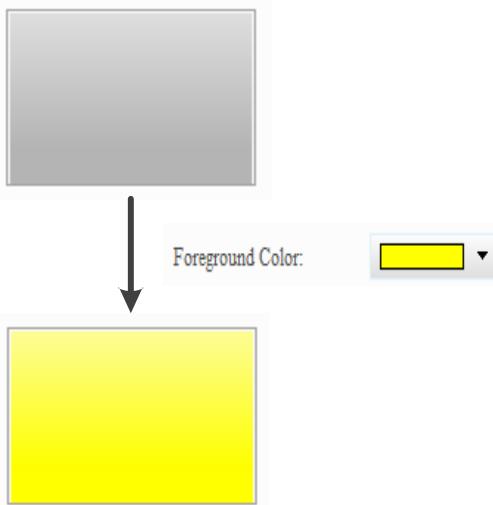


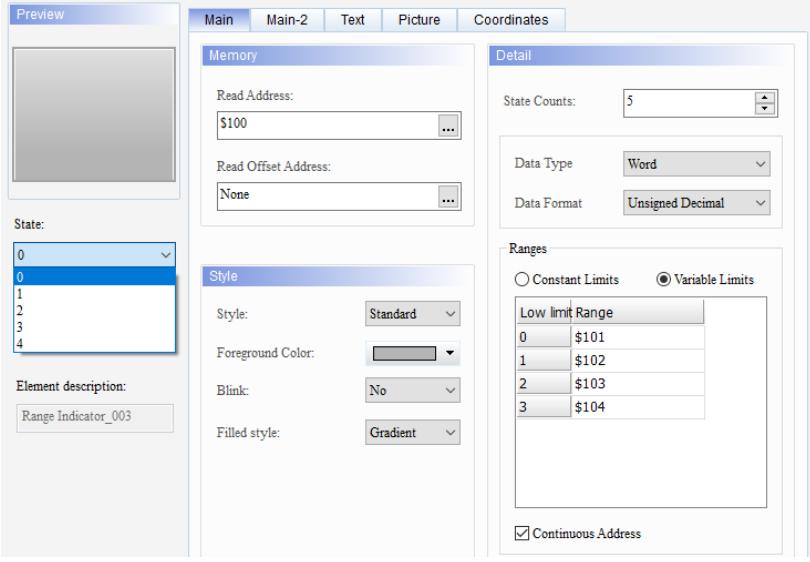
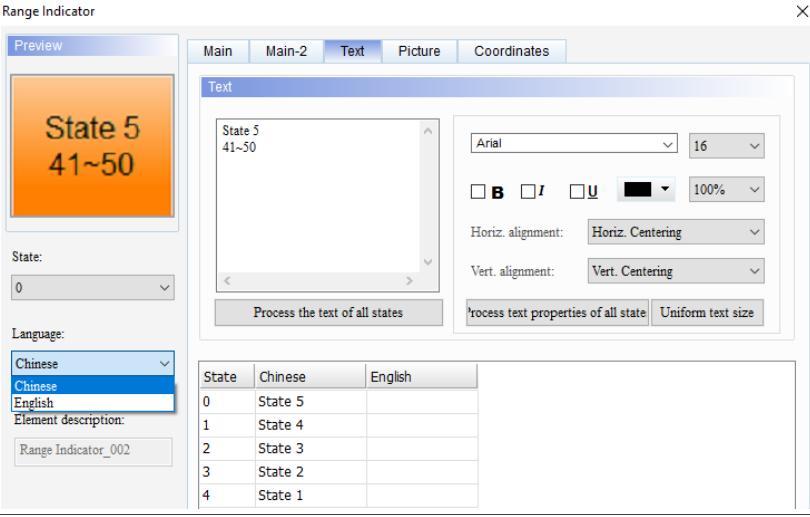
Figure 10.2.2. Main property page for the Range Indicator element

No.	Property	Function description											
(1)	Read Address	<ul style="list-style-type: none"> <li>You can choose the internal memory address or controller register address. The input memory type has to be Word.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>											
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.											
(2)	State Counts	Set the state count for the Range Indicator. If the Data Type is Word or Double Word, you can set 1 - 256 states.											
(3)	Data Type	There are two Data Types: Word and Double Word.  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Word</td> </tr> <tr> <td style="padding: 2px;">Word</td> </tr> <tr> <td style="padding: 2px;">Double Word</td> </tr> </table>	Word	Word	Double Word								
Word													
Word													
Double Word													
Data Format	When the Data Type is either Word or Double Word, the Data Formats include BCD, Signed BCD, Signed Decimal, and Unsigned Decimal.  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Word</td> <td style="padding: 2px;">Double Word</td> </tr> <tr> <td style="padding: 2px;">Unsigned Decimal</td> <td style="padding: 2px;">Unsigned Decimal</td> </tr> <tr> <td style="padding: 2px;">BCD</td> <td style="padding: 2px;">BCD</td> </tr> <tr> <td style="padding: 2px;">Signed BCD</td> <td style="padding: 2px;">Signed BCD</td> </tr> <tr> <td style="padding: 2px;">Signed Decimal</td> <td style="padding: 2px;">Signed Decimal</td> </tr> <tr> <td style="padding: 2px;">Unsigned Decimal</td> <td style="padding: 2px;">Unsigned Decimal</td> </tr> </table>	Word	Double Word	Unsigned Decimal	Unsigned Decimal	BCD	BCD	Signed BCD	Signed BCD	Signed Decimal	Signed Decimal	Unsigned Decimal	Unsigned Decimal
Word	Double Word												
Unsigned Decimal	Unsigned Decimal												
BCD	BCD												
Signed BCD	Signed BCD												
Signed Decimal	Signed Decimal												
Unsigned Decimal	Unsigned Decimal												

No.	Property	Function description
(5)	Ranges	<p>■ You can set the range values as constants or variables for the Range Indicator.</p> <p>■ Under <b>Ranges</b>, if you click <b>Constant Limits</b>, it means the input value is a constant; if you click <b>Variable Limits</b>, you can define the value with a memory address.</p> <p>■ Under <b>Ranges</b>, if you click <b>Variable Limits</b>, then you can set whether it should be a continuous address. Once you select the <b>Continuous Address</b> check box, the software automatically calculates the address range based on the Read Address and Data Type set for the Range Indicator.</p> <p>■ After selecting the <b>Continuous Address</b> check box, you cannot enter the memory address.</p> <p>Constant Limits</p> 
	Variable Limits with <b>Continuous Address</b> selected	<p>Set \$100 for the Read Address. If you select the <b>Continuous Address</b> check box, then the software automatically calculates the continuous addresses, \$100 - \$104.</p> 

No.	Property	Function description								
(5)	Ranges	<p>Variable Limits with <b>Continuous Address</b> not selected</p> 								
(6)	Style	<p>The available element styles are Standard, Raised, Round, and Invisible. You can change the appearance of the element with this setting.</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Standard</td> <td>Raised</td> <td>Round</td> <td>Invisible</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Round	Invisible				
Standard	Raised	Round	Invisible							
(7)	Foreground Color	<ul style="list-style-type: none"> <li>■ Set the element foreground color.</li> <li>■ When you set the Style to Invisible, the Foreground Color setting is invalid.</li> </ul> 								
(8)	Blink	<p>Set whether the indicator blinks when it switches between states; the blink color is the contrast color of the element foreground color.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Blink:</td> <td></td> </tr> <tr> <td>Filled style:</td> <td></td> </tr> </table>	Blink:		Filled style:					
Blink:										
Filled style:										

10

No.	Property	Function description		
(9)	Filled style	Gradient		
		Fixed (Solid)		
(10)	State	You can check the state values through State.		
				
(11)	Language	If you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.		
				

## ■ Main-2

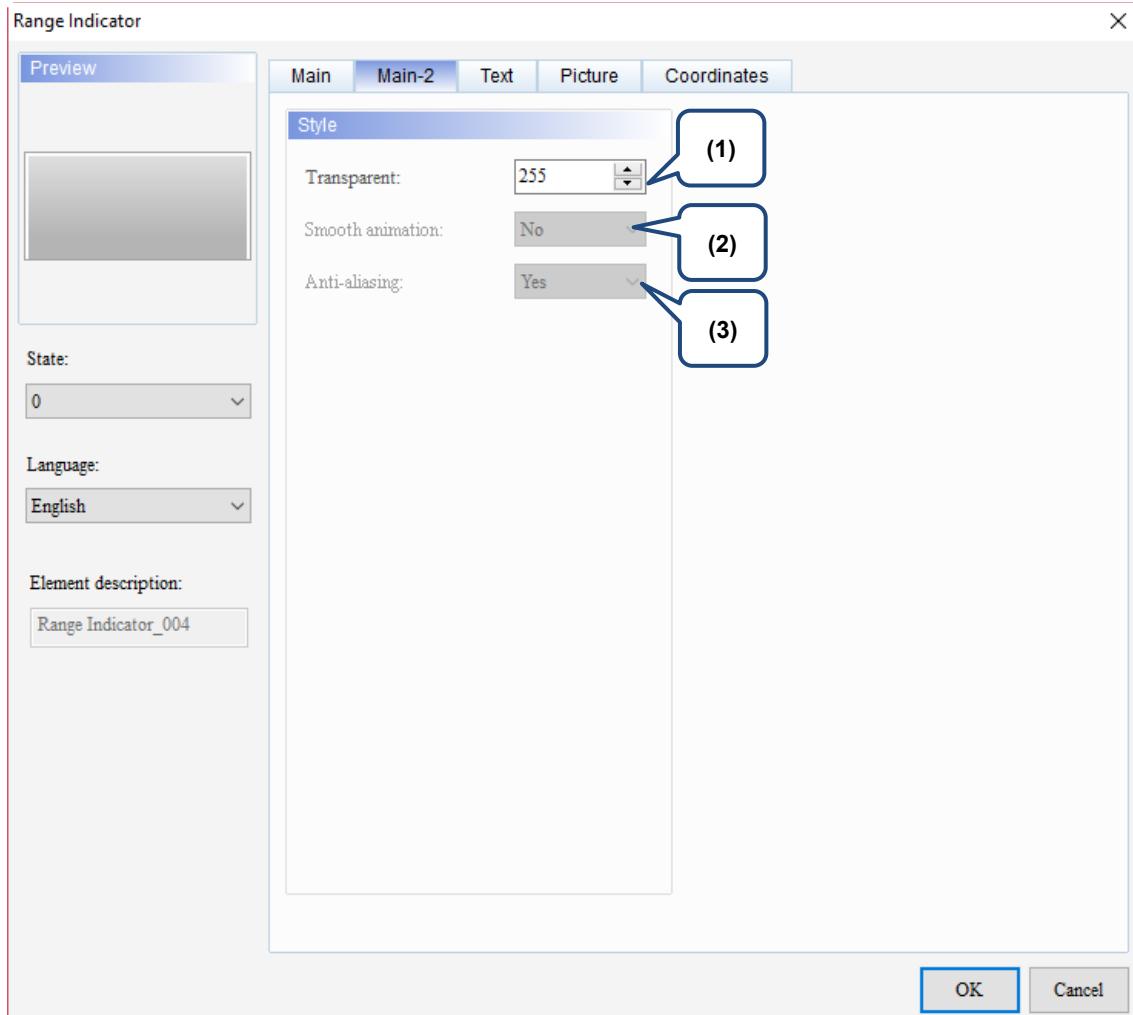


Figure 10.2.3 Main-2 property page for the Range Indicator element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Text

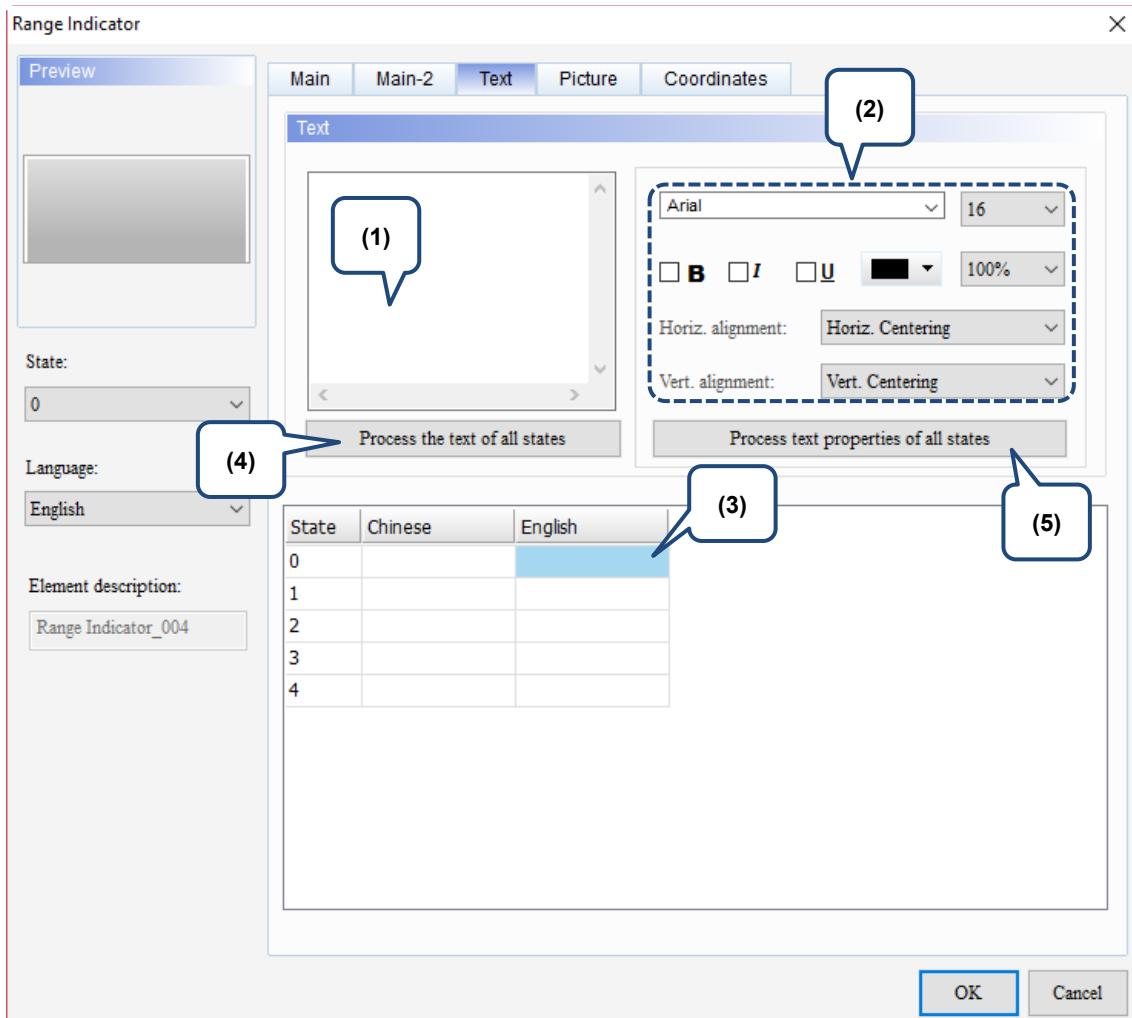
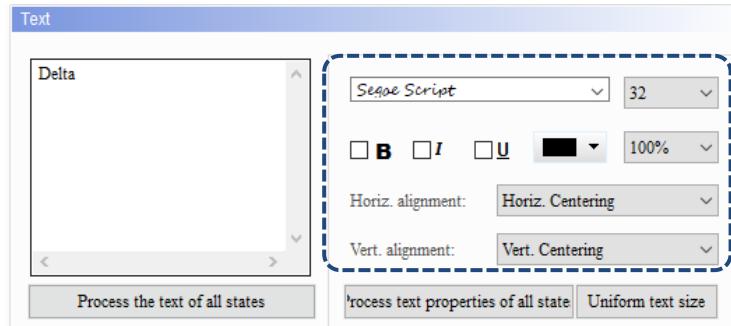
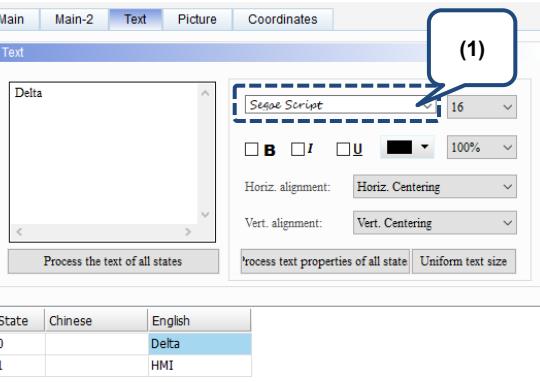
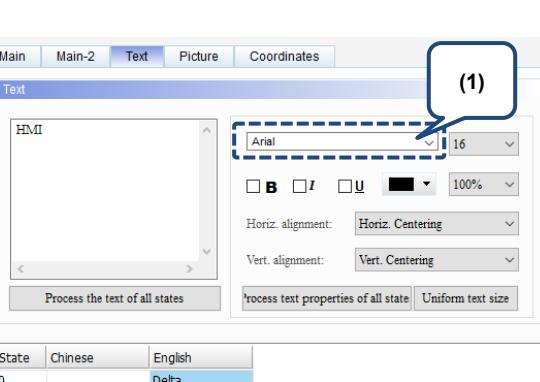
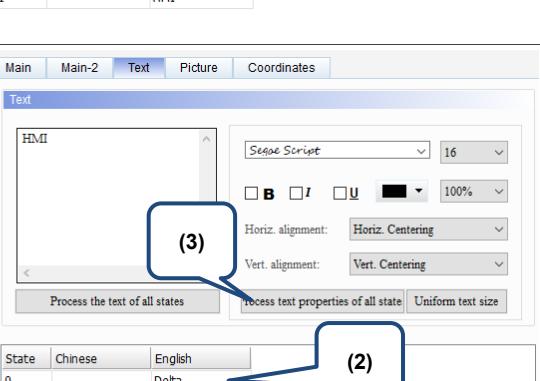
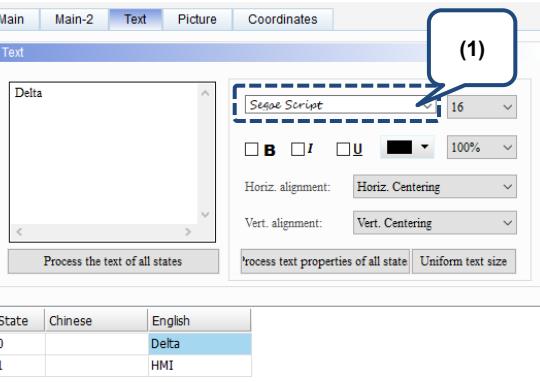
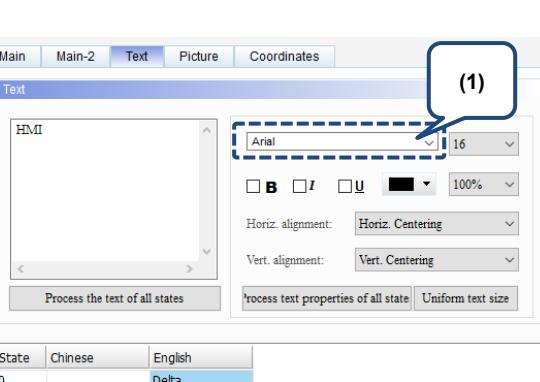
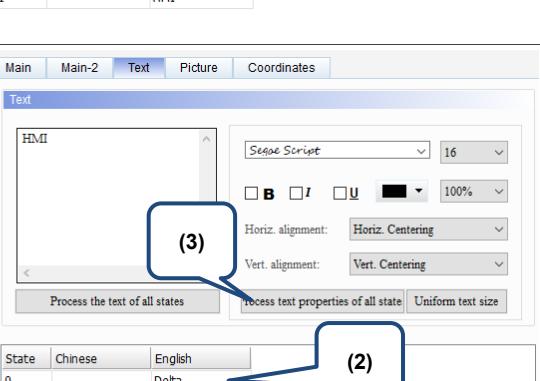
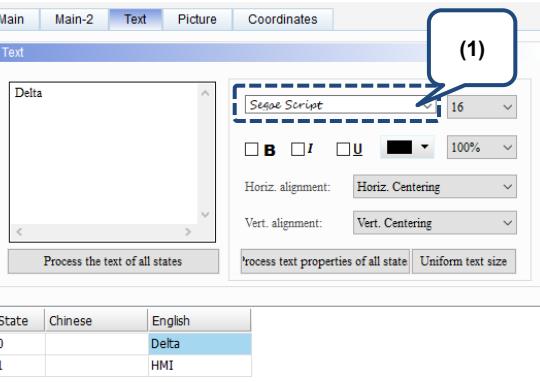
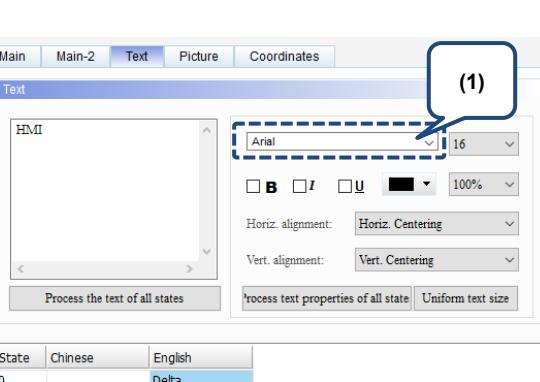
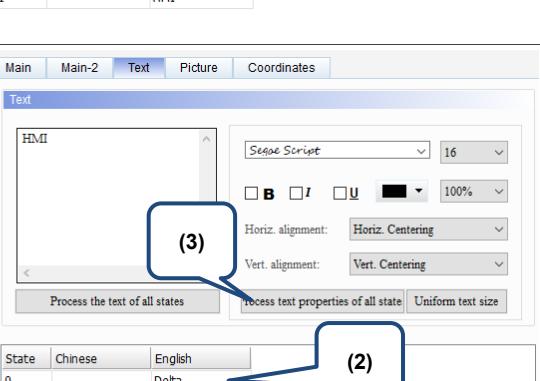


Figure 10.2.4 Text property page for the Range Indicator element

No.	Property	Function description																		
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr><td>0</td><td>台達電子</td><td>Delta</td></tr> <tr><td>1</td><td>人機介面</td><td>HMI</td></tr> <tr><td>2</td><td>測試工程</td><td>TE</td></tr> <tr><td>3</td><td>機電事業群</td><td>IABG</td></tr> <tr><td>4</td><td>品質</td><td>Quality</td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key to start editing and entering the text.</li> </ul>	State	Chinese	English	0	台達電子	Delta	1	人機介面	HMI	2	測試工程	TE	3	機電事業群	IABG	4	品質	Quality
State	Chinese	English																		
0	台達電子	Delta																		
1	人機介面	HMI																		
2	測試工程	TE																		
3	機電事業群	IABG																		
4	品質	Quality																		
(2)	Text	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the Text property setting results.																		

No.	Property	Function description
(3)	Edit multi-language text	<p>If you have added multi-language data, the Text page allows you to edit multi-language data.</p>
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. The example and setting steps are as follows.</p> <ol style="list-style-type: none"> <li>1. Enter the texts for State 0 to State 4.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process the text of all states</b> and the texts of State 1 to State 4 are changed to "123".</li> </ol> <p>The screenshot shows the DOPSoft software interface. On the left, there's a preview window showing the number '123'. To its right is a 'Text' panel with various settings like font (Arial), size (16), and alignment (Horiz. Centering). Below these are two tables. The first table, labeled 'Before', has columns for State, Chinese, and English. It shows State 0 with Chinese '123' and English '123', while States 1-4 have Chinese '111', '222', '333', and '444' respectively, and English is empty. The second table, labeled 'After', shows the same structure but with English values '123' for all states (1-4). A blue callout (1) points to the 'Language' dropdown in the 'Text' panel. Callouts (2) and (3) point to the table rows and the 'Process the text of all states' button respectively.</p>

No.	Property	Function description																		
(5)	Process text properties of all states	<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>  <p>The example and setting steps are as follows:</p> <ol style="list-style-type: none"> <li>1. Enter the text "Delta" for State 0 and "HMI" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process text properties of all states</b> and the text font of State 1 is changed to Segoe Script.</li> </ol> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Before</th> </tr> <tr> <th style="width: 15%;">Preview</th> <th style="width: 60%;">Main</th> <th style="width: 25%;">Coordinates</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"> <b>Main</b>   Main-2   <b>Text</b>   Picture   Coordinates  <b>Text</b>            Delta            State: 0            Language: English            Element description: Range Indicator_003         </td> <td style="text-align: center;">           (1)   </td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"> <b>Main</b>   Main-2   <b>Text</b>   Picture   Coordinates  <b>Text</b>            HMI            State: 1            Language: English            Element description: Range Indicator_003         </td> <td style="text-align: center;">  </td> </tr> <tr> <th colspan="3" style="text-align: center;">After</th> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"> <b>Main</b>   Main-2   <b>Text</b>   Picture   Coordinates  <b>Text</b>            HMI            State: 1            Language: English            Element description: Range Indicator_003         </td> <td style="text-align: center;">  </td> </tr> </tbody> </table>	Before			Preview	Main	Coordinates		<b>Main</b> Main-2 <b>Text</b> Picture   Coordinates <b>Text</b> Delta State: 0 Language: English Element description: Range Indicator_003	(1) 		<b>Main</b> Main-2 <b>Text</b> Picture   Coordinates <b>Text</b> HMI State: 1 Language: English Element description: Range Indicator_003		After				<b>Main</b> Main-2 <b>Text</b> Picture   Coordinates <b>Text</b> HMI State: 1 Language: English Element description: Range Indicator_003	
Before																				
Preview	Main	Coordinates																		
	<b>Main</b> Main-2 <b>Text</b> Picture   Coordinates <b>Text</b> Delta State: 0 Language: English Element description: Range Indicator_003	(1) 																		
	<b>Main</b> Main-2 <b>Text</b> Picture   Coordinates <b>Text</b> HMI State: 1 Language: English Element description: Range Indicator_003																			
After																				
	<b>Main</b> Main-2 <b>Text</b> Picture   Coordinates <b>Text</b> HMI State: 1 Language: English Element description: Range Indicator_003																			

## ■ Picture

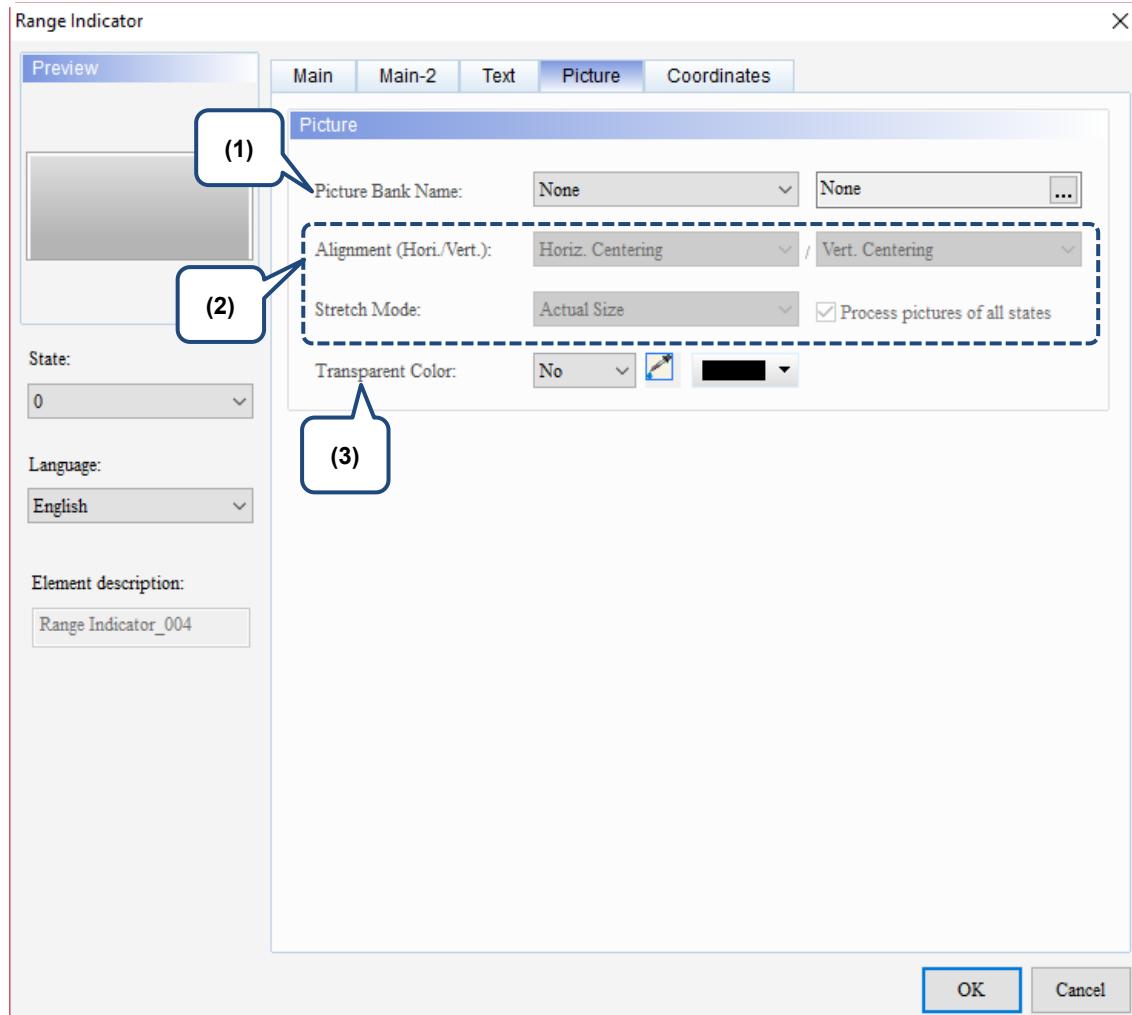
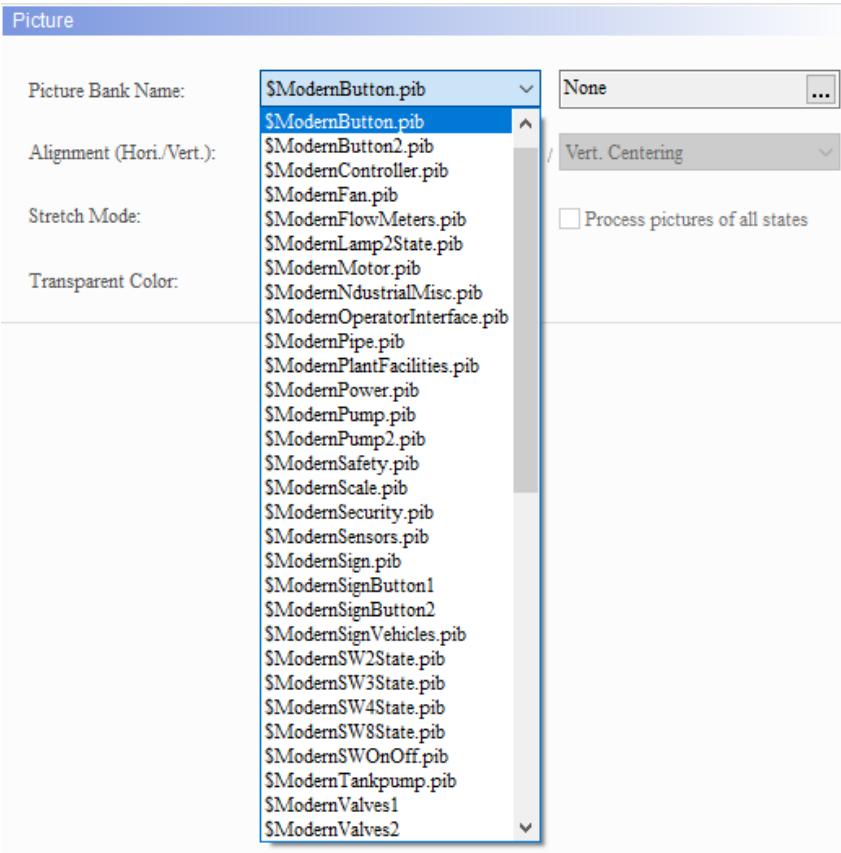
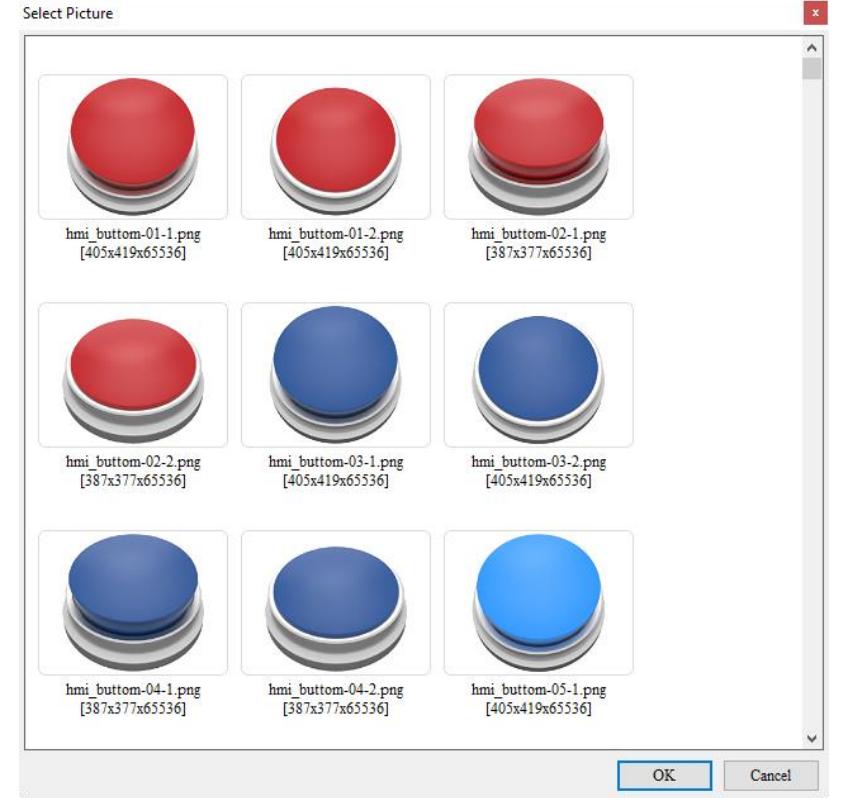
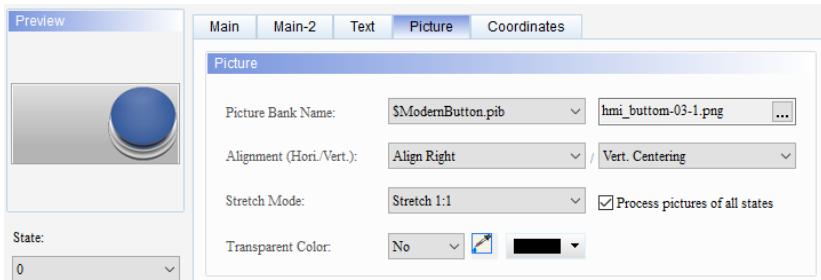


Figure 10.2.5 Picture property page for the Range Indicator element

No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list box to view the picture bank provided by the software and then select the desired pictures.</p>  <p>Picture</p> <p>Picture Bank Name: \$ModernButton.pib</p> <p>Alignment (Hori./Vert.): None</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p>Vert. Centering</p> <p><input type="checkbox"/> Process pictures of all states</p>  <p>Select Picture</p> <p>hmi_button-01-1.png [405x419x65536]   hmi_button-01-2.png [405x419x65536]   hmi_button-02-1.png [387x377x65536]</p> <p>hmi_button-02-2.png [387x377x65536]   hmi_button-03-1.png [405x419x65536]   hmi_button-03-2.png [405x419x65536]</p> <p>hmi_button-04-1.png [387x377x65536]   hmi_button-04-2.png [387x377x65536]   hmi_button-05-1.png [405x419x65536]</p> <p>OK Cancel</p>

10

No.	Property	Function description					
(2)	Alignment	<ul style="list-style-type: none"> <li>You can use the alignment options to set how pictures are aligned.</li> </ul>  <p>The screenshot shows the 'Picture' tab of the properties dialog. It includes fields for 'Picture Bank Name' (\$ModemButton.pib), 'Alignment (Hori./Vert.)' (Align Right / Vert. Centering), 'Stretch Mode' (Stretch 1:1), and 'Transparent Color' (No). A preview window shows a blue button icon.</p>					
	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table>  <p>The three images show the same blue button at different sizes relative to its container, demonstrating the effect of Stretch All, Stretch 1:1, and Actual Size respectively.</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.
Stretch All	Stretch 1:1	Actual Size					
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.					
(3)	Transparent Color	<ul style="list-style-type: none"> <li>Assuming that the elements have multiple states and some pictures do not fill the full element display area, if you select the <b>Process pictures of all states</b> check box, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p> <p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p>Foreground Color: </p>  <p>The two calendar icons illustrate how the transparent color feature works. The left one shows the original state with a white background, while the right one shows the result after applying the transparent color, where the white parts are now blue.</p>					

10

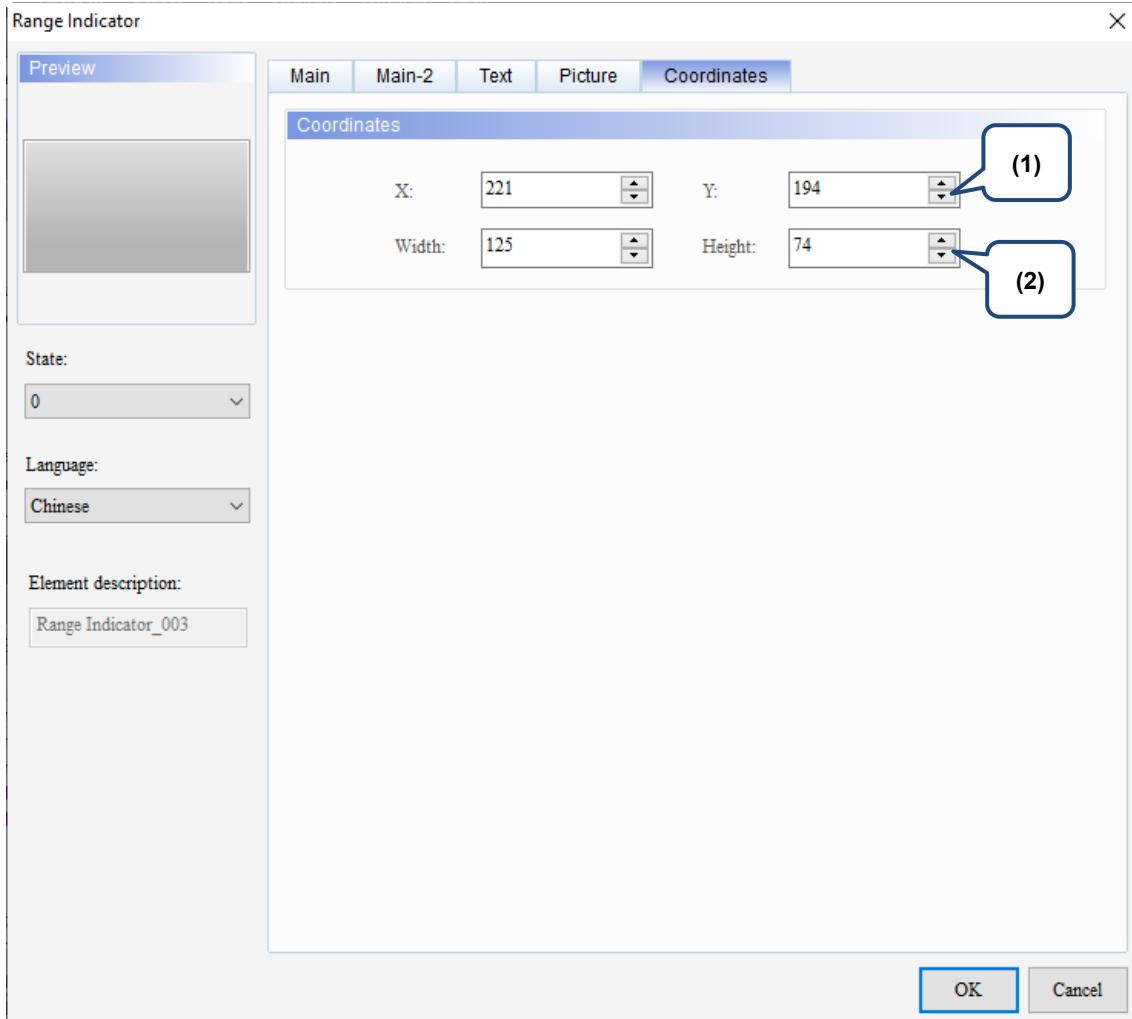
**■ Coordinates**

Figure 10.2.6 Coordinates property page for the Range Indicator element

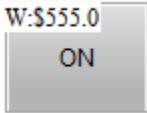
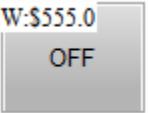
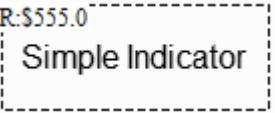
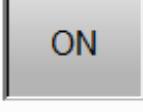
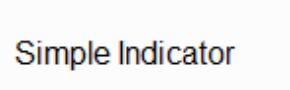
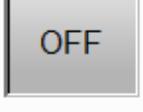
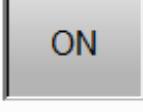
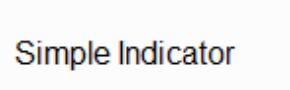
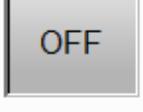
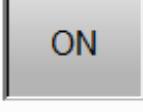
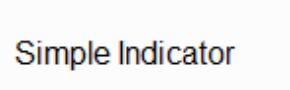
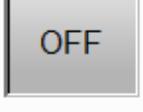
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 10.3 Simple Indicator

The Simple Indicator has two states, On and Off. You can change the XOR colors when the state switches. This indicator can be set with Button elements for identifying the On and Off states with different colors.

Refer to Table 10.3.1 for the Simple Indicator example

Table 10.3.1 Simple Indicator example

Simple Indicator example				
	Set to On / Set to Off elements	Simple Indicator element		
Read Address	Write Address W:\$555.0  ON  OFF	Read Address R:\$555.0  Simple Indicator	\$555.0	
Detail settings	XOR Color 	Redraw No		
Execution results	<p>After you compile and download the screen data to the HMI, the Simple Indicator switches to On or Off state according to the read memory address. If you press <b>ON</b>, the Simple Indicator switches to State 1; if you press <b>OFF</b>, the indicator switches to State 0.</p> <table border="1"> <tr> <td>State 0  Simple Indicator  ON     OFF</td><td>State 1  Simple Indicator  ON     OFF</td></tr> </table>		State 0  Simple Indicator  ON  OFF	State 1  Simple Indicator  ON  OFF
State 0  Simple Indicator  ON  OFF	State 1  Simple Indicator  ON  OFF			

When you double-click the Simple Indicator, the property page is shown as follows.

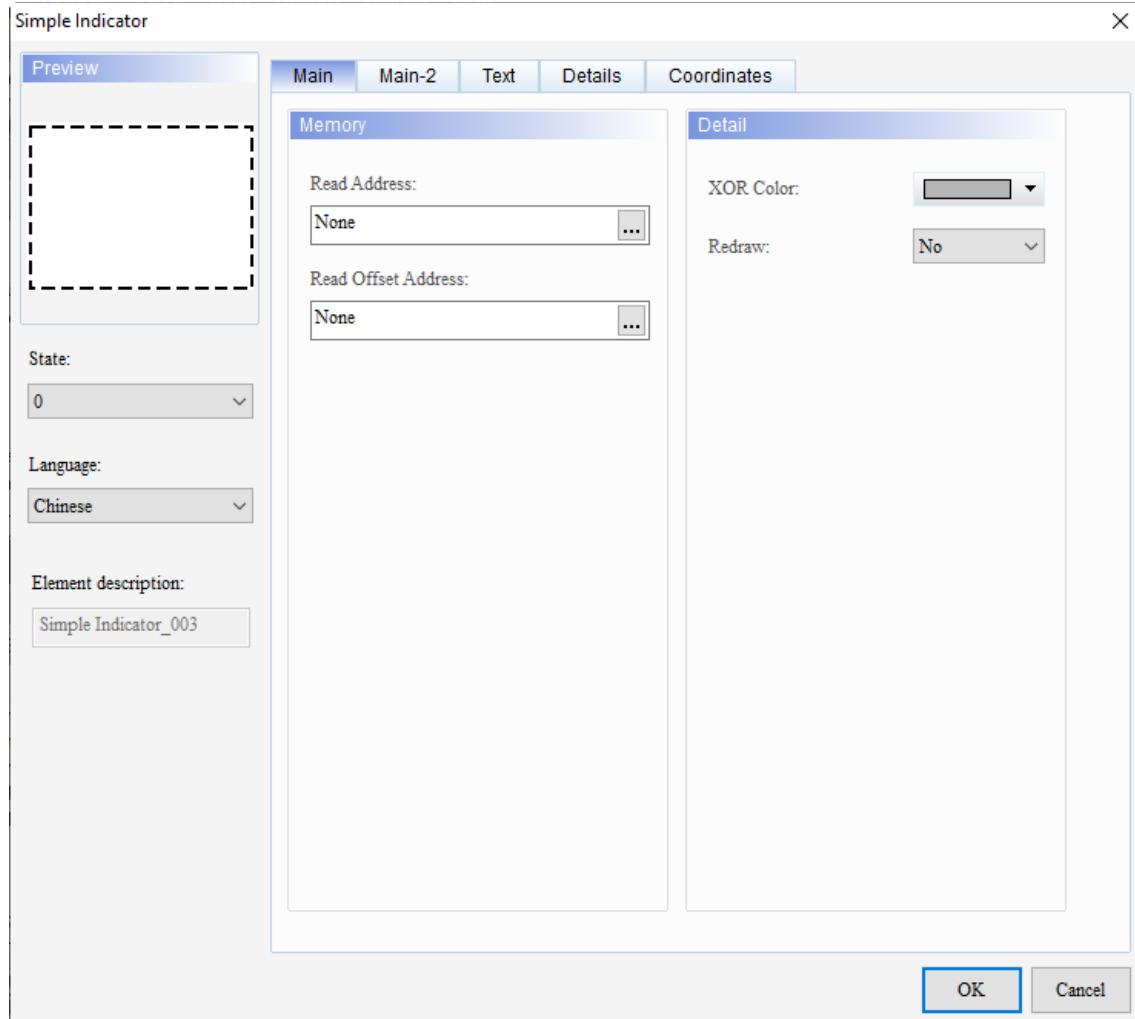


Figure 10.3.1 Properties of Simple Indicator

Table 10.3.2 Function page of Simple Indicator

Simple Indicator	
Function page	Description
Preview	You can view the state values and multi-language display data of the element.
Main	Set the Read Address, Read Offset Address, XOR Color, and Redraw.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, alignment type, and state text.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the element.

■ Main

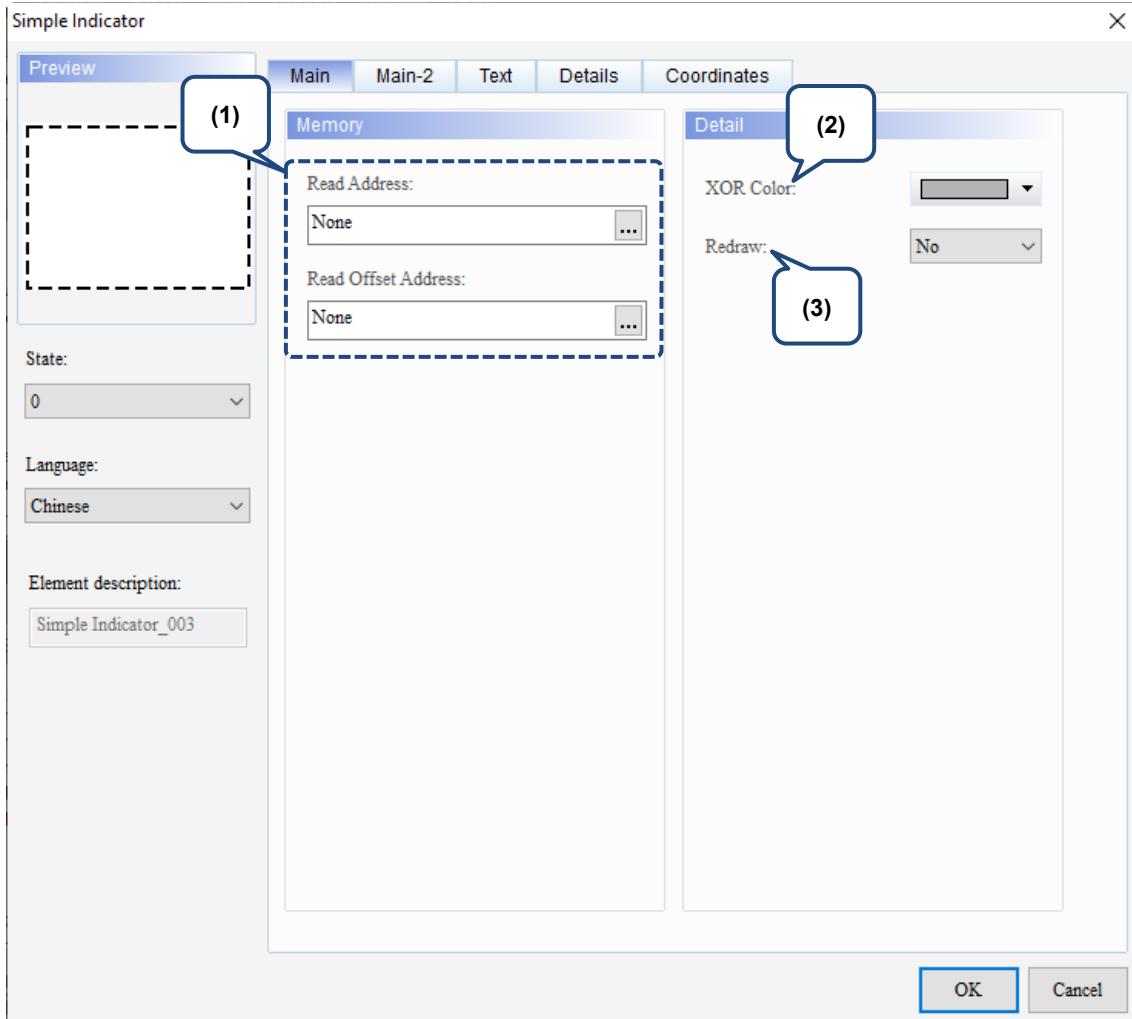
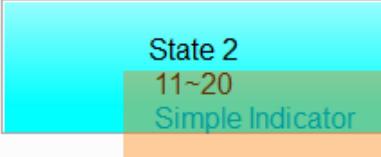
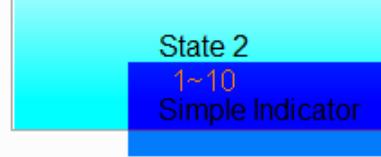
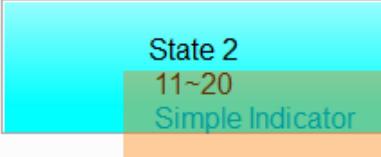
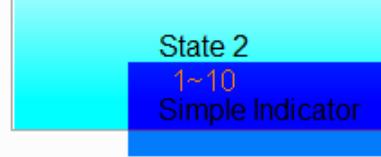
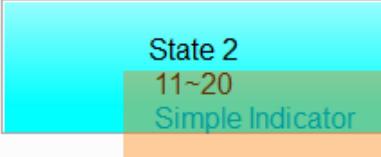
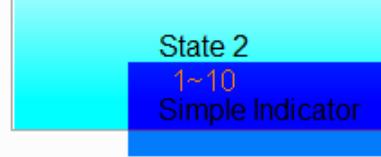


Figure 10.3.2 Main property page for the Simple Indicator element

No.	Property	Function description						
(1)	Read Address	<ul style="list-style-type: none"> <li>The Simple Indicator only supports Bit data type with options of the internal memory or controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>						
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.						
(2)	XOR Color	<p>Specify the XOR Color.</p> <table border="1"> <tr> <td style="text-align: center;">XOR Color:</td> <td style="background-color: yellow; width: 20px;"></td> </tr> <tr> <td style="text-align: center;">Before using XOR</td> <td style="text-align: center;">After using XOR</td> </tr> <tr> <td style="text-align: center;">Simple Indicator</td> <td style="background-color: blue; color: white; text-align: center;">Simple Indicator</td> </tr> </table>	XOR Color:		Before using XOR	After using XOR	Simple Indicator	Simple Indicator
XOR Color:								
Before using XOR	After using XOR							
Simple Indicator	Simple Indicator							

No.	Property	Function description				
(3)	Redraw	<ul style="list-style-type: none"> <li>■ When you select <b>Yes</b> and overlap the Simple Indicator element on the dynamic element, you can successfully read the data when the dynamic element switches between states. If you select <b>No</b>, then the data of the dynamic element does not display.</li> <li>■ As shown in the following table, both the two pictures display the background color of State 2. The displaying text of State 2 should be State 2 11~20. However, if you set Redraw to No, you can find the range value is covered by the Simple Indicator so you cannot see the range value.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Yes</th> <th style="text-align: center;">No</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </tbody> </table>	Yes	No		
Yes	No					
						

## ■ Main-2

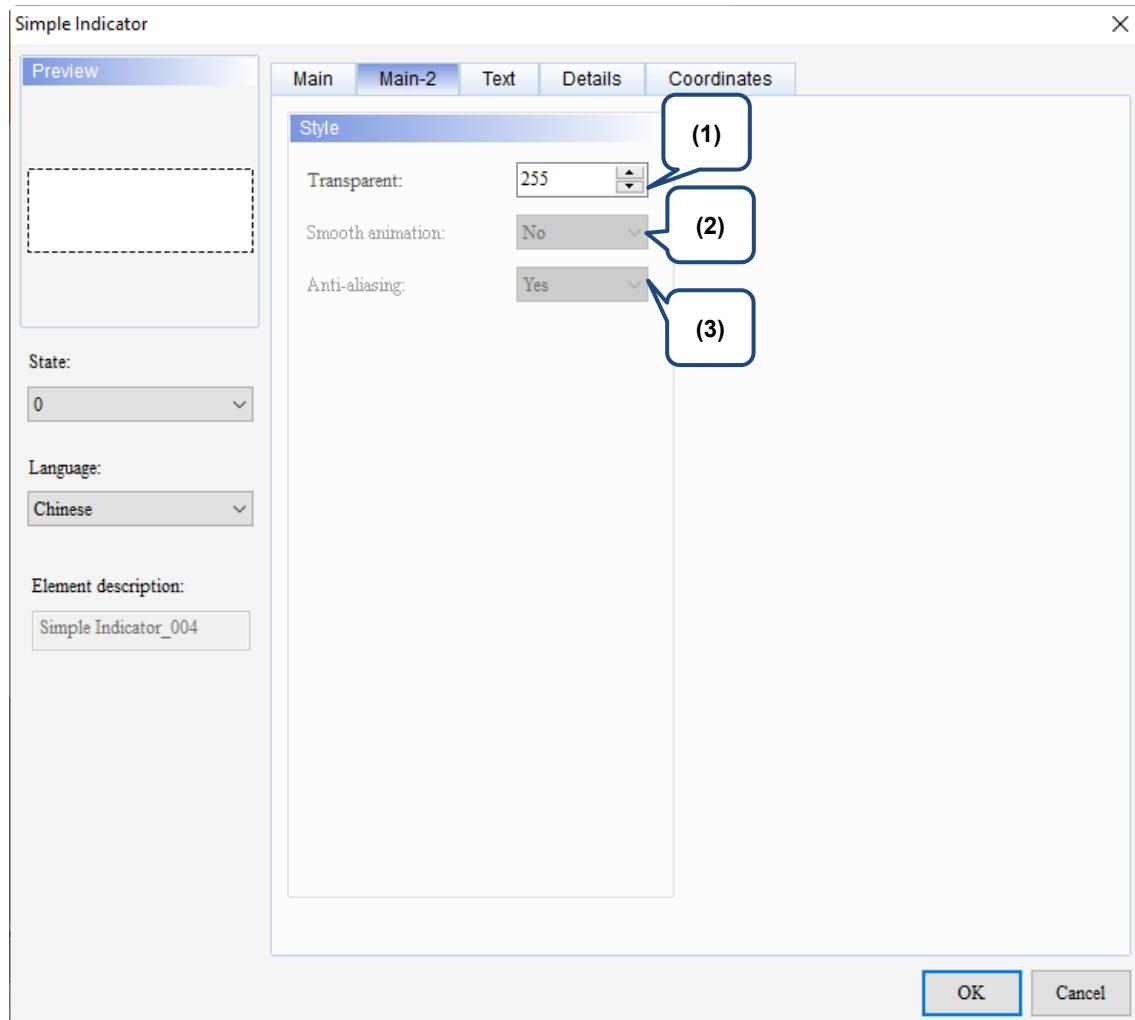


Figure 10.3.3 Main-2 property page for the Simple Indicator element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Text

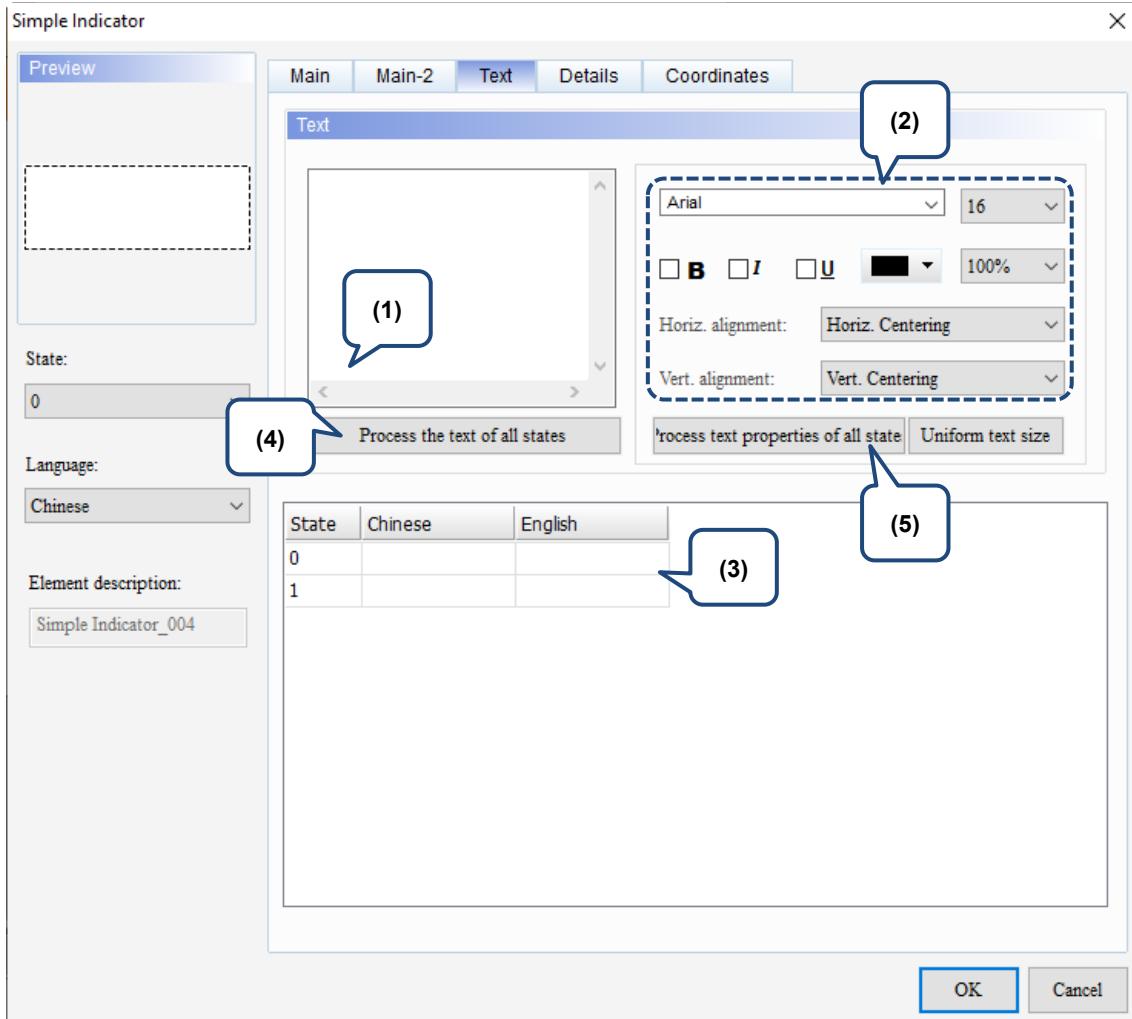
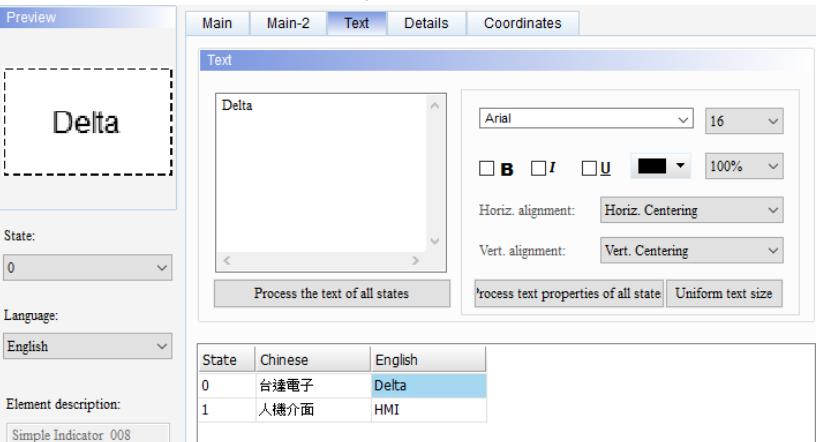
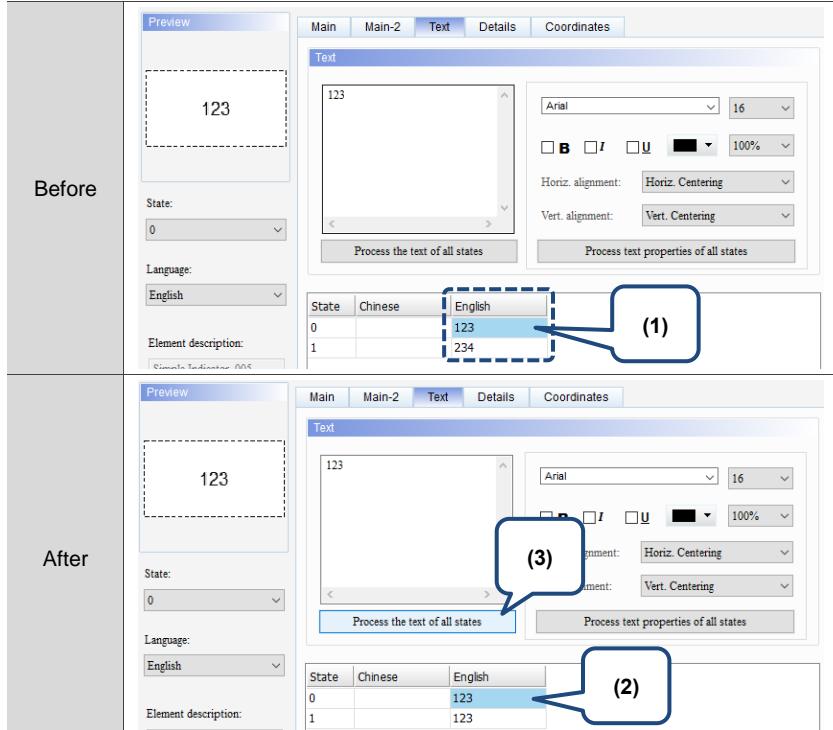
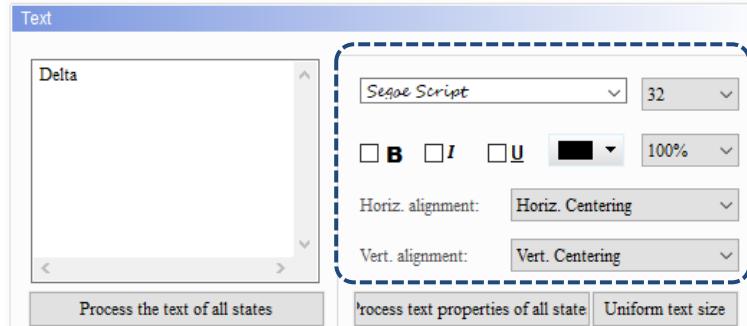
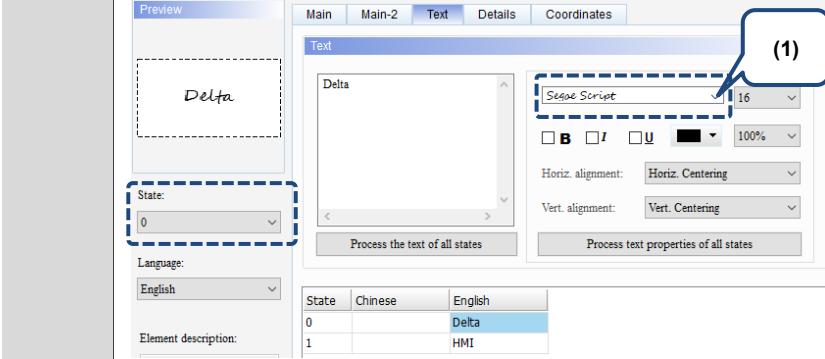
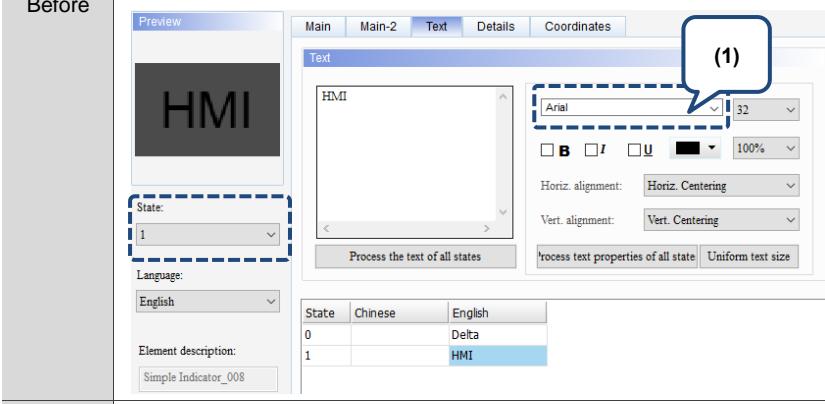
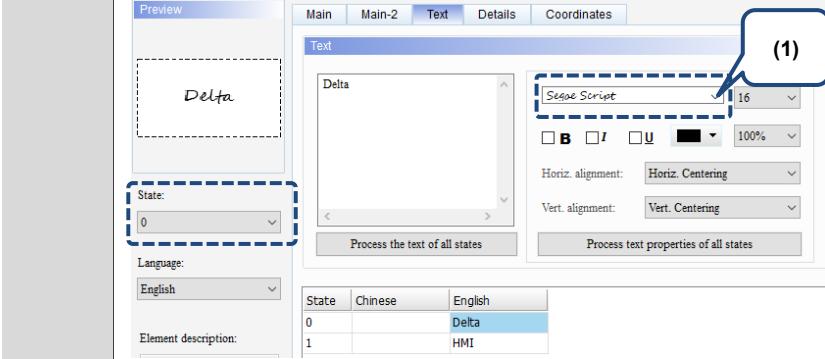
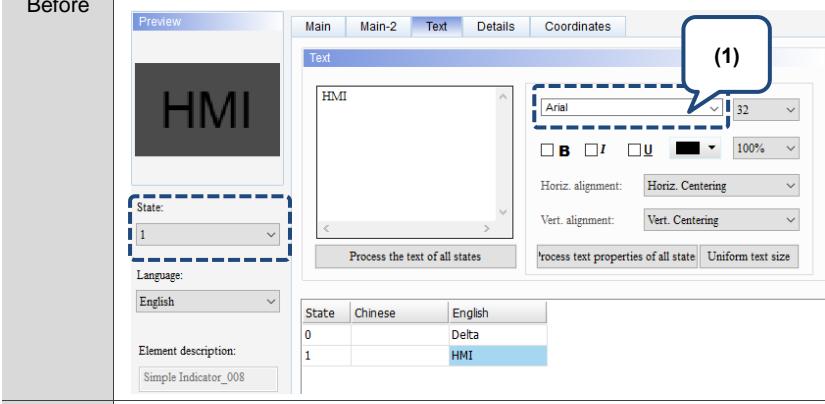
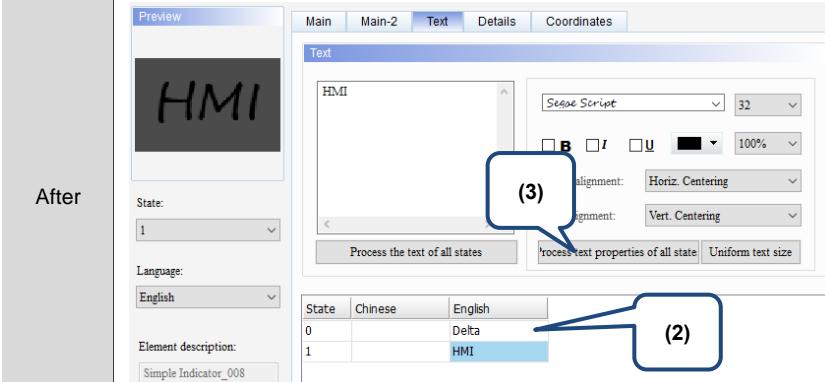


Figure 10.3.4 Text property page for the Simple Indicator element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul>  <p>The screenshot shows the 'Text' property page for a 'Simple Indicator' element. The 'Text' tab is active. In the preview area, the word 'Delta' is displayed. The 'Text' tab contains settings for font (Arial, size 16), bold/italic/underline, color, and zoom. Below these are horizontal and vertical alignment options. A table at the bottom allows editing of text in multiple languages (Chinese and English). The 'Language' dropdown on the left is set to 'English'. The 'OK' and 'Cancel' buttons are at the bottom right.</p>
(2)	Text	<ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element on the screen and press the space key to start editing and entering the text.</li> </ul>
(3)	Edit multi-language text	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the Text property setting results.

No.	Property	Function description
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. The example and setting steps are as follows.</p> <ol style="list-style-type: none"> <li>1. Enter the text "123" for State 0 and "234" for State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process the text of all states</b> and the text of State 1 is changed to "123".</li> </ol>  <p>The screenshot shows the 'Text' property dialog. In the 'Before' state, the text '123' is displayed in the preview and the table. In the 'After' state, the text '123' is displayed in the preview and the table, indicating that the text has been processed from State 1 to State 0.</p>
(5)	Process text properties of all states	<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>  <p>The screenshot shows the 'Text' property dialog. A dashed box highlights the font settings: Segoe Script, size 32, bold, italic, underline, and alignment options (Horiz. Centering, Vert. Centering).</p>

No.	Property	Function description
(5)	Process text properties of all states	<p>The example and setting steps are as follows:</p> <ol style="list-style-type: none"> <li>1. Enter the text "Delta" for State 0 and "HMI" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process text properties of all states</b> and the text font of State 1 is changed to Segoe Script.</li> </ol>  
	Before	 
	After	

## ■ Details

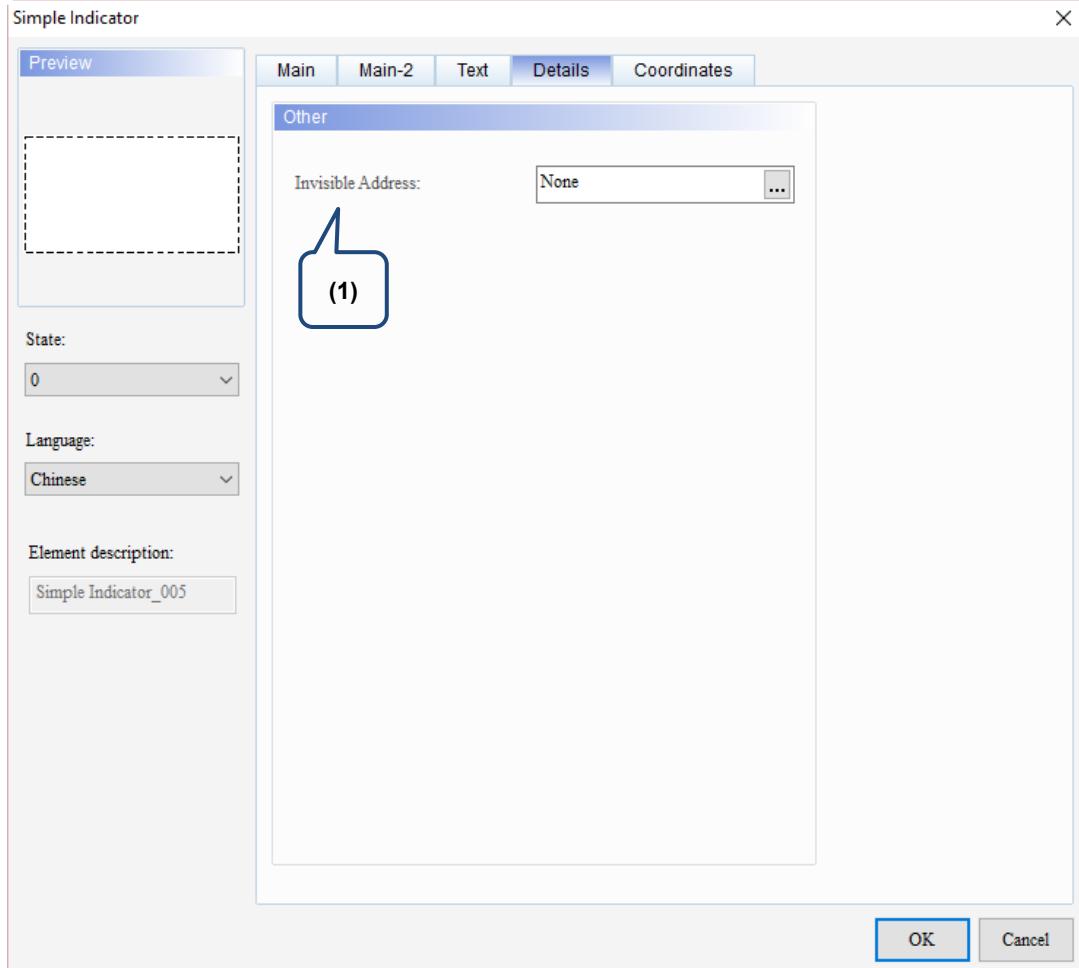


Figure 10.3.5 Details property page for the Simple Indicator element

No.	Property	Function description		
(1)	Invisible Address	When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.	Invisible Address is Off	
				Invisible Address \$9.0 OFF
		Invisible Address is On	Element is invisible	Invisible Address \$9.0 ON
		<p>Simple Indicator</p>		

## ■ Coordinates

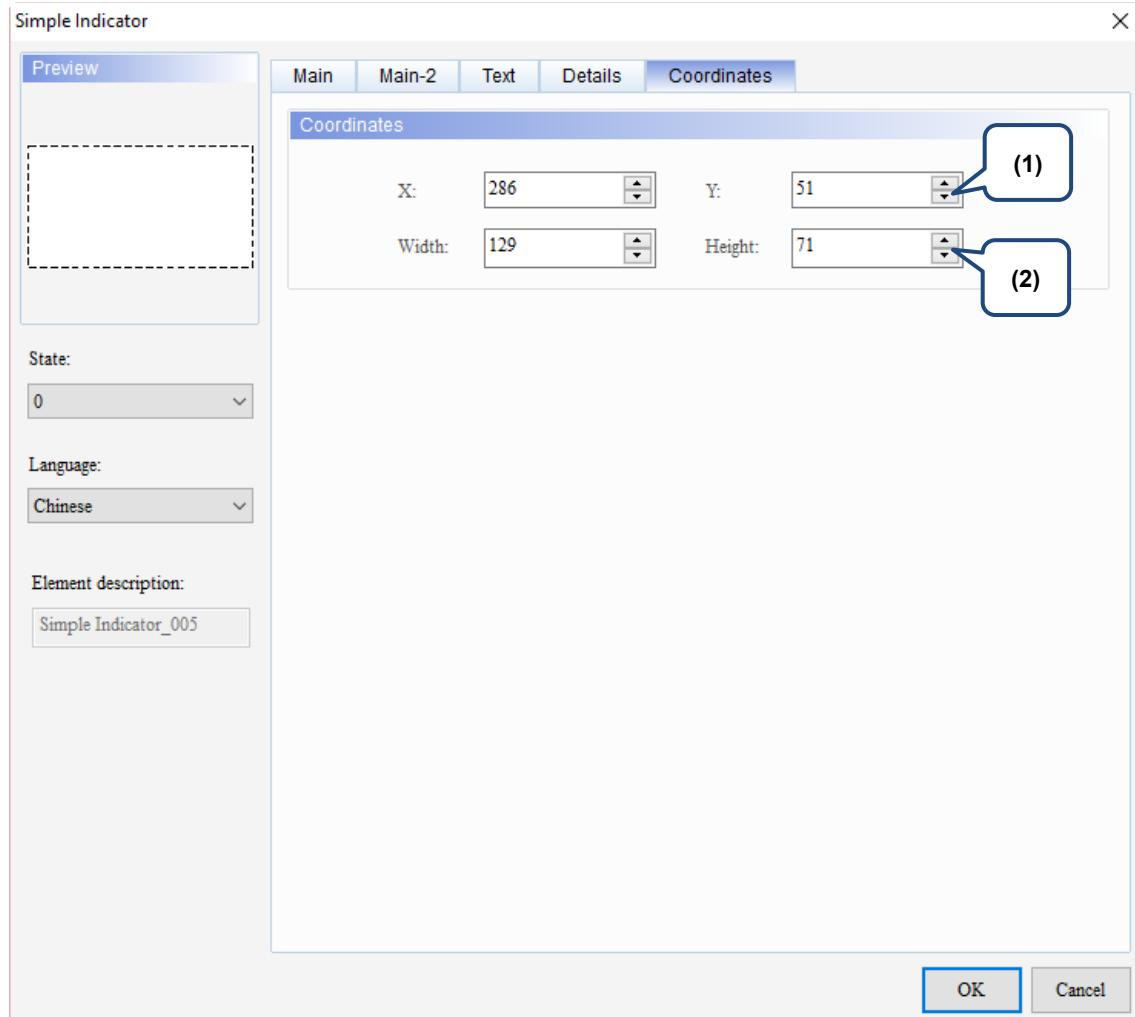


Figure 10.3.6 Coordinates property page for the Simple Indicator element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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# 11

## Data Display

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This chapter provides the usage and setting details for the Data Display elements.

11.1	Numeric Display .....	11-2
11.2	Character Display .....	11-26
11.3	Date Display / Time Display / Week Display .....	11-35
11.3.1	Date Display .....	11-36
11.3.2	Time Display .....	11-42
11.3.3	Week Display .....	11-48
11.4	General Message Display .....	11-56
11.5	Moving Sign .....	11-70
11.6	QR code display .....	11-83
11.7	Barcode .....	11-91

## 11.1 Numeric Display

The main function of the Numeric Display is to read the value of the memory address and display the value on the element. The Numeric Display can also display the status return values of other elements, such as 0 or 1.

Table 11.1.1 Numeric Display example

Numeric Display			
Address settings	Numeric Display element		Numeric Entry element
	Read Address	\$555	Write Address
Detail settings			
Execution results	Numeric Display element		
	Data Type	Data Format	Integer Digits      Fractional (Digits)
	Word	Unsigned Decimal	4      0
After creating the elements, compile and download the data to the HMI. Next, enter 100 with the Numeric Entry element and the Numeric Display element will display the value you entered.			
Enter 100 and the value is written to the specified address (\$555).			
<b>Numeric Entry</b>		<b>Numeric Display</b>	

Numeric Display supports two data types, Word and Double Word. The allowable ranges are shown in Table 11.1.2.

Table 11.1.2 Numeric Display allowable range

Numeric Display		
	Data Format	Allowable range
Word	BCD	0 to 9999
	Signed BCD	-999 to +9999
	Signed Decimal	-32768 to +32767
	Unsigned Decimal	0 to 65535
	Hex	0 to 0xFFFF
	Binary	0 to 0xFFFF
Double Word	Data Format	Allowable range
	BCD	0 to 99999999
	Signed BCD	-9999999 to +9999999
	Signed Decimal	-2147483648 to +2147483647
	Unsigned Decimal	0 to 4294697295
	Hex	0 to 0xFFFFFFFF
Quad Word	Binary	0 to 0xFFFFFFFF
	Floating	0 to 9999999
	Data Format	Allowable range
	BCD	0 to 9999999999999999
	Signed BCD	-9999999999999999 to +9999999999999999
	Signed Decimal	-9223372036854775808 to +9223372036854775807
	Unsigned Decimal	0 to 18446744073709551615
	Hex	0 to 0xffffffffffff
	Binary	0 to 0xffffffffffff
	Floating	0 to 9999999999999999

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When you double-click the Numeric Display, the property page is shown as follows.

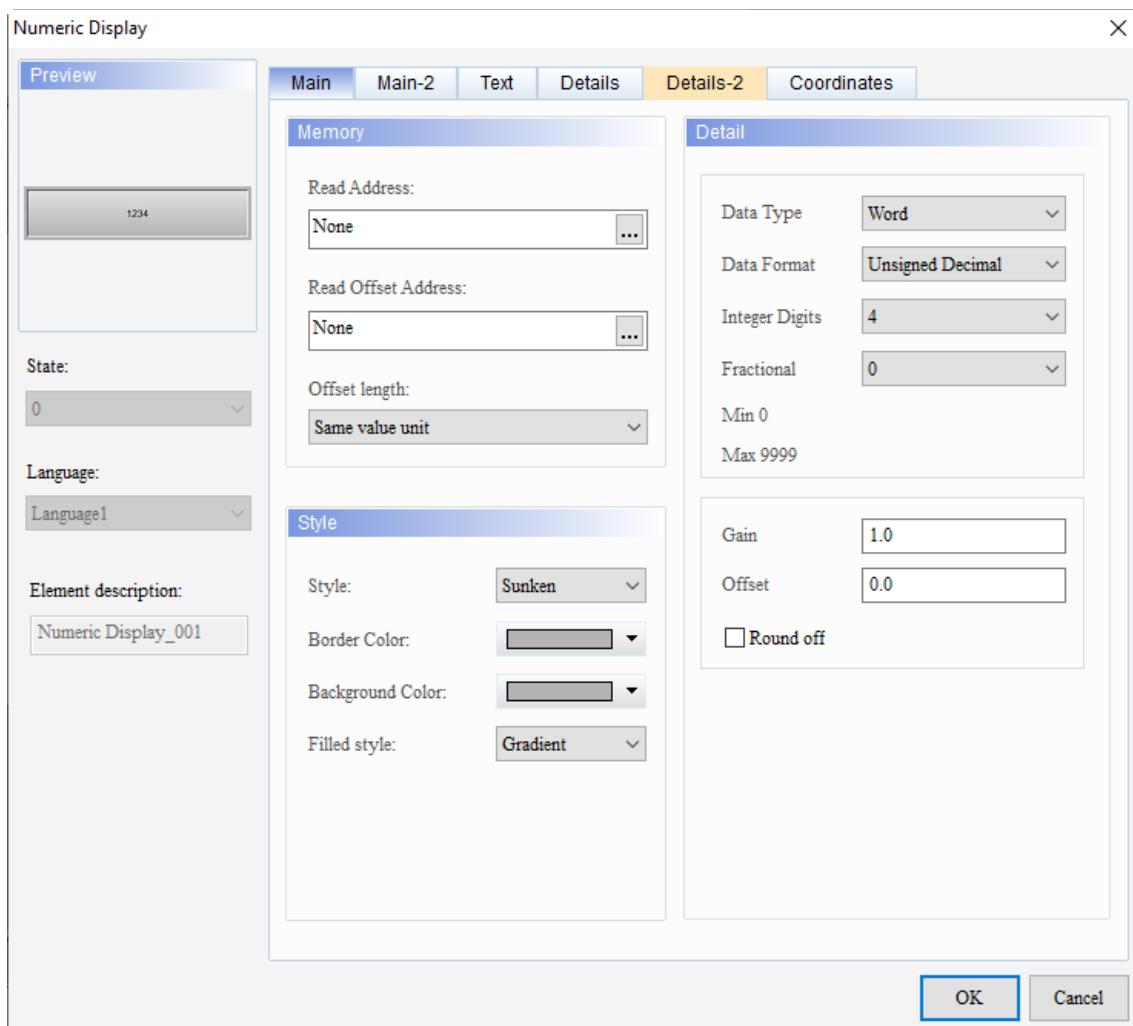


Figure 11.1.1 Properties of Numeric Display

Table 11.1.3 Function page of Numeric Display

Numeric Display	
Function page	Description
Preview	Numeric Display elements do not support multiple state values and multi-language data display.
Main	Set the Read Address, Read Offset Address, Style, Border Color, Background Color, and Filled style. Set the Data Type, Data Format, Integer Digits, Fractional (Digits), Gain, Offset, and select the <b>Round off</b> check box.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the displaying text font, size, color, and alignment options.
Details	Set the Prefix Zero, Invisible Address, and Word arrangement.
Details-2	Set the Type, Unit and Address for the Source and Display, Custom formula, and Percentage.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

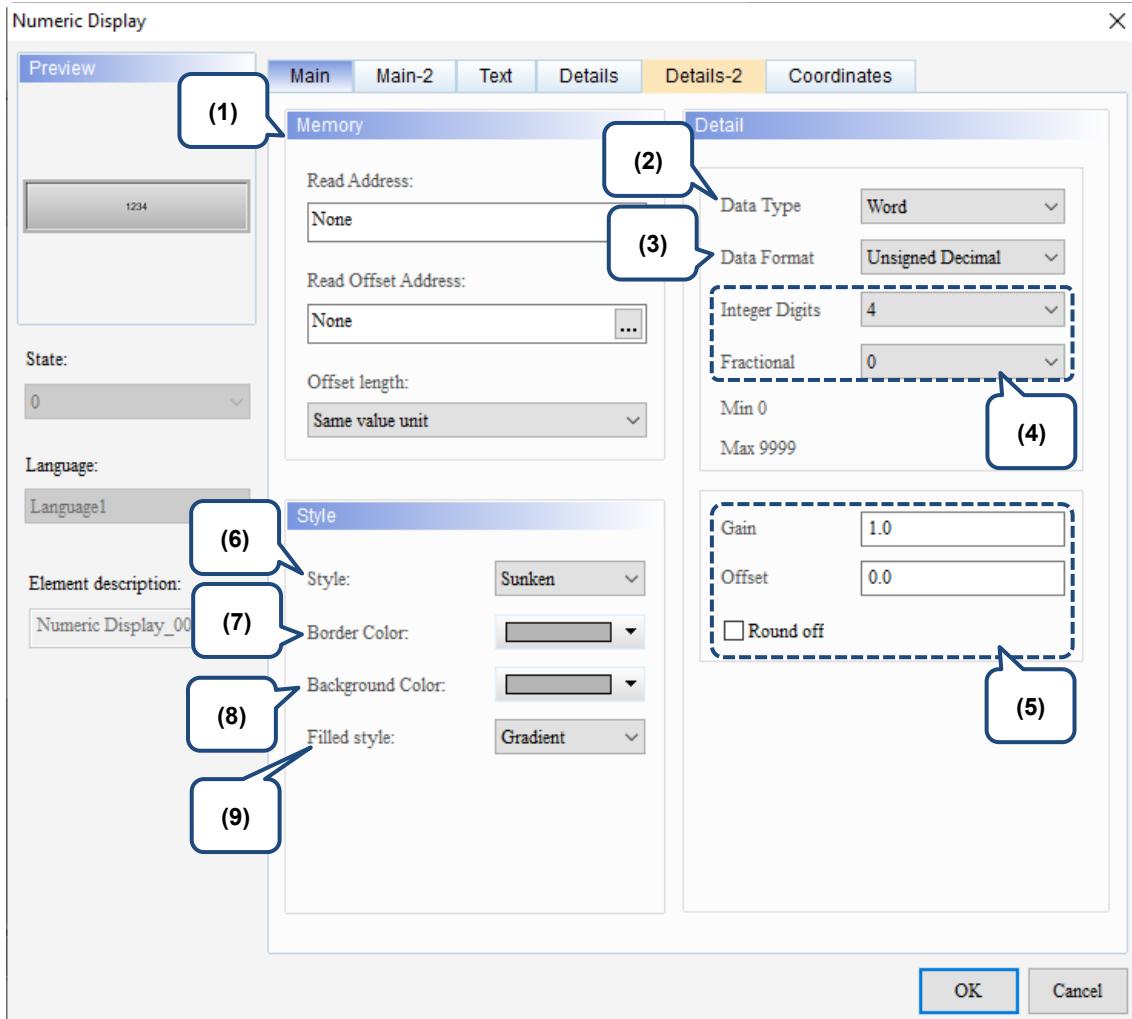
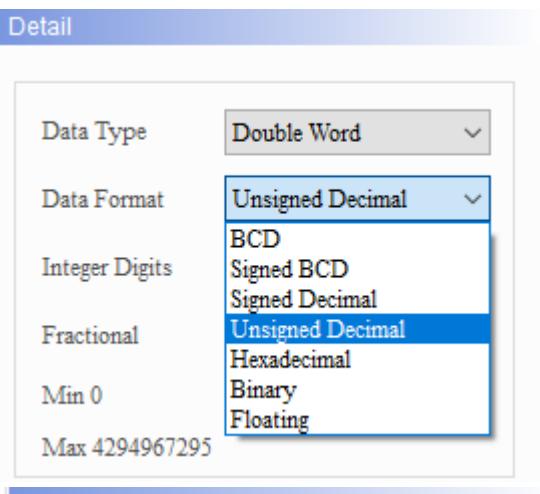
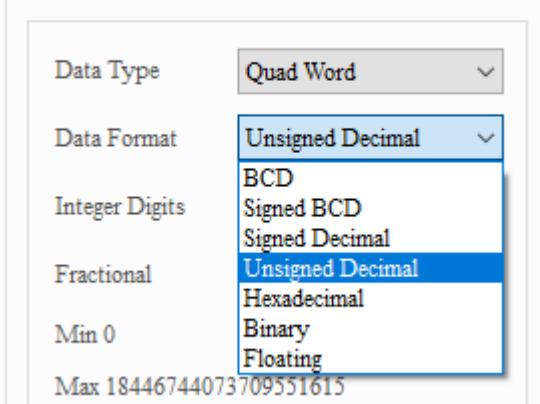


Figure 11.1.2. Main property page for the Numeric Display element

No.	Property	Function description										
(1)	Read Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>										
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.										
(2)	Data Type	<ul style="list-style-type: none"> <li>There are three data types.</li> </ul> <div style="display: flex; align-items: center;"> <span>Data Type</span> <div style="margin-left: 10px;"> <span>Word</span> <span>Word</span> <span>Double Word</span> <span>Quad Word</span> </div> </div> <ul style="list-style-type: none"> <li>If Quad Word is being used, only the internal memory and certain PLC brands are supported, as shown in the following table:</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Brand</th><th style="text-align: center;">Model number</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">Delta</td><td>15MC 15MC TCP 10EMC</td></tr> <tr> <td style="text-align: center;">Omron</td><td>NJ FINS TCP NJ/NX FINS UDP</td></tr> <tr> <td style="text-align: center;">Beckhoff</td><td>TWINCAT TCP</td></tr> <tr> <td style="text-align: center;">SIEMENS</td><td>S7-1200 S7-1500</td></tr> </tbody> </table>	Brand	Model number	Delta	15MC 15MC TCP 10EMC	Omron	NJ FINS TCP NJ/NX FINS UDP	Beckhoff	TWINCAT TCP	SIEMENS	S7-1200 S7-1500
Brand	Model number											
Delta	15MC 15MC TCP 10EMC											
Omron	NJ FINS TCP NJ/NX FINS UDP											
Beckhoff	TWINCAT TCP											
SIEMENS	S7-1200 S7-1500											
<ul style="list-style-type: none"> <li>The internal memory is only available for the DOP-112 and DOP-115 models. When the Data Type is Quad Word, the internal registers can be up to 200000 sets. However, the expanded internal memory is only used to set the screen elements. The internal registers used in the macro remain as 65536 sets (\$0 - \$65535).</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Access type</th><th style="text-align: center;">Device type</th><th style="text-align: center;">Storage range</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">Word</td><td style="text-align: center;">\$n</td><td style="text-align: center;">\$0 - \$199999</td></tr> <tr> <td style="text-align: center;">Bit</td><td style="text-align: center;">\$n.b</td><td style="text-align: center;">\$0.0 - \$199999.15</td></tr> </tbody> </table> <p>Note: n = Word (0 - 199999); b = Bit (0 - 15).</p>	Access type	Device type	Storage range	Word	\$n	\$0 - \$199999	Bit	\$n.b	\$0.0 - \$199999.15			
Access type	Device type	Storage range										
Word	\$n	\$0 - \$199999										
Bit	\$n.b	\$0.0 - \$199999.15										
(3)	Data Format	<ul style="list-style-type: none"> <li>When the Data Type is Word, the supported data formats are as follows.</li> </ul> <div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc; border-radius: 5px;"> <span style="color: #0070C0; font-weight: bold; margin-right: 10px;">Detail</span> <div style="display: flex; align-items: center;"> <span>Data Type</span> <div style="margin-left: 10px;"> <span>Word</span> <span>Unsigned Decimal</span> <span>BCD</span> <span>Signed BCD</span> <span>Signed Decimal</span> <span>Unsigned Decimal</span> <span>Hexadecimal</span> <span>Binary</span> </div> </div> </div>										

No.	Property	Function description
(3)	Data Format	<ul style="list-style-type: none"> <li>When the Data Type is Double Word or Quad Word, the supported data formats are as follows.</li> </ul>   <ul style="list-style-type: none"> <li>When the Data Type is Double Word and the Data Format is Floating, the integer and fractional digits support only 7 digits in total. When this limit is exceeded, the software displays a warning message.</li> <li>When the Data Type is Quad Word and the Data Format is Floating, the integer and fractional digits support only 15 digits in total. When this limit is exceeded, the software displays a warning message.</li> </ul>
(4)	Integer Digits Fractional (Digits)	<ul style="list-style-type: none"> <li>You can set the displaying number of integer digits and the number of decimal places.</li> <li>The number of decimal places here is not really a decimal value, but just the display format. Only when Floating is selected for the Data Format, the Fractional setting is the actual decimal.</li> </ul>

No.	Property	Function description								
(5)	Gain and Offset	<ul style="list-style-type: none"> <li>The formula of Gain and Offset: <math>y = (a)x + (b)</math>.           <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding: 2px;">y</td> <td style="padding: 2px;">a</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">b</td> </tr> <tr> <td style="padding: 2px;">Element display value</td> <td style="padding: 2px;">Gain</td> <td style="padding: 2px;">Actual register value</td> <td style="padding: 2px;">Offset value</td> </tr> </table> </li> <li>The Numeric Display element multiplies the register actual value by the set gain value, and then displays the result on the HMI screen. The default of Gain is 1.0. If you set the Gain to 2.0, when the element reads the register value 10, the actual value displayed on the element is 20.           <p style="text-align: center;"><b>Numeric Display element</b></p> <pre>     graph LR       R1[\$101   10] -- "Gain 1.0" --&gt; R2[\$101   10]       R1 -- "Gain 2.0" --&gt; R3[\$101   20]   </pre> </li> <li>The Numeric Display element adds the register actual value to the set offset value, and then displays the sum on the HMI screen. The default offset is 0.0. If you set the Offset to 1.0 and the element reads the register value 10, then the actual value displayed on the element is 11. On the other hand, if you set the Offset to -1.0 and the element reads the register value 10, the actual value displayed on the element is 9.           <p style="text-align: center;"><b>Numeric Display element</b></p> <pre>     graph LR       R1[\$101   10] -- "Offset 1.0" --&gt; R2[\$101   11]       R1 -- "Offset -1.0" --&gt; R3[\$101   9]   </pre> </li> <li>The following is the diagram of examples for [Gain 2.0; Offset 1.0] and [Gain 2.0; Offset -1.0].           <p style="text-align: center;"><b>Numeric Display element</b></p> <pre>     graph LR       R1_1[\$101   10] -- "Gain 2.0" --&gt; D1[21]       R1_1 -- "Offset 1.0" --&gt; D2[19]   </pre> </li> <li>If you select the <b>Round off</b> check box, the calculation results are rounded off before being displayed on the Numeric Display element.</li> </ul>	y	a	x	b	Element display value	Gain	Actual register value	Offset value
y	a	x	b							
Element display value	Gain	Actual register value	Offset value							

No.	Property	Function description								
(6)	Style	<p>The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
(7)	Border Color	<ul style="list-style-type: none"> <li>■ Set the border color of the element.</li> <li>■ When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul>								
(8)	Background Color	<ul style="list-style-type: none"> <li>■ Set the background color of the element.</li> <li>■ When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul>								
(9)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 10px;">Gradient</td> <td style="text-align: center; padding: 10px;"></td> </tr> <tr> <td style="text-align: center; padding: 10px;">Fixed (Solid)</td> <td style="text-align: center; padding: 10px;"></td> </tr> </table>	Gradient		Fixed (Solid)					
Gradient										
Fixed (Solid)										

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## ■ Main-2

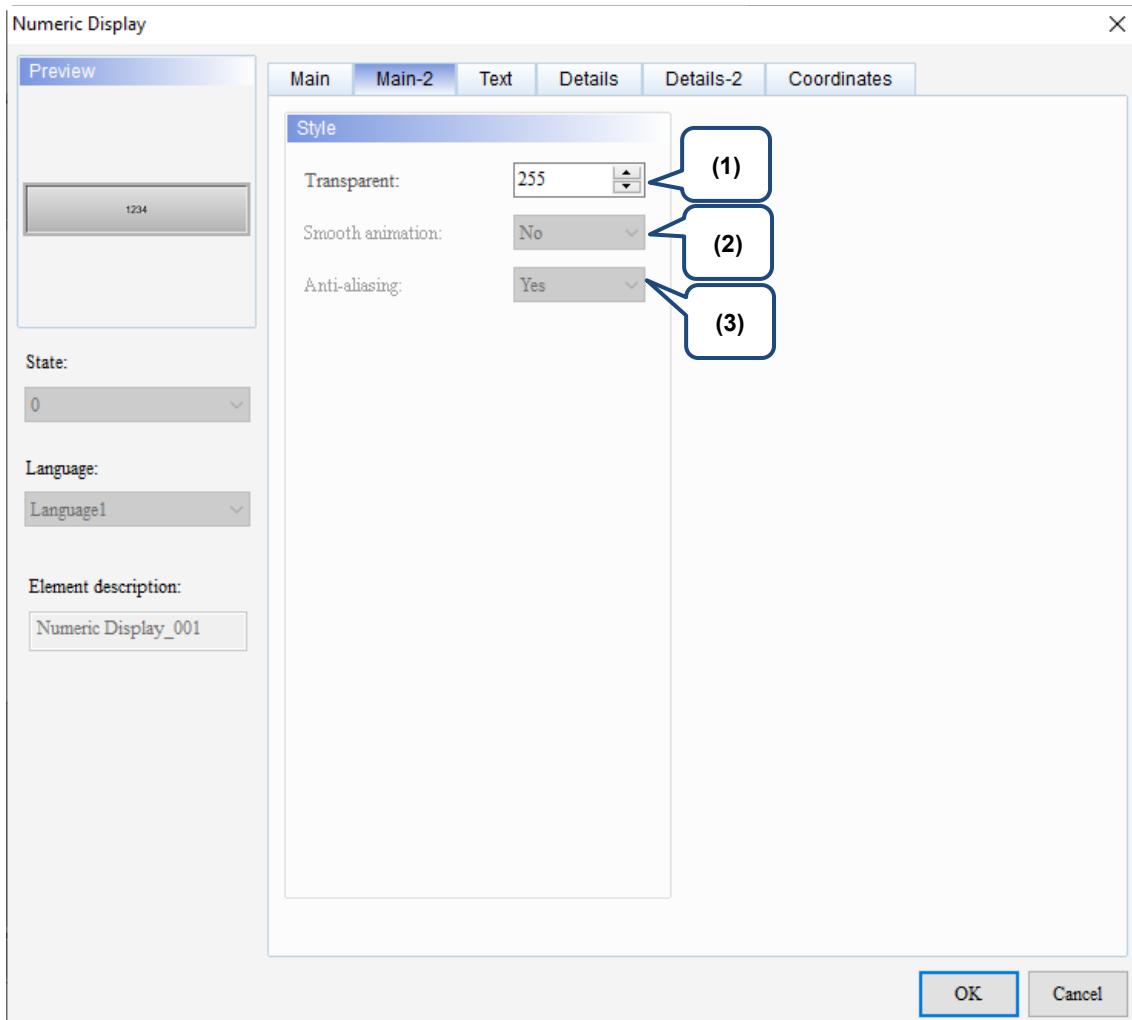


Figure 11.1.3. Main-2 property page for the Numeric Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

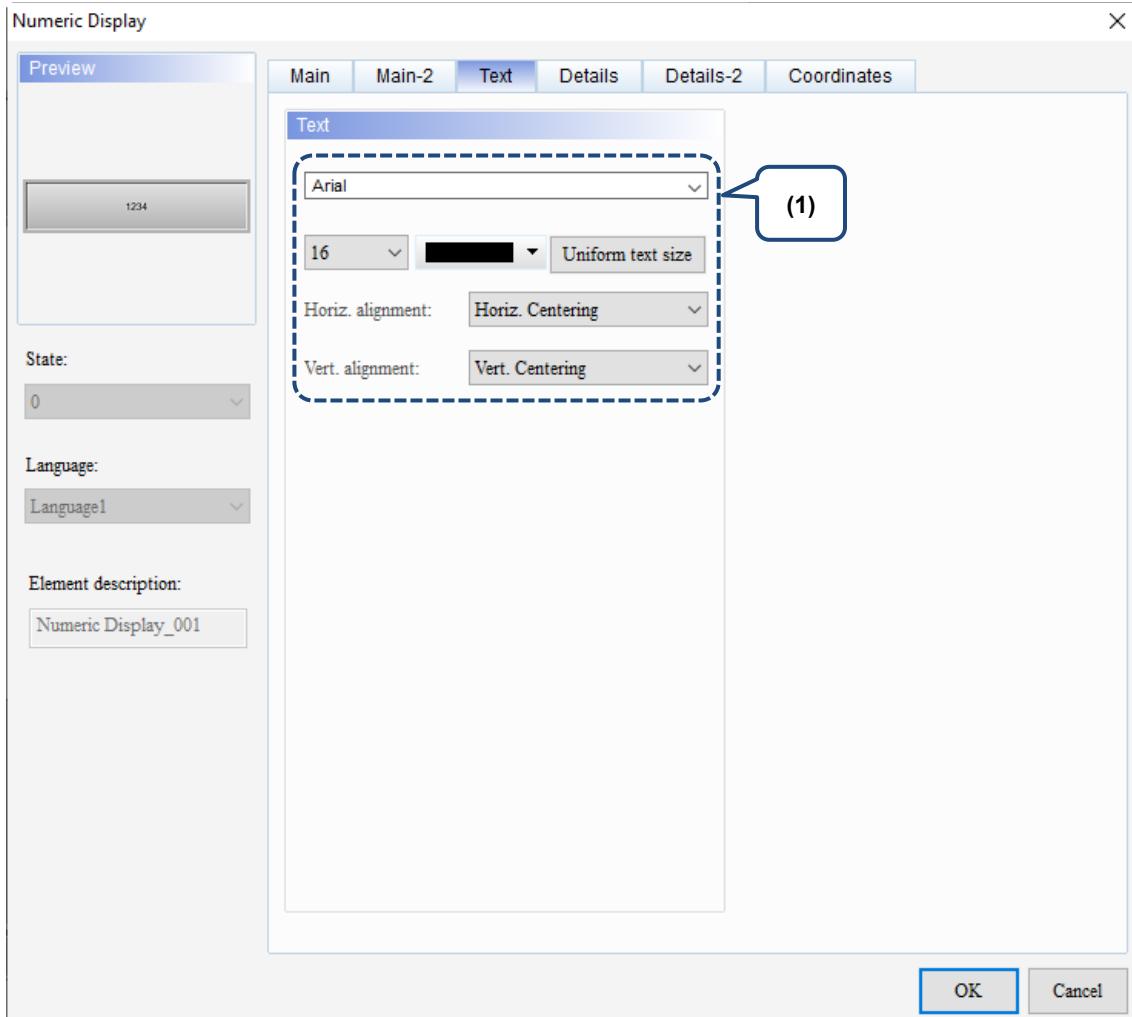
**■ Text**

Figure 11.1.4. Text property page for the Numeric Display element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

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## ■ Details

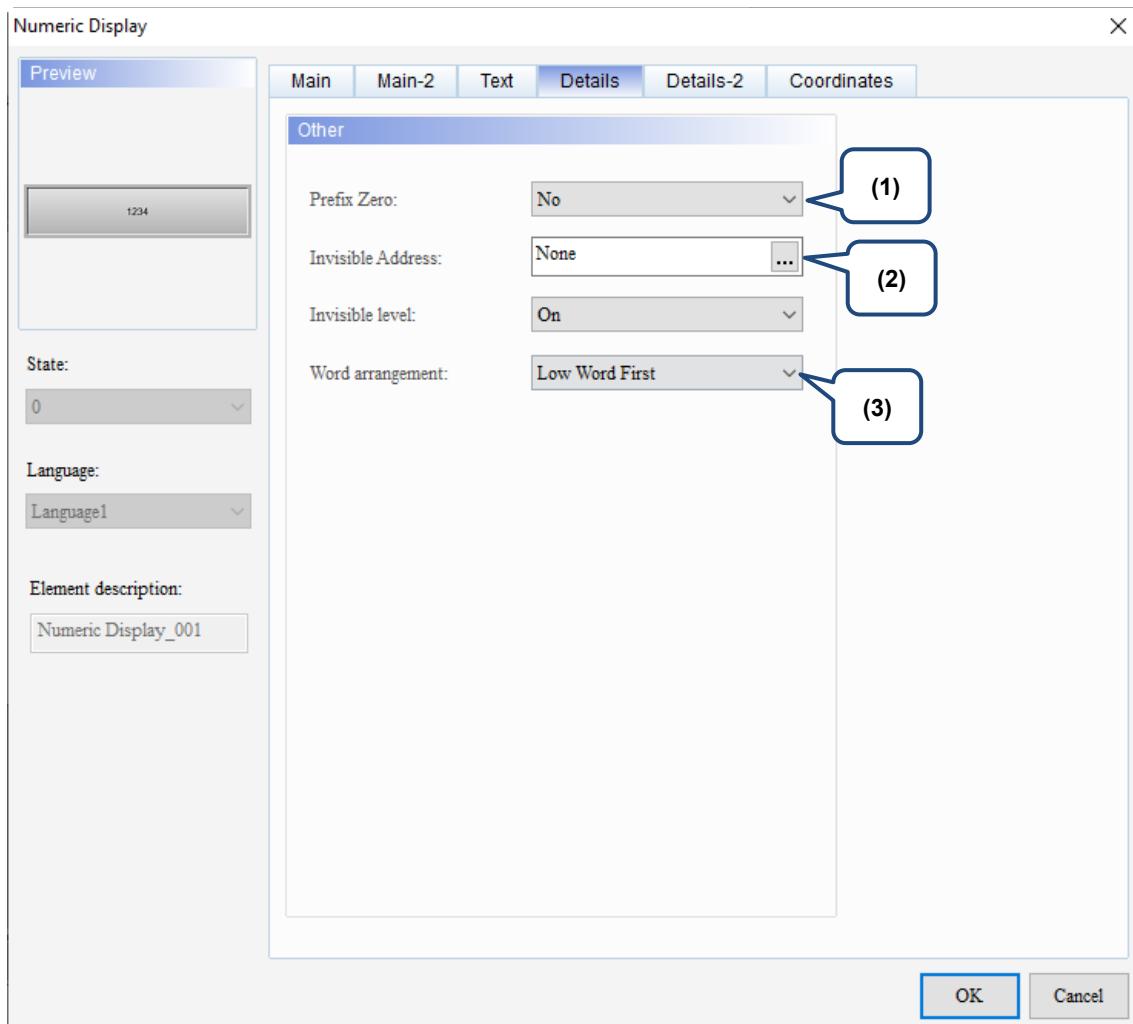


Figure 11.1.5 Details property page for the Numeric Display element

No.	Property	Function description								
(1)	Prefix Zero	<p>The Prefix Zero function determines how many zeros to add according to the set Integer Digits. Refer to the following example.</p> <p style="text-align: center;"><b>Integer Digits is set to 5</b></p> <div style="display: flex; justify-content: space-around;"> <span><input checked="" type="checkbox"/> Prefix Zero</span> <span><input type="checkbox"/> Prefix Zero</span> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">00050</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">50</div> </div>								
(2)	Invisible Address	<p>When the Invisible Address is set to On, the Numeric Display element is invisible and you cannot execute its set functions.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px; text-align: center;">Invisible Address is On</td> <td style="padding: 5px; border: 2px dashed blue; text-align: center;">Element is invisible</td> <td style="padding: 5px; text-align: center;">Invisible Adreess \$9.0 ON</td> </tr> <tr> <td style="padding: 5px; text-align: center;">Invisible Address is Off</td> <td style="padding: 5px; text-align: center;">0</td> <td style="padding: 5px; text-align: center;">Invisible Adreess \$9.0 OFF</td> </tr> </table>			Invisible Address is On	Element is invisible	Invisible Adreess \$9.0 ON	Invisible Address is Off	0	Invisible Adreess \$9.0 OFF
Invisible Address is On	Element is invisible	Invisible Adreess \$9.0 ON								
Invisible Address is Off	0	Invisible Adreess \$9.0 OFF								
(3)	Word arrangement	<p>You can swap the high and low words using the Word arrangement function with the options of Low Word First and High Word First.</p> <div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">Word arrangement:</span> <div style="border: 1px solid #ccc; padding: 2px 10px; background-color: #f0f0f0; display: inline-block;"> <span style="margin-right: 5px;">Low Word First</span> <span style="margin-right: 5px;">Low Word First</span> <span>High Word First</span> </div> </div>								

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## ■ Details-2

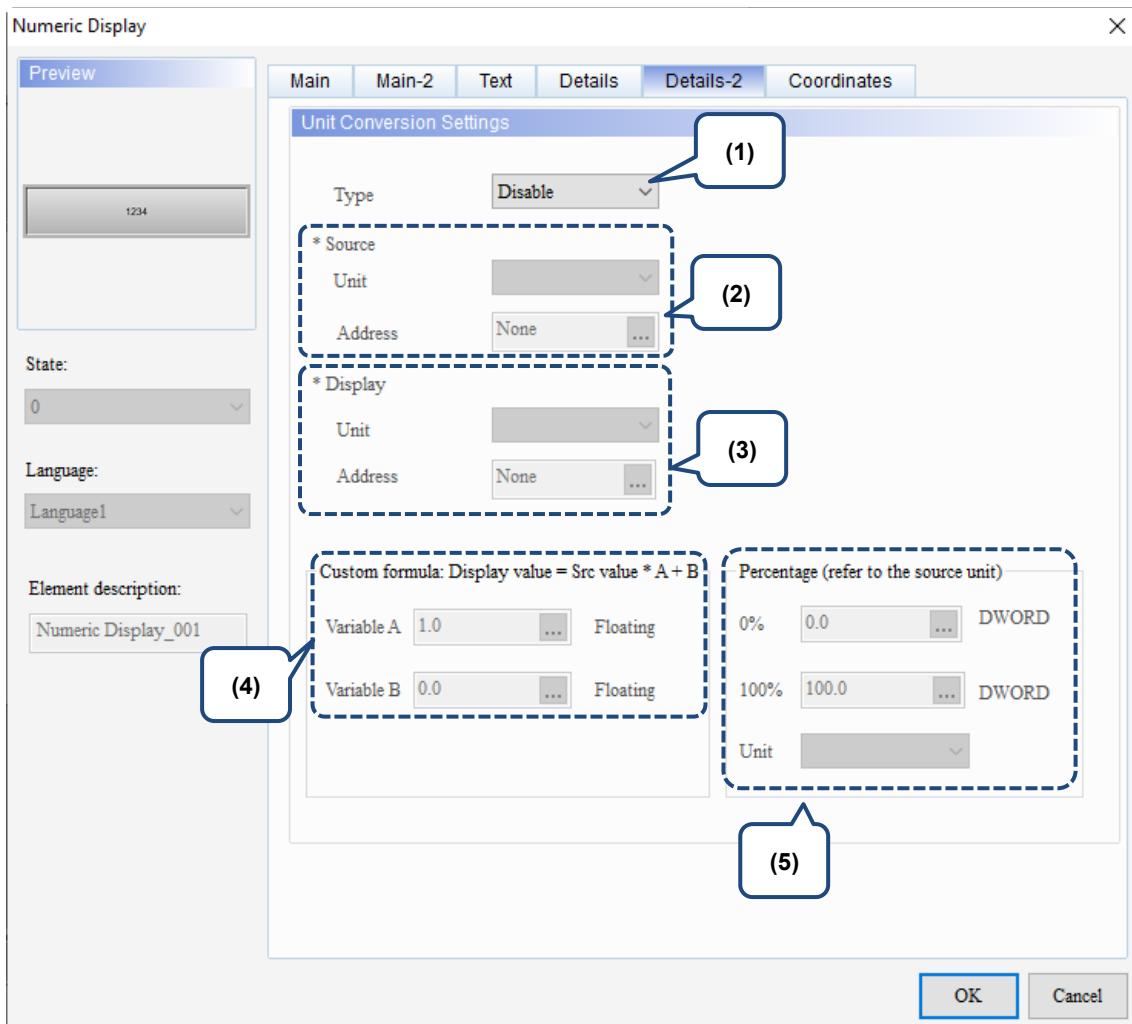
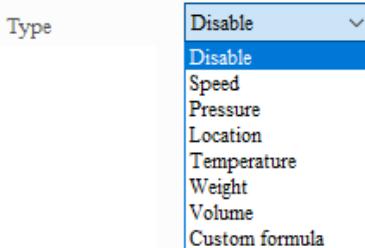
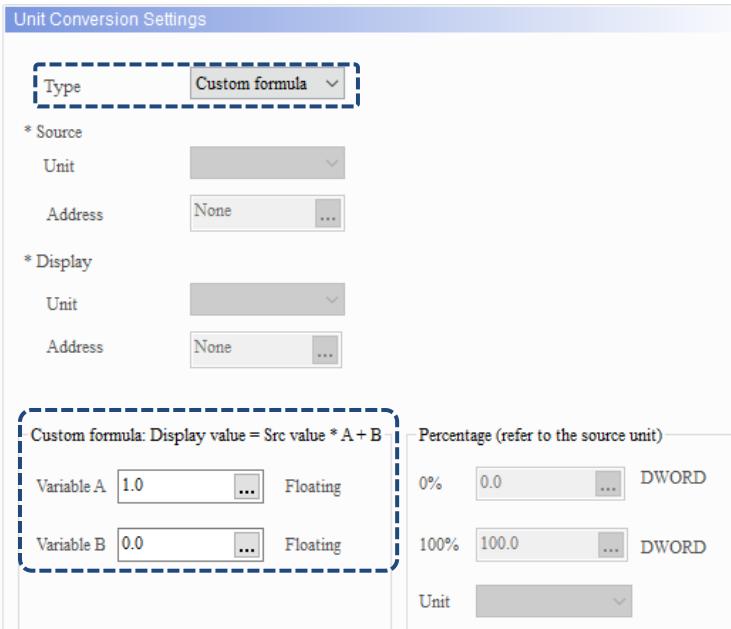
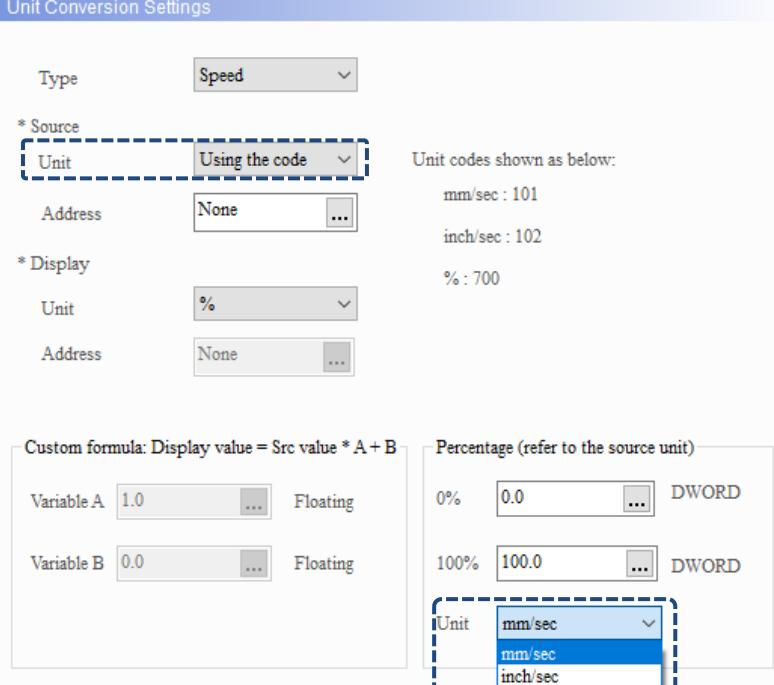


Figure 11.1.6 Details-2 property page for the Numeric Display element

No.	Property	Function description																										
(1)	Type	<ul style="list-style-type: none"> <li>You can select the conversion type, including Speed, Pressure, Location, Temperature, Weight, Volume, and Custom formula.</li> </ul>  <ul style="list-style-type: none"> <li>If you select Disable, it means the value does not need conversion.</li> <li>When selecting the Custom formula for the Type, you have to enter values for Variable A and Variable B. The unit of Variable A and Variable B is Floating, and the formula is [Display value = Source value * A + B].</li> </ul>  <table border="1"> <thead> <tr> <th colspan="3">Percentage (refer to the source unit)</th> </tr> <tr> <th>0%</th> <th>0.0</th> <th>DWORD</th> </tr> </thead> <tbody> <tr> <td>100%</td> <td>100.0</td> <td>DWORD</td> </tr> <tr> <td colspan="3">Unit</td> </tr> </tbody> </table>	Percentage (refer to the source unit)			0%	0.0	DWORD	100%	100.0	DWORD	Unit																
Percentage (refer to the source unit)																												
0%	0.0	DWORD																										
100%	100.0	DWORD																										
Unit																												
(2)	Source	<ul style="list-style-type: none"> <li>The unit is subject to change based on the selected Type. The following table lists the corresponding units for each type.</li> </ul> <table border="1"> <thead> <tr> <th>Type</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Speed</td> <td>mm/sec</td> </tr> <tr> <td>inch/sec</td> </tr> <tr> <td>%</td> </tr> <tr> <td colspan="2">Using the code</td> </tr> <tr> <td rowspan="3">Pressure</td> <td>kg/cm</td> </tr> <tr> <td>bar</td> </tr> <tr> <td>%</td> </tr> <tr> <td colspan="2">Using the code</td> </tr> <tr> <td rowspan="3">Location (position)</td> <td>mm</td> </tr> <tr> <td>inch</td> </tr> <tr> <td>%</td> </tr> <tr> <td colspan="2">Using the code</td> </tr> <tr> <td rowspan="3">Temperature</td> <td>°F</td> </tr> <tr> <td>°C</td> </tr> <tr> <td>%</td> </tr> <tr> <td colspan="2">Using the code</td> </tr> </tbody> </table>	Type	Unit	Speed	mm/sec	inch/sec	%	Using the code		Pressure	kg/cm	bar	%	Using the code		Location (position)	mm	inch	%	Using the code		Temperature	°F	°C	%	Using the code	
Type	Unit																											
Speed	mm/sec																											
	inch/sec																											
	%																											
Using the code																												
Pressure	kg/cm																											
	bar																											
	%																											
Using the code																												
Location (position)	mm																											
	inch																											
	%																											
Using the code																												
Temperature	°F																											
	°C																											
	%																											
Using the code																												

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No.	Property	Function description																											
		Type	Unit																										
(2)	Source		ton																										
			kN																										
			g																										
			oz																										
			%																										
			Using the code																										
			L																										
			ml																										
			kL																										
			%																										
			Using the code																										
<ul style="list-style-type: none"> <li>When you select % (Percentage) or Using the code as the unit for either the Source or Display, the Percentage setting section is enabled. When the Percentage setting section allows data input, you need to define the values for 0% and 100% which unit setting refers to the Source.</li> </ul>																													
<p><b>Unit Conversion Settings</b></p> <p><b>* Source</b></p> <table> <tr> <td>Type</td> <td>Speed</td> </tr> <tr> <td>Unit</td> <td>mm/sec</td> </tr> <tr> <td>Address</td> <td>None</td> </tr> </table> <p><b>* Display</b></p> <table> <tr> <td>Unit</td> <td>%</td> </tr> <tr> <td>Address</td> <td>None</td> </tr> </table> <p><b>Custom formula: Display value = Src value * A + B</b></p> <table> <tr> <td>Variable A</td> <td>1.0</td> <td>Floating</td> <td>0%</td> <td>0.0</td> <td>DWORD</td> </tr> <tr> <td>Variable B</td> <td>0.0</td> <td>Floating</td> <td>100%</td> <td>100.0</td> <td>DWORD</td> </tr> </table> <p><b>Percentage (refer to the source unit)</b></p> <table> <tr> <td>Unit</td> <td>mm/sec</td> </tr> <tr> <td></td> <td>mm/sec</td> </tr> </table>				Type	Speed	Unit	mm/sec	Address	None	Unit	%	Address	None	Variable A	1.0	Floating	0%	0.0	DWORD	Variable B	0.0	Floating	100%	100.0	DWORD	Unit	mm/sec		mm/sec
Type	Speed																												
Unit	mm/sec																												
Address	None																												
Unit	%																												
Address	None																												
Variable A	1.0	Floating	0%	0.0	DWORD																								
Variable B	0.0	Floating	100%	100.0	DWORD																								
Unit	mm/sec																												
	mm/sec																												

No.	Property	Function description																																																			
(2)	Source	<p><b>Unit Conversion Settings</b></p>  <ul style="list-style-type: none"> <li>When you select Using the code as the unit, it means you can enter variables to specify the unit codes for the Source and Display. The unit codes are as follows:</li> </ul> <table border="1"> <thead> <tr> <th>Type</th> <th>Unit</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Speed</td> <td>mm/sec</td> <td>101</td> </tr> <tr> <td>inch/sec</td> <td>102</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="3">Pressure</td> <td>kg/cm</td> <td>201</td> </tr> <tr> <td>bar</td> <td>202</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="3">Location (position)</td> <td>mm</td> <td>301</td> </tr> <tr> <td>inch</td> <td>302</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="3">Temperature</td> <td>°F</td> <td>401</td> </tr> <tr> <td>°C</td> <td>402</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="5">Weight</td> <td>ton</td> <td>501</td> </tr> <tr> <td>kN</td> <td>502</td> </tr> <tr> <td>g</td> <td>503</td> </tr> <tr> <td>oz</td> <td>504</td> </tr> <tr> <td>%</td> <td>700</td> </tr> <tr> <td rowspan="4">Volume</td> <td>L</td> <td>601</td> </tr> <tr> <td>ml</td> <td>602</td> </tr> <tr> <td>kL</td> <td>603</td> </tr> <tr> <td>%</td> <td>700</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>User-defined address is available only when you select Using the code for the unit.</li> <li>If you select Using the code as the unit for both the Source and Display, do not use the same address.</li> </ul>	Type	Unit	Code	Speed	mm/sec	101	inch/sec	102	%	700	Pressure	kg/cm	201	bar	202	%	700	Location (position)	mm	301	inch	302	%	700	Temperature	°F	401	°C	402	%	700	Weight	ton	501	kN	502	g	503	oz	504	%	700	Volume	L	601	ml	602	kL	603	%	700
Type	Unit	Code																																																			
Speed	mm/sec	101																																																			
	inch/sec	102																																																			
	%	700																																																			
Pressure	kg/cm	201																																																			
	bar	202																																																			
	%	700																																																			
Location (position)	mm	301																																																			
	inch	302																																																			
	%	700																																																			
Temperature	°F	401																																																			
	°C	402																																																			
	%	700																																																			
Weight	ton	501																																																			
	kN	502																																																			
	g	503																																																			
	oz	504																																																			
	%	700																																																			
Volume	L	601																																																			
	ml	602																																																			
	kL	603																																																			
	%	700																																																			

No.	Property	Function description
(3)	Display	<ul style="list-style-type: none"> <li>■ Refer to the Source description for details about the units.</li> <li>■ User-defined address is available only when you select Using the code for the unit.</li> <li>■ If you select Using the code as the unit for both the Source and Display, do not use the same address.</li> </ul>
(4)	Custom formula	<ul style="list-style-type: none"> <li>■ You can input external / internal memory addresses and constants for both Variable A and Variable B.</li> <li>■ When selecting the Custom formula for the Type, you have to enter values for Variable A and Variable B. The unit of Variable A and Variable B is Floating, and the formula is [Display value = Source value * A + B].</li> </ul>
(5)	Percentage	<ul style="list-style-type: none"> <li>■ You can input external / internal memory addresses and constants for both setting values of 0% and 100%.</li> <li>■ When you select % (Percentage) or Using the code as the unit for either the Source or Display, the Percentage setting section is enabled.</li> <li>■ The unit is subject to change based on the Source unit setting. Take the speed setting for example. If you select % (Percentage) or Using the code as the Source unit, you can select mm/sec or inch/sec from the Unit drop-down list box in the Percentage setting section; if you select mm/sec for the Source unit, mm/sec is the only unit available in the Percentage setting section.</li> </ul>

Refer to Table 11.1.4 Unit Conversion example.

Table 11.1.4 Unit Conversion example

Unit conversion (fixed unit)			
Address settings	Numeric Display element (Display)		Numeric Entry element (Source)
	Read Address	\$10	Write Address
Detail settings	Numeric Display / Numeric Entry elements		
	Data Type	Data Format	Integer Digits      Fractional (Digits)
	Word	Unsigned Decimal	5      0
Unit settings	<ul style="list-style-type: none"> <li>Double-click the Numeric Display element and go to the Details-2 page. Select Temperature for the Type and select °F for the Source Unit and °C for the Display Unit.</li> </ul>		
	State:	0	
	Language:	Language1	
	Element description:	Numeric Display_001	

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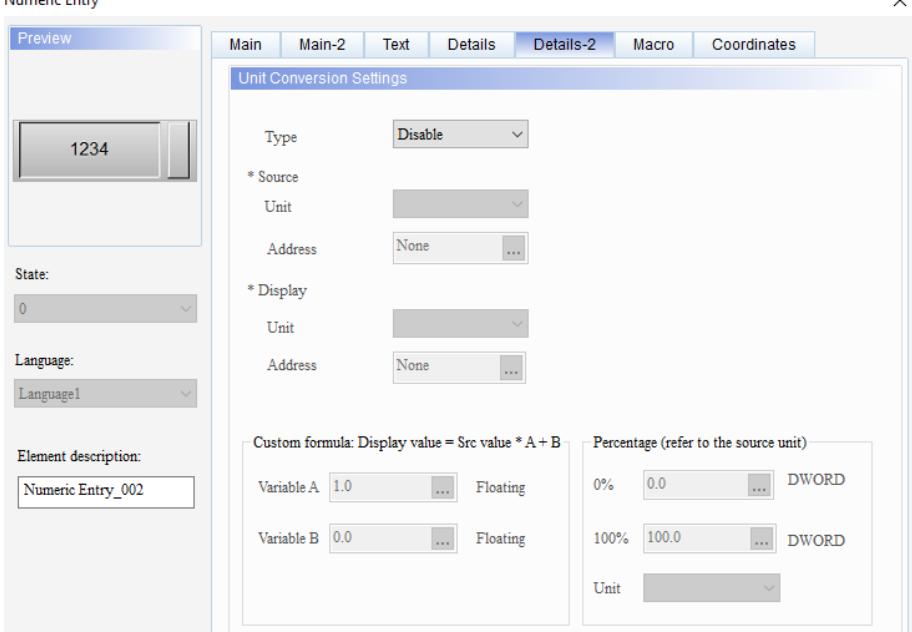
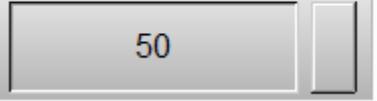
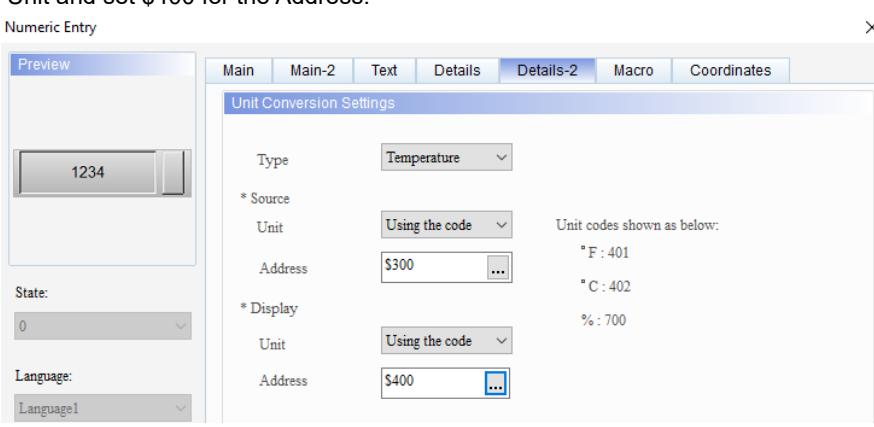
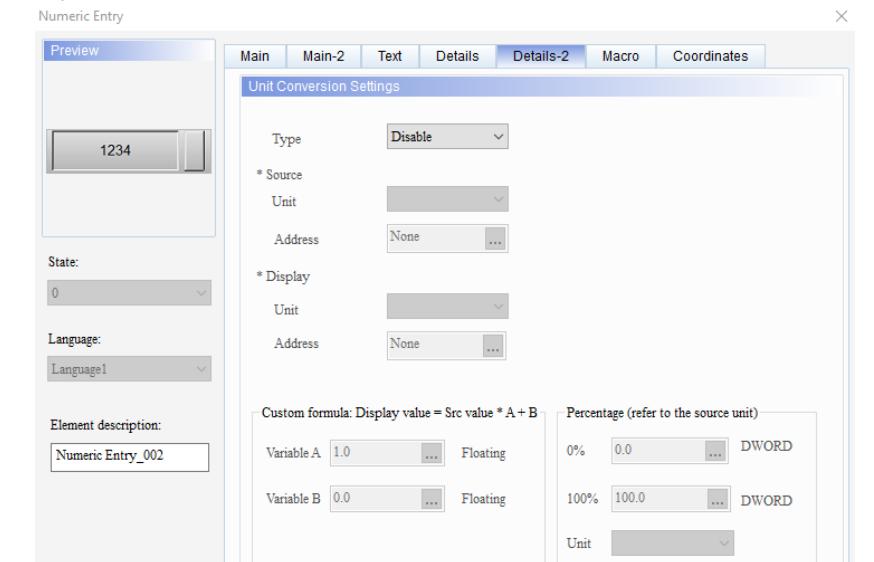
<h3 style="text-align: center;">Unit conversion (fixed unit)</h3> <ul style="list-style-type: none"> <li>Since the Numeric Entry element does not need unit conversion, set the Type to Disable.</li> </ul>	
<p><b>Unit settings</b></p> 	<p>1 Since the Numeric Entry element does not need unit conversion, set the Type to Disable.</p>
<p><b>Execution results</b></p> <p>After creating the elements, compile and download the data to the HMI. Then, enter 50 (°F) with the Numeric Entry element and the Numeric Display element will convert the temperature to 10 (°C).</p> <div style="display: flex; justify-content: space-around;"> <span>Display °C</span> <span>Source °F</span> </div> <div style="display: flex; justify-content: space-around;">   </div>	<p>After creating the elements, compile and download the data to the HMI. Then, enter 50 (°F) with the Numeric Entry element and the Numeric Display element will convert the temperature to 10 (°C).</p> <div style="display: flex; justify-content: space-around;"> <span>Display °C</span> <span>Source °F</span> </div> <div style="display: flex; justify-content: space-around;">   </div>

Table 11.1.5 Unit Conversion example

Unit conversion (Using the code)						
Address settings	Numeric Entry element		Numeric Entry element (Source)		Numeric Entry element (Display)	
	Read Address	\$10	Write Address	\$300	Write Address	\$400
	W:\$10	#####	W:\$300	#####	W:\$400	#####
Detail settings	Numeric Entry element					
	Data Type	Data Format	Integer Digits	Fractional (Digits)		
	Word	Unsigned Decimal	5	0		
	<ul style="list-style-type: none"> <li>Double-click the Numeric Entry element of \$10 and go to the Details-2 page. Select Temperature for the Type. For the Source settings, select Using the code for the Unit and set \$300 for the Address; for the Display settings, select Using the code for the Unit and set \$400 for the Address.</li> </ul> 					
Unit settings	<ul style="list-style-type: none"> <li>Since the Numeric Entry elements of \$300 and \$400 do not need unit conversion, set the Type to Disable.</li> </ul> 					

## Execution results

**Unit conversion (Using the code)**

- After creating the elements, compile and download the data to the HMI and then enter 50 for \$10.



- Enter 401 (means °F) for \$300 and enter 402 (means °C) for \$400, and then \$10 converts the value to 10 (°C).

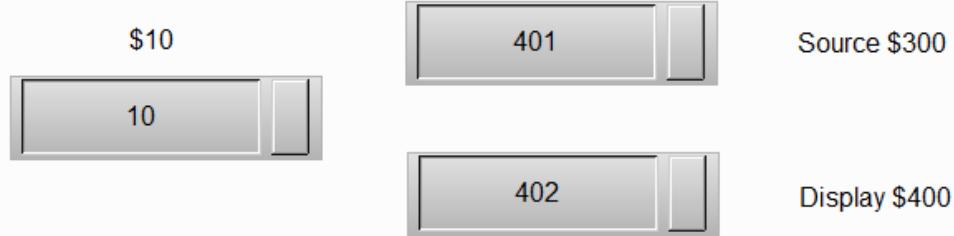
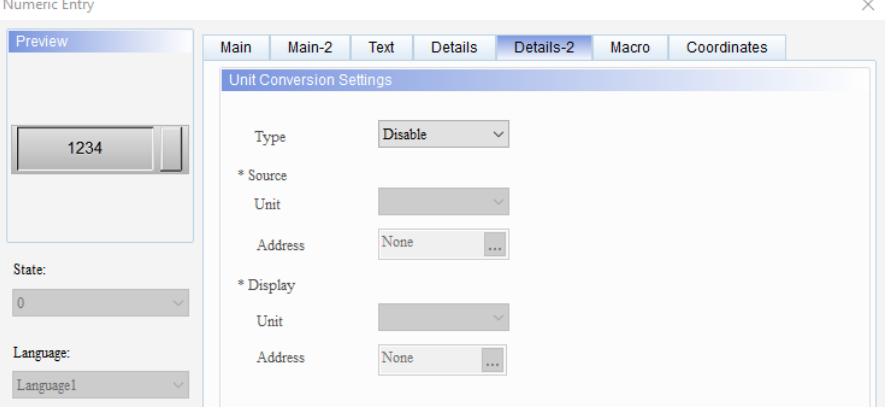


Table 11.1.6 Unit Conversion example

Unit conversion (%)															
	Numeric Display element	Numeric Entry element (Source)													
Address settings	Read Address	\$10	Write Address												
	W:\$10	#####	W:\$300 #####												
Detail settings	Numeric Display / Numeric Entry elements														
	Data Type	Data Format	Integer Digits Fractional (Digits)												
	Word	Unsigned Decimal	5 0												
	<ul style="list-style-type: none"> <li>Double-click the Numeric Display element of \$10. Go to the Details-2 page, select Temperature for the Type, set the Source unit to %, and set the Display unit to °C.</li> </ul>														
	<p style="background-color: #ADD8E6; padding: 2px;">Unit Conversion Settings</p> <table> <tr> <td>Type</td> <td>Temperature</td> </tr> <tr> <td>* Source</td> <td>Unit %</td> </tr> <tr> <td>Address</td> <td>None ...</td> </tr> <tr> <td>* Display</td> <td>Unit °C</td> </tr> <tr> <td>Address</td> <td>None ...</td> </tr> </table>			Type	Temperature	* Source	Unit %	Address	None ...	* Display	Unit °C	Address	None ...		
Type	Temperature														
* Source	Unit %														
Address	None ...														
* Display	Unit °C														
Address	None ...														
Unit settings	<ul style="list-style-type: none"> <li>In the Percentage setting section, set 0% to 30.0 and 100% to 1000.0.</li> <li>Since the Source unit is %, the Percentage setting unit can be °F or °C. In this example, °F is used as the unit.</li> </ul> <table> <tr> <td colspan="3">Percentage (refer to the source unit)</td> </tr> <tr> <td>0%</td> <td>30.0</td> <td>DWORD</td> </tr> <tr> <td>100%</td> <td>1000.0</td> <td>DWORD</td> </tr> <tr> <td>Unit</td> <td>°F</td> <td>°F °F °C</td> </tr> </table>			Percentage (refer to the source unit)			0%	30.0	DWORD	100%	1000.0	DWORD	Unit	°F	°F °F °C
Percentage (refer to the source unit)															
0%	30.0	DWORD													
100%	1000.0	DWORD													
Unit	°F	°F °F °C													

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<b>Unit conversion (%)</b>	
Unit settings	Since the Numeric Entry element of \$10 does not need unit conversion, set the Type to Disable. 
Execution results	<ul style="list-style-type: none"><li>After creating the elements, compile and download the data to the HMI. The value for the Numeric Entry element of \$10 is 0, so the Numeric Display element displays 30, meaning the value for 0% is 30. </li><li>If you set \$10 to 100, the Numeric Display element displays 1000, meaning the value for 100% is 1000. </li></ul>

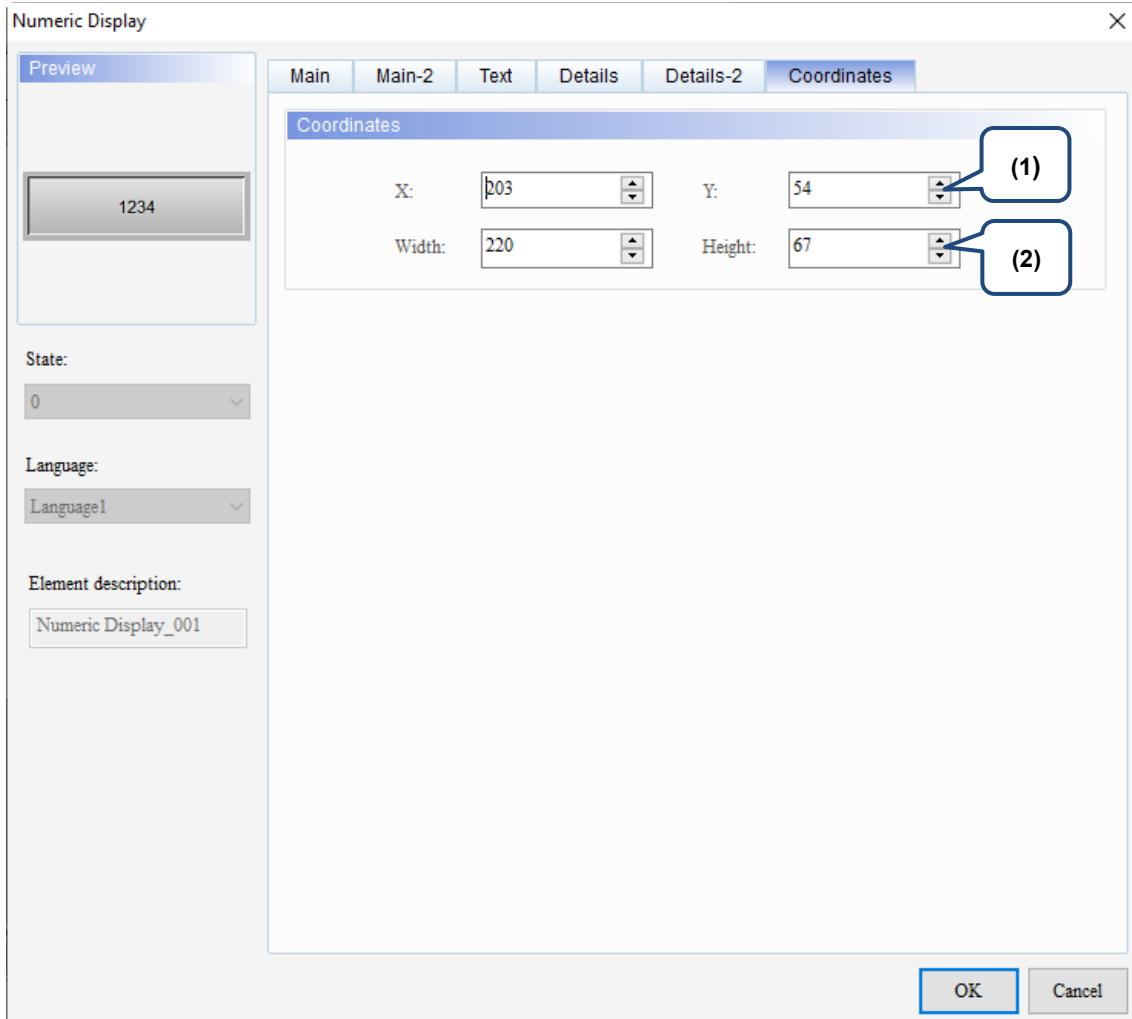
**■ Coordinates**

Figure 11.1.7 Coordinates property page for the Numeric Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 11.2 Character Display

The Character Display element is for displaying characters; therefore, the input values have to be readable ASCII codes. The software converts the ASCII codes into characters and displays them on the Character Display element. The Character Display is an element reading byte data and the default data type of the Numeric Entry element is Word, which consists of double byte, so one word represents two bytes. Then, the high and low bytes of the value read by the Character Display element swaps, and this result will be the actual characters displayed. For example, if \$0 is 4241 (Hex), it is displayed as “AB” after the high and low bytes are swapped.



The following conversion table shows the conversion between data formats and characters from A to G. The remaining characters can be deduced with the same pattern.

Table 11.2.1 ASCII code conversion table

Unsigned Decimal	Hexadecimal	Character
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G

Refer to Table 11.2.2 Character Display example.

Table 11.2.2 Character Display example

Character Display												
	Character Display element	Numeric Entry element										
Address settings	Read Address      \$555 	Write Address      \$555 										
	<ul style="list-style-type: none"> <li>Set the String Length to 4 for the Character Display element.</li> </ul>											
	<b>Detail</b> String Length: <input type="text" value="4"/>											
Detail settings	<ul style="list-style-type: none"> <li>The characters of the Character Display will display the corresponding value depending on the Data Format. Refer to Table 11.2.1.</li> </ul>											
	<table border="1"> <thead> <tr> <th colspan="3">Numeric Entry element</th> </tr> <tr> <th>Data Type</th> <th>Data Format</th> <th>Integer Digits</th> </tr> </thead> <tbody> <tr> <td>Word</td> <td>Unsigned Decimal</td> <td>4</td> </tr> </tbody> </table>			Numeric Entry element			Data Type	Data Format	Integer Digits	Word	Unsigned Decimal	4
Numeric Entry element												
Data Type	Data Format	Integer Digits										
Word	Unsigned Decimal	4										
	<table border="1"> <thead> <tr> <th colspan="3">Numeric Entry element</th> </tr> <tr> <th>Data Type</th> <th>Data Format</th> <th>Integer Digits</th> </tr> </thead> <tbody> <tr> <td>Word</td> <td>Hexadecimal</td> <td>4</td> </tr> </tbody> </table>			Numeric Entry element			Data Type	Data Format	Integer Digits	Word	Hexadecimal	4
Numeric Entry element												
Data Type	Data Format	Integer Digits										
Word	Hexadecimal	4										
Execution results	<p>Compile and download the screen data to the HMI, and then the Character Display will display the corresponding characters based on the value of the Read Address and the set Data Format.</p> <p><b>Unsigned Decimal</b></p> <table border="1"> <thead> <tr> <th>Numeric Entry</th> <th>Character Display</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> <p><b>Hexadecimal</b></p> <table border="1"> <thead> <tr> <th>Numeric Entry</th> <th>Character Display</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>			Numeric Entry	Character Display			Numeric Entry	Character Display			
Numeric Entry	Character Display											
Numeric Entry	Character Display											

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When you double-click the Character Display, the property page is shown as follows.

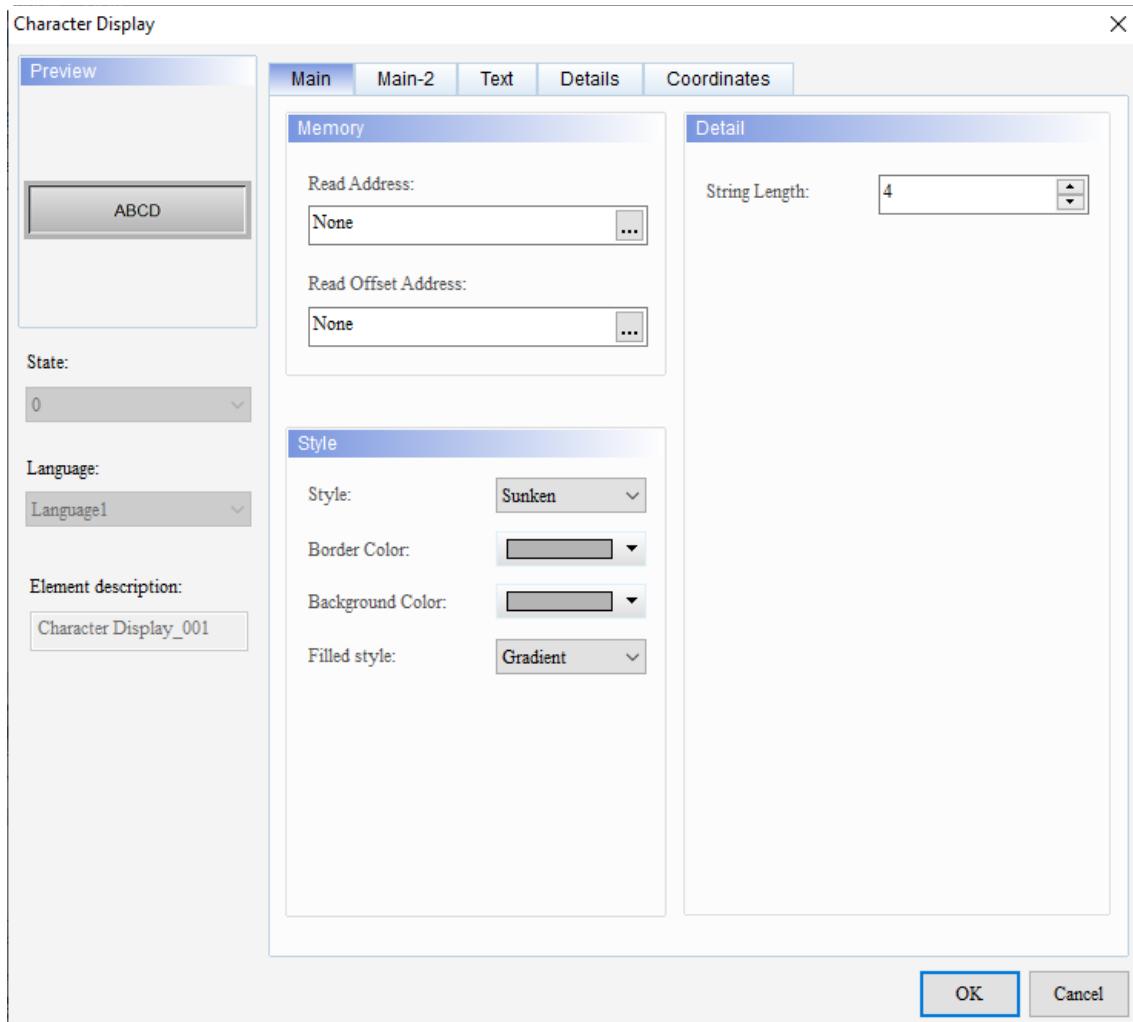


Figure 11.2.1 Properties of Character Display

Table 11.2.3 Function page of Character Display

Character Display	
Function page	Description
Preview	Character Display elements do not support multiple state values and multi-language data display.
Main	Set the Read Address, Read Offset Address, Style, Border Color, Background Color, and Filled style. Set the String Length.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the displaying text font, size, color, and alignment options.
Details	Set the Invisible Address and Insufficient string length zero.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

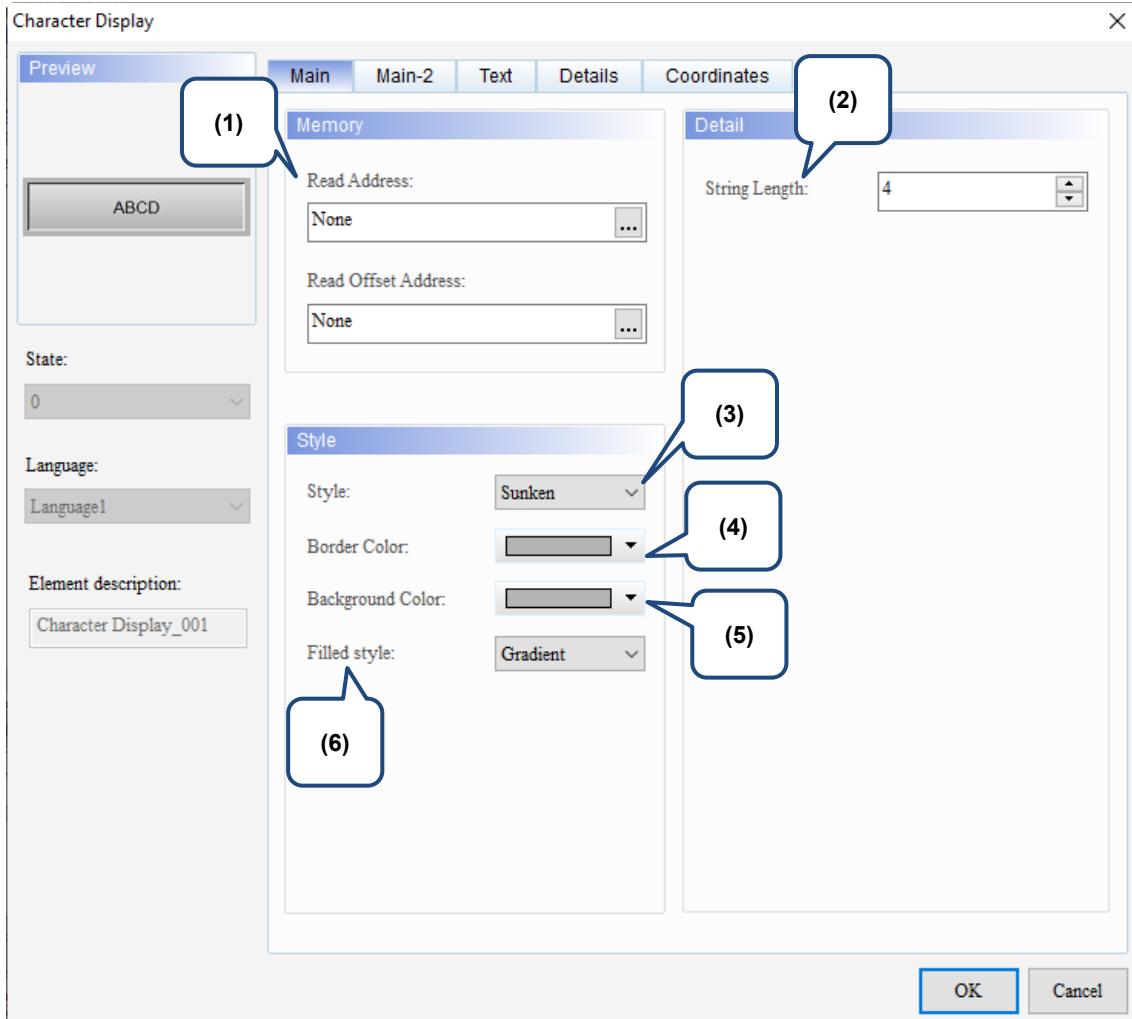
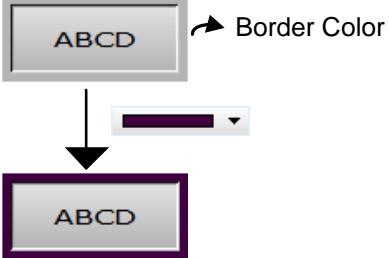
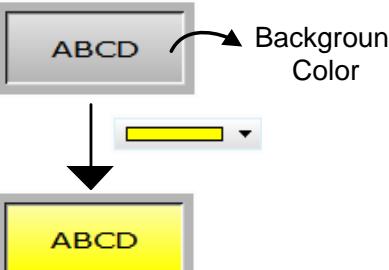


Figure 11.2.2. Main property page for the Character Display element

No.	Property	Function description								
(1)	Read Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>								
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.								
(2)	String Length	The setting range of the String Length is 1 - 256.								
(3)	Style	<p>The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							

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No.	Property	Function description				
(4)	Border Color	<ul style="list-style-type: none"> <li>Set the border color of the element.</li> <li>When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul> 				
(5)	Background Color	<ul style="list-style-type: none"> <li>Set the background color of the element.</li> <li>When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul> 				
(6)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1"> <tr> <td>Gradient</td> <td></td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						

## ■ Main-2

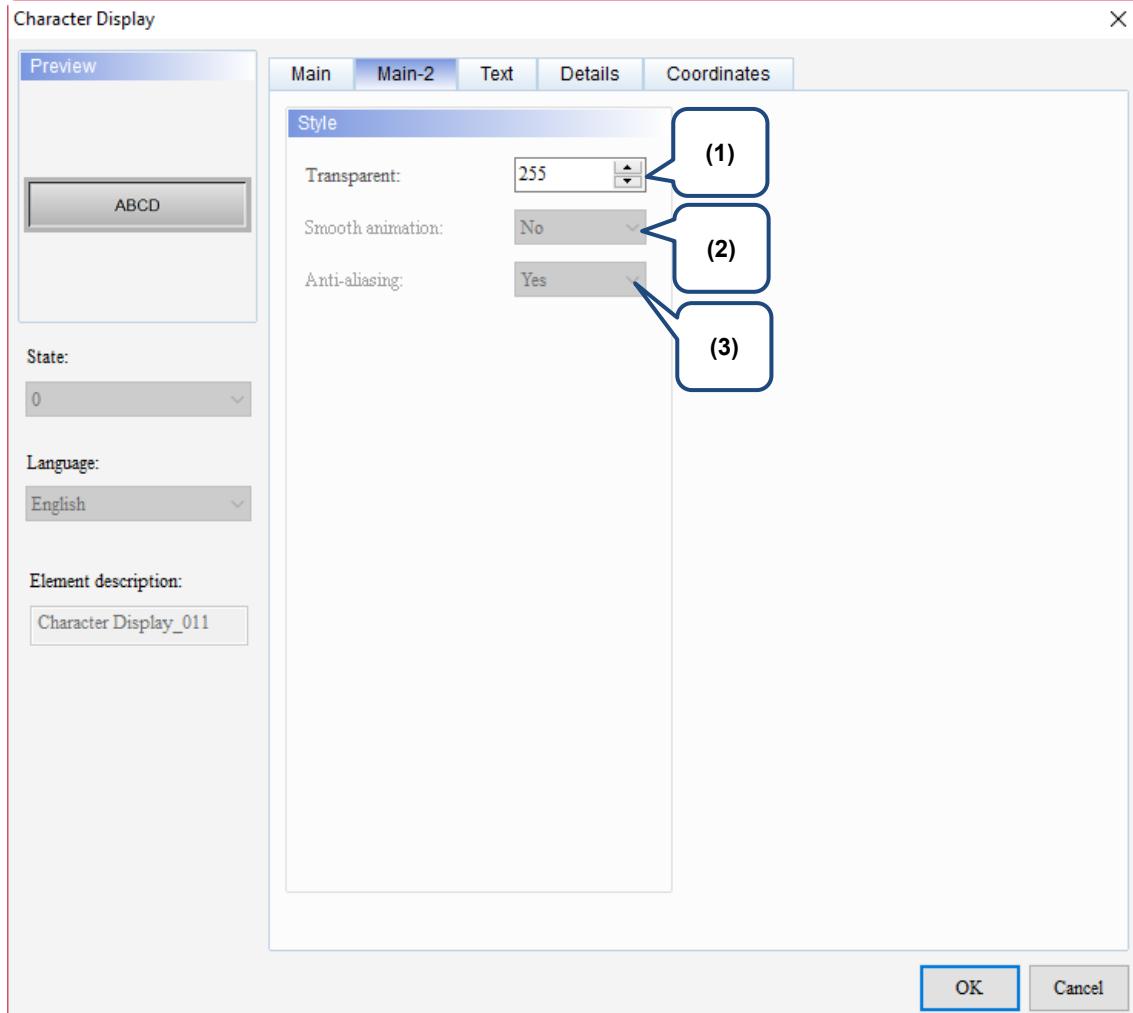


Figure 11.2.3. Main-2 property page for the Character Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Text

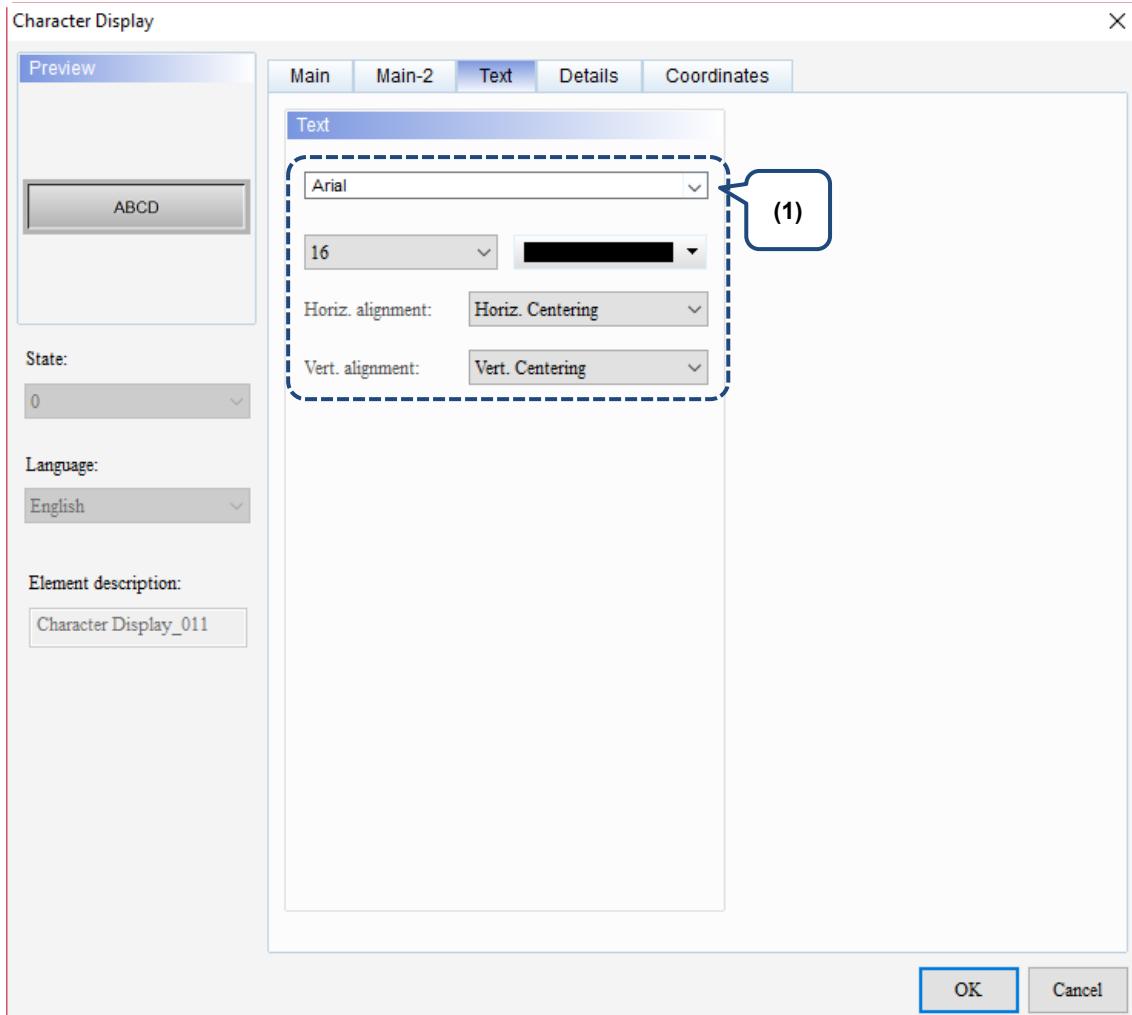


Figure 11.2.4. Text property page for the Character Display element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

## ■ Details

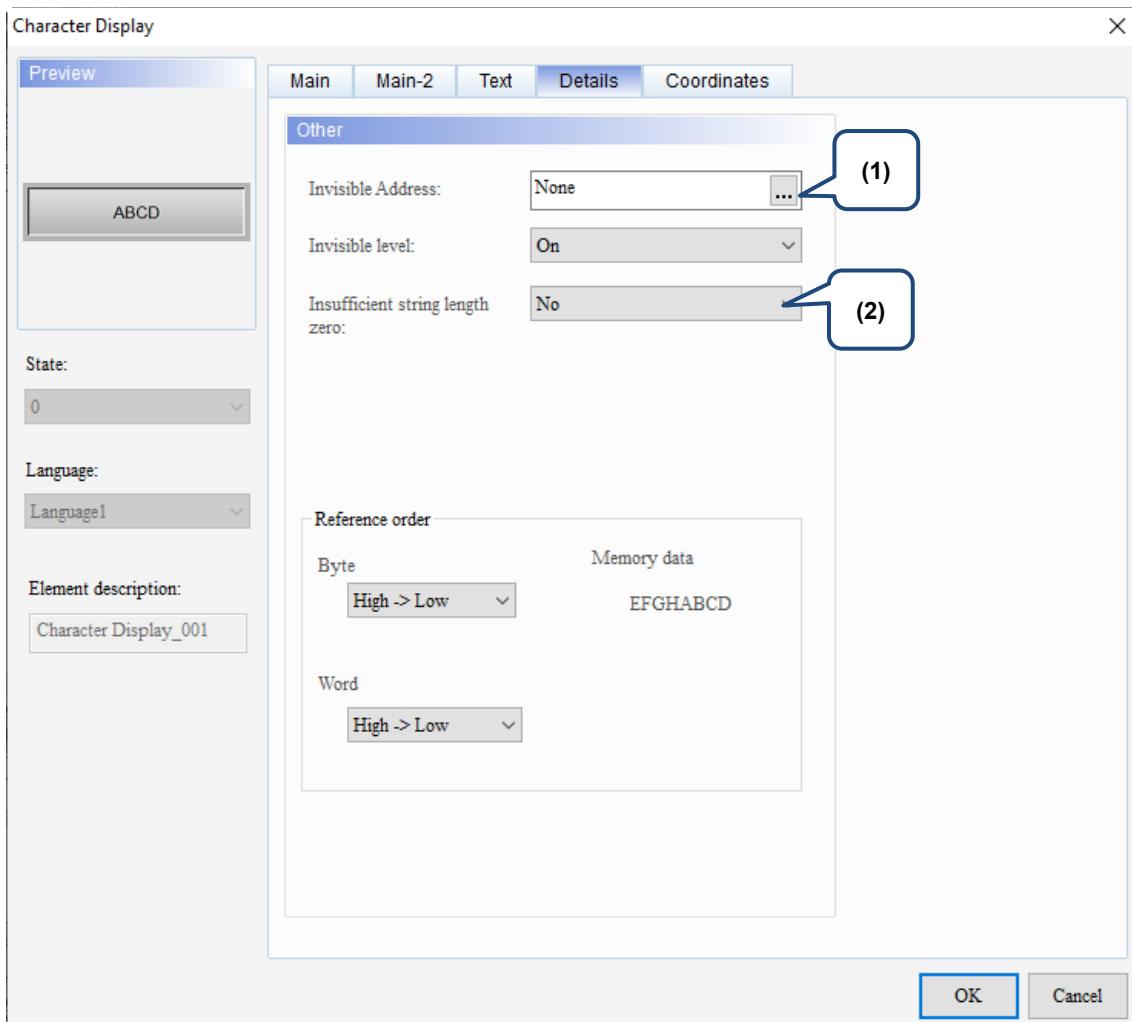


Figure 11.2.5 Details property page for the Character Display element

No.	Property	Function description		
(1)	Invisible Address	When the Invisible Address is set to On, the Character Display element is invisible and you cannot execute its set functions.		
		Invisible Address is On	Element is invisible	Invisible address \$9.0 ON
(2)	Insufficient string length zero	When the length of the input string is less than the set String Length, the remaining characters will be filled in with zeros for display.		
		DELTA		Invisible address \$9.0 OFF

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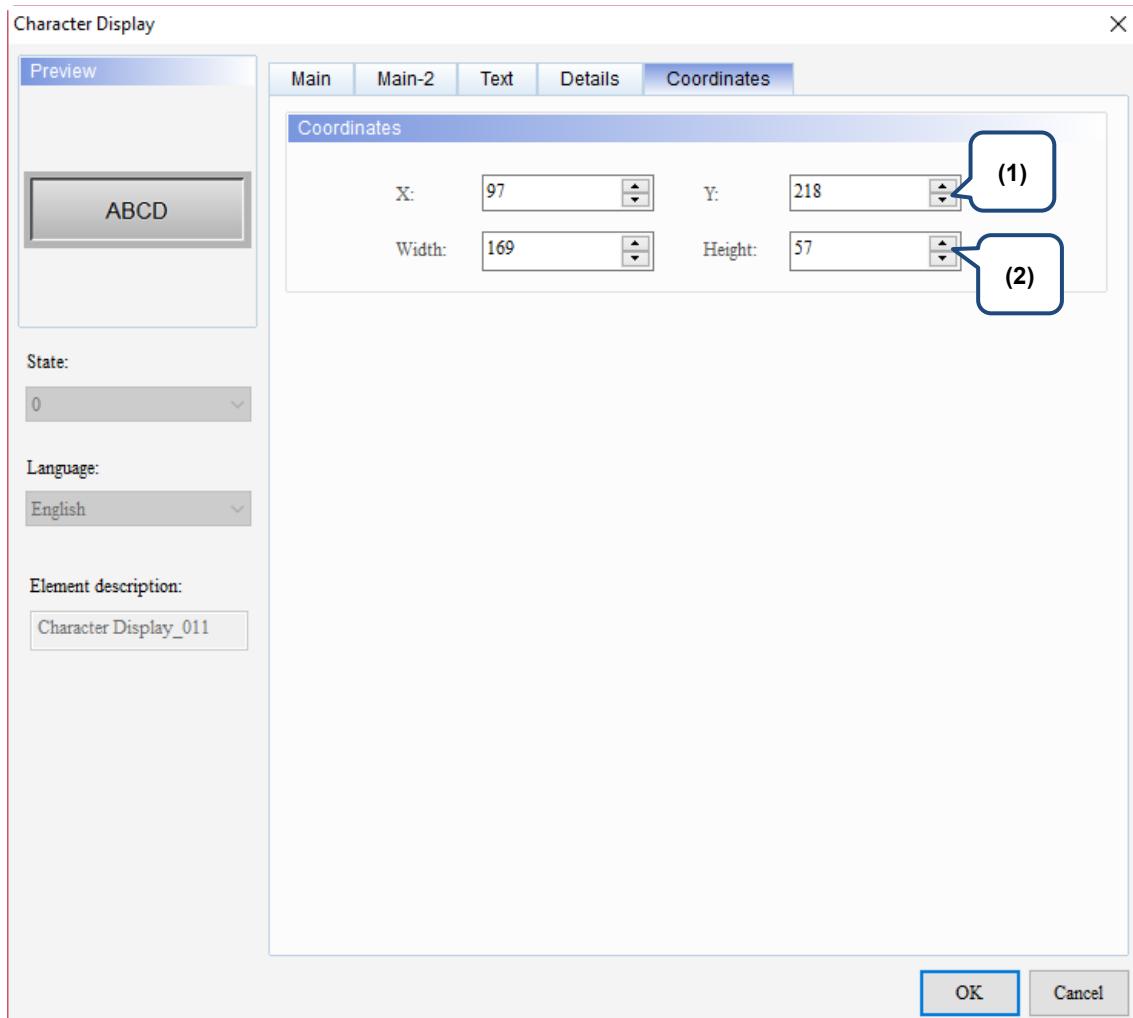
**■ Coordinates**

Figure 11.2.6 Coordinates property page for the Character Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 11.3 Date Display / Time Display / Week Display

The Date Display, Time Display, and Week Display are mainly for displaying the date, time, and week of the HMI system. You can set the format of both the Date Display and Time Display, and use the multi-language editing for the Week Display. Refer to Table 11.3.1 Date Display / Time Display / Week Display example.

Table 11.3.1 Date Display / Time Display / Week Display example

Date Display / Time Display / Week Display																											
	Date Display element		Date format																								
Date Display	Setting format	mm/dd/yy																									
		mm/dd/yy dd/mm/yy dd.mm.yy yy.mm.dd yy/mm/dd mm.dd mm/dd																									
Time Display	Time Display element		Time format																								
	Setting format	HH:MM:SS HH:MM																									
Week Display	If you have set the multi-language data, then you can edit the multi-language data of the element.		<table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>日</td> <td>SUN</td> </tr> <tr> <td>1</td> <td>一</td> <td>MON</td> </tr> <tr> <td>2</td> <td>二</td> <td>TUE</td> </tr> <tr> <td>3</td> <td>三</td> <td>WED</td> </tr> <tr> <td>4</td> <td>四</td> <td>THR</td> </tr> <tr> <td>5</td> <td>五</td> <td>FRI</td> </tr> <tr> <td>6</td> <td>六</td> <td>SAT</td> </tr> </tbody> </table>	State	Chinese	English	0	日	SUN	1	一	MON	2	二	TUE	3	三	WED	4	四	THR	5	五	FRI	6	六	SAT
State	Chinese	English																									
0	日	SUN																									
1	一	MON																									
2	二	TUE																									
3	三	WED																									
4	四	THR																									
5	五	FRI																									
6	六	SAT																									
Execution results	Compile and download the screen to the HMI, and the HMI displays the elements as follows.																										
	Date Display	Time Display	Week Display																								
			<table border="1"> <thead> <tr> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Chinese	English																						
Chinese	English																										

### 11.3.1 Date Display

When you double-click the Date Display, the property page is shown as follows.

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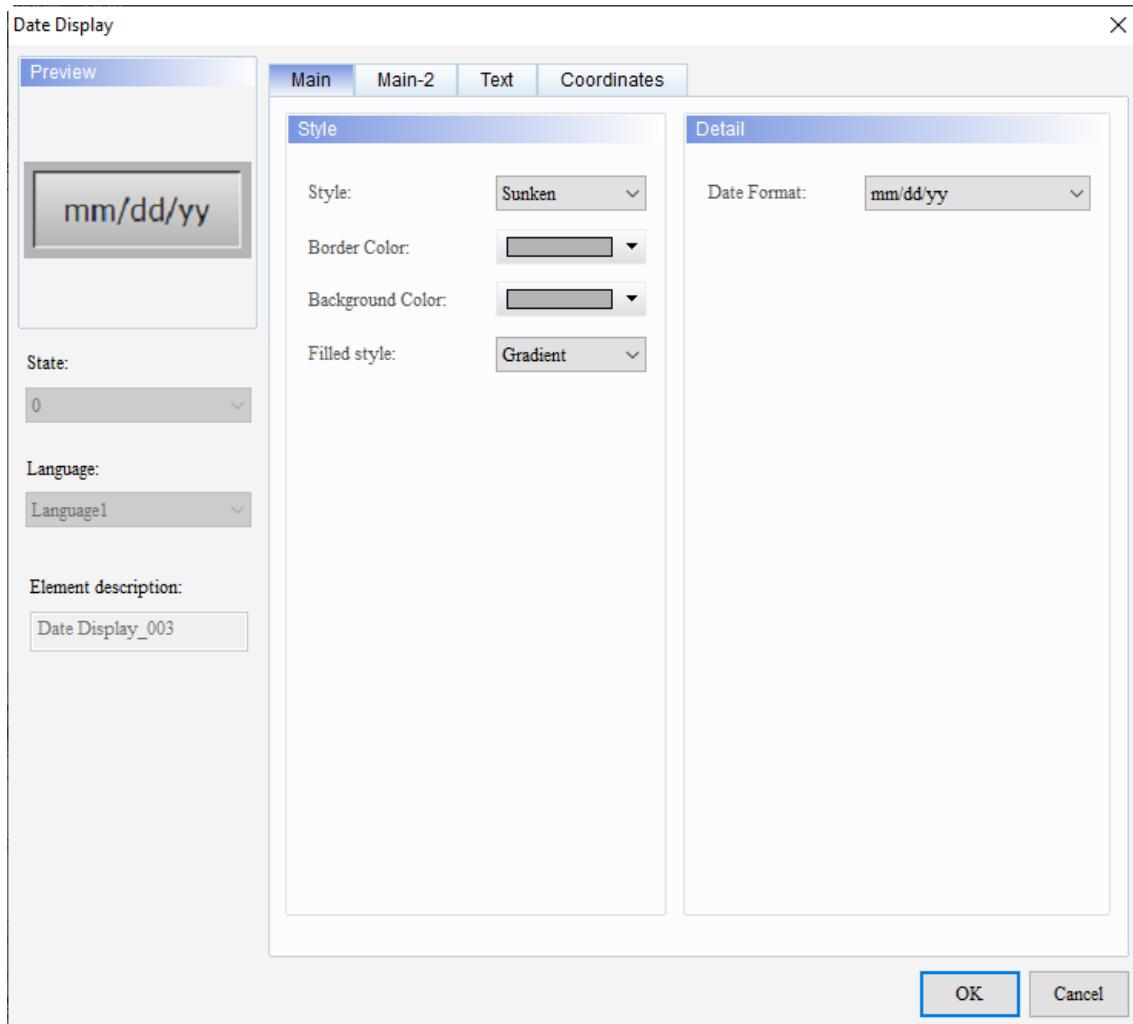


Figure 11.3.1.1 Properties of the Date Display

Table 11.3.1.1 Function page of Date Display

Date Display	
Function page	Description
Preview	The Date Display is for displaying the HMI system date. This element does not support multiple state values and multi-language display.
Main	Set the Style, Border Color, Background Color, and Filled style of the element. Set the Date Format.
Text	Set the displaying text content, font, size, color, and alignment options.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

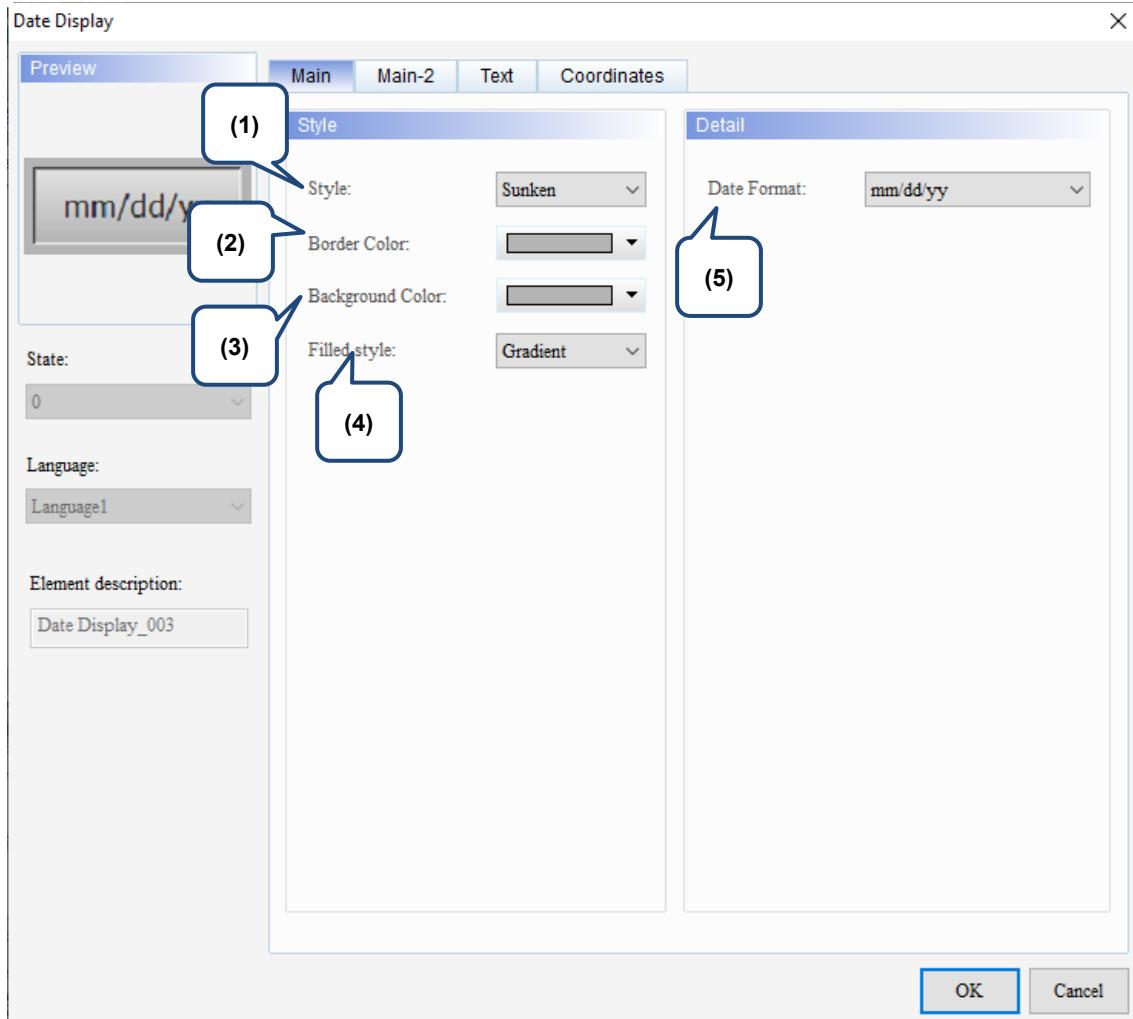
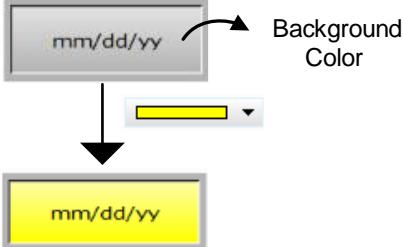
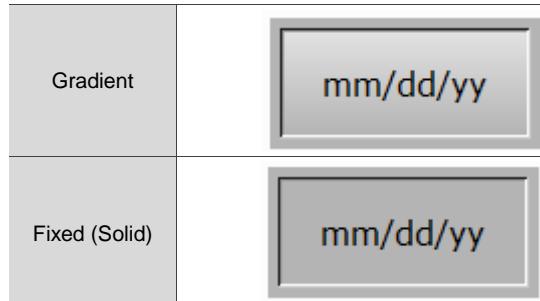
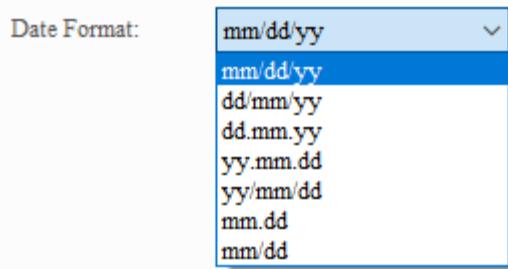


Figure 11.3.1.2 Main property page for the Date Display element

No.	Property	Function description								
(1)	Style	<p>The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td>mm/dd/yy</td> <td style="background-color: #cccccc;">mm/dd/yy</td> <td>mm/dd/yy</td> <td>mm/dd/yy</td> </tr> </table>	Standard	Raised	Sunken	Transparent	mm/dd/yy	mm/dd/yy	mm/dd/yy	mm/dd/yy
Standard	Raised	Sunken	Transparent							
mm/dd/yy	mm/dd/yy	mm/dd/yy	mm/dd/yy							
(2)	Border Color	<ul style="list-style-type: none"> <li>Set the border color of the element.</li> <li>When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul> <div style="text-align: center; margin-top: 20px;"> </div>								

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No.	Property	Function description
(3)	Background Color	<ul style="list-style-type: none"> <li>Set the background color of the element.</li> <li>When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul> 
(4)	Filled style	The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model. 
(5)	Date Format	The software provides 7 date formats for you to select. 

## ■ Main-2

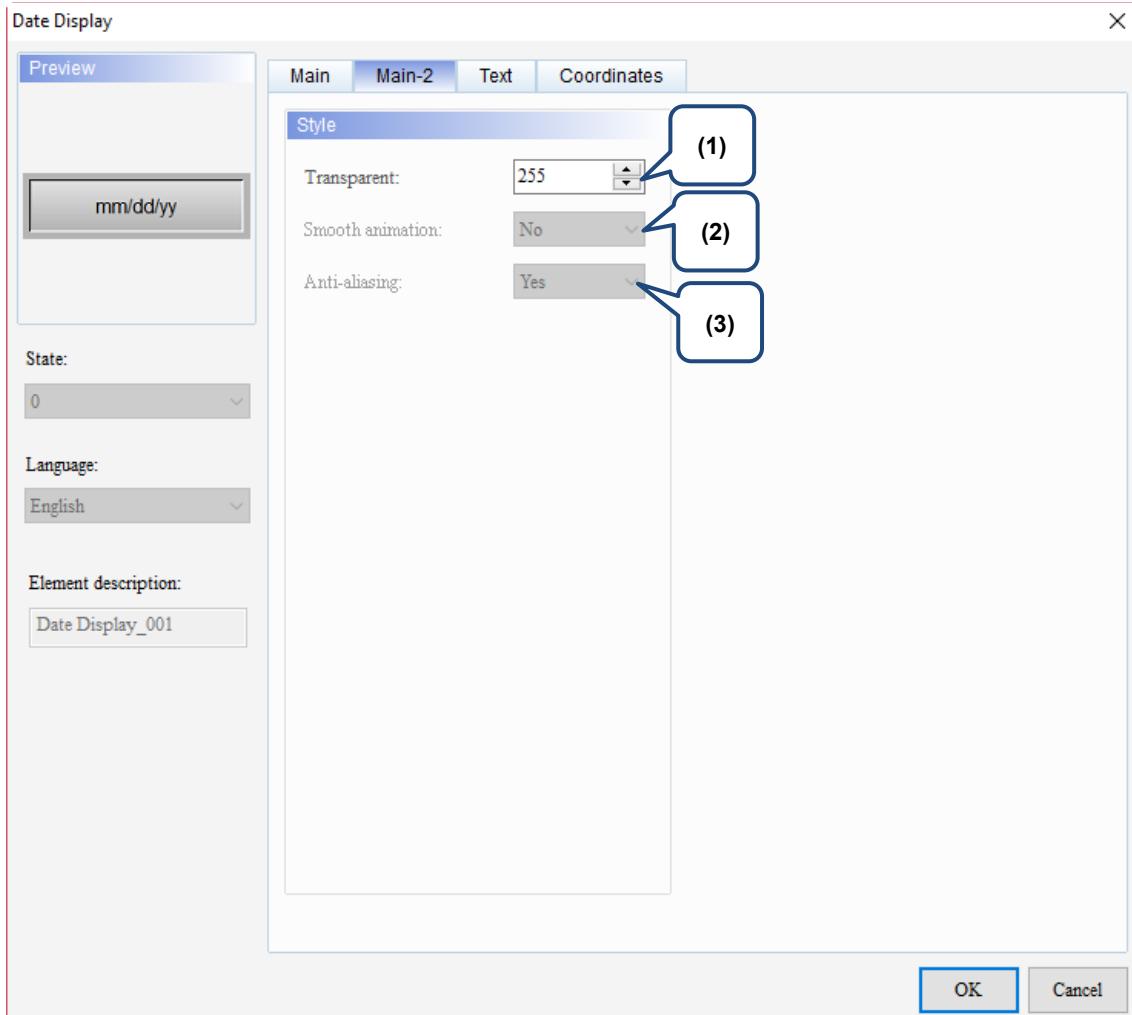


Figure 11.3.1.3 Main-2 property page for the Date Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Text

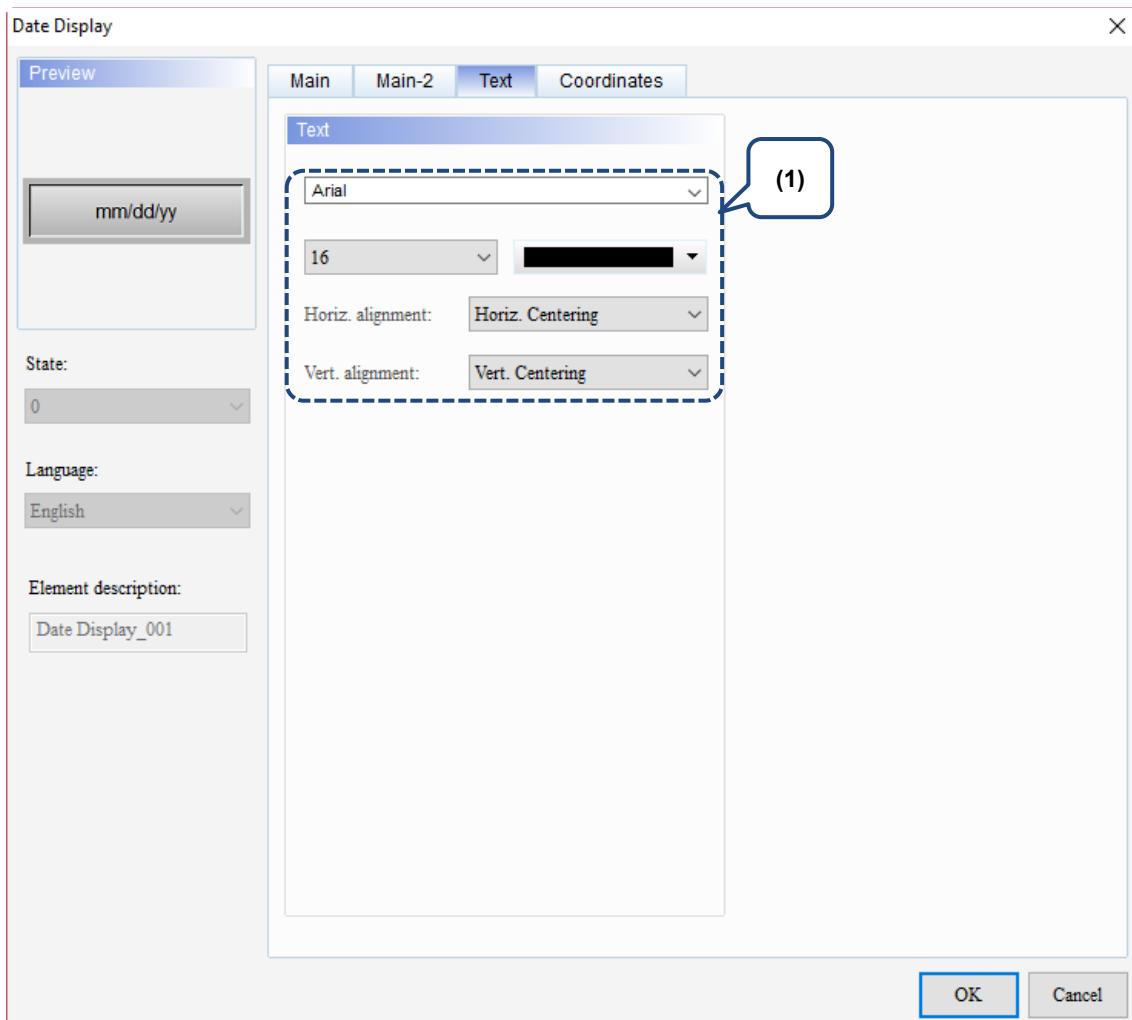


Figure 11.3.1.4 Text property page for the Date Display element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

## ■ Coordinates

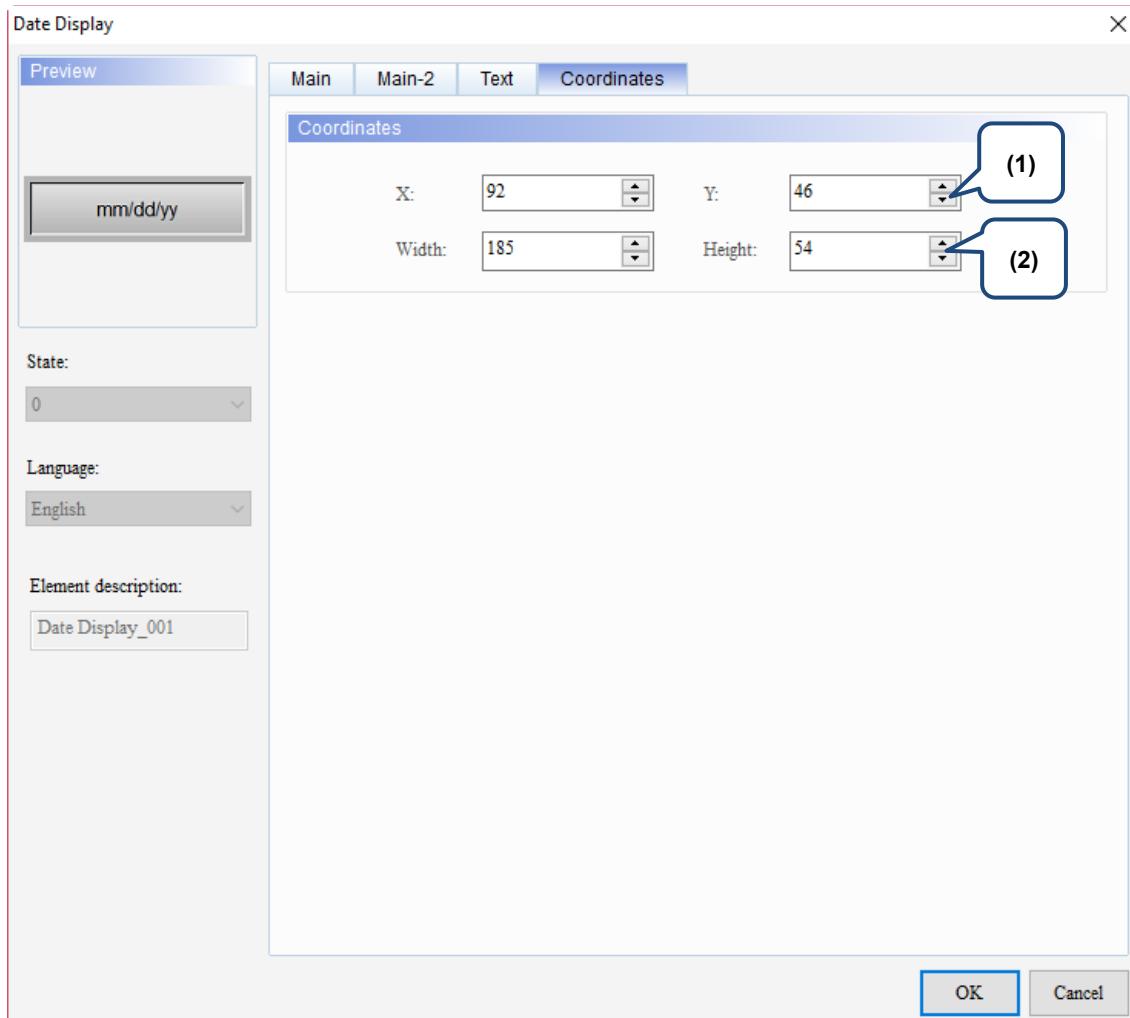


Figure 11.3.1.5 Coordinates property page for the Date Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

### 11.3.2 Time Display

When you double-click the Time Display, the property page is shown as follows.

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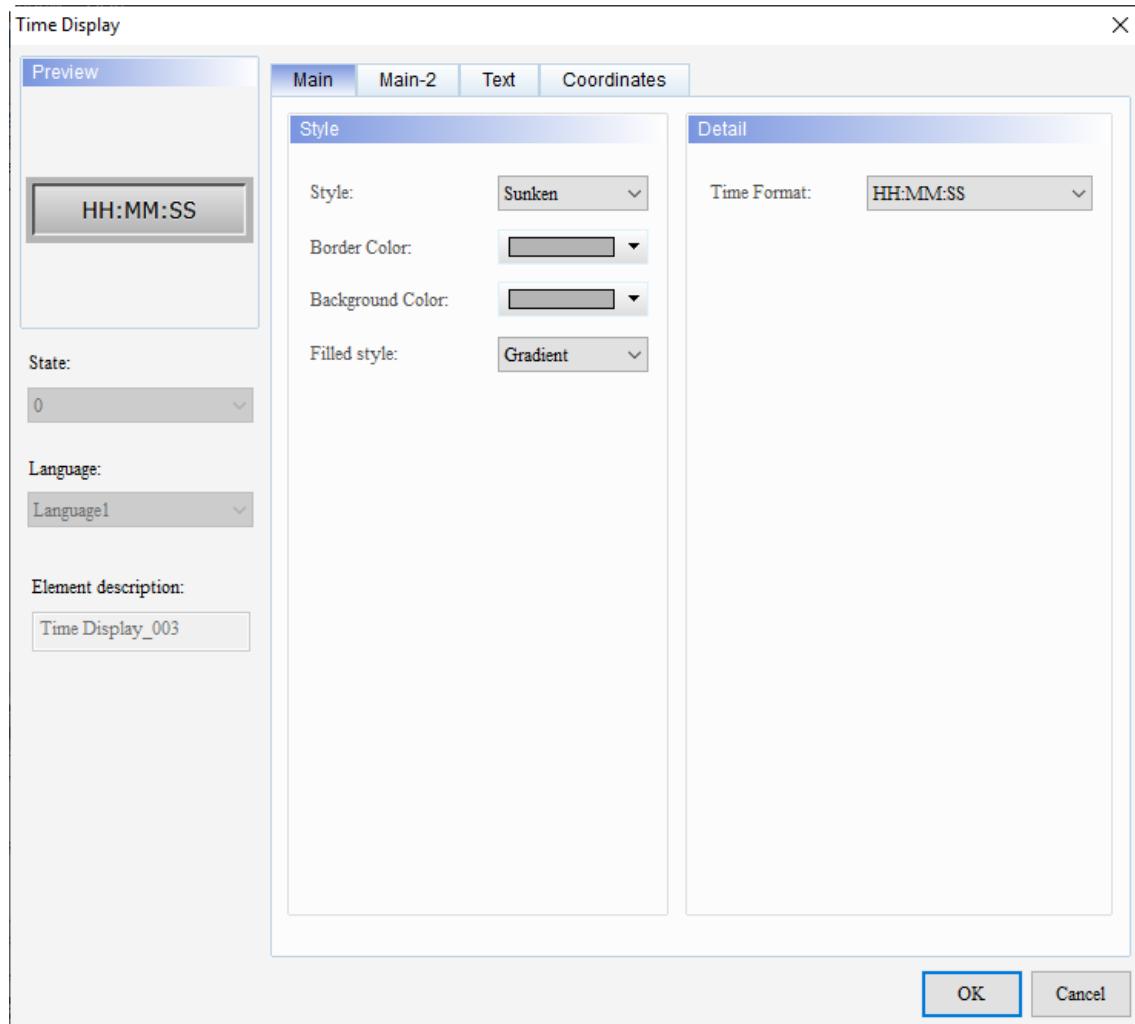


Figure 11.3.2.1 Properties of Time Display

Table 11.3.2.1 Function page of Time Display

Time Display	
Function page	Description
Preview	The Time Display is for displaying the HMI system time. This element does not support multiple state values and multi-language display.
Main	Set the Style, Border Color, Background Color, and Filled style of the element. Set the Time Format.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the displaying text content, font, size, color, and alignment options.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

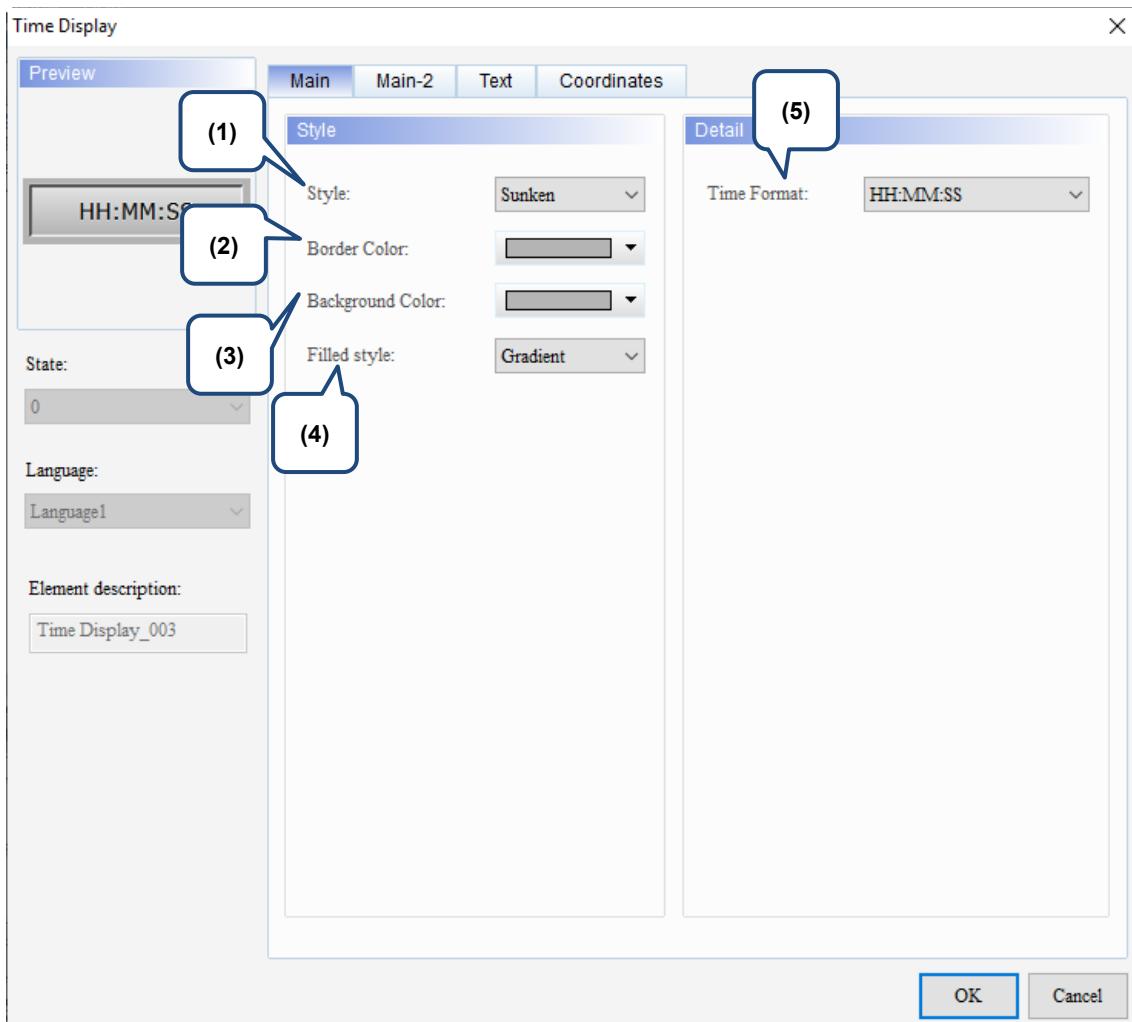
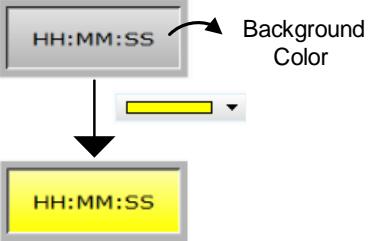
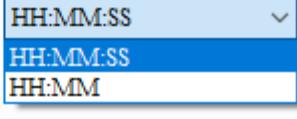


Figure 11.3.2.2 Main property page for the Time Display element

No.	Property	Function description								
(1)	Style	<p>The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td style="background-color: #d3d3d3;">HH:MM:SS</td> <td style="border: 1px solid black;">HH:MM:SS</td> <td style="background-color: #d3d3d3;">HH:MM:SS</td> <td style="border: 1px dashed black;">HH:MM:SS</td> </tr> </table>	Standard	Raised	Sunken	Transparent	HH:MM:SS	HH:MM:SS	HH:MM:SS	HH:MM:SS
Standard	Raised	Sunken	Transparent							
HH:MM:SS	HH:MM:SS	HH:MM:SS	HH:MM:SS							
(2)	Border Color	<ul style="list-style-type: none"> <li>Set the border color of the element.</li> <li>When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul> <div style="text-align: center; margin-top: 20px;"> </div>								

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No.	Property	Function description				
(3)	Background Color	<ul style="list-style-type: none"> <li>Set the background color of the element.</li> <li>When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul> 				
(4)	Filled style	<p>The default fill style for the element on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1"> <tr> <td>Gradient</td> <td></td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						
(5)	Time Format	<p>The software provides 2 time formats for you to select.</p> <p>Time Format:</p> 				

## ■ Main-2

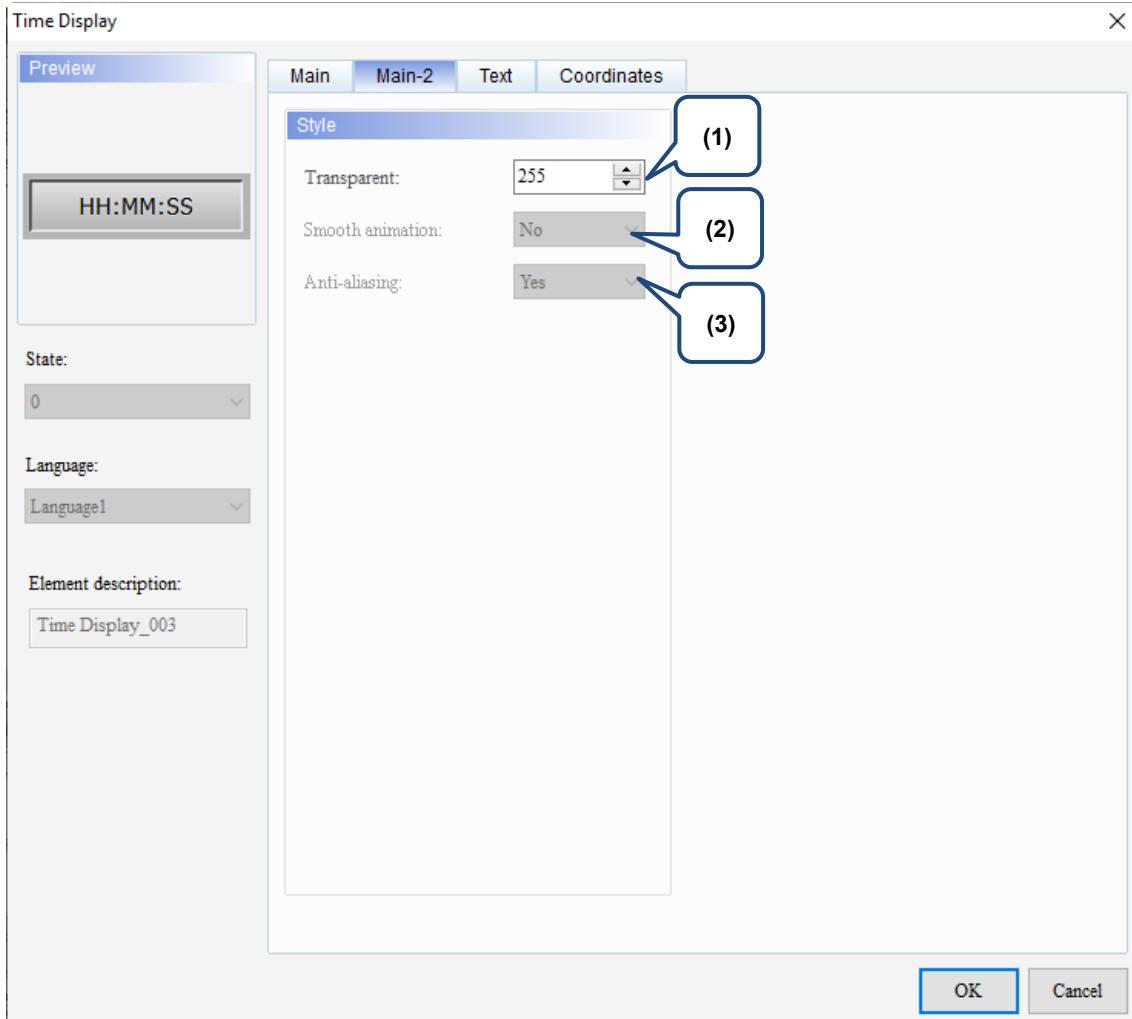


Figure 11.3.2.3 Main-2 property page for the Time Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Text

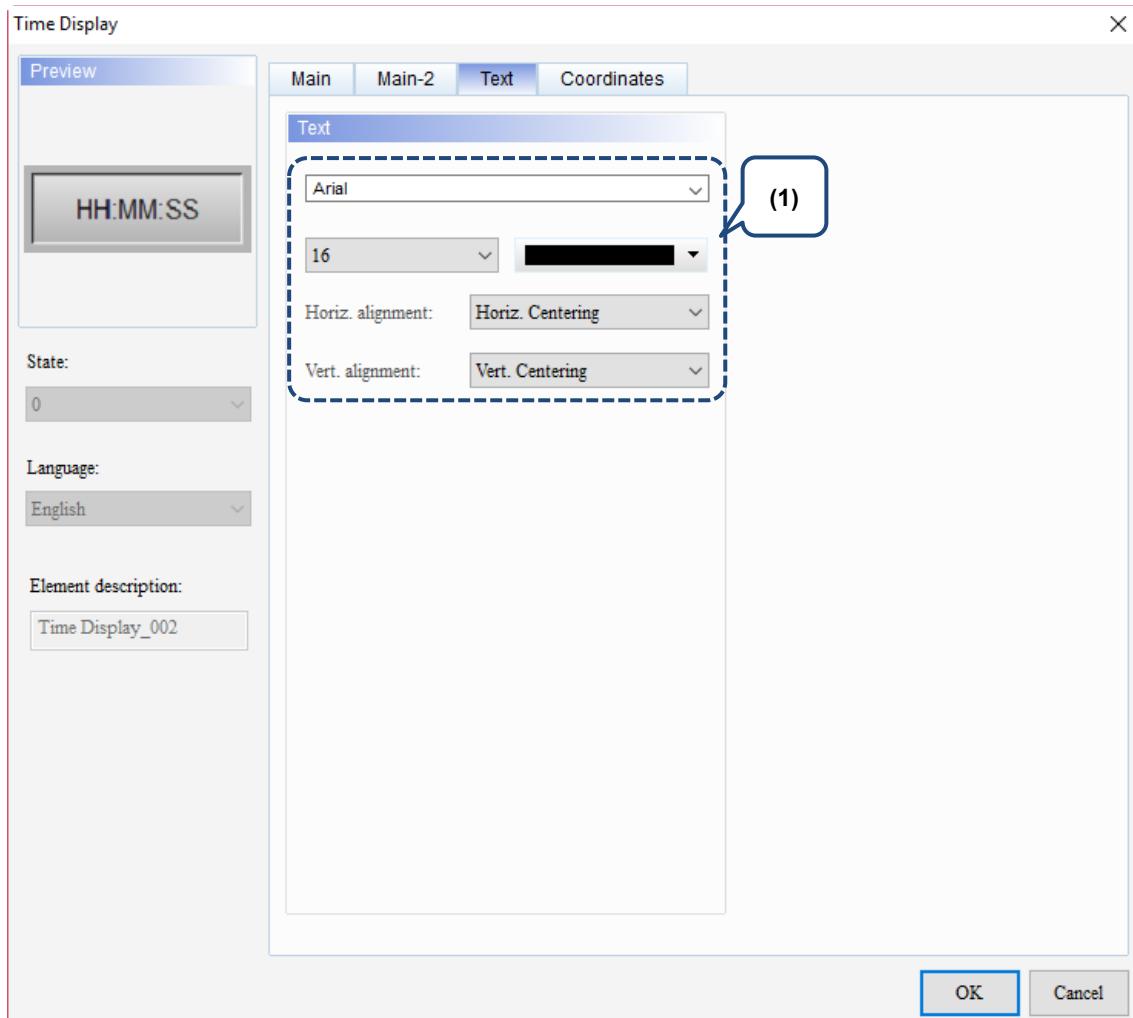


Figure 11.3.2.4 Text property page for the Time Display element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

## ■ Coordinates

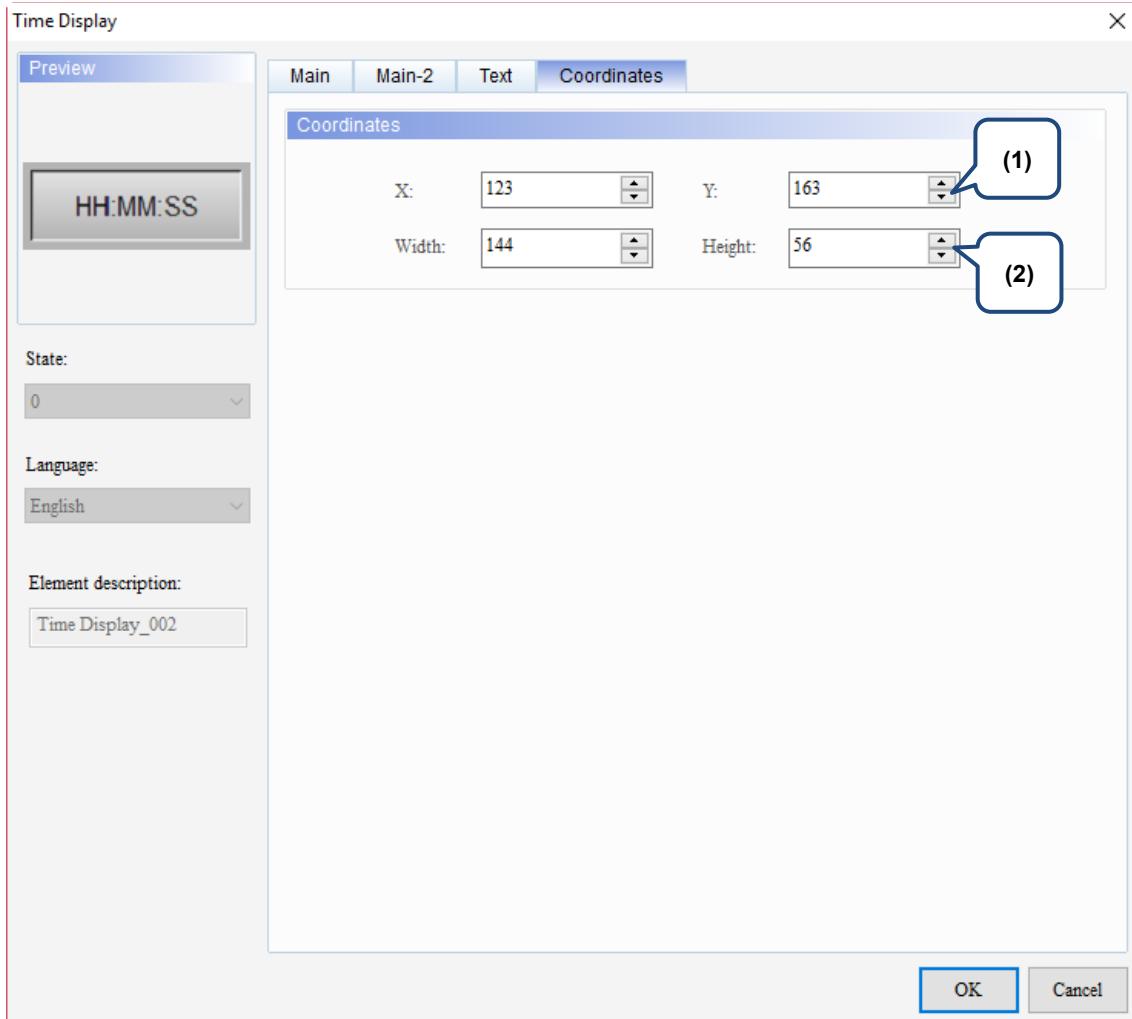


Figure 11.3.2.5 Coordinates property page for the Time Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

### 11.3.3 Week Display

When you double-click the Week Display, the property page is shown as follows.

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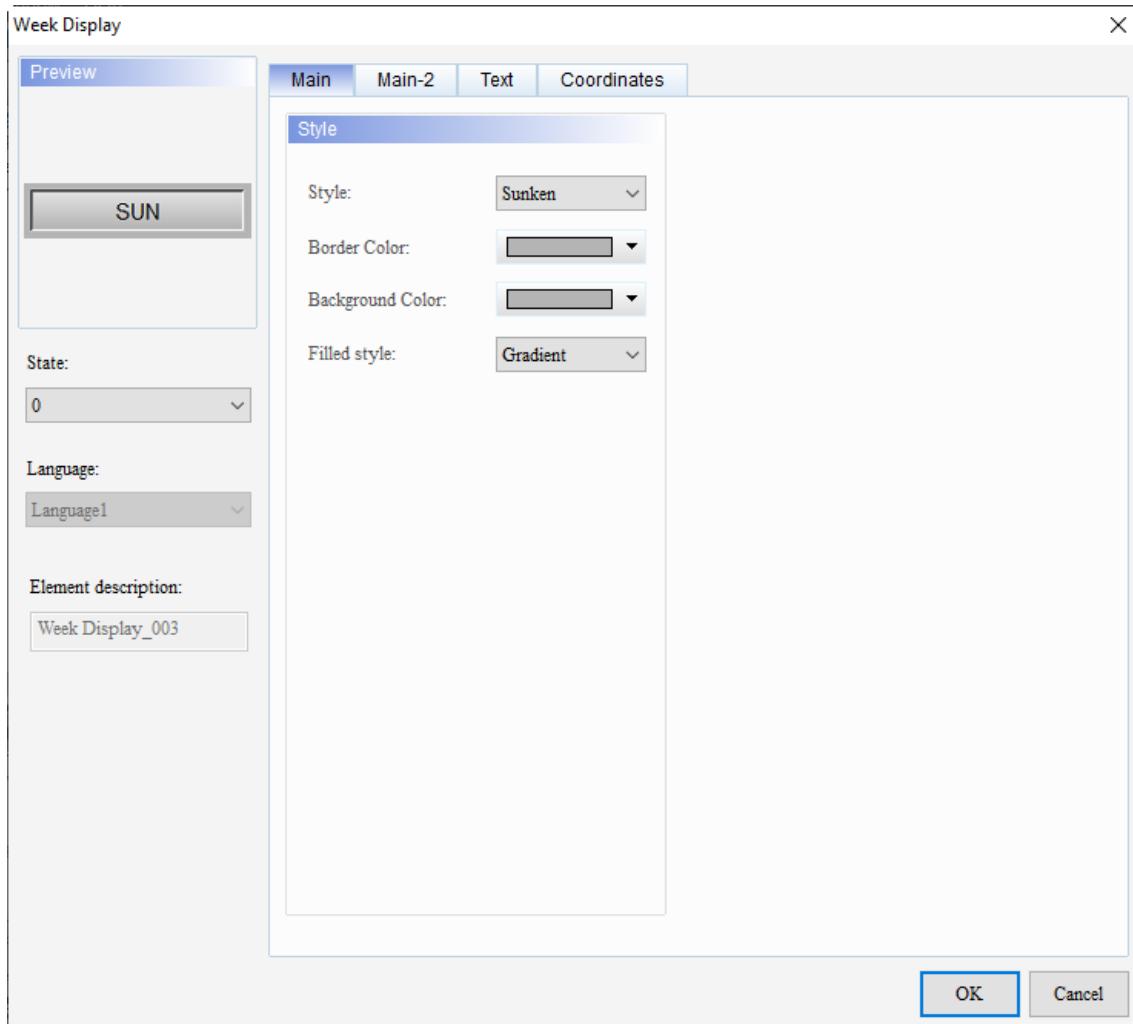


Figure 11.3.3.1 Properties of Week Display

Table 11.3.3.1 Function page of Week Display

Week Display	
Function page	Description
Preview	In addition to displaying the HMI system week, the Week Display supports multiple state values and multi-language display.
Main	Set the Style, Border Color, Background Color, and Filled style of the element.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options. Edit the texts for the Week Display. If you have set multi-language data, you can edit data in other languages.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

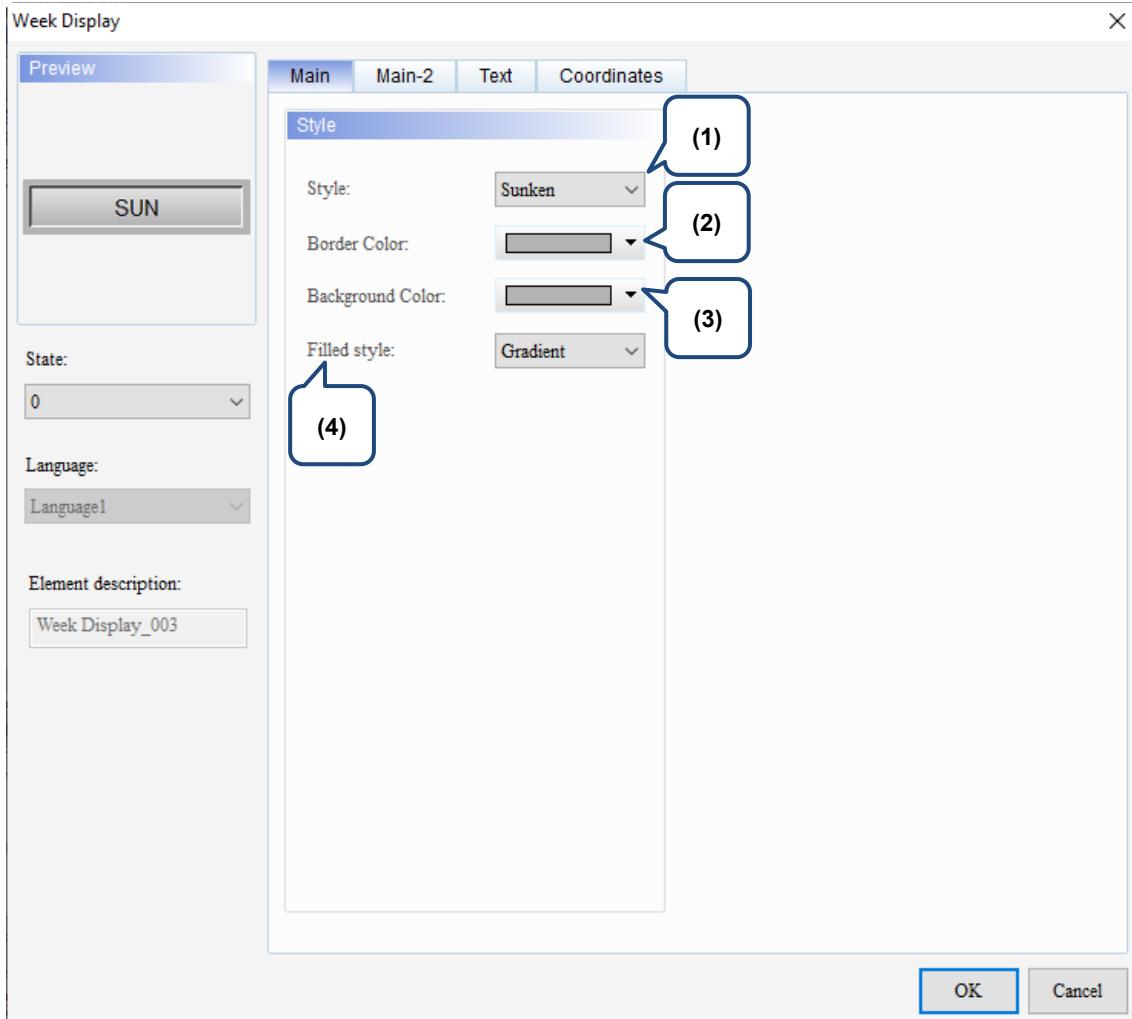
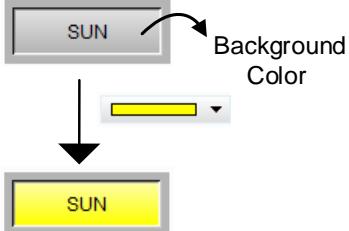


Figure 11.3.3.2 Main property page for the Week Display element

No.	Property	Function description								
(1)	Style	<p>The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Standard</td><td>Raised</td><td>Sunken</td><td>Transparent</td></tr> <tr> <td></td><td></td><td></td><td></td></tr> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
(2)	Border Color	<ul style="list-style-type: none"> <li>Set the border color of the element.</li> <li>When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul>								

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No.	Property	Function description				
(3)	Background Color	<ul style="list-style-type: none"> <li>Set the background color of the element.</li> <li>When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul> 				
(4)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1"> <tr> <td>Gradient</td> <td></td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						

## ■ Main-2

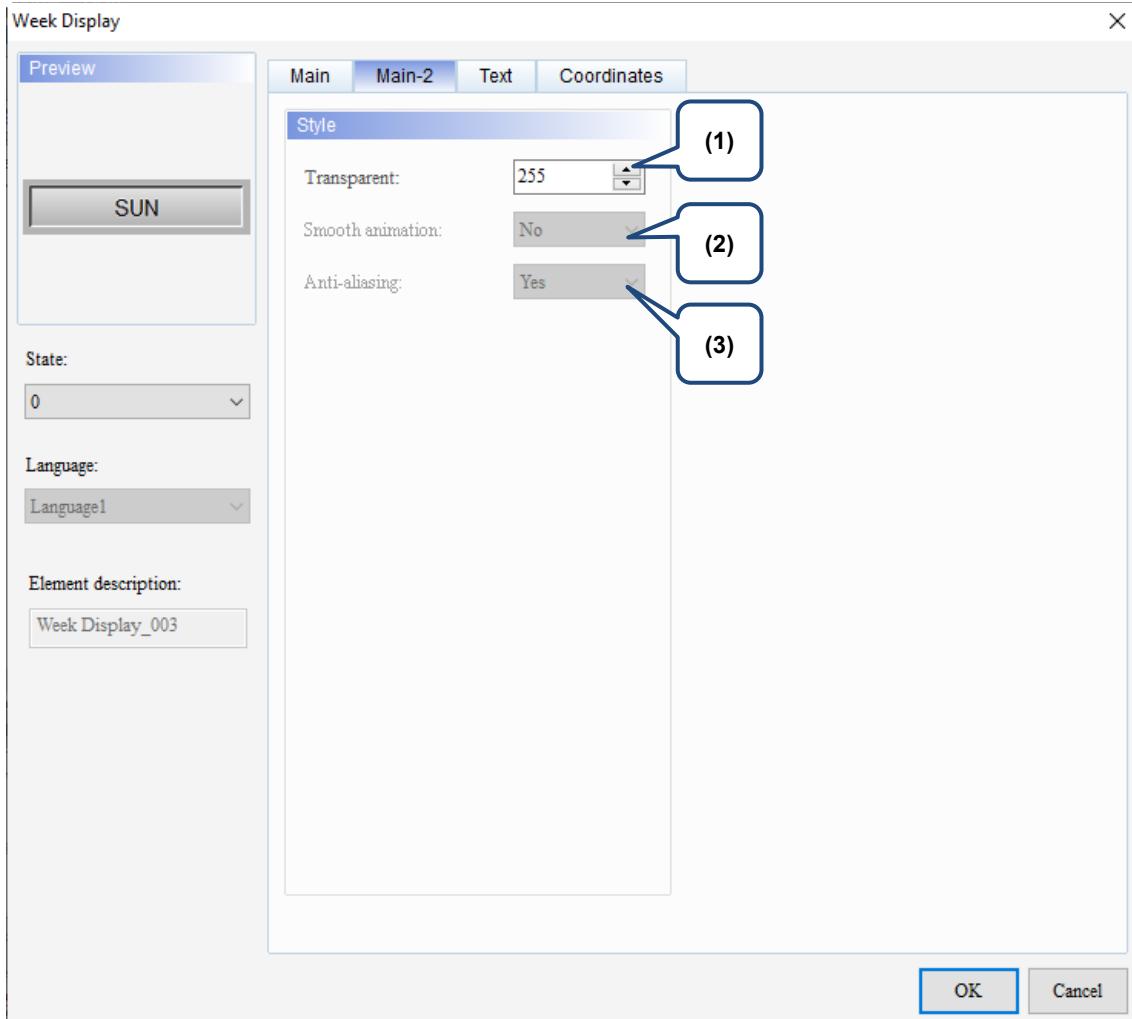


Figure 11.3.3.3 Main-2 property page for the Week Display element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Text

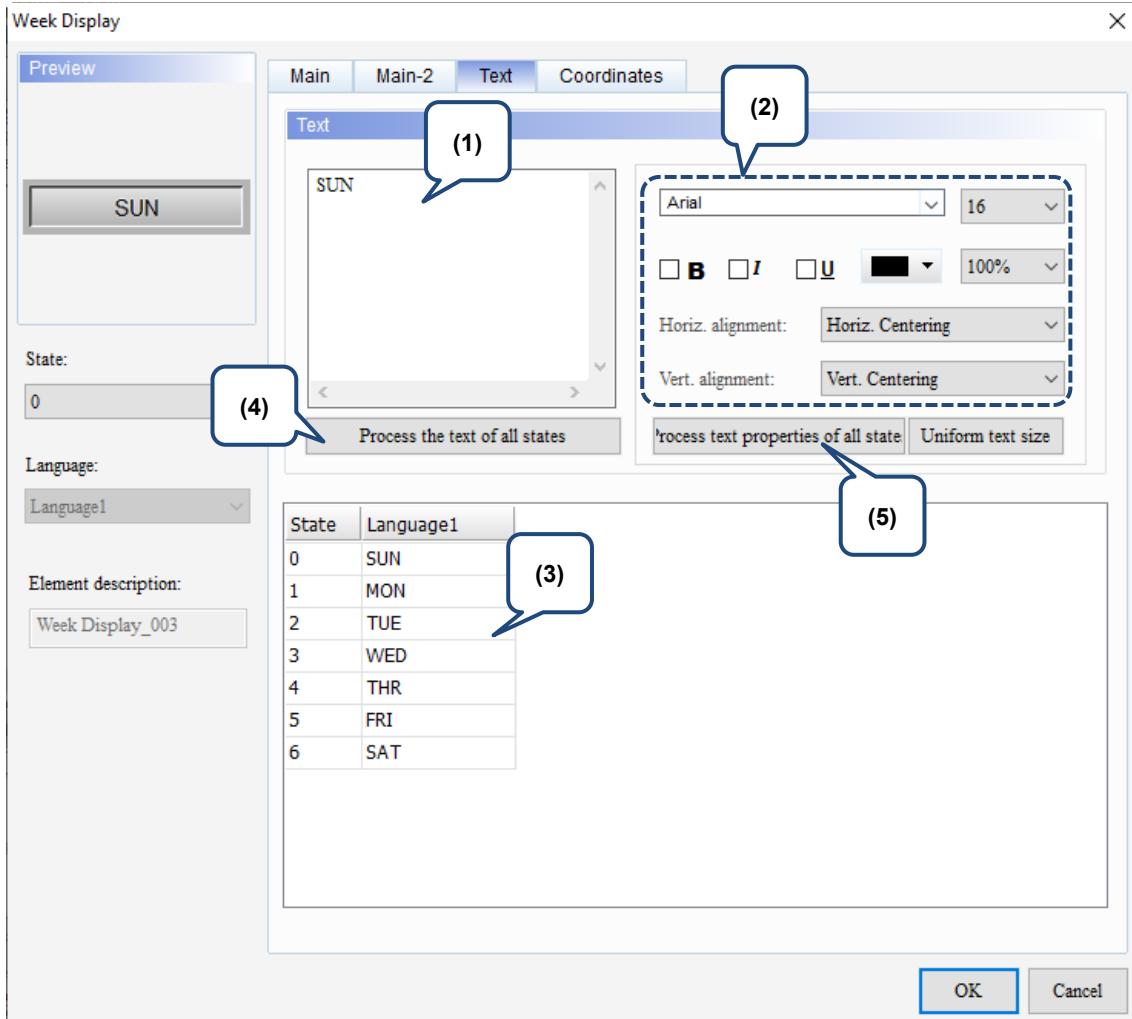
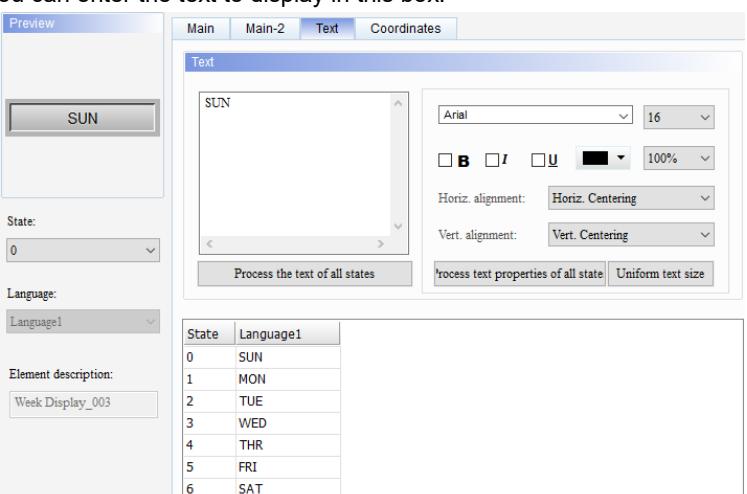
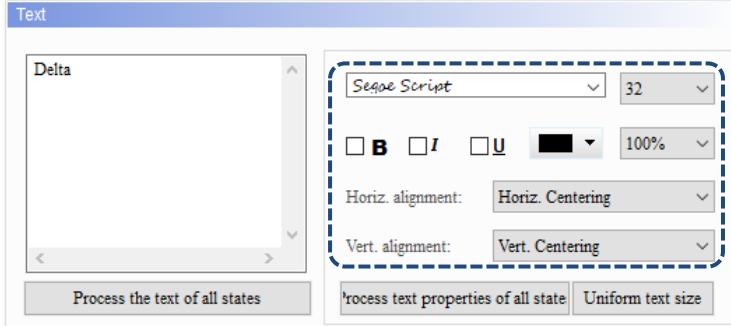
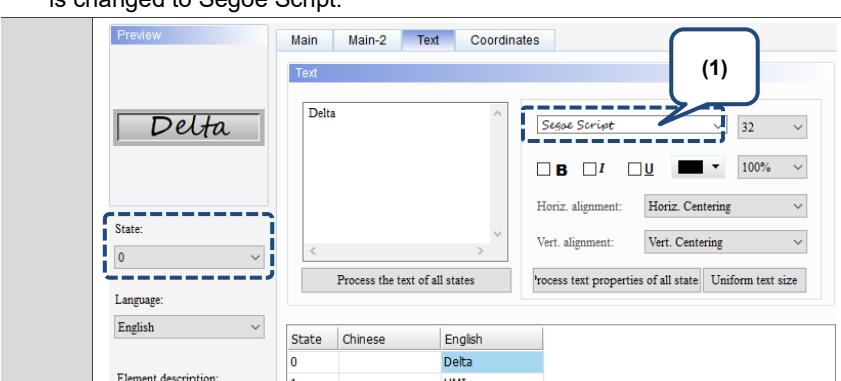
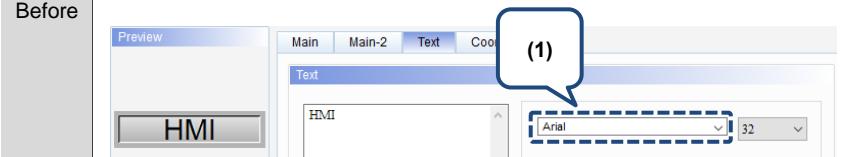
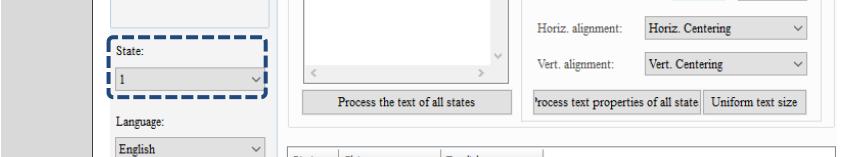
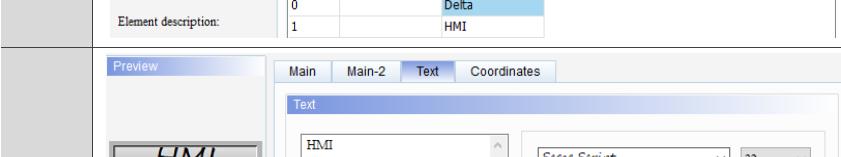
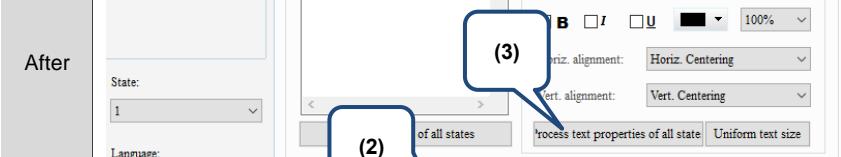
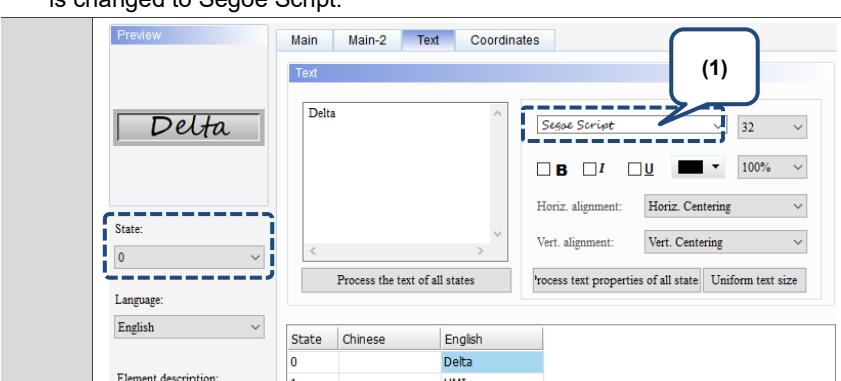
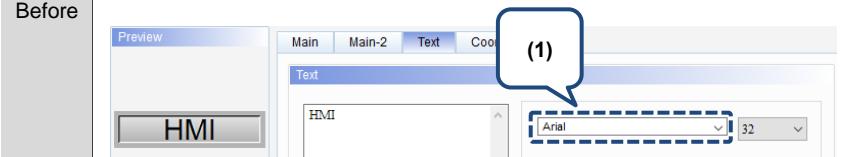
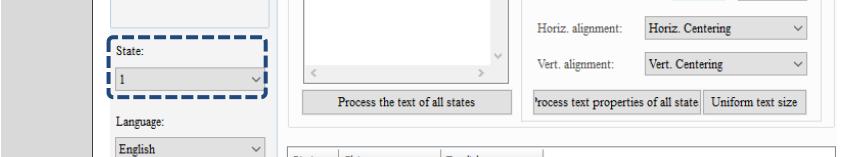
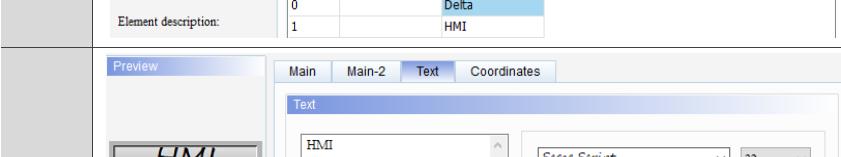
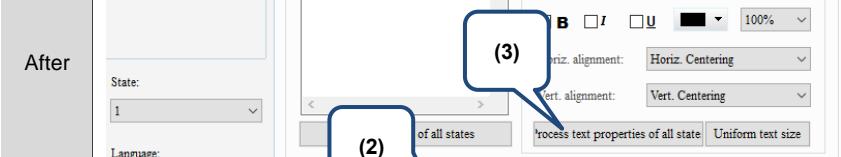
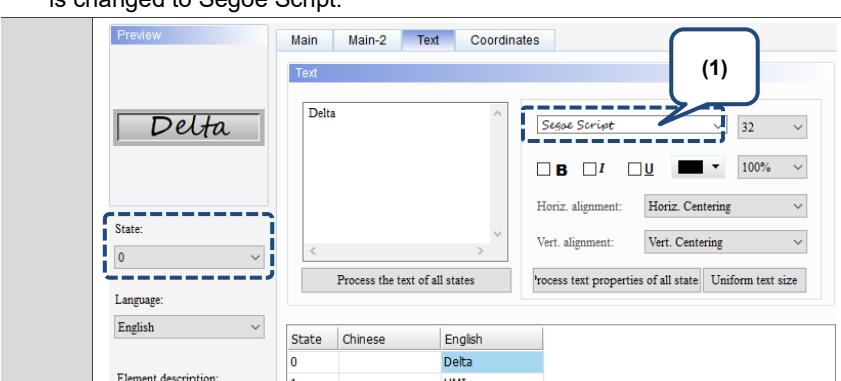
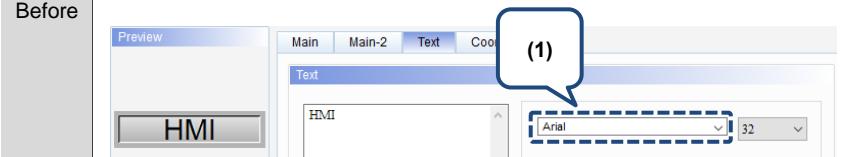
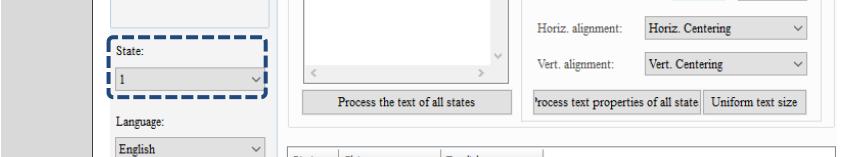
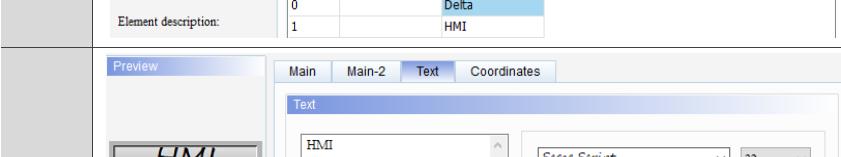
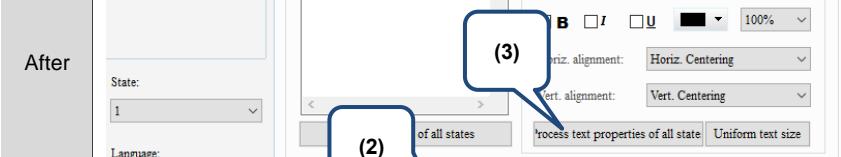


Figure 11.3.3.4 Text property page for the Week Display element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul>  <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element and press the space key to start editing the text.</li> </ul>
(2)	Text	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the Text property setting results.

No.	Property	Function description									
(3)	Edit multi-language text	If you have added multi-language data, the Text page allows you to edit multi-language data.									
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. The example and setting steps are as follows.</p> <ol style="list-style-type: none"> <li>1. Enter the text "123" for State 0 and "234" for State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process the text of all states</b> and the text of State 1 is changed to "123".</li> </ol> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>123</td> </tr> <tr> <td>1</td> <td></td> <td>234</td> </tr> </tbody> </table>	State	Chinese	English	0		123	1		234
State	Chinese	English									
0		123									
1		234									

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No.	Property	Function description				
		<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p> 				
(5)	Process text properties of all states	<p>The example and setting steps are as follows:</p> <ol style="list-style-type: none"> <li>1. Enter the text "Delta" for State 0 and "HMI" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process text properties of all states</b> and the text font of State 1 is changed to Segoe Script.</li> </ol> <table border="1"> <tr> <td style="vertical-align: top;"> <p>Before</p>  </td> <td style="vertical-align: top;"> <p>(1)</p>  </td> </tr> <tr> <td style="vertical-align: top;"> <p>After</p>  </td> <td style="vertical-align: top;"> <p>(2)</p>  <p>(3)</p>  </td> </tr> </table>	<p>Before</p> 	<p>(1)</p> 	<p>After</p> 	<p>(2)</p>  <p>(3)</p> 
<p>Before</p> 	<p>(1)</p> 					
<p>After</p> 	<p>(2)</p>  <p>(3)</p> 					

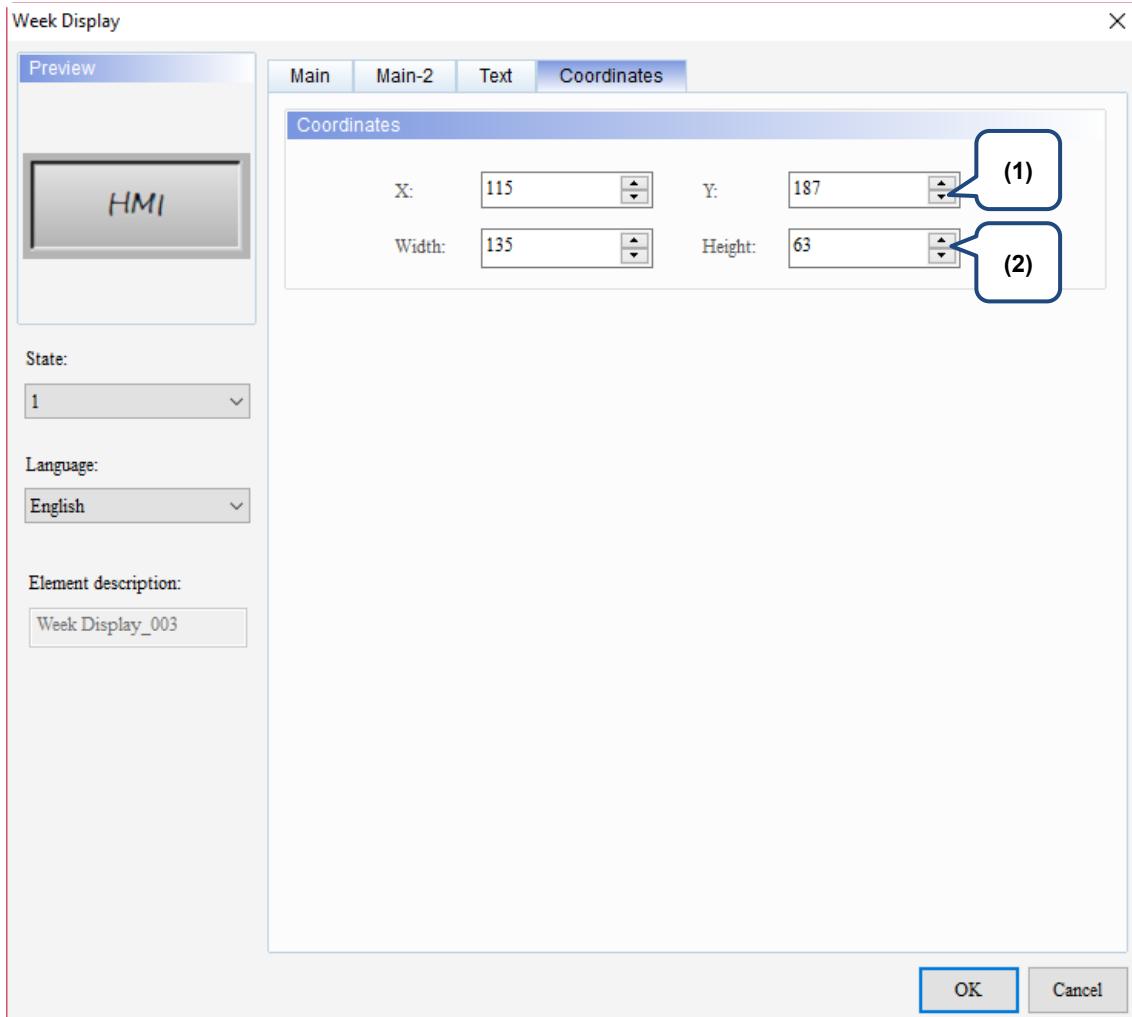
**■ Coordinates**

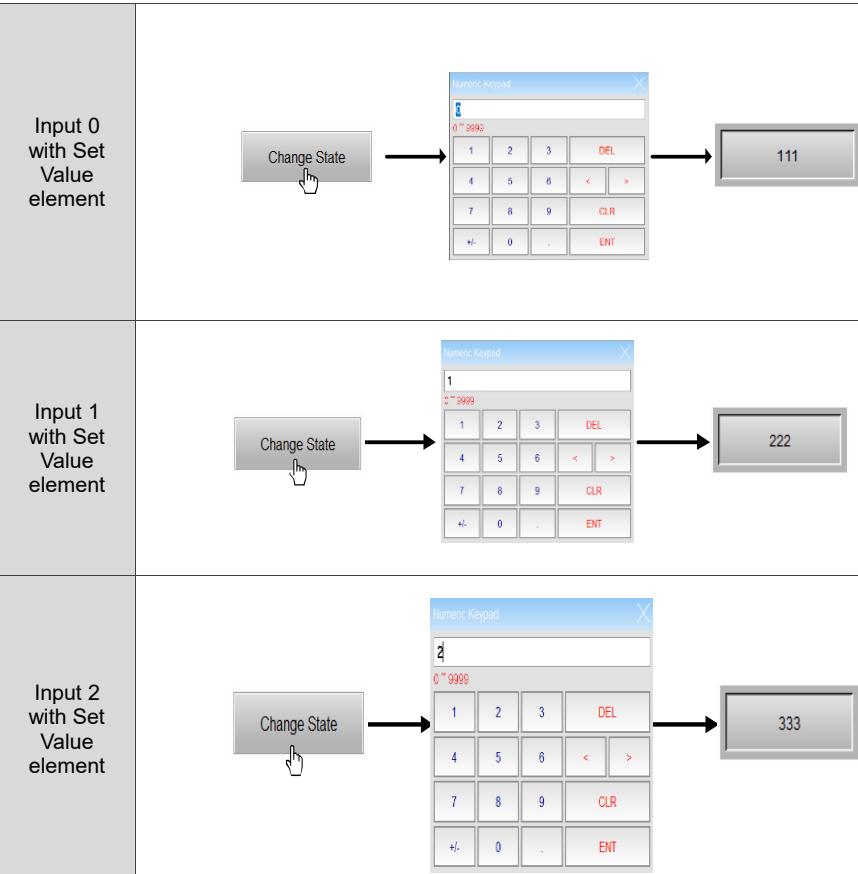
Figure 11.3.3.5 Coordinates property page for the Week Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 11.4 General Message Display

You can use the General Message Display to display the state text message to switch, and this element can read the corresponding state text based on the set memory address. Refer to Table 11.4.1 for the General Message Display example.

Table 11.4.1 General Message Display example

General Message Display															
Address settings	General Message Display element		Set Value element												
	Read Address	\$13	Write Address												
															
Detail settings	General Message Display element														
	Data Type	Data Format	State Counts												
State displaying text	Word	Unsigned Decimal	3												
	<p>Double-click the General Message Display to go to the Text page and edit the text to display.</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>111</td> </tr> <tr> <td>1</td> <td></td> <td>222</td> </tr> <tr> <td>2</td> <td></td> <td>333</td> </tr> </tbody> </table>			State	Chinese	English	0		111	1		222	2		333
State	Chinese	English													
0		111													
1		222													
2		333													
Execution results	<p>After creating the elements, compile and download the data to the HMI. Then, enter 0, 1, and 2 with the Set Value element in sequence and the General Message Display element will display the corresponding text.</p> 														

The General Message Display supports four data types, as shown in Table 11.4.2. To add or reduce the number of states, you can simply increase or decrease the number of State Counts in the Properties window.

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Table 11.4.2 Data Type of General Message Display

General Message Display	
Data Type	State Counts
Word	<ul style="list-style-type: none"> <li>■ If the Data Type is Word, you can set 1 to 256 states for the State Counts.           <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <b>Detail</b> <div style="margin-top: 10px;">           Data Type: <input style="border: 1px solid #ccc; padding: 2px; width: 150px; height: 25px;" type="button" value="Word"/>             Data Format: <input style="border: 1px solid #ccc; padding: 2px; width: 150px; height: 25px;" type="button" value="Unsigned Decimal"/>             State Counts: <input style="border: 1px solid #ccc; padding: 2px; width: 50px; height: 25px;" type="button" value="256"/> </div> </div> </li> </ul>
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>■ If the Data Type is Word, the memory address is in units of Word.</li> <li>■ LSB is to first convert the data in the register to binary data, and then use the lowest non-zero bit to determine the current state of the object.</li> <li>■ If the Data Type is LSB, you can set 1 to 16 states except for State 0.           <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <b>Detail</b> <div style="margin-top: 10px;">           Data Type: <input style="border: 1px solid #ccc; padding: 2px; width: 150px; height: 25px;" type="button" value="LSB"/>             Data Format: <input style="border: 1px solid #ccc; padding: 2px; width: 150px; height: 25px;" type="button" value="Unsigned Decimal"/>             State Counts: <input style="border: 1px solid #ccc; padding: 2px; width: 50px; height: 25px;" type="button" value="16"/> </div> </div> </li> <li>■ To display State 0, select LSB (Support State 0) for the Data Type.           <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <b>Detail</b> <div style="margin-top: 10px;">           Data Type: <input style="border: 1px solid #ccc; padding: 2px; width: 150px; height: 25px;" type="button" value="LSB"/> <div style="border: 1px solid #ccc; padding: 2px; margin-top: 5px; width: 150px; height: 100px; background-color: black; display: flex; align-items: center; justify-content: center;"> <div style="font-size: 2em; color: white;">■</div> </div> </div> </div> </li> <li>■ If you selected LSB, the element is black when the state is 0.           <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> </div> </li> <li>■ When the Data Type is either LSB or LSB (Support State 0), the memory address is in units of Word.</li> </ul>

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General Message Display																																																														
Data Type	State Counts																																																													
	<ul style="list-style-type: none"> <li>The examples in the following table show how the state value is determined with the lowest non-zero bit of the binary value converted from a decimal value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.</li> </ul> <table border="1"> <thead> <tr> <th>Decimal</th><th>Binary</th><th>State value</th></tr> </thead> <tbody> <tr> <td><u>0</u></td><td><u>0000000000000000</u></td><td><u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u></td></tr> <tr> <td>1</td><td>0000000000000001</td><td>The lowest non-zero bit is bit 0, State = 1.</td></tr> <tr> <td>2</td><td>0000000000000010</td><td>The lowest non-zero bit is bit 1, State = 2.</td></tr> <tr> <td><u>3</u></td><td><u>0000000000000011</u></td><td><u>The lowest non-zero bit is bit 0, State = 1.</u></td></tr> <tr> <td>4</td><td>00000000000000100</td><td>The lowest non-zero bit is bit 2, State = 3.</td></tr> <tr> <td><u>7</u></td><td><u>00000000000000111</u></td><td><u>The lowest non-zero bit is bit 0, State = 1.</u></td></tr> <tr> <td>8</td><td>00000000000001000</td><td>The lowest non-zero bit is bit 3, State = 4.</td></tr> <tr> <td>16</td><td>00000000000010000</td><td>The lowest non-zero bit is bit 4, State = 5.</td></tr> <tr> <td>32</td><td>00000000000100000</td><td>The lowest non-zero bit is bit 5, State = 6.</td></tr> <tr> <td>64</td><td>00000000001000000</td><td>The lowest non-zero bit is bit 6, State = 7.</td></tr> <tr> <td>128</td><td>00000000100000000</td><td>The lowest non-zero bit is bit 7, State = 8.</td></tr> <tr> <td>256</td><td>00000001000000000</td><td>The lowest non-zero bit is bit 8, State = 9.</td></tr> <tr> <td>512</td><td>00000010000000000</td><td>The lowest non-zero bit is bit 9, State = 10.</td></tr> <tr> <td>1024</td><td>00000100000000000</td><td>The lowest non-zero bit is bit 10, State = 11.</td></tr> <tr> <td>2048</td><td>00001000000000000</td><td>The lowest non-zero bit is bit 11, State = 12.</td></tr> <tr> <td>4096</td><td>00010000000000000</td><td>The lowest non-zero bit is bit 12, State = 13.</td></tr> <tr> <td>8192</td><td>00100000000000000</td><td>The lowest non-zero bit is bit 13, State = 14.</td></tr> <tr> <td>16384</td><td>01000000000000000</td><td>The lowest non-zero bit is bit 14, State = 15.</td></tr> <tr> <td>32768</td><td>10000000000000000</td><td>The lowest non-zero bit is bit 15, State = 16.</td></tr> </tbody> </table>		Decimal	Binary	State value	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.	<u>7</u>	<u>00000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	8	00000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	00000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	00000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	00000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	00000000100000000	The lowest non-zero bit is bit 7, State = 8.	256	00000001000000000	The lowest non-zero bit is bit 8, State = 9.	512	00000010000000000	The lowest non-zero bit is bit 9, State = 10.	1024	00000100000000000	The lowest non-zero bit is bit 10, State = 11.	2048	00001000000000000	The lowest non-zero bit is bit 11, State = 12.	4096	00010000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	00100000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	01000000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	10000000000000000	The lowest non-zero bit is bit 15, State = 16.
Decimal	Binary	State value																																																												
<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>																																																												
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16384	01000000000000000	The lowest non-zero bit is bit 14, State = 15.																																																												
32768	10000000000000000	The lowest non-zero bit is bit 15, State = 16.																																																												
Bit	<ul style="list-style-type: none"> <li>If the Data Type is Bit, you can set only 2 states.</li> </ul> <div style="background-color: #e0f2ff; padding: 5px; border-radius: 5px;"> <span style="color: #0070C0;">Detail</span> </div> <div style="margin-top: 10px;"> <p>         Data Type: <input style="border: 1px solid #ccc; padding: 2px; width: 100px; height: 20px;" type="button" value="Bit"/> </p> <p>         Data Format: <input style="border: 1px solid #ccc; padding: 2px; width: 100px; height: 20px;" type="button" value="Unsigned Decimal"/> </p> <p>         State Counts: <input style="border: 1px solid #ccc; padding: 2px; width: 50px; height: 20px; text-align: center;" type="button" value="2"/> </p> </div> <ul style="list-style-type: none"> <li>If the Data Type is Bit, the memory address is in units of Bit.</li> </ul>																																																													

When you double-click the General Message Display, the property page is shown as follows.

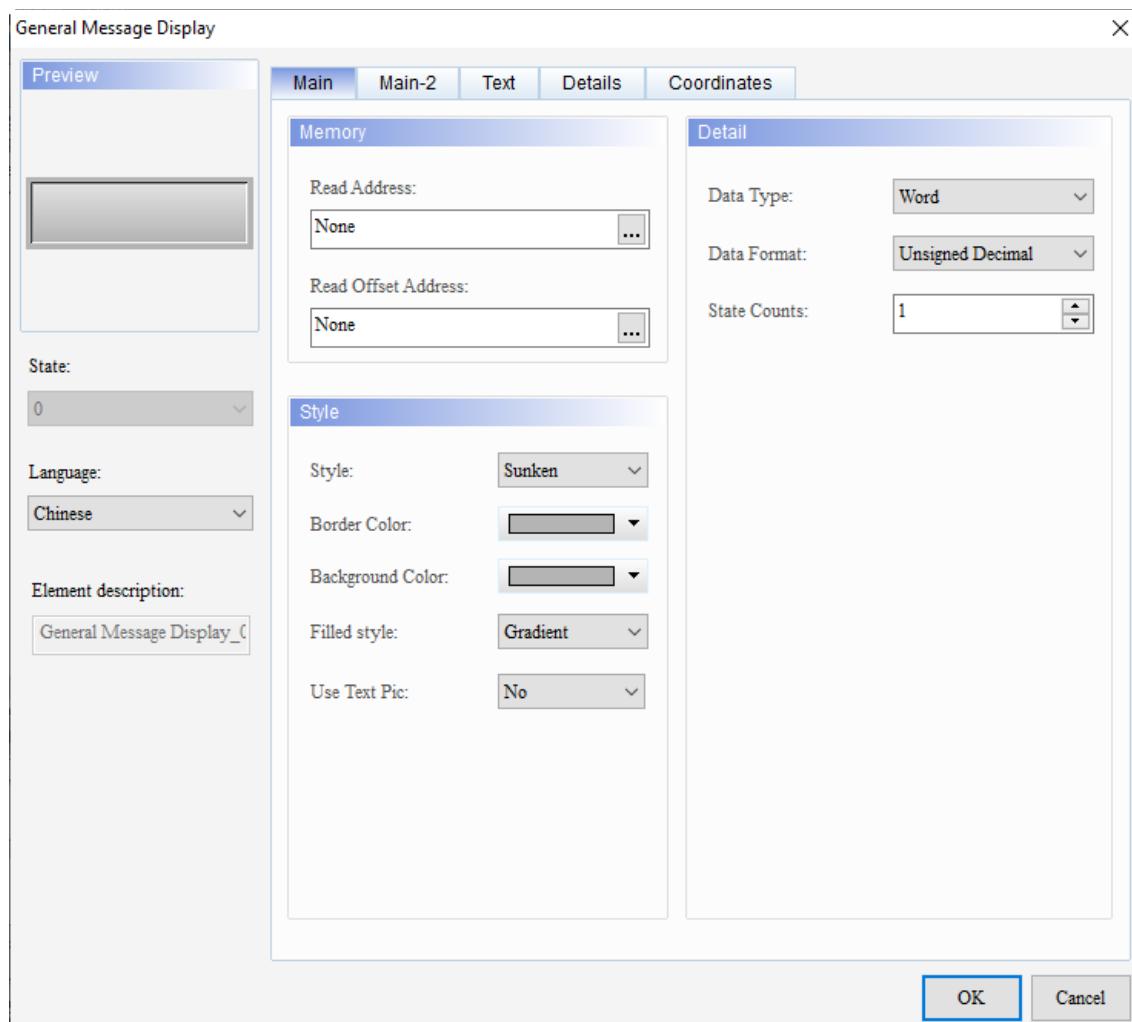


Figure 11.4.1 Properties of General Message Display

Table 11.4.3 Function page of General Message Display

General Message Display	
Function page	Description
Preview	General Message Display elements can view multiple status values and multi-language data display.
Main	Set the Read Address, Read Offset Address, Style, Border Color, Background Color, Filled style, and Use Text Pic function. Set the Data Type, Data Format, and State Counts.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text font, size, color, format, zoom, and alignment options.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

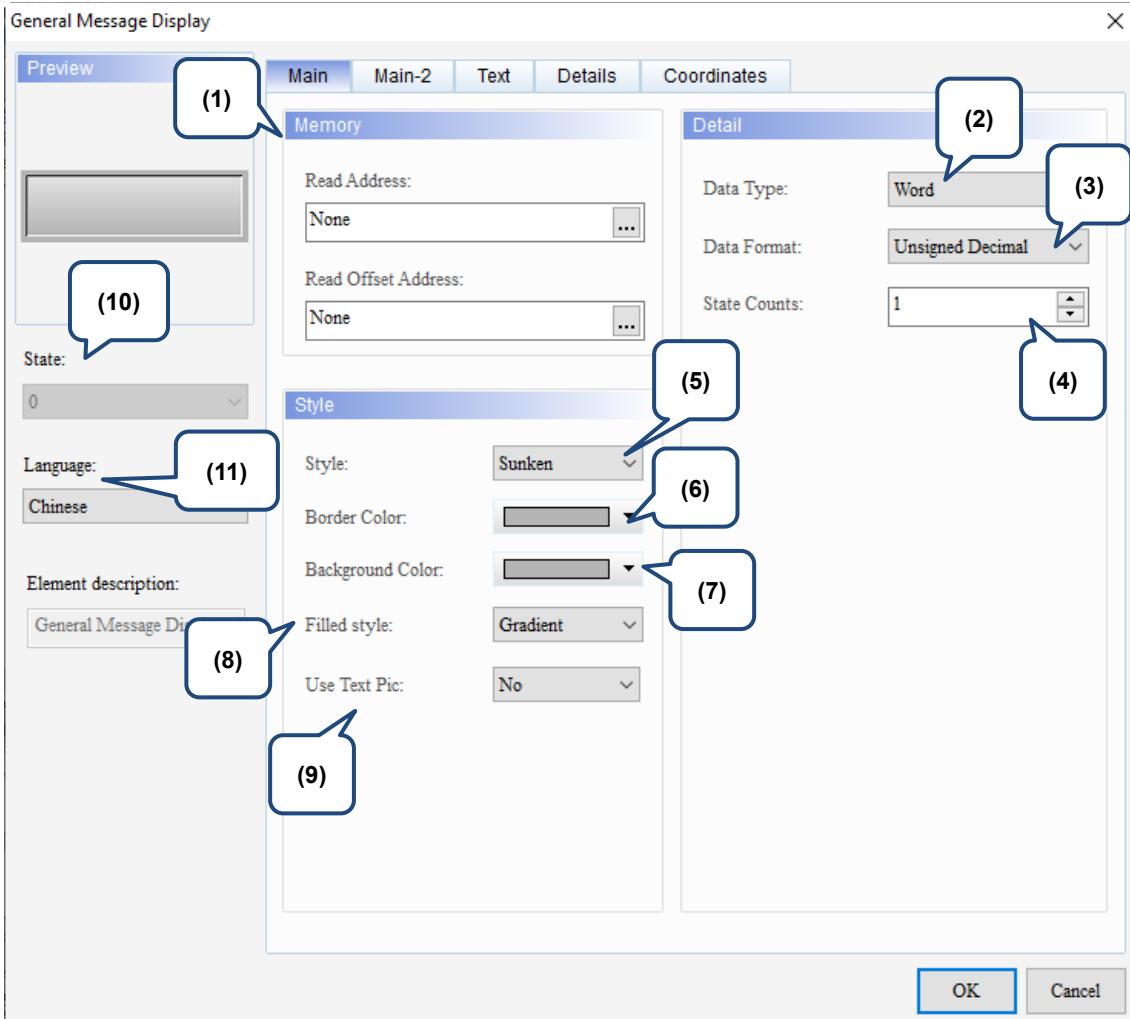
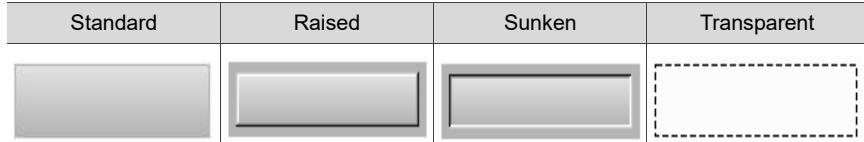
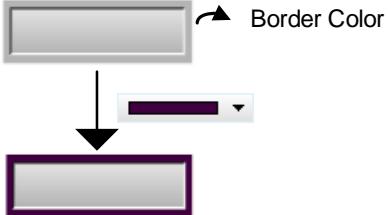
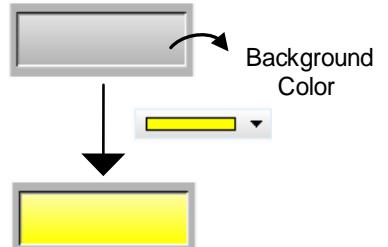
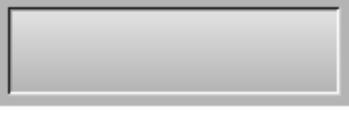
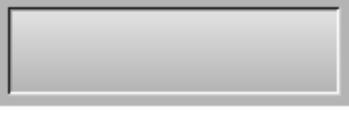
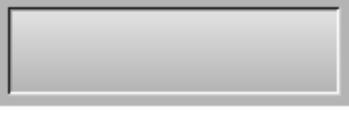
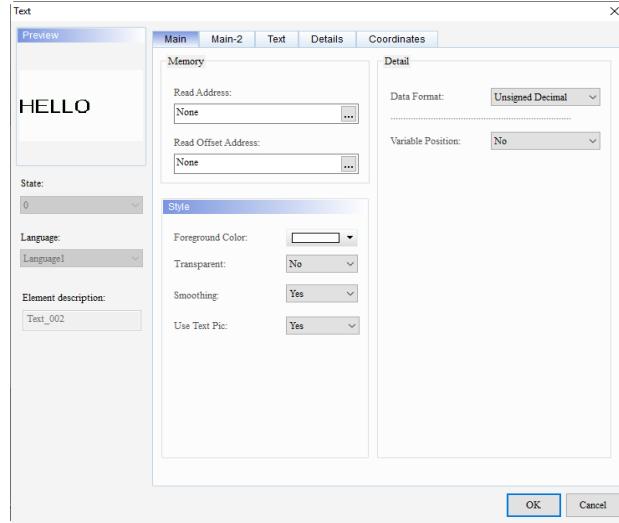
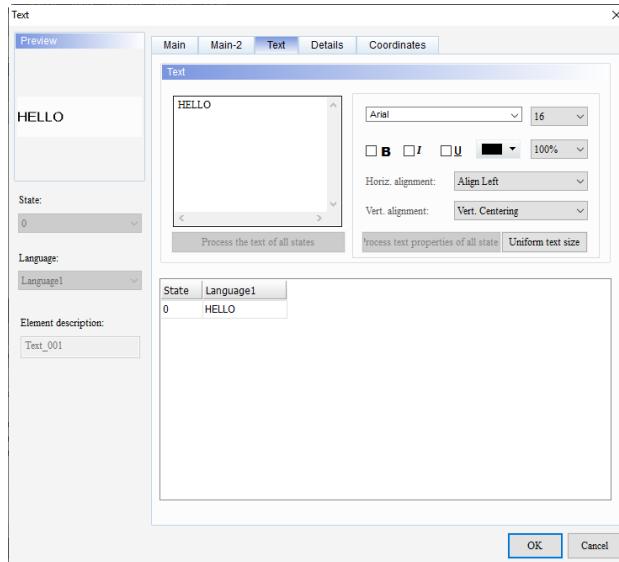


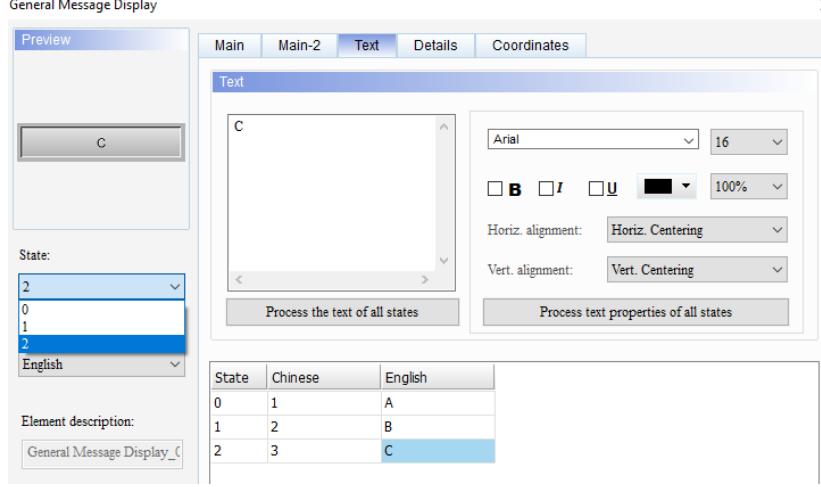
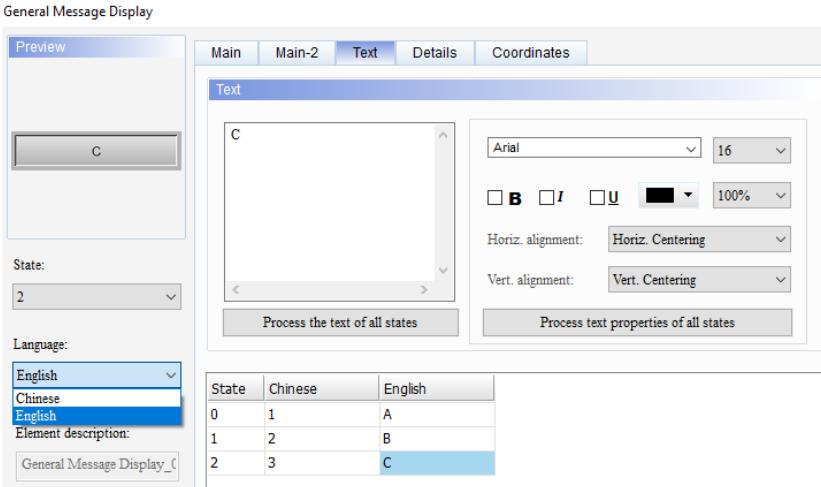
Figure 11.4.2 Main property page for the General Message Display element

No.	Property	Function description						
(1)	Read Address	<ul style="list-style-type: none"> <li>You can choose the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 11.4.2.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>						
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.						
(2)	Data Type	There are four data types, Bit, Word, LSB, and LSB (Support State 0). Refer to Table 11.4.2 for more details.						
(3)	Data Format	<ul style="list-style-type: none"> <li>You can select the Data Format only when the Data Type is Word.</li> <li>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</li> </ul> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>Detail</p> <table> <tr> <td>Data Type:</td> <td>Word</td> </tr> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td>State Counts:</td> <td>1</td> </tr> </table> <p>BCD Signed Decimal <b>Unsigned Decimal</b> Hexadecimal</p> </div>	Data Type:	Word	Data Format:	Unsigned Decimal	State Counts:	1
Data Type:	Word							
Data Format:	Unsigned Decimal							
State Counts:	1							

No.	Property	Function description				
(4)	State Counts	Set the State Counts of the General Message Display element. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), you can set 17 states; and if the Data Type is Bit, you can set only 2 states. Refer to Table 11.4.2 for details.				
(5)	Style	The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting. 				
(6)	Border Color	<ul style="list-style-type: none"> <li>Set the border color of the element.</li> <li>When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul> 				
(7)	Foreground Color	<ul style="list-style-type: none"> <li>Set the Background Color of the element.</li> <li>When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul> 				
(8)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1"> <tr> <td>Gradient</td> <td></td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						

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No.	Property	Function description				
(9)	Use Text Pic	<p>Unlike the DOP-B series models using pictures to present all texts, the DOP-100 series models present directly with the texts. Therefore, if the language you use for the element is not yet supported by the PC, it is possible to cause missing characters and garbled texts when the element is displayed on the HMI. To have the text display effect be the same as that on the DOP-B models, the Use Text Pic function is added to the Text, Button, and General Message Display elements. Refer to the following examples.</p> <p><b>Use Text Pic</b></p> <ul style="list-style-type: none"> <li>Create a Text element and go to the [Main] tab to set the Use Text Pic function.</li> </ul>  <p>Note: if you use the DOPSoft 4.00.06 version to open a DOP-B project, the Use Text Pic function is enabled (Yes) by default. If you added a DOP-100 project, then the Use Text Pic function is disabled (No) by default.</p> <ul style="list-style-type: none"> <li>Go to the [Text] tab, and type the text and set its font.</li> </ul> 				
	Execution results	<ul style="list-style-type: none"> <li>After creating the element, compile and download the element to the HMI.</li> <li>The following table shows the results of using and not using the Use Text Pic function.</li> </ul> <table border="1"> <thead> <tr> <th>Use Text Pic is Yes</th> <th>Use Text Pic is No</th> </tr> </thead> <tbody> <tr> <td><b>HELLO</b></td> <td><b>HELLO</b></td> </tr> </tbody> </table>	Use Text Pic is Yes	Use Text Pic is No	<b>HELLO</b>	<b>HELLO</b>
Use Text Pic is Yes	Use Text Pic is No					
<b>HELLO</b>	<b>HELLO</b>					

No.	Property	Function description												
(10)	State	<p>By switching the State, you can preview or change the settings of each state of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>2</td> <td>B</td> </tr> <tr> <td>2</td> <td>3</td> <td>C</td> </tr> </tbody> </table>	State	Chinese	English	0	1	A	1	2	B	2	3	C
State	Chinese	English												
0	1	A												
1	2	B												
2	3	C												
(11)	Language	<p>If you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>2</td> <td>B</td> </tr> <tr> <td>2</td> <td>3</td> <td>C</td> </tr> </tbody> </table>	State	Chinese	English	0	1	A	1	2	B	2	3	C
State	Chinese	English												
0	1	A												
1	2	B												
2	3	C												

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## ■ Main-2

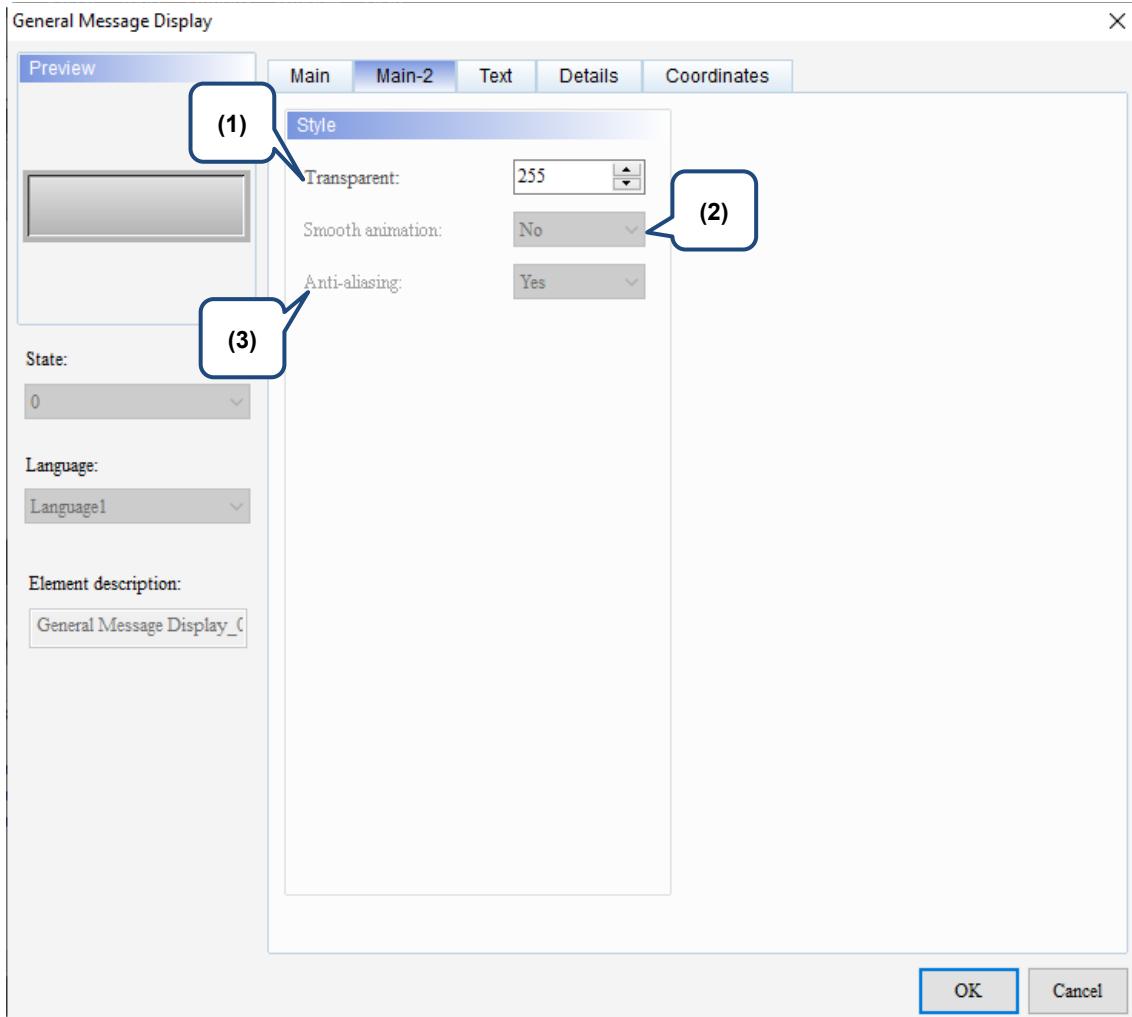
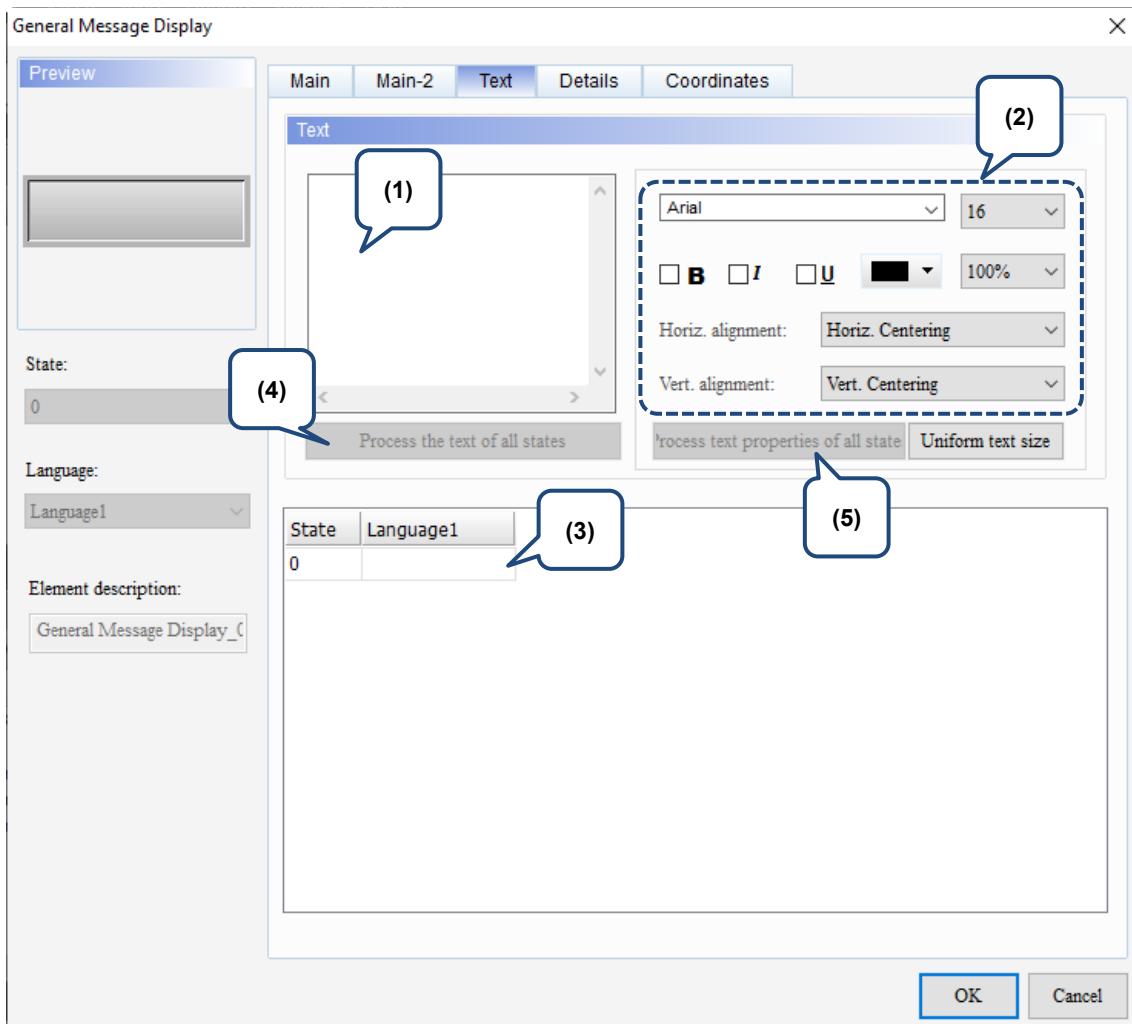


Figure 11.4.3 Main-2 property page for the General Message Display element

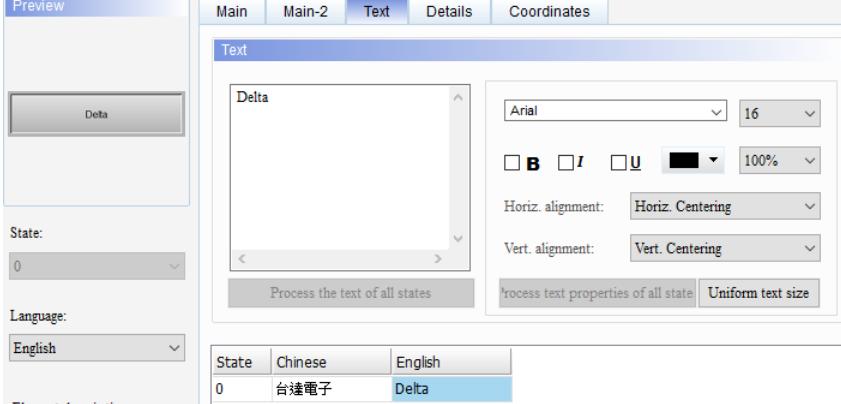
No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text



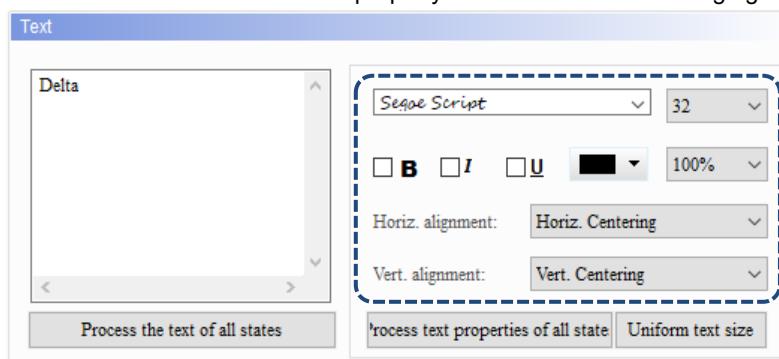
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Figure 11.4.4 Text property page for the General Message Display element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul>  <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element and press the space key to start editing the text.</li> </ul>
(2)	Text	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the Text property setting results.
(3)	Edit multi-language text	If you have added multi-language data, the Text page allows you to edit multi-language data.

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No.	Property	Function description									
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. The example and setting steps are as follows:</p> <ol style="list-style-type: none"> <li>1. Enter the text "123" for State 0 and "234" for State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process the text of all states</b> and the text of State 1 is changed to "123".</li> </ol> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>123</td> </tr> <tr> <td>1</td> <td></td> <td>234</td> </tr> </tbody> </table>	State	Chinese	English	0		123	1		234
State	Chinese	English									
0		123									
1		234									

No.	Property	Function description																																																																								
(5)	Process text properties of all states	<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>  <p>The example and setting steps are as follows:</p> <ol style="list-style-type: none"> <li>1. Enter the text “Delta” for State 0 and “HMI” for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process text properties of all states</b> and the text font of State 1 is changed to Segoe Script.</li> </ol> <table border="1"> <thead> <tr> <th>Main</th> <th>Main-2</th> <th>Text</th> <th>Details</th> <th>Coordinates</th> </tr> </thead> <tbody> <tr> <td colspan="5"> <p><b>Text</b></p> <p>Delta (1)</p> <p>Font: Segoe Script, Size: 32, Bold, Center, Center</p> <p>Horiz. alignment: Horiz. Centering Vert. alignment: Vert. Centering</p> <p>Process the text of all states</p> </td> </tr> <tr> <td colspan="5"> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table> </td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Main</th> <th>Main-2</th> <th>Text</th> <th>Details</th> <th>Coordinates</th> </tr> </thead> <tbody> <tr> <td colspan="5"> <p><b>Text</b></p> <p>HMI (1)</p> <p>Font: Arial, Size: 32, Bold, Center, Center</p> <p>Horiz. alignment: Horiz. Centering Vert. alignment: Vert. Centering</p> <p>Process the text of all states</p> </td> </tr> <tr> <td colspan="5"> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table> </td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Main</th> <th>Main-2</th> <th>Text</th> <th>Details</th> <th>Coordinates</th> </tr> </thead> <tbody> <tr> <td colspan="5"> <p><b>Text</b></p> <p>HMI (3)</p> <p>Font: Segoe Script, Size: 32, Bold, Center, Center</p> <p>Horiz. alignment: Horiz. Centering Vert. alignment: Vert. Centering</p> <p>Process the text of all states</p> </td> </tr> <tr> <td colspan="5"> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI (2)</td> </tr> </tbody> </table> </td> </tr> </tbody> </table>	Main	Main-2	Text	Details	Coordinates	<p><b>Text</b></p> <p>Delta (1)</p> <p>Font: Segoe Script, Size: 32, Bold, Center, Center</p> <p>Horiz. alignment: Horiz. Centering Vert. alignment: Vert. Centering</p> <p>Process the text of all states</p>					<table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>					State	Chinese	English	0		Delta	1		HMI	Main	Main-2	Text	Details	Coordinates	<p><b>Text</b></p> <p>HMI (1)</p> <p>Font: Arial, Size: 32, Bold, Center, Center</p> <p>Horiz. alignment: Horiz. Centering Vert. alignment: Vert. Centering</p> <p>Process the text of all states</p>					<table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>					State	Chinese	English	0		Delta	1		HMI	Main	Main-2	Text	Details	Coordinates	<p><b>Text</b></p> <p>HMI (3)</p> <p>Font: Segoe Script, Size: 32, Bold, Center, Center</p> <p>Horiz. alignment: Horiz. Centering Vert. alignment: Vert. Centering</p> <p>Process the text of all states</p>					<table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI (2)</td> </tr> </tbody> </table>					State	Chinese	English	0		Delta	1		HMI (2)
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11

## ■ Details

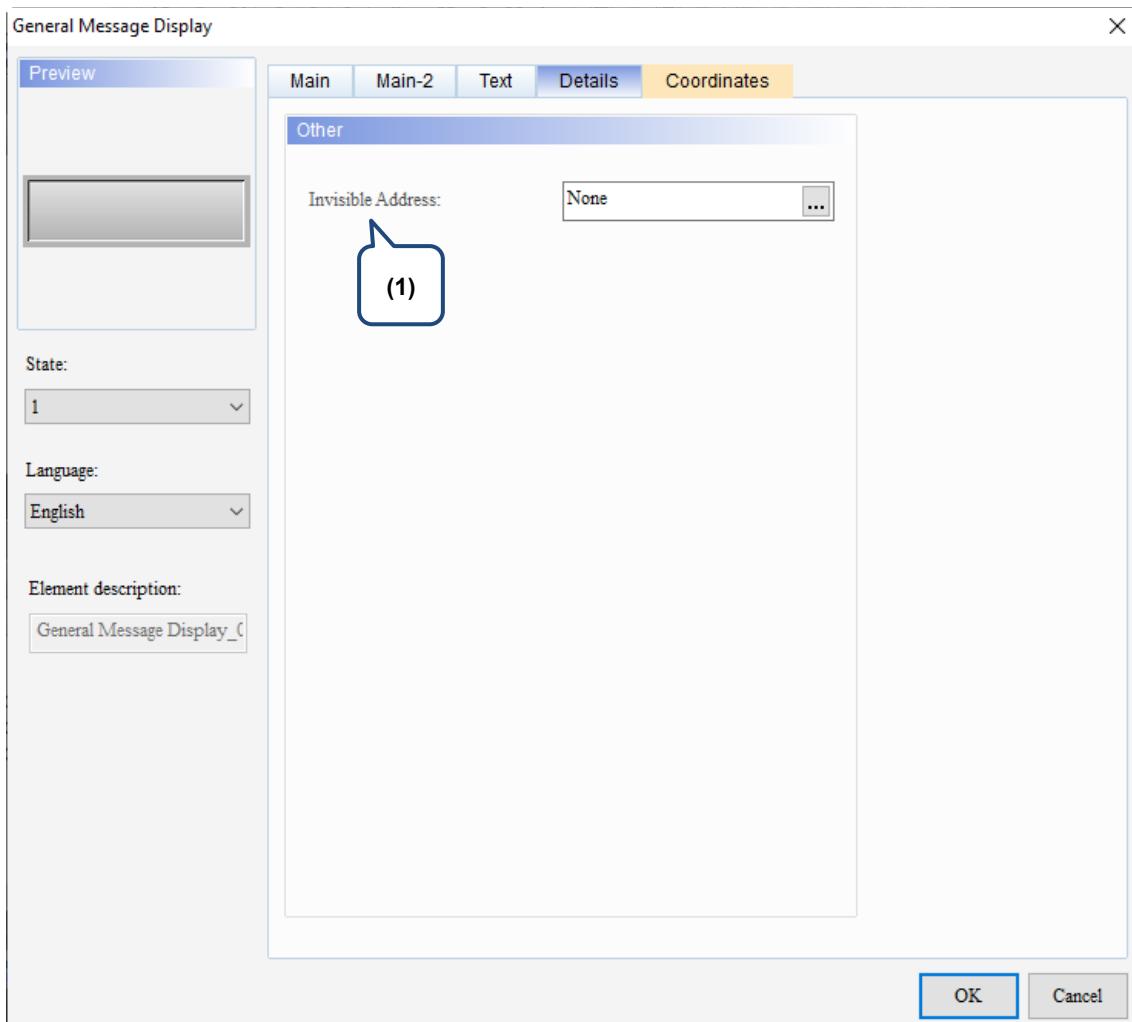
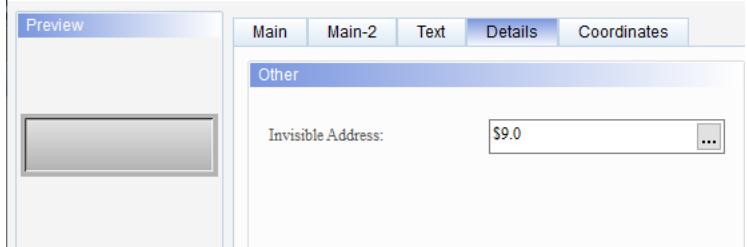


Figure 11.4.5 Details property page for the General Message Display element

No.	Property	Function description
(1)	Invisible Address	<p>When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <b>Invisible Address</b> \$9.0 OFF         </div> </div> <div style="margin-top: 20px;"> <div style="border: 2px dashed blue; padding: 5px; display: inline-block;">           Element is invisible         </div> <div style="margin-left: 20px;"> <b>Invisible Address</b> \$9.0 ON         </div> </div> <div style="margin-top: 20px;">  </div>

## ■ Coordinates

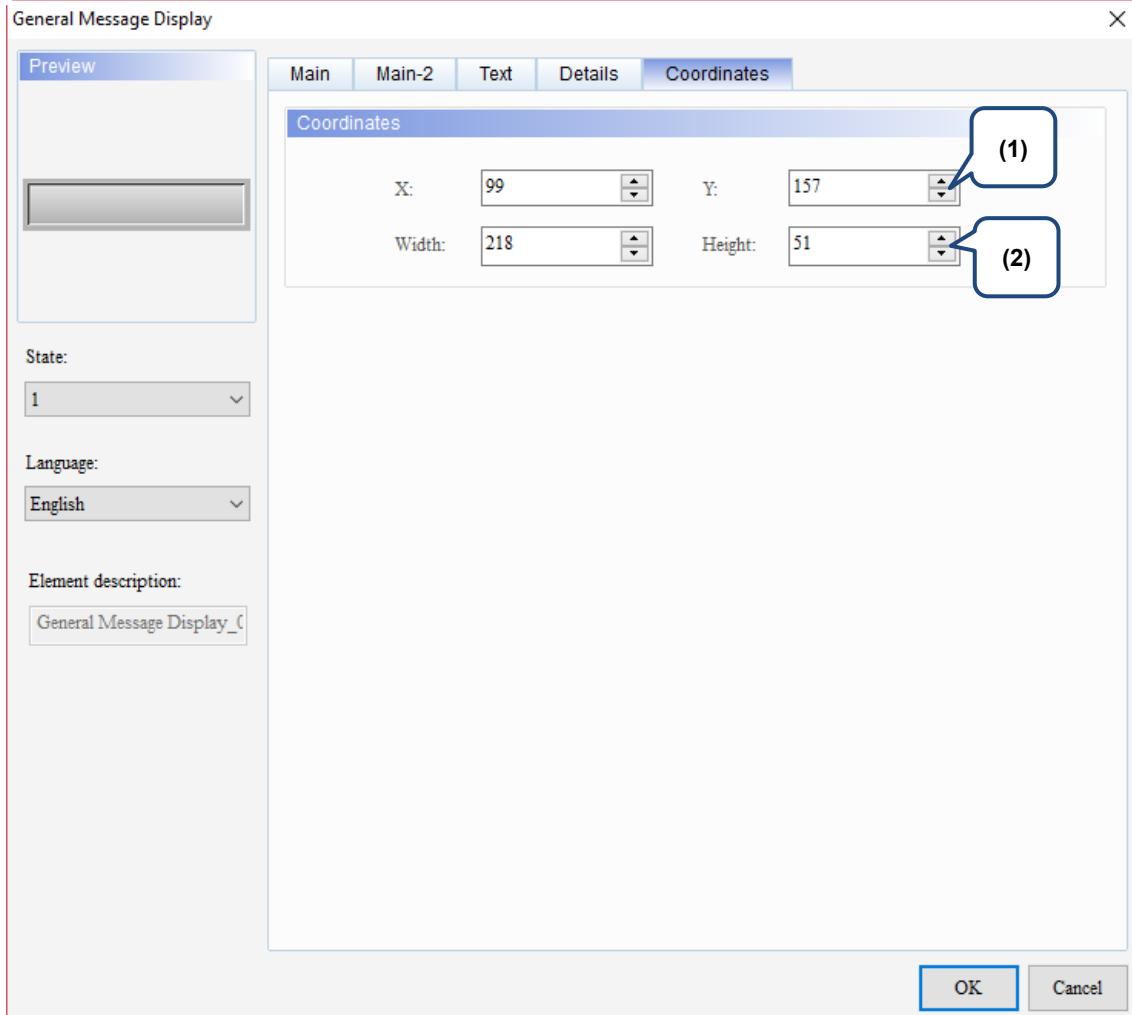


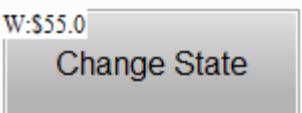
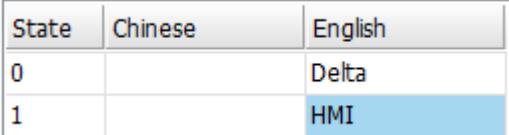
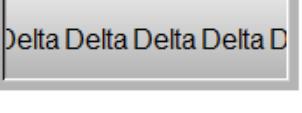
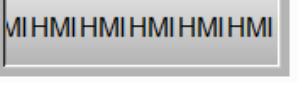
Figure 11.4.6 Coordinates property page for the General Message Display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 11.5 Moving Sign

Apart from the General Message Display, you can use the Moving Sign element to switch the state text messages, as well as adjusting the text displaying direction, moving points per time, and time interval. Refer to Table 11.5.1 for the Moving Sign example.

Table 11.5.1 Moving Sign example

Moving Sign					
Set the Moving Sign element	Data Type	State Counts	Direction	Points per time	Interval
	Bit	2	Left	1	100 (ms)
Address settings		Moving Sign element		Maintained element	
		Read Address	\$55.0	Write Address	\$55.0
					Change State
State displaying text		Double-click the Moving Sign to go to the Text page and edit the text to display.			
					
		After creating the elements, compile and download the data to the HMI. Next, use the Maintained element to switch between State 0 and State 1, and the Moving Sign element will display the corresponding state text.			
Execution results	State 0				
	State 1				

The Moving Sign supports four data types, as shown in Table 11.5.2. To add or reduce the number of states, you can simply increase or decrease the number of State Counts in the Properties window.

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Table 11.5.2 Data Type of Moving Sign

Moving Sign	
Data Type	State Counts
Word	<ul style="list-style-type: none"> <li>■ If the Data Type is Word, you can set 1 to 256 states for the State Counts.</li> </ul> <div style="background-color: #e0f2ff; padding: 5px; margin-bottom: 10px;"> <span style="border: 1px solid #ccc; padding: 2px;">Detail</span> </div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>Data Type:</p> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="Word"/> </div> <div style="flex: 1;"> <p>Data Format:</p> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="Unsigned Decimal"/> </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>State Counts:</p> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="256"/> </div> <div style="flex: 1;"> <span style="border: 1px solid #ccc; padding: 2px;">▲</span> <span style="border: 1px solid #ccc; padding: 2px;">▼</span> </div> </div>
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>■ If the Data Type is Word, the memory address is in units of Word.</li> <li>■ LSB is to first convert the data in the register to binary data, and then use the lowest non-zero bit to determine the current state of the object.</li> <li>■ If the Data Type is LSB, you can set 1 to 16 states except for State 0.</li> </ul> <div style="background-color: #e0f2ff; padding: 5px; margin-bottom: 10px;"> <span style="border: 1px solid #ccc; padding: 2px;">Detail</span> </div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>Data Type:</p> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="LSB"/> </div> <div style="flex: 1;"> <p>Data Format:</p> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="Unsigned Decimal"/> </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>State Counts:</p> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="16"/> </div> <div style="flex: 1;"> <span style="border: 1px solid #ccc; padding: 2px;">▲</span> <span style="border: 1px solid #ccc; padding: 2px;">▼</span> </div> </div> <ul style="list-style-type: none"> <li>■ To display State 0, select LSB (Support State 0) for the Data Type.</li> </ul> <div style="background-color: #e0f2ff; padding: 5px; margin-bottom: 10px;"> <span style="border: 1px solid #ccc; padding: 2px;">Detail</span> </div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>Data Type:</p> <div style="border: 1px solid #ccc; padding: 2px; width: 100%;"> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="LSB"/> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="Bit"/> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="Word"/> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="LSB"/> <input style="border: 1px solid #ccc; padding: 2px; width: 100%; background-color: #e0f2ff; color: #0070C0; font-weight: bold;" type="button" value="LSB (Support State 0)"/> <input style="border: 1px solid #ccc; padding: 2px; width: 100%;" type="button" value="16"/> </div> </div> </div> <ul style="list-style-type: none"> <li>■ If you selected LSB, the element is black when the state is 0.</li> </ul> <div style="text-align: center; margin-top: 10px;">  </div> <ul style="list-style-type: none"> <li>■ When the Data Type is either LSB or LSB (Support State 0), the memory address is in units of Word.</li> </ul>

Moving Sign																																																														
Data Type	State Counts																																																													
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>The examples in the following table show how the state value is determined with the lowest non-zero bit of the binary value converted from a decimal value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.</li> </ul> <table border="1"> <thead> <tr> <th>Decimal</th><th>Binary</th><th>State value</th></tr> </thead> <tbody> <tr> <td><u>0</u></td><td><u>0000000000000000</u></td><td><u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u></td></tr> <tr> <td>1</td><td>0000000000000001</td><td>The lowest non-zero bit is bit 0, State = 1.</td></tr> <tr> <td>2</td><td>0000000000000010</td><td>The lowest non-zero bit is bit 1, State = 2.</td></tr> <tr> <td><u>3</u></td><td><u>0000000000000011</u></td><td><u>The lowest non-zero bit is bit 0, State = 1.</u></td></tr> <tr> <td>4</td><td>00000000000000100</td><td>The lowest non-zero bit is bit 2, State = 3.</td></tr> <tr> <td><u>7</u></td><td><u>00000000000000111</u></td><td><u>The lowest non-zero bit is bit 0, State = 1.</u></td></tr> <tr> <td>8</td><td>0000000000001000</td><td>The lowest non-zero bit is bit 3, State = 4.</td></tr> <tr> <td>16</td><td>0000000000010000</td><td>The lowest non-zero bit is bit 4, State = 5.</td></tr> <tr> <td>32</td><td>0000000000100000</td><td>The lowest non-zero bit is bit 5, State = 6.</td></tr> <tr> <td>64</td><td>0000000001000000</td><td>The lowest non-zero bit is bit 6, State = 7.</td></tr> <tr> <td>128</td><td>0000000010000000</td><td>The lowest non-zero bit is bit 7, State = 8.</td></tr> <tr> <td>256</td><td>0000000100000000</td><td>The lowest non-zero bit is bit 8, State = 9.</td></tr> <tr> <td>512</td><td>0000001000000000</td><td>The lowest non-zero bit is bit 9, State = 10.</td></tr> <tr> <td>1024</td><td>0000010000000000</td><td>The lowest non-zero bit is bit 10, State = 11.</td></tr> <tr> <td>2048</td><td>0000100000000000</td><td>The lowest non-zero bit is bit 11, State = 12.</td></tr> <tr> <td>4096</td><td>0001000000000000</td><td>The lowest non-zero bit is bit 12, State = 13.</td></tr> <tr> <td>8192</td><td>0010000000000000</td><td>The lowest non-zero bit is bit 13, State = 14.</td></tr> <tr> <td>16384</td><td>0100000000000000</td><td>The lowest non-zero bit is bit 14, State = 15.</td></tr> <tr> <td>32768</td><td>1000000000000000</td><td>The lowest non-zero bit is bit 15, State = 16.</td></tr> </tbody> </table>		Decimal	Binary	State value	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.	<u>7</u>	<u>00000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.	4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.
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Bit	<ul style="list-style-type: none"> <li>If the Data Type is Bit, you can set only 2 states.</li> </ul> <div style="background-color: #e0f2ff; padding: 5px; border-radius: 5px;"> <span style="color: #0070C0;">Detail</span> </div> <div style="margin-top: 10px;"> <p style="margin: 0;">Data Type:</p> <div style="display: flex; align-items: center;"> <input style="width: 100px; height: 30px; border: 1px solid #ccc; margin-right: 10px;" type="text" value="Bit"/> <span style="font-size: small;">▼</span> </div> <p style="margin: 0;">Data Format:</p> <div style="display: flex; align-items: center;"> <input style="width: 100px; height: 30px; border: 1px solid #ccc; margin-right: 10px;" type="text" value="Unsigned Decimal"/> <span style="font-size: small;">▼</span> </div> <p style="margin: 0;">State Counts:</p> <div style="display: flex; align-items: center;"> <input style="width: 30px; height: 30px; border: 1px solid #ccc; margin-right: 10px;" type="text" value="2"/> <span style="font-size: small;">▲ ▼</span> </div> </div> <ul style="list-style-type: none"> <li>If the Data Type is Bit, the memory address is in units of Bit.</li> </ul>																																																													

When you double-click the Moving Sign, the property page is shown as follows.

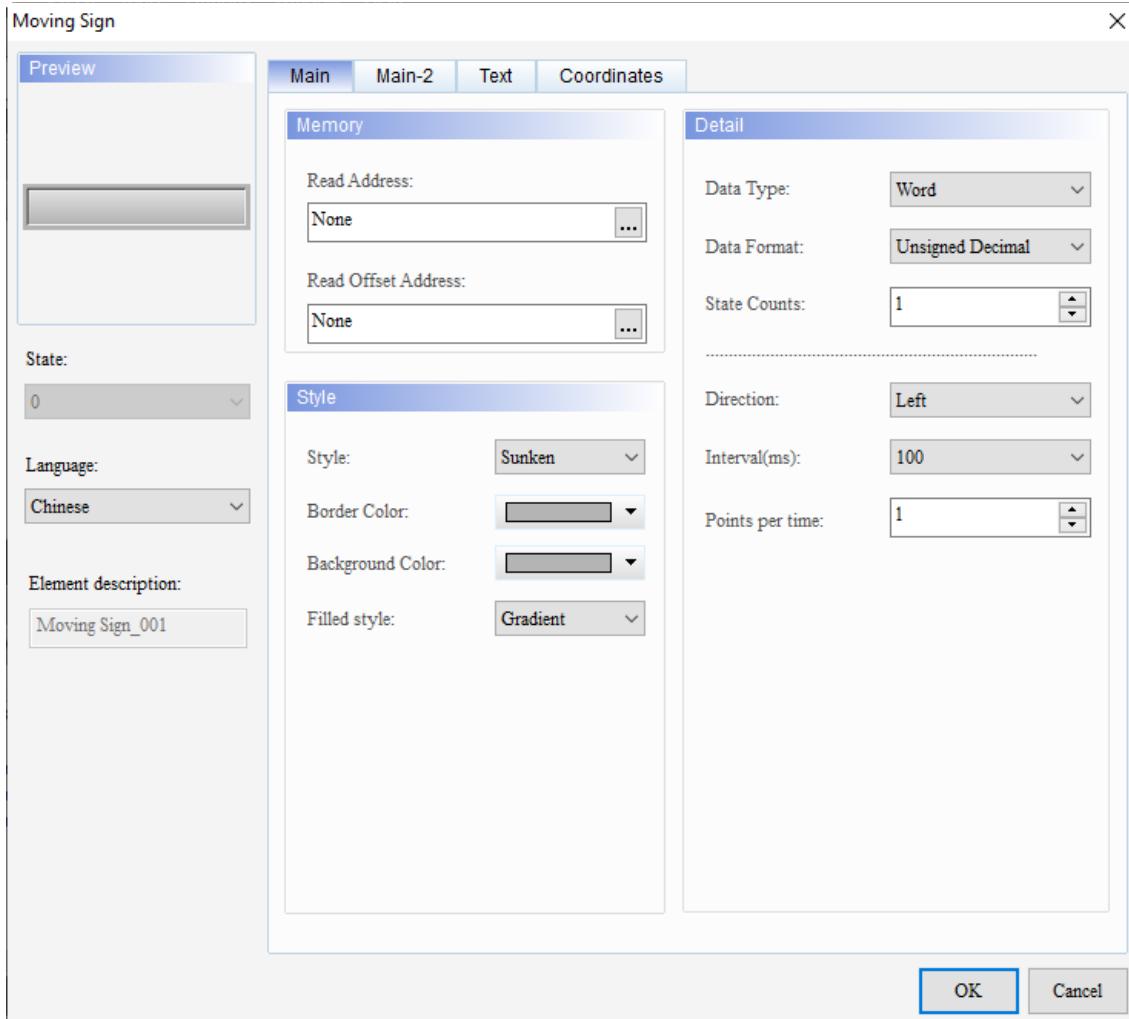


Figure 11.5.1 Properties of Moving Sign

Table 11.5.3 Function page of Moving Sign

Moving Sign	
Function page	Description
Preview	Moving Sign elements can view multiple state values and multi-language data display.
Main	Set the Read Address, Read Offset Address, Style, Border Color, Background Color, and Filled style. Set the Data Type, Data Format, State Counts, Direction, Interval (ms), and Points per time (for the movement).
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text font, size, color, format, zoom, and alignment options.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

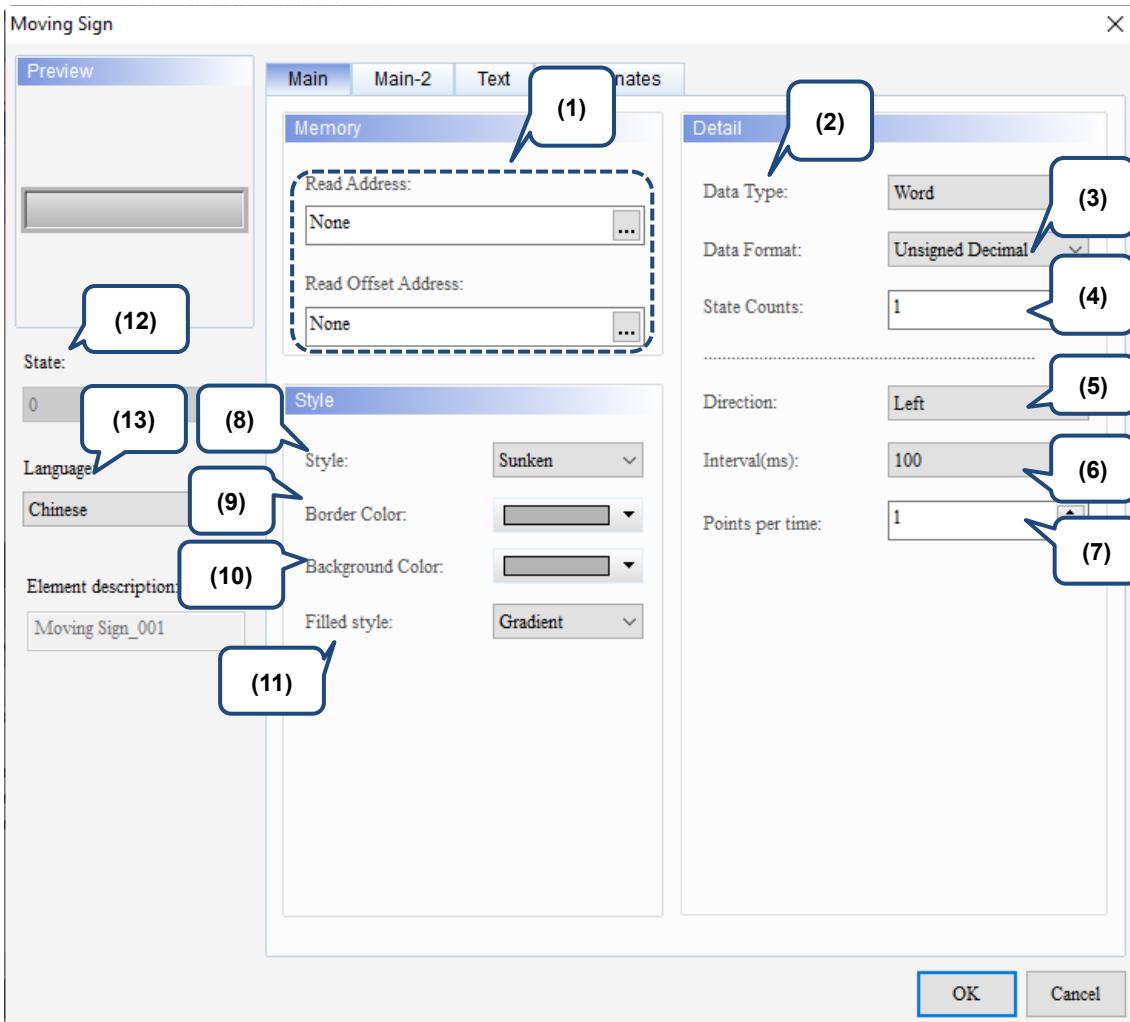
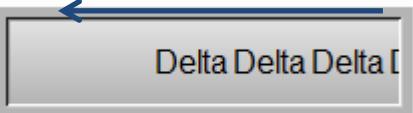
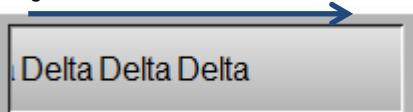
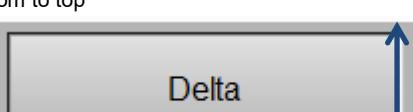
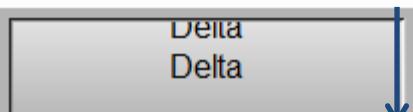
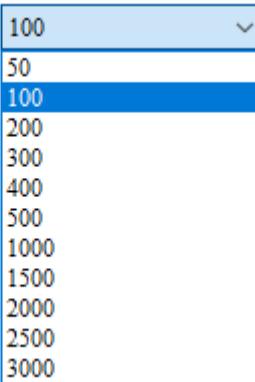
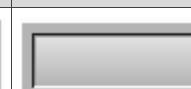
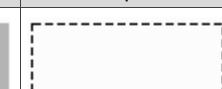
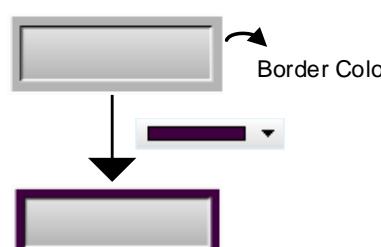
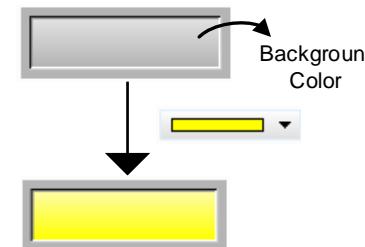
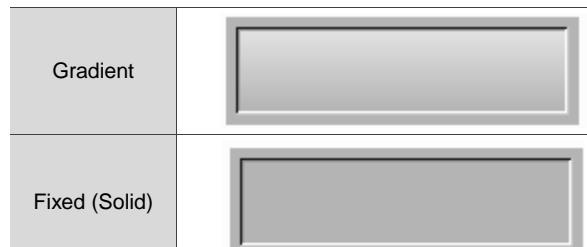
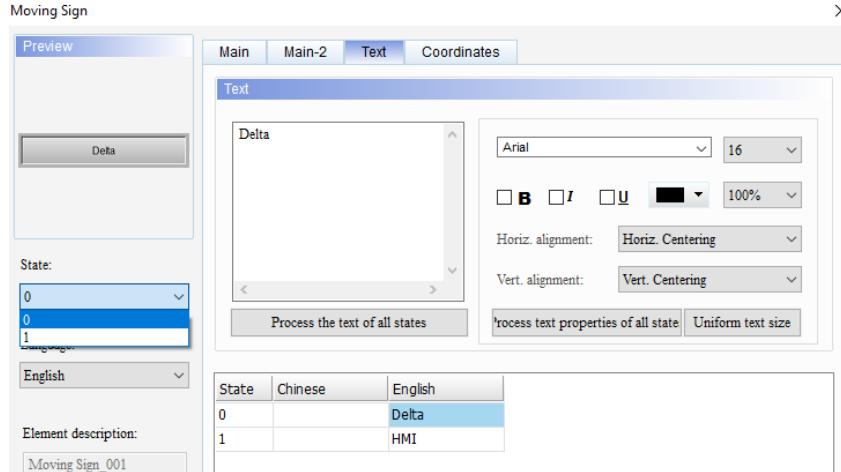


Figure 11.5.2 Main property page for the Moving Sign element

No.	Property	Function description												
(1)	Read Address	<ul style="list-style-type: none"> <li>You can choose the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 11.5.2.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>												
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.												
(2)	Data Type	There are four data types, Bit, Word, LSB, and LSB (Support State 0). Refer to Table 11.5.2 for more details.												
(3)	Data Format	<ul style="list-style-type: none"> <li>You can select the Data Format only when the Data Type is Word.</li> <li>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</li> </ul> <p>Detail</p> <table> <tr> <td>Data Type:</td> <td>Word</td> </tr> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td></td> <td>BCD</td> </tr> <tr> <td></td> <td>Signed Decimal</td> </tr> <tr> <td></td> <td>Unsigned Decimal</td> </tr> <tr> <td></td> <td>Hexadecimal</td> </tr> </table>	Data Type:	Word	Data Format:	Unsigned Decimal		BCD		Signed Decimal		Unsigned Decimal		Hexadecimal
Data Type:	Word													
Data Format:	Unsigned Decimal													
	BCD													
	Signed Decimal													
	Unsigned Decimal													
	Hexadecimal													

No.	Property	Function description	
(4)	State Counts	Set the State Counts of the Moving Sign element. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), you can set 17 states; and if the Data Type is Bit, you can set only 2 states. Refer to Table 11.5.2 for details.	
(5)	Direction	The available display directions are Left, Right, Up, and Down. You can select the text moving direction to display.	
		Left	From right to left 
		Right	From left to right 
		Up	From bottom to top 
		Down	From top to bottom 
(6)	Interval (ms)	The Interval (ms) defines the interval time (unit: ms) between two message movements of the Moving Sign. The moving distance is determined by the setting of Points per time.	
		Interval(ms):	
(7)	Points per time	The greater the number of points, the greater the distance each time the text moves. The setting range is 1 - 50 pixels.	
		The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.	
(8)	Style	Standard	
		Raised	
		Sunken	
		Transparent	

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No.	Property	Function description									
(9)	Border Color	<ul style="list-style-type: none"> <li>Set the border color of the element.</li> <li>When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul> 									
(10)	Background Color	<ul style="list-style-type: none"> <li>Set the background color of the element.</li> <li>When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul> 									
(11)	Filled style	The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model. 									
(12)	State	<p>By switching the State, you can preview or change the settings of each state of the element.</p> <p>Moving Sign</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0		Delta	1		HMI
State	Chinese	English									
0		Delta									
1		HMI									

No.	Property	Function description									
(13)	Language	<p>If you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.</p> <p>Moving Sign</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0		Delta	1		HMI
State	Chinese	English									
0		Delta									
1		HMI									

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## ■ Main-2

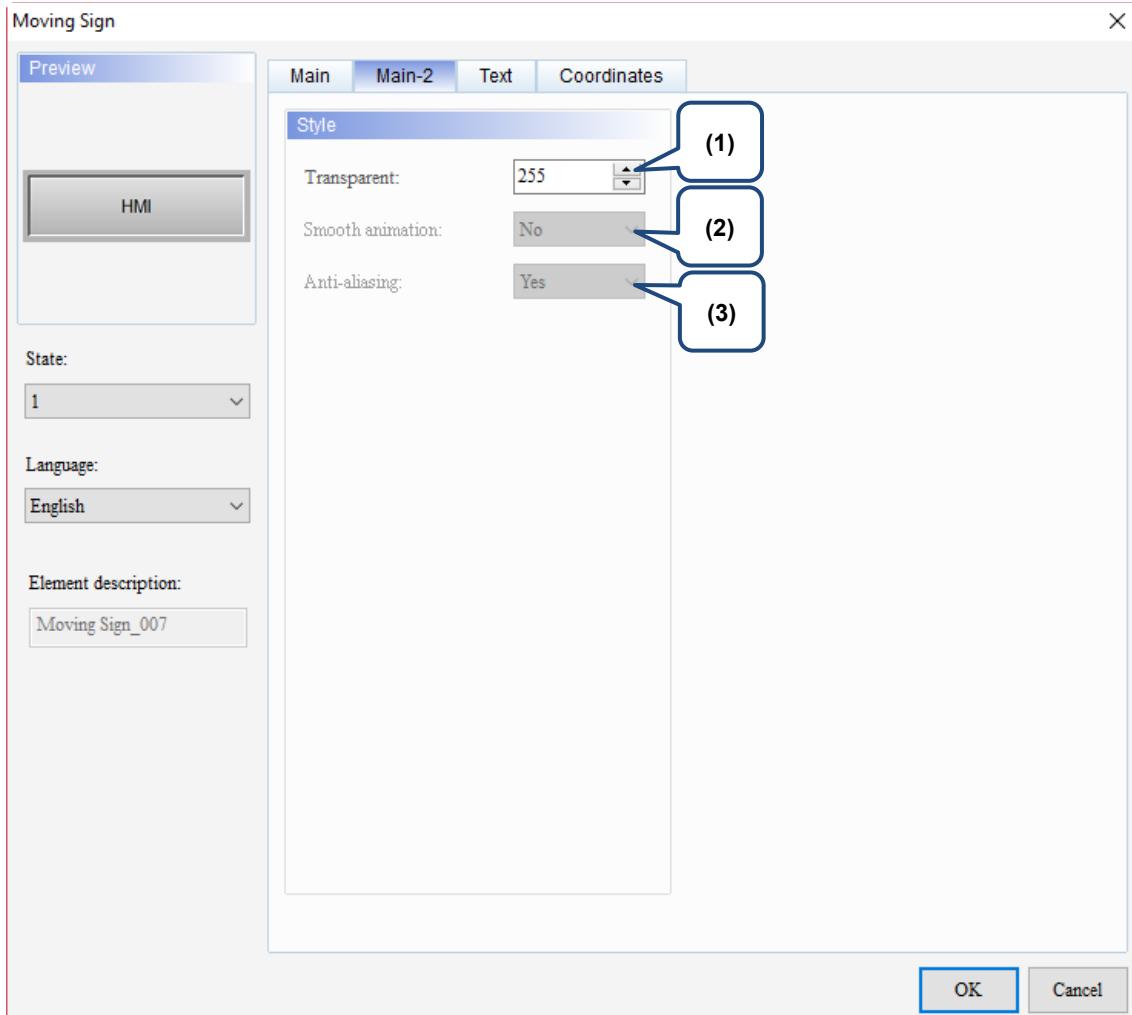


Figure 11.5.3 Main-2 property page for the Moving Sign element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

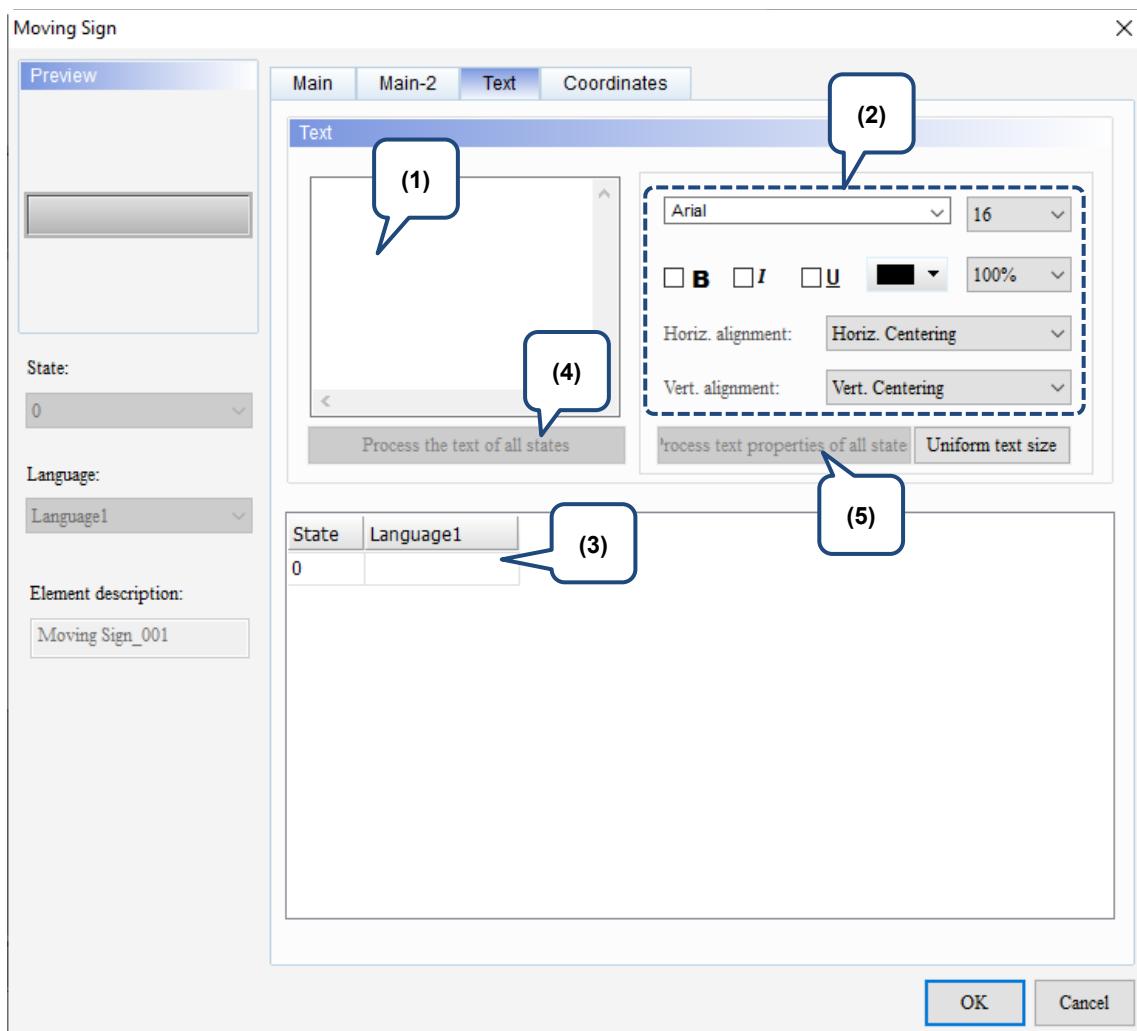
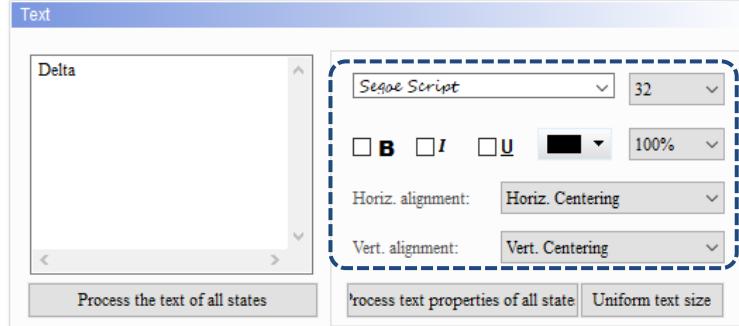
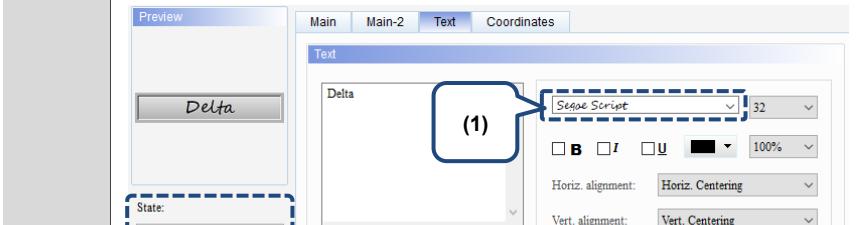
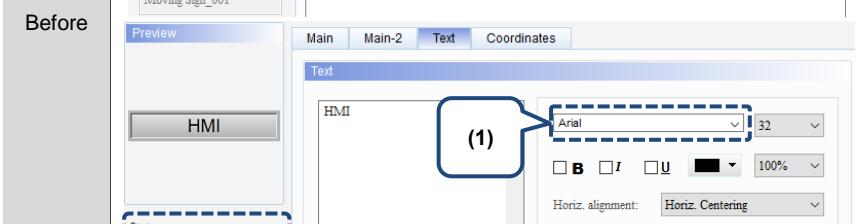
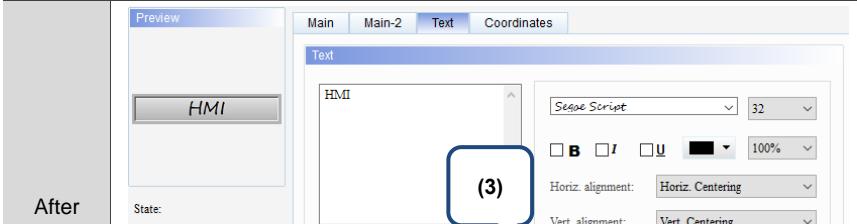


Figure 11.5.4 Text property page for the Moving Sign element

No.	Property	Function description
(1)	Text	You can enter the text to display in this box. A preview window shows 'Delta'. Below it are settings for font (Arial, size 16), bold/italic/underline (B, I, U), color (black), and zoom (100%). Horizontal alignment is set to 'Horiz. Centering' and vertical alignment to 'Vert. Centering'. A 'Process the text of all states' button is present. A table at the bottom lists states: State 0 is Language1 (English), State 1 is Chinese (HMI).
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the Text property setting results.
(3)	Edit multi-language text	If you have added multi-language data, the Text page allows you to edit multi-language data.

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No.	Property	Function description									
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. The example and setting steps are as follows:</p> <ol style="list-style-type: none"> <li>1. Enter the text “123” for State 0 and “234” for State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process the text of all states</b> and the text of State 1 is changed to “123”.</li> </ol> <p>The screenshot shows the 'Text' dialog and a state table. In the dialog, 'State: 0' is selected. A callout (1) points to the 'Process the text of all states' button. In the state table, the English column for State 0 is highlighted with a blue box. A callout (2) points to the English column for State 1. A callout (3) points to the preview window showing the text '123'.</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>123</td> </tr> <tr> <td>1</td> <td></td> <td>234</td> </tr> </tbody> </table>	State	Chinese	English	0		123	1		234
State	Chinese	English									
0		123									
1		234									
	After	<p>The screenshot shows the 'Text' dialog and a state table. The English column for State 0 now contains '123'. A callout (3) points to the preview window showing the text '123'.</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>123</td> </tr> <tr> <td>1</td> <td></td> <td>123</td> </tr> </tbody> </table>	State	Chinese	English	0		123	1		123
State	Chinese	English									
0		123									
1		123									

No.	Property	Function description
		<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>  <p>The example and setting steps are as follows:</p> <ol style="list-style-type: none"> <li>1. Enter the text "Delta" for State 0 and "HMI" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process text properties of all states</b> and the text font of State 1 is changed to Segoe Script.</li> </ol>
(5)	Process text properties of all states	<p>Before</p>   <p>After</p> 

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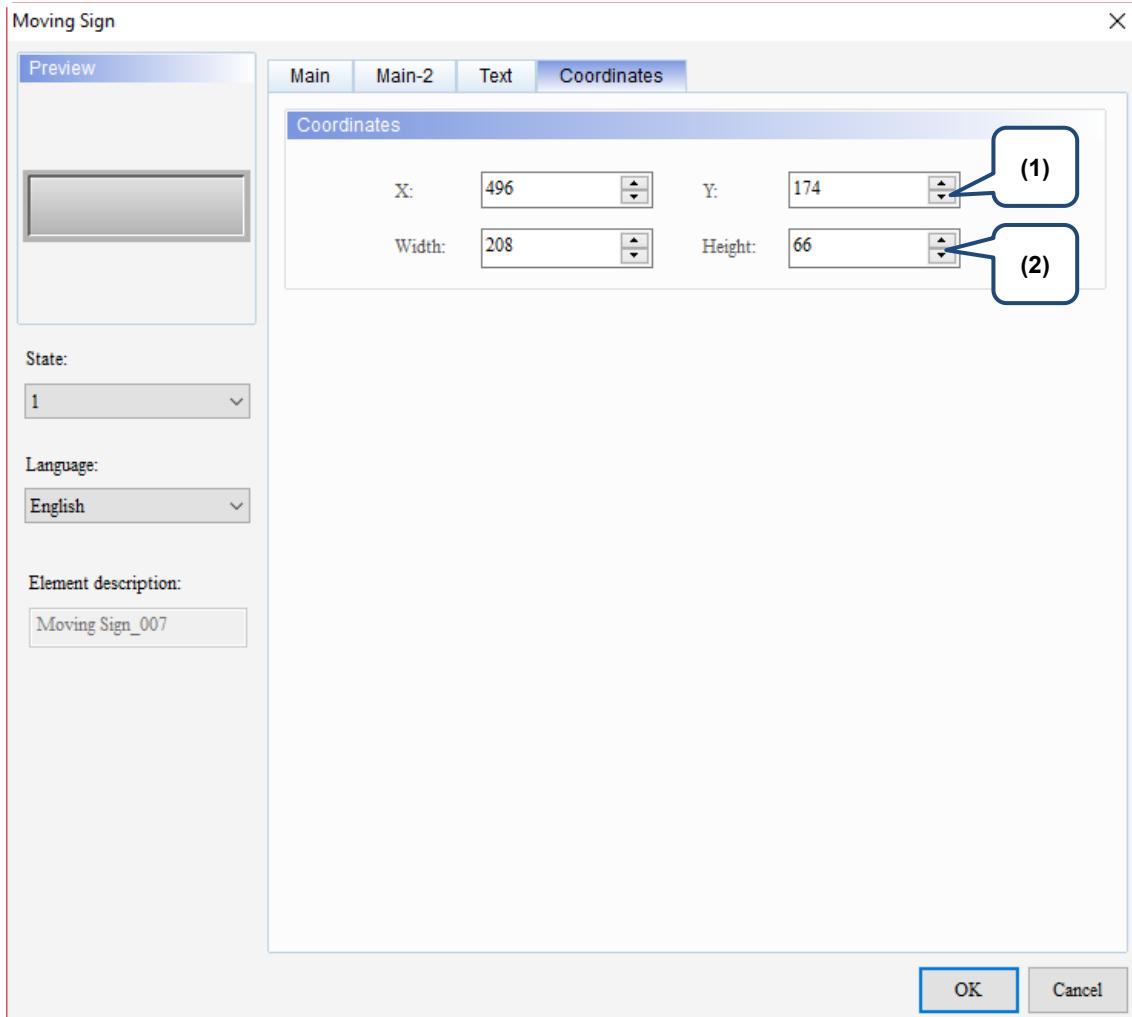
**■ Coordinates**

Figure 11.5.5 Coordinates property page for the Moving Sign element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 11.6 QR code display

Quick Response Codes (QR codes) are also known as two-dimensional barcodes or matrix barcodes. The data types can be stored in a QR code include numbers, letters, binary data, and Kanji. A QR code is a square two-dimensional barcode comprising only two colors, black and white. There are three position markers (a square in a grid) on the three corners of the QR code and another position marker is at a position near the lower right corner. These markers are for identification and positioning, so there is no need for the user to carefully align the code while scanning. The scanning software can decode the code correctly regardless of angle and direction.

The QR code display element encodes the string to be displayed. You can scan the QR code to obtain the string. When the string is a URL, you can go to the website directly. This element also supports multi-language input. Refer to Table 11.6.1 QR code display example.

Table 11.6.1 QR code display example

QR code display																	
Create QR code display element	<p>Set the Read Address and String Length.</p> <p>QR code display</p> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>Preview</p>  <p>State: 0</p> </div> <div style="flex: 1;"> <p>Main Details Coordinates</p> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>Memory</p> <table border="1"> <tr><td>Read Address:</td><td>\$100</td></tr> <tr><td>Read Offset Address:</td><td>None</td></tr> </table> </div> <div style="flex: 1;"> <p>Setting</p> <table border="1"> <tr><td>String Length:</td><td>30</td></tr> <tr><td>Error correction:</td><td>HIGH</td></tr> </table> </div> </div> </div> </div>	Read Address:	\$100	Read Offset Address:	None	String Length:	30	Error correction:	HIGH								
Read Address:	\$100																
Read Offset Address:	None																
String Length:	30																
Error correction:	HIGH																
Create Character Entry and Multi-language Input elements	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Character Entry element</th> <th colspan="2">Multi-language Input element</th> </tr> </thead> <tbody> <tr> <td>Write Address</td><td>\$100</td> <td>Write Address</td><td>\$100</td> </tr> <tr> <td>String Length</td><td>30</td> <td>String Length</td><td>30</td> </tr> <tr> <td colspan="2"> <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;">           ABCDEFGHIJKLMNOPQRSTUVWXYZ            ZABCD         </div> </td> <td colspan="2"> <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;">           ABCDEFGHIJKLMNOPQRSTUVWXYZ            ZABCD         </div> </td> </tr> </tbody> </table>	Character Entry element		Multi-language Input element		Write Address	\$100	Write Address	\$100	String Length	30	String Length	30	<div style="border: 1px solid #ccc; padding: 5px; display: inline-block;">           ABCDEFGHIJKLMNOPQRSTUVWXYZ            ZABCD         </div>		<div style="border: 1px solid #ccc; padding: 5px; display: inline-block;">           ABCDEFGHIJKLMNOPQRSTUVWXYZ            ZABCD         </div>	
Character Entry element		Multi-language Input element															
Write Address	\$100	Write Address	\$100														
String Length	30	String Length	30														
<div style="border: 1px solid #ccc; padding: 5px; display: inline-block;">           ABCDEFGHIJKLMNOPQRSTUVWXYZ            ZABCD         </div>		<div style="border: 1px solid #ccc; padding: 5px; display: inline-block;">           ABCDEFGHIJKLMNOPQRSTUVWXYZ            ZABCD         </div>															

## Select the language

**QR code display element**

Go to [Options] > [Configuration] > [Multi-language Settings] to select the **English** and **Traditional Chinese** check boxes.

After creating the elements, compile and download the data to the HMI, and then use the Character Entry element and the Multi-language Input element to enter the strings to generate the QR codes.

## Execution results

	Enter the Delta website URL, and the corresponding QR code is generated.
Generate QR code with Character Entry element	<input type="text" value="https://www.deltaww.com"/>
Generate QR code with Multi-language Input element	<input type="text" value="DELTA"/>

When you double-click the QR code display, the property page is shown as follows.

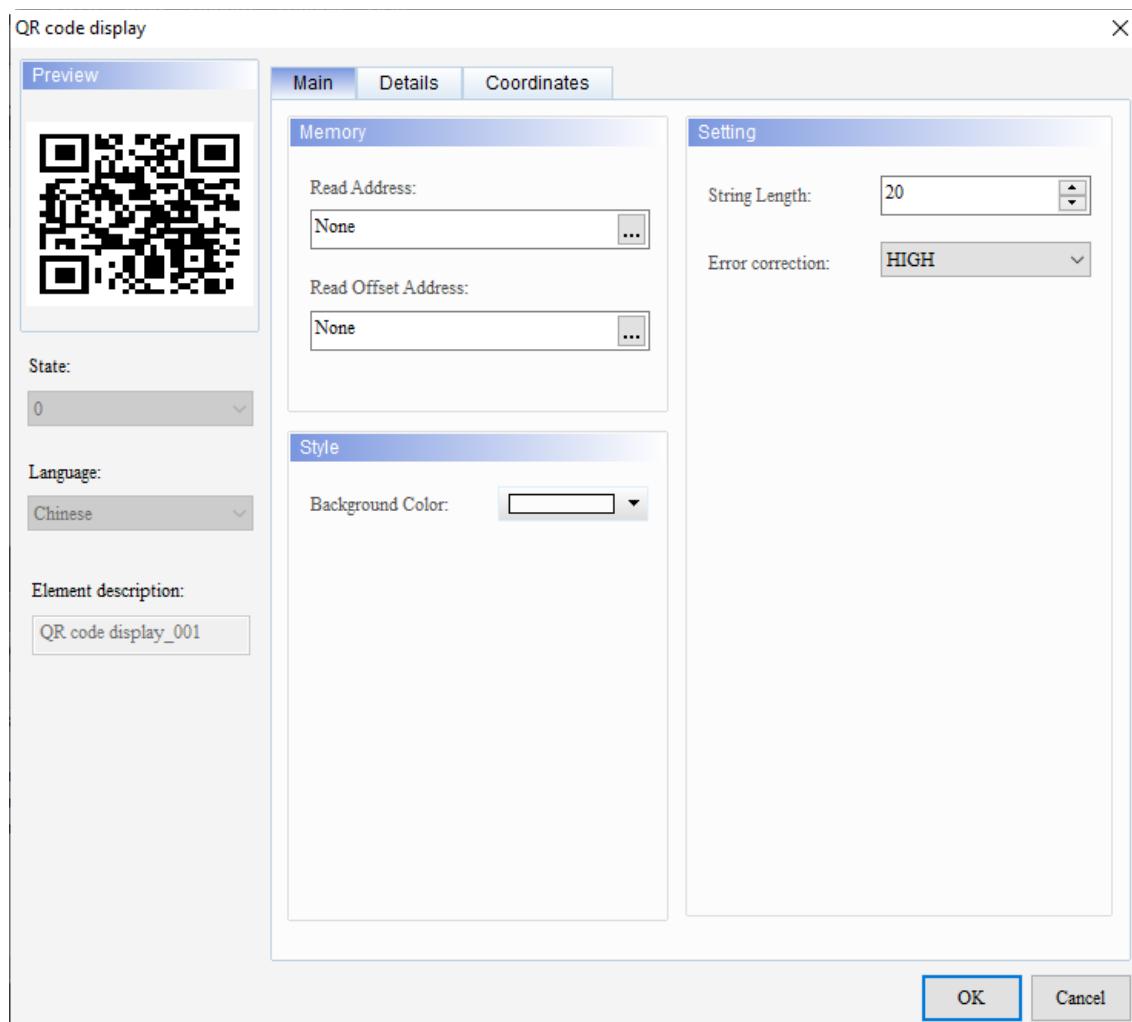


Figure 11.6.1 Properties of QR code display

Table 11.6.2 Function page of QR code display

QR code display	
Function page	Description
Preview	QR code display elements do not support multiple state values and multi-language data display.
Main	Set the Read Address, Read Offset Address, and Background Color. Set the String Length and Error correction.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

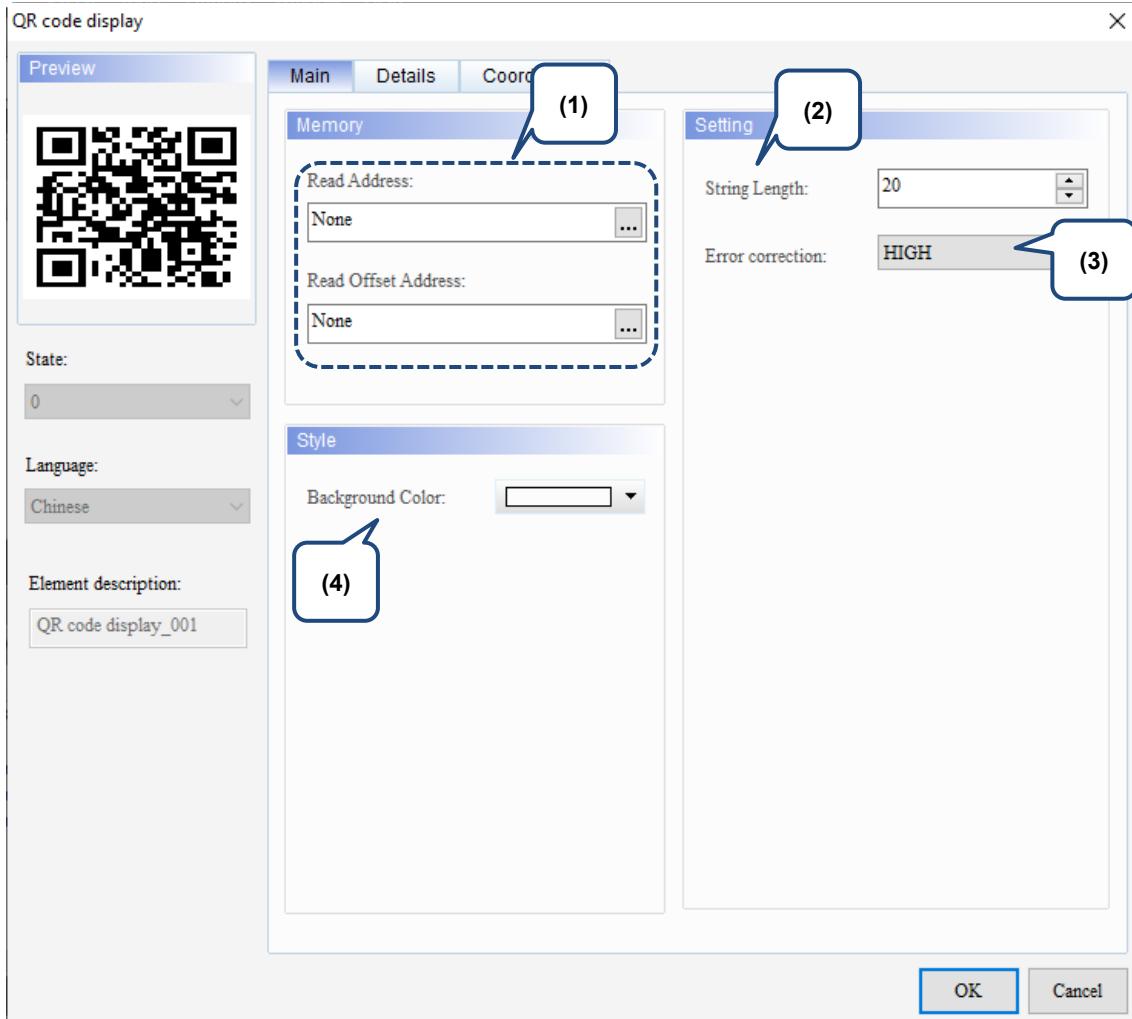
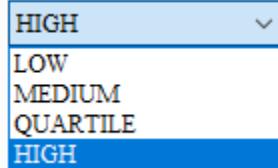
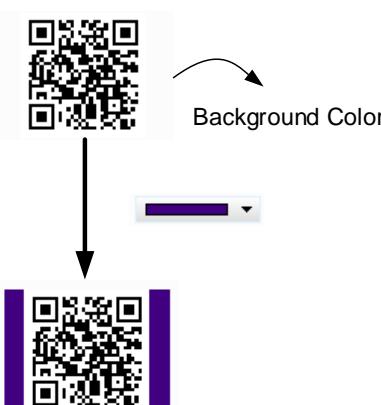


Figure 11.6.2. Main property page for the QR code display element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>■ You can select the internal memory or the controller register address.</li> <li>■ Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
(2)	String Length	The maximum string length is 256.

No.	Property	Function description
(3)	Error correction	<ul style="list-style-type: none"> <li>QR codes have the capability of correcting errors. There are four correction levels available, LOW, MEDIUM, QUARTILE, and HIGH, based on the error tolerance capabilities.</li> </ul> <p>Error correction:</p> 
(4)	Background Color	<p>Set the background color of the element.</p> 

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## ■ Details

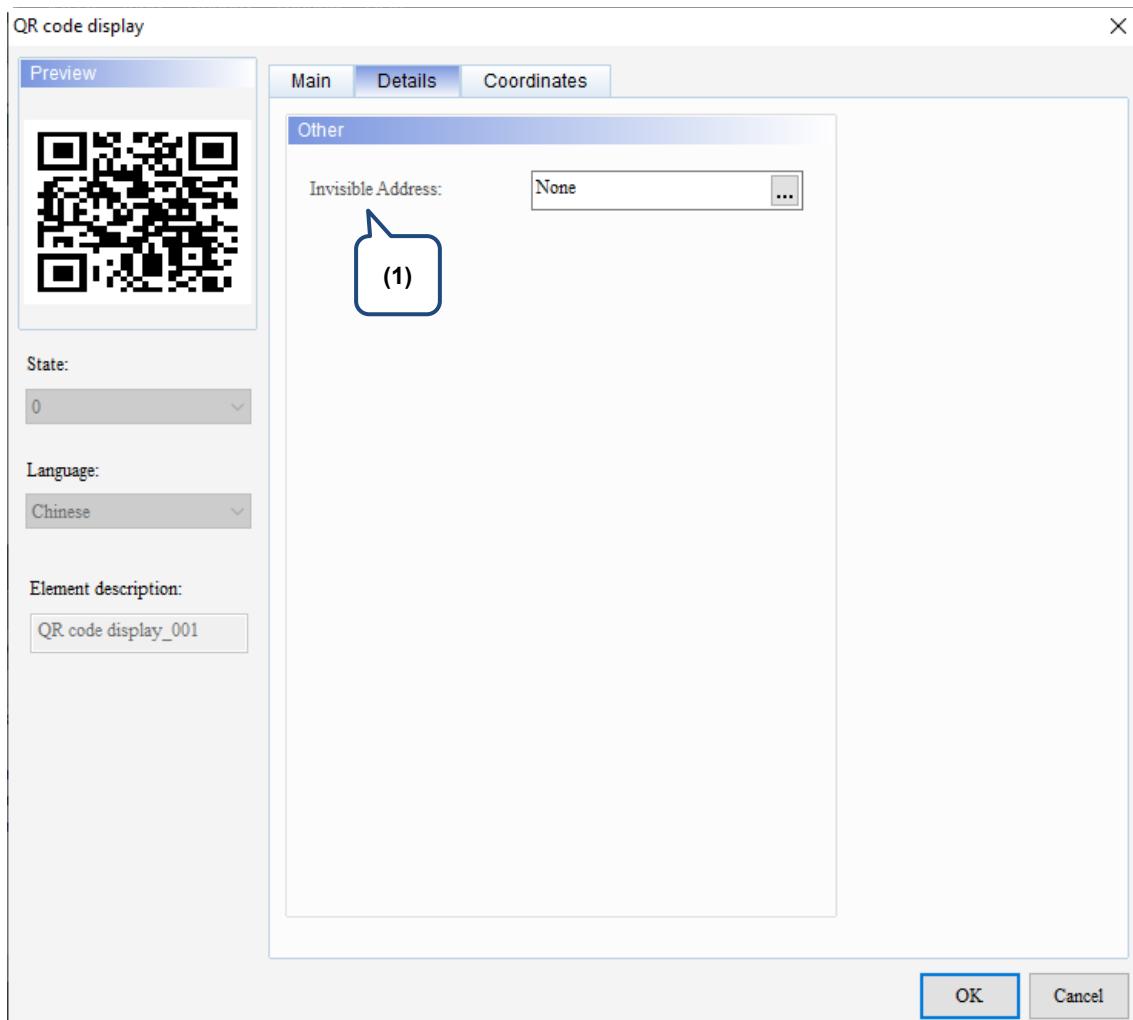


Figure 11.6.3 Details property page for the QR code display element

No.	Property	Function description								
(1)	Invisible Address	<ul style="list-style-type: none"> <li>■ Before executing the Invisible Address for the QR code display element, you must first generate the QR code with the Character Entry element or the Multi-language Input element.</li> <li>■ When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</li> </ul>  <p>QR code display</p> <table border="1"> <thead> <tr> <th>Preview</th> <th>Main</th> <th>Details</th> <th>Coordinates</th> </tr> </thead> <tbody> <tr> <td></td> <td>Other</td> <td>Invisible Address: <input type="text" value="\$9.0"/> <input type="button" value="..."/></td> <td></td> </tr> </tbody> </table>	Preview	Main	Details	Coordinates		Other	Invisible Address: <input type="text" value="\$9.0"/> <input type="button" value="..."/>	
Preview	Main	Details	Coordinates							
	Other	Invisible Address: <input type="text" value="\$9.0"/> <input type="button" value="..."/>								

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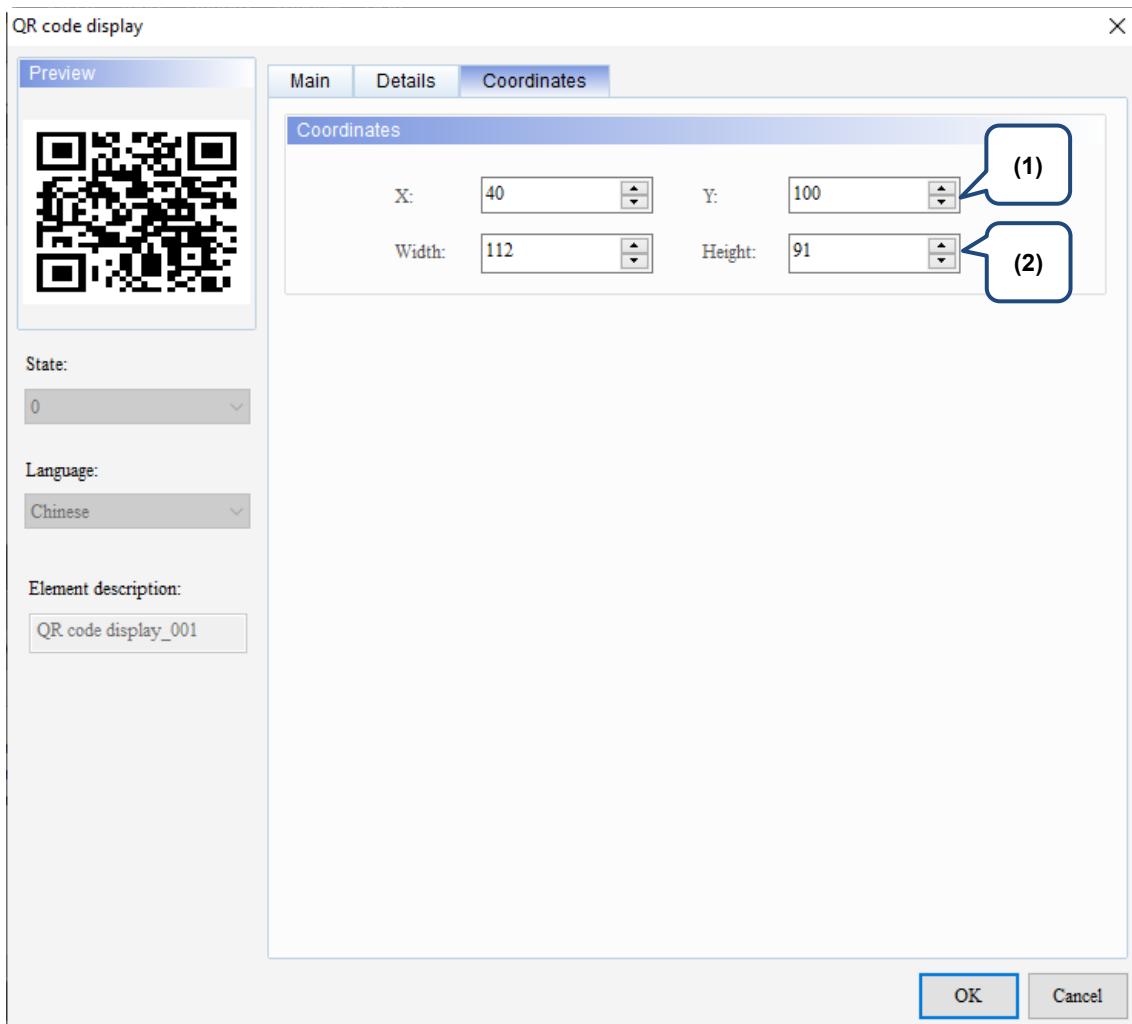
**■ Coordinates**

Figure 11.6.4 Coordinates property page for the QR code display element

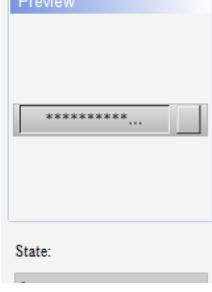
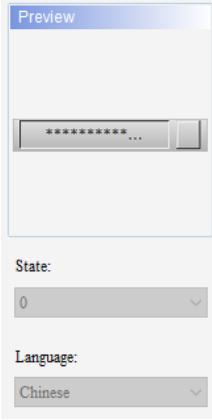
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 11.7 Barcode

The Barcode element is used to generate barcodes, so it must be used with Barcode Input element. Refer to the Table 11.7.1 for the Barcode display example.

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Table 11.7.1 Barcode display example

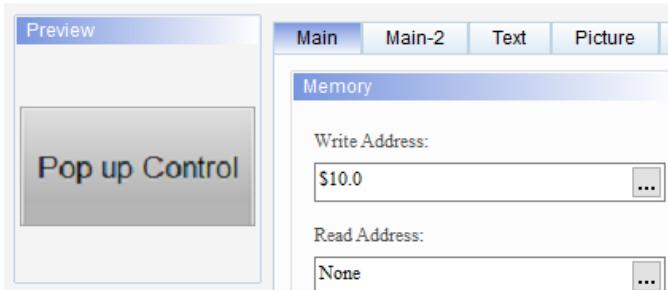
Barcode	
<p><b>Create Barcode element</b></p>  <p>Set the Read Address to \$100.</p>	<p><b>Main</b> <b>Coordinates</b></p> <p><b>Address</b></p> <p>Read Address: \$100</p> <p>Read Offset Address: None</p> <p><b>Setting</b></p> <p>Encoded Mode: EAN13</p> <p>Encoded Length: 12</p> <p>Encoded Text Size: 16</p>
<p><b>Create Barcode Input element</b></p> <p>■ Set the Write Address and String Length.</p>  <p><b>Main</b> <b>Main-2</b> <b>Text</b> <b>Details</b> <b>Macro</b> <b>Coordinates</b></p> <p><b>Memory</b></p> <p>Write Address: \$100</p> <p>Read Address: None</p> <p><b>Detail</b></p> <p>System Keypad</p> <p>String Length: 20</p>	<p>■ Set the Input Mode to Touch, and set the Popup Control Addr. to \$10.0.</p>  <p><b>Main</b> <b>Main-2</b> <b>Text</b> <b>Details</b> <b>Macro</b> <b>Coordinates</b></p> <p><b>Other</b></p> <p>Input Mode: Touch</p> <p>Popup Control Addr.: \$10.0</p> <p>Interlock State: On</p> <p>Interlock Display Mode: Show Element</p> <p>Interlock Address: None</p> <p>Trigger Mode: Before Writing</p> <p>Trigger Addr.: None</p>

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Create  
Maintained  
button

Set the Write Address to \$10.0.

Maintained



After creating the elements, compile and download the elements to the HMI.

After you download the elements, the HMI screen is as follows:

Step 1

Execute the Popup Control Addr. first, then click the Barcode Input element, and the input keyboard will be displayed.



Execution  
results

Step 2

After the keyboard is displayed, enter the numbers to generate the barcode.



Popup

00123456784

When you double-click the Barcode, the property page is shown as follows.

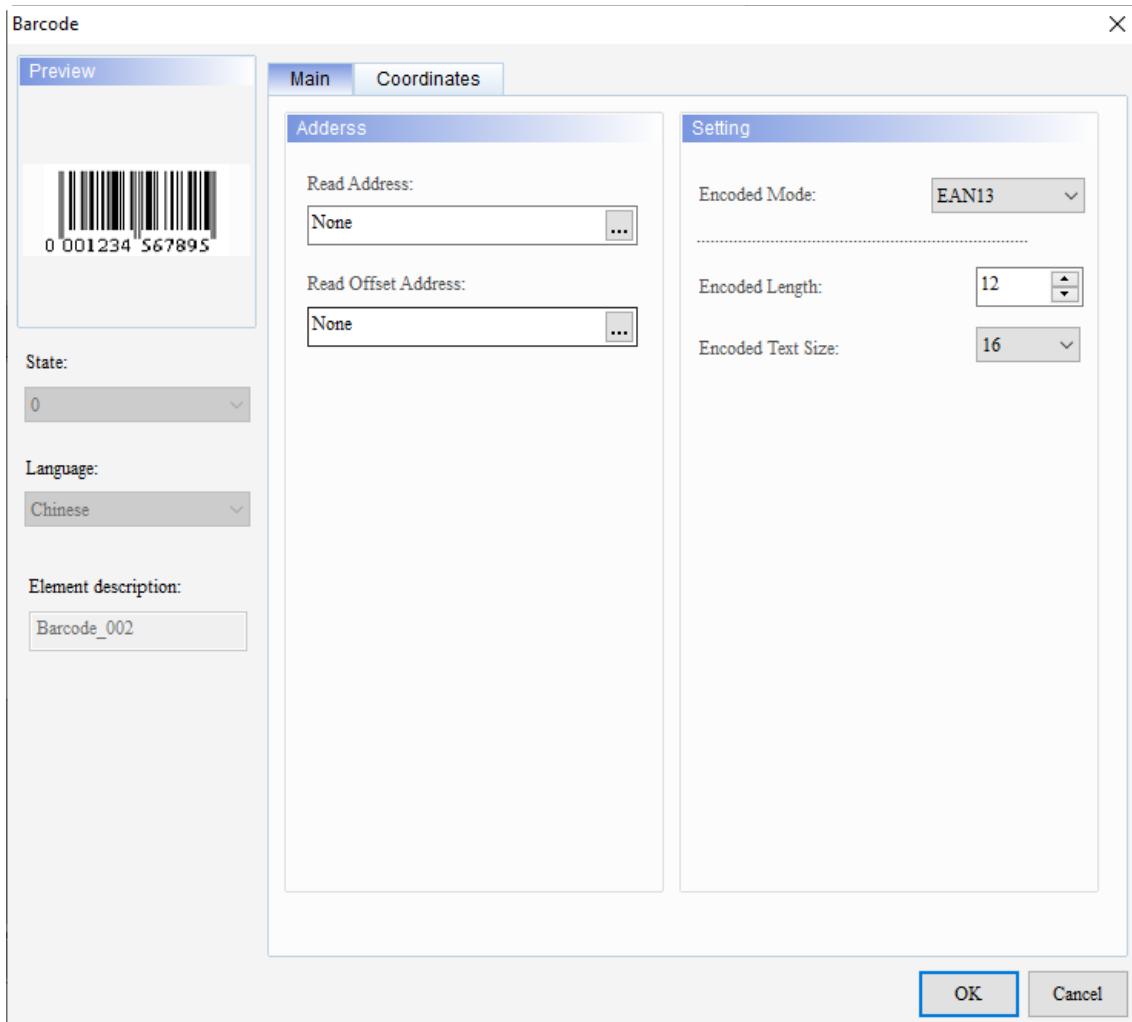


Figure 11.7.1 Properties of Barcode

Table 11.7.2 Function page of Barcode

Barcode	
Function page	Description
Preview	Barcode elements do not support multiple state values and multi-language data display.
Main	Set the Read Address and Read Offset Address. Set the Encoded Mode, Encoded Length, and Encoded Text Size.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

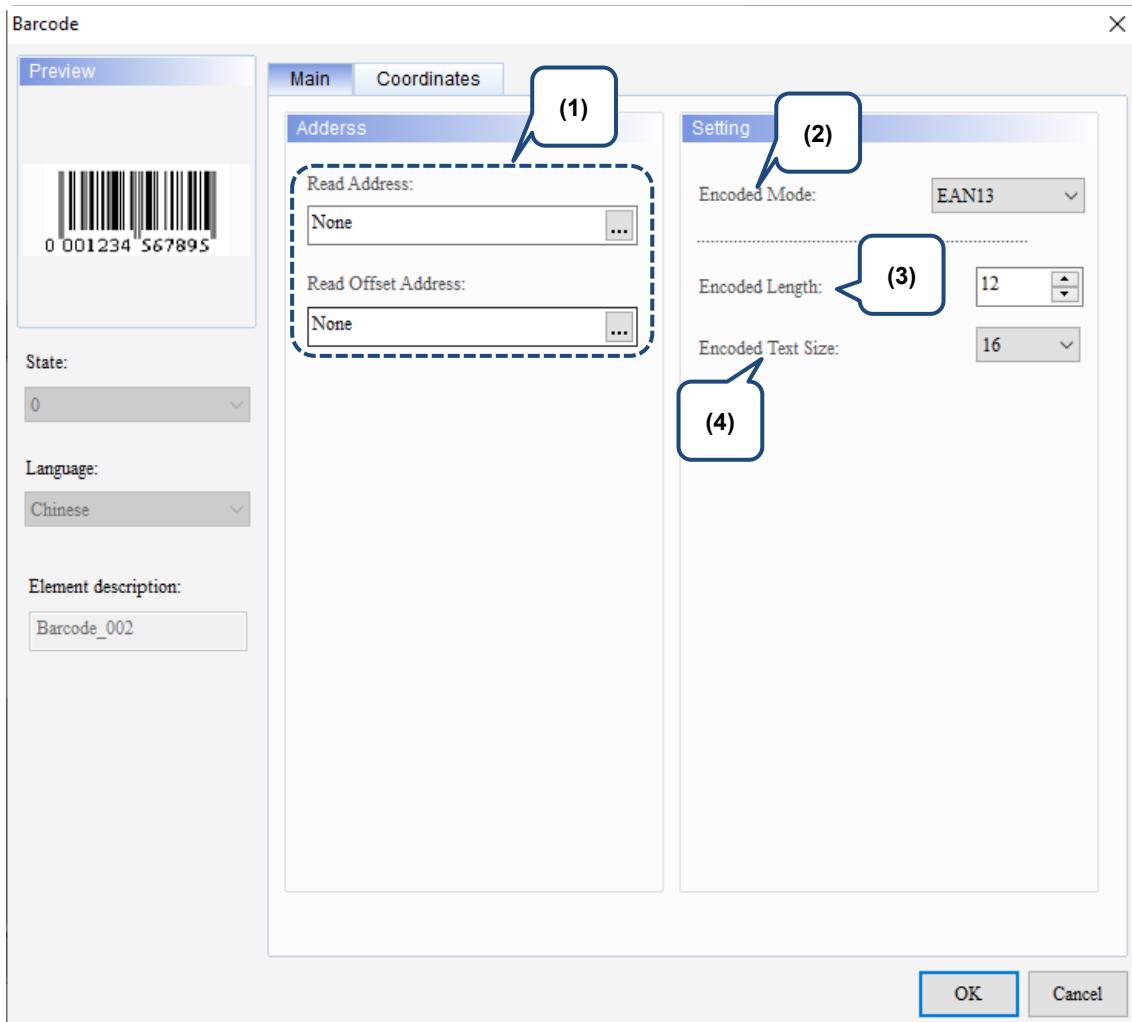


Figure 11.7.2. Main property page for the Barcode element

No.	Property	Function description		
(1)	Read Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>		
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.		
(2)	Encoded Mode	<ul style="list-style-type: none"> <li>There are two encoding formats, EAN13 and CODE128.</li> </ul> <p>Encoded Mode:</p> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block;"> <span>EAN13</span> <span>CODE128</span> </div>		
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">EAN13</td> <td style="text-align: center; padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">CODE128</td> <td style="text-align: center; padding: 5px;"></td> </tr> </table>	EAN13	
EAN13				
CODE128				

No.	Property	Function description
(3)	Encoded Length	<ul style="list-style-type: none"> <li>■ The encoding length is subject to change based on the selected Encoded Mode.</li> <li>■ EAN13 supports lengths of up to 12.</li> <li>■ CODE128 supports lengths of up to 48.</li> </ul>
(4)	Encoded Text Size	<p>This function is used to determine the size of the numbers displayed on the barcode, and the default is 16.</p> <div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">Encoded Text Size:</span> <div style="border: 1px solid #ccc; padding: 2px; width: 150px; height: 200px; background-color: #f9f9f9;"> <div style="border-bottom: 1px solid #ccc; padding-bottom: 2px; font-size: 10px; color: #666;">▼</div> <div style="font-size: 10px; margin-bottom: 2px;">16</div> <div style="font-size: 10px; margin-bottom: 2px;">8</div> <div style="font-size: 10px; margin-bottom: 2px;">10</div> <div style="font-size: 10px; margin-bottom: 2px;">12</div> <div style="font-size: 10px; margin-bottom: 2px;">14</div> <div style="font-size: 10px; margin-bottom: 2px;">16</div> <div style="font-size: 10px; margin-bottom: 2px;">18</div> <div style="font-size: 10px; margin-bottom: 2px;">20</div> <div style="font-size: 10px; margin-bottom: 2px;">22</div> <div style="font-size: 10px; margin-bottom: 2px;">24</div> <div style="font-size: 10px; margin-bottom: 2px;">28</div> <div style="font-size: 10px; margin-bottom: 2px;">32</div> <div style="font-size: 10px; margin-bottom: 2px;">36</div> <div style="font-size: 10px; margin-bottom: 2px;">40</div> <div style="font-size: 10px; margin-bottom: 2px;">48</div> <div style="font-size: 10px; margin-bottom: 2px;">64</div> <div style="font-size: 10px; margin-bottom: 2px;">72</div> <div style="font-size: 10px; margin-bottom: 2px;">96</div> <div style="font-size: 10px; margin-bottom: 2px;">128</div> </div> </div>

1 1

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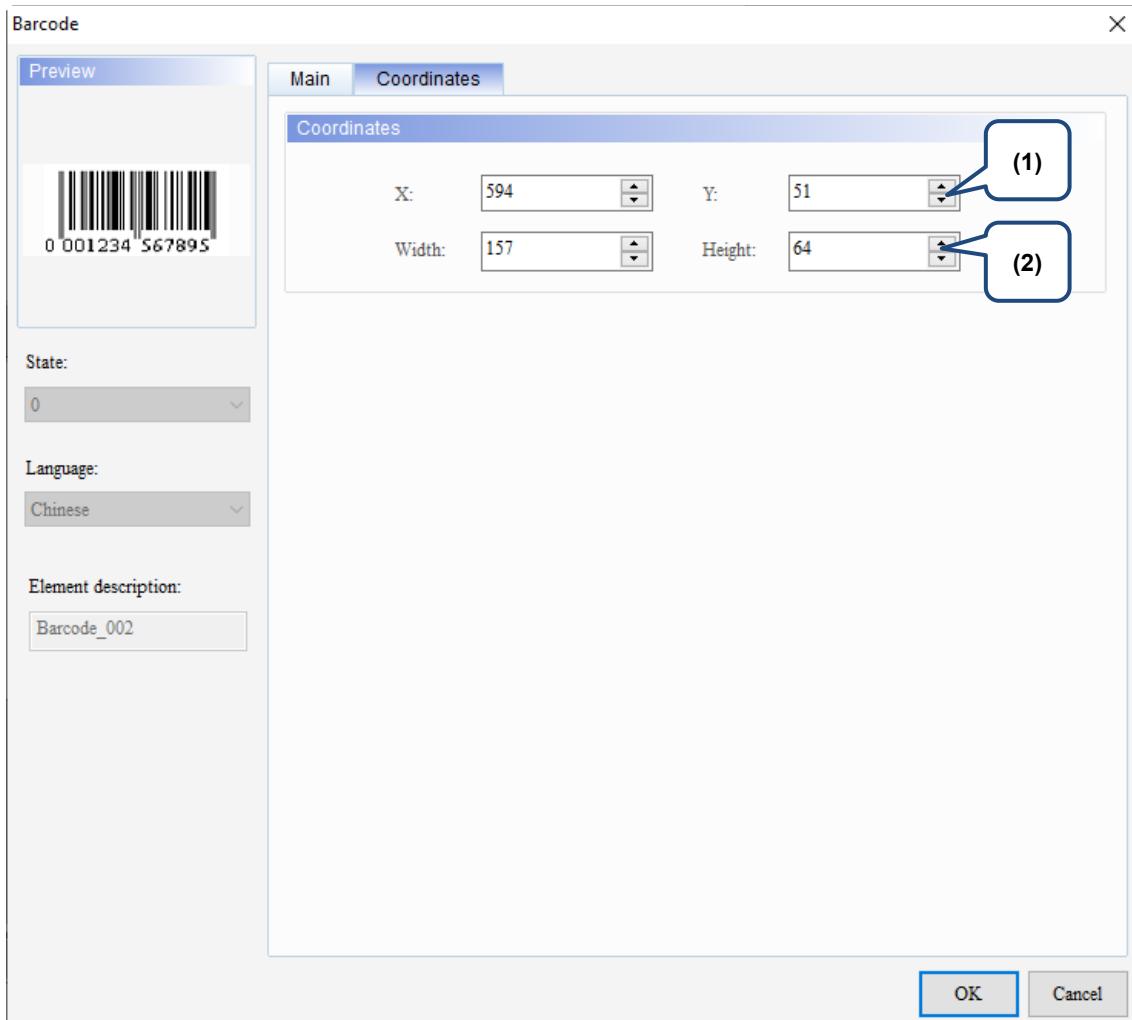
**■ Coordinates**

Figure 11.7.3 Coordinates property page for the Barcode element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

# 12

## Graph Display

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This chapter provides the usage and setting details for the Graph Display elements.

12.1 State Graphic .....	12-2
12.2 Animated Graphic .....	12-17
12.3 Real-time Image .....	12-30

## 12.1 State Graphic

You can create multi-state graphics with the State Graphic element. The value read by the set Read Address corresponds to the state value of the element, and then the set state graphic is displayed on the HMI.

The following describes three application examples: Table 12.1.1 illustrates the example of Auto Picture Change is set to No, Table 12.1.2 illustrates the example of Auto Picture Change is set to Yes, and Table 12.1.3 illustrates the example of Auto Picture Change is set to Variation.

Table 12.1.1 State Graphic example

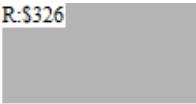
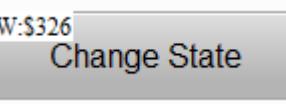
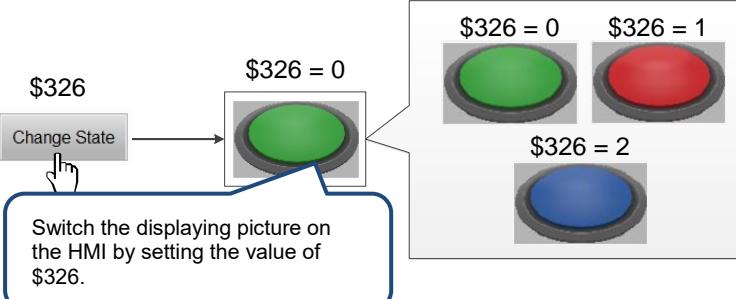
State Graphic example - Auto Picture Change is set to No				
Read Address	State Graphic element		Set Value element	
	Read Address	\$326	Write Address	\$326
R:\$326				
W:\$326				
Detail settings	State Graphic element			
	Data Type	Data Format	State Counts	Auto Picture Change
Word	Unsigned Decimal	3	No	
Picture	Set the State Graphic display			
	State 0	State 1	State 2	
Execution results	After creating the elements, compile and download the elements to the HMI. Next, input a value to the Set Value element, and the State Graphic element displays the picture corresponding to the input value.			
	\$326	\$326 = 0		 \$326 = 1  \$326 = 2
 <p>Switch the displaying picture on the HMI by setting the value of \$326.</p>				

Table 12.1.2 State Graphic example

State Graphic example - Auto Picture Change is set to Yes				
	State Graphic element		Set Value element	
Read Address	Read Address	\$326	Write Address	\$326
Detail settings	State Graphic element			
	Data Type	Data Format	State Counts	Auto Picture Change
	Word	Unsigned Decimal	3	Yes
Picture	Set the State Graphic display			
	State 0	State 1	State 2	
Execution results	<p>After creating the elements, compile and download the elements to the HMI. When you input a value other than 0 to the Set Value element, the State Graphic automatically changes to the set picture display according to the set Change Time (ms). If you input 0, the State Graphic resets to the initial state without executing any action.</p>			

Table 12.1.3 State Graphic example

State Graphic example - Auto Picture Change is set to Variation					
Read Address	State Graphic element		Set Value element		Set Value element
	Read Address	\$326	Write Address	\$326	Write Address
	R:\$326		W:\$326	Change State	W:\$327
Detail settings	State Graphic element				
	Data Type	Data Format	State Counts	Auto Picture Change	
Picture	Word	Unsigned Decimal	3	Variation	
	Set the State Graphic display				
Execution results	State 0		State 1	State 2	
	<ul style="list-style-type: none"> <li>■ The Read Address of the State Graphic element indicates the register for the changing state pictures. [Read Address+1] is for accessing the register when Auto Picture Change is set to Variation.</li> <li>■ After creating the elements, compile and download the elements to the HMI. If you press the Set Value element of \$327 and input a value other than 0, the State Graphic automatically changes to the set picture display according to the set Change Time (ms). You can also press the Set Value element of \$326 to input the value corresponding to the State Graphic at the same time. If you input 0 to the Set Value element of \$327, the State Graphic does not automatically change the state pictures.</li> </ul>				
	<p>HMI default value \$326 = 0</p> <p>\$327</p> <p>Change State</p> <p>Automatically switch the displaying picture on the HMI by setting \$327 to a non-zero value.</p>				

State Graphic supports four data types as shown in Table 12.1.4. To add or reduce the total number of states, you can simply increase or decrease the number of State Counts in the Properties window.

Table 12.1.4 Data Type of State Graphic

State Graphic																																											
Data Type	State Counts																																										
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p> <p><b>Detail</b></p> <table> <tr> <td>Data Type:</td> <td>Word</td> </tr> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td>State Counts:</td> <td>256</td> </tr> </table>	Data Type:	Word	Data Format:	Unsigned Decimal	State Counts:	256																																				
Data Type:	Word																																										
Data Format:	Unsigned Decimal																																										
State Counts:	256																																										
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>■ LSB is to first convert the data in the register to binary format, and then use the lowest non-zero bit to determine the current state of the object.</li> <li>■ If the Data Type is LSB, you can set 1 to 16 states except for State 0.</li> </ul> <p><b>Detail</b></p> <table> <tr> <td>Data Type:</td> <td>LSB</td> </tr> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td>State Counts:</td> <td>16</td> </tr> </table> <ul style="list-style-type: none"> <li>■ To display State 0, select LSB (Support State 0) for the Data Type.</li> </ul> <p><b>Detail</b></p> <table> <tr> <td>Data Type:</td> <td>LSB</td> </tr> <tr> <td>Data Format:</td> <td>Bit</td> </tr> <tr> <td></td> <td>Word</td> </tr> <tr> <td></td> <td>LSB</td> </tr> <tr> <td></td> <td><b>LSB (Support State 0)</b></td> </tr> <tr> <td></td> <td>To</td> </tr> </table> <ul style="list-style-type: none"> <li>■ If you selected LSB, the element is black when the state is 0.</li> </ul>  <ul style="list-style-type: none"> <li>■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in units of Word.</li> <li>■ The examples in the following table show how the state value is determined with the lowest non-zero bit of the binary value converted from a decimal value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.</li> </ul> <table border="1"> <thead> <tr> <th>Decimal</th> <th>Binary</th> <th>State value</th> </tr> </thead> <tbody> <tr> <td><b>0</b></td> <td><b>0000000000000000</b></td> <td><u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u></td> </tr> <tr> <td>1</td> <td>0000000000000001</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>2</td> <td>0000000000000010</td> <td>The lowest non-zero bit is bit 1, State = 2.</td> </tr> <tr> <td><b>3</b></td> <td><b>0000000000000011</b></td> <td><u>The lowest non-zero bit is bit 0, State = 1.</u></td> </tr> <tr> <td>4</td> <td>00000000000000100</td> <td>The lowest non-zero bit is bit 2, State = 3.</td> </tr> <tr> <td><b>7</b></td> <td><b>00000000000000111</b></td> <td><u>The lowest non-zero bit is bit 0, State = 1.</u></td> </tr> <tr> <td>8</td> <td>000000000000001000</td> <td>The lowest non-zero bit is bit 3, State = 4.</td> </tr> </tbody> </table>	Data Type:	LSB	Data Format:	Unsigned Decimal	State Counts:	16	Data Type:	LSB	Data Format:	Bit		Word		LSB		<b>LSB (Support State 0)</b>		To	Decimal	Binary	State value	<b>0</b>	<b>0000000000000000</b>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<b>3</b>	<b>0000000000000011</b>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.	<b>7</b>	<b>00000000000000111</b>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	8	000000000000001000	The lowest non-zero bit is bit 3, State = 4.
Data Type:	LSB																																										
Data Format:	Unsigned Decimal																																										
State Counts:	16																																										
Data Type:	LSB																																										
Data Format:	Bit																																										
	Word																																										
	LSB																																										
	<b>LSB (Support State 0)</b>																																										
	To																																										
Decimal	Binary	State value																																									
<b>0</b>	<b>0000000000000000</b>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>																																									
1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.																																									
2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.																																									
<b>3</b>	<b>0000000000000011</b>	<u>The lowest non-zero bit is bit 0, State = 1.</u>																																									
4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.																																									
<b>7</b>	<b>00000000000000111</b>	<u>The lowest non-zero bit is bit 0, State = 1.</u>																																									
8	000000000000001000	The lowest non-zero bit is bit 3, State = 4.																																									

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State Graphic			
Data Type	State Counts		
	Decimal	Binary	State value
LSB / LSB (Support State 0)	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.
	32	00000000000100000	The lowest non-zero bit is bit 5, State = 6.
	64	000000000001000000	The lowest non-zero bit is bit 6, State = 7.
	128	0000000000010000000	The lowest non-zero bit is bit 7, State = 8.
	256	00000000000100000000	The lowest non-zero bit is bit 8, State = 9.
	512	000000000001000000000	The lowest non-zero bit is bit 9, State = 10.
	1024	0000000000010000000000	The lowest non-zero bit is bit 10, State = 11.
	2048	00000000000100000000000	The lowest non-zero bit is bit 11, State = 12.
	4096	000000000001000000000000	The lowest non-zero bit is bit 12, State = 13.
	8192	0000000000010000000000000	The lowest non-zero bit is bit 13, State = 14.
	16384	00000000000100000000000000	The lowest non-zero bit is bit 14, State = 15.
	32768	000000000001000000000000000	The lowest non-zero bit is bit 15, State = 16.
Bit	If the Data Type is Bit, you can set only 2 states.		
	<a href="#">Detail</a>		
	Data Type:	Bit	<input type="button" value="▼"/>
	Data Format:	Unsigned Decimal	<input type="button" value="▼"/>
	State Counts:	2	<input type="button" value="▼"/>

When you double-click the State Graphic, the property page is shown as follows.

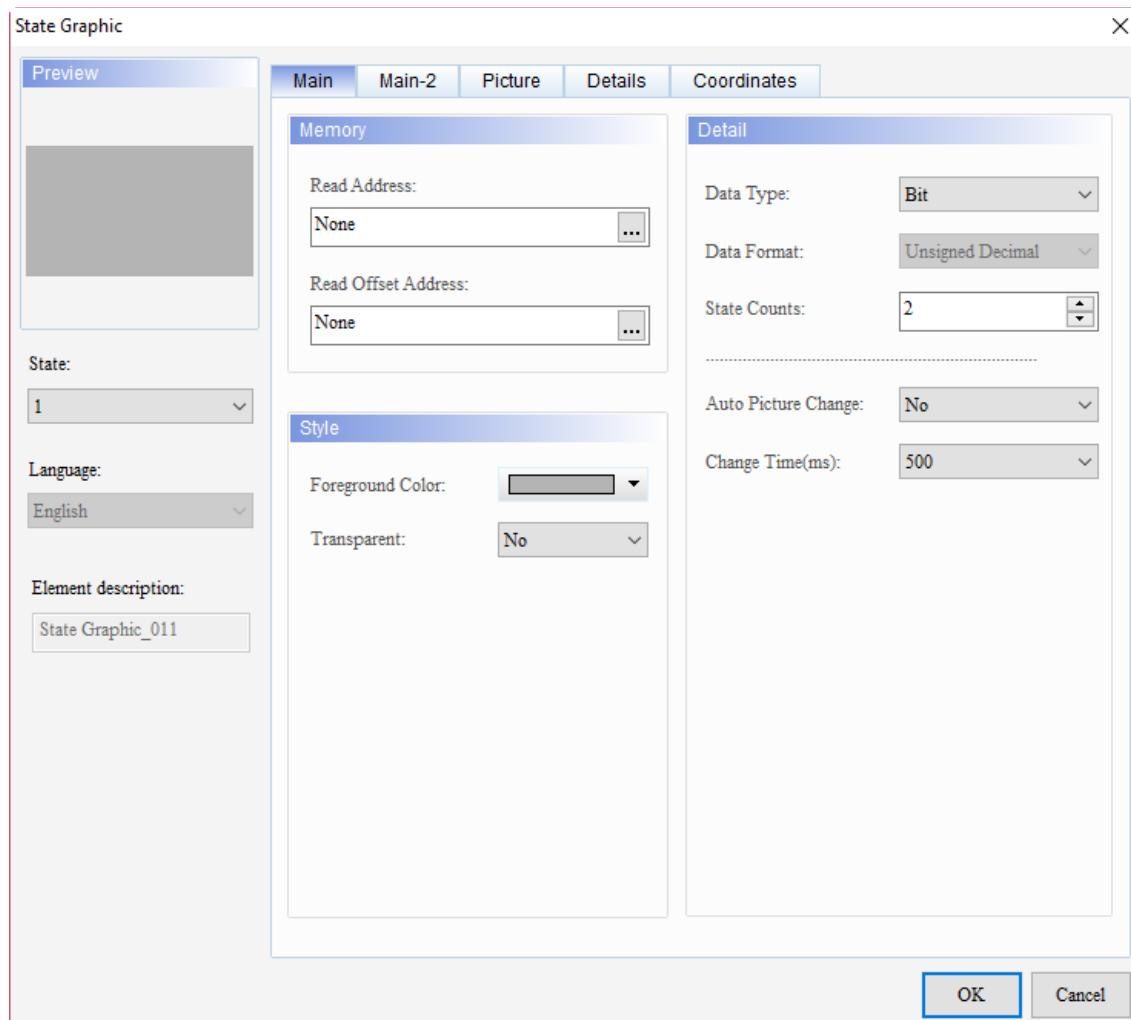


Figure 12.1.1 Properties of State Graphic

Table 12.1.5 Function page of State Graphic

State Graphic	
Function page	Description
Preview	State Graphic elements support viewing the multiple state values but do not support the multi-language data display.
Main	Set the Read Address, Read Offset Address, Foreground Color, and Transparent. Set the Data Type, Data Format, State Counts, Auto Picture Change, and Change Time(ms).
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

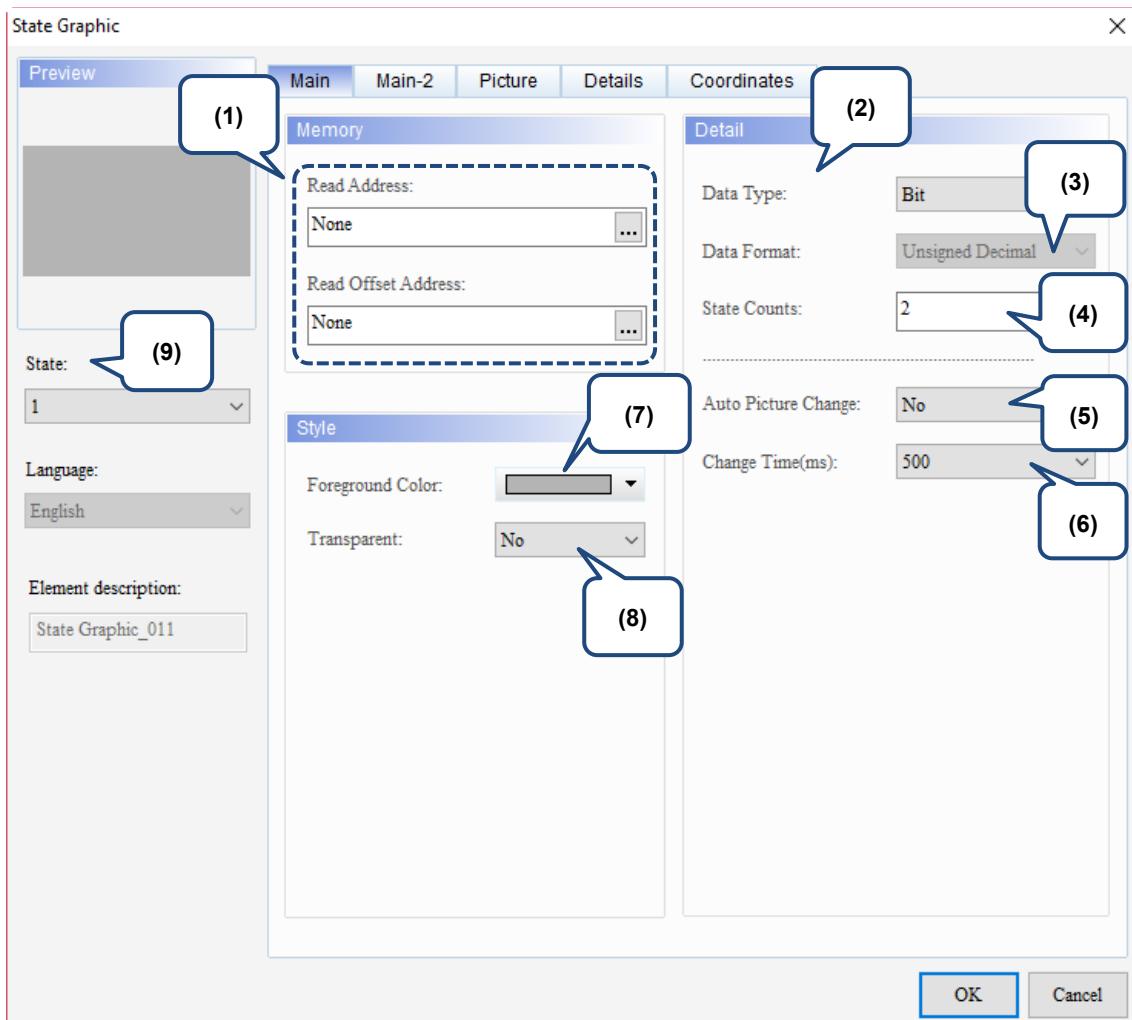
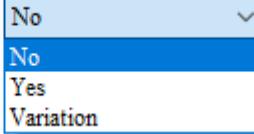
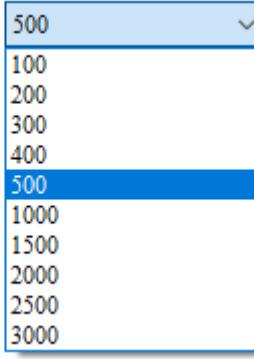
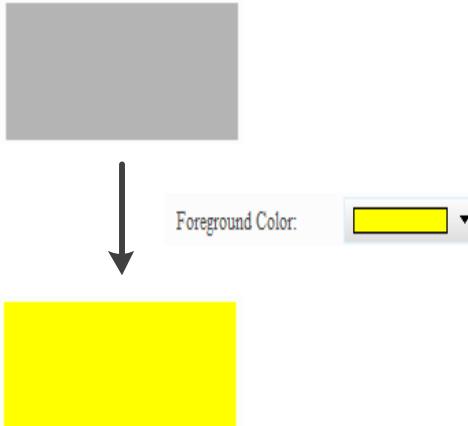
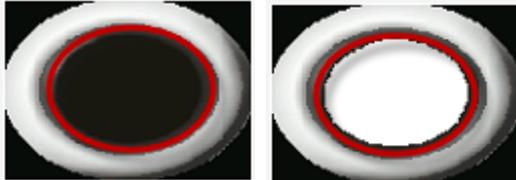
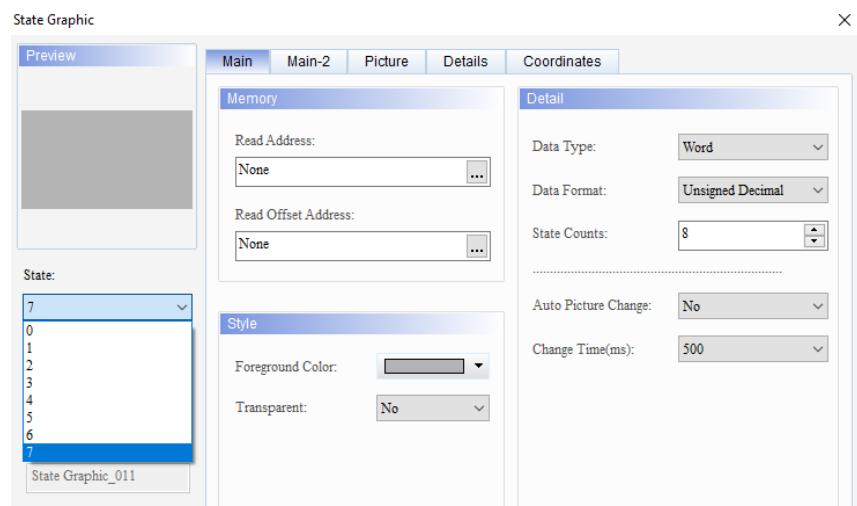


Figure 12.1.2 Main property page for the State Graphic element

No.	Property	Function description						
(1)	Read Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 12.1.4.</li> <li>Select Link Name or Device type. Refer to Chapter 5 Buttons for details.</li> </ul>						
	Read Offset Address	Refer to the instructions in Appendix D Write and Read Offset Addresses.						
(2)	Data Type	There are four data types: Bit, Word, LSB, and LSB (Support State 0). Refer to Table 12.1.4 for details.						
(3)	Data Format	<ul style="list-style-type: none"> <li>You can select the Data Format only when the Data Type is Word.</li> <li>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</li> </ul> <p style="text-align: center;">Detail</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Data Type:</td> <td style="padding: 5px;">Word</td> </tr> <tr> <td style="padding: 5px;">Data Format:</td> <td style="padding: 5px;">Unsigned Decimal</td> </tr> <tr> <td style="padding: 5px;">State Counts:</td> <td style="padding: 5px;">BCD Signed Decimal Unsigned Decimal Hexadecimal</td> </tr> </table>	Data Type:	Word	Data Format:	Unsigned Decimal	State Counts:	BCD Signed Decimal Unsigned Decimal Hexadecimal
Data Type:	Word							
Data Format:	Unsigned Decimal							
State Counts:	BCD Signed Decimal Unsigned Decimal Hexadecimal							

No.	Property	Function description
(4)	State Counts	Set the total state count for the State Graphic. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), you can set 17 states; and if the Data Type is Bit, you can set only 2 states. Refer to Table 12.1.4 for details.
(5)	Auto Picture Change	<ul style="list-style-type: none"> <li>There are three options for Auto Picture Change: Yes, No, and Variation.</li> </ul> 
(6)	Change Time(ms)	<ul style="list-style-type: none"> <li>Refer to Table 12.1.1, Table 12.1.2, and Table 12.1.3 for application examples of Auto Picture Change.</li> </ul>
(7)	Foreground Color	<ul style="list-style-type: none"> <li>The setting range for the picture change time is 100 - 3000 milliseconds (ms).</li> <li>The default is 500 ms.</li> </ul>  <p>■ Set the foreground color of the element.    ■ If you set Transparent to Yes, the setting of the foreground color is invalid.</p> 

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No.	Property	Function description
(8)	Transparent	<ul style="list-style-type: none"> <li>When you select Yes for Transparent, the result is as follows:</li> </ul>  <ul style="list-style-type: none"> <li>You can also specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the black part in the button, the software changes the black part into transparent.</li> </ul>  <ul style="list-style-type: none"> <li>If both the element and graphic are transparent, the result is as follows:</li> </ul> 
(9)	State	<p>By switching the State, you can preview or change the settings for each state of the element.</p> 

## ■ Main-2

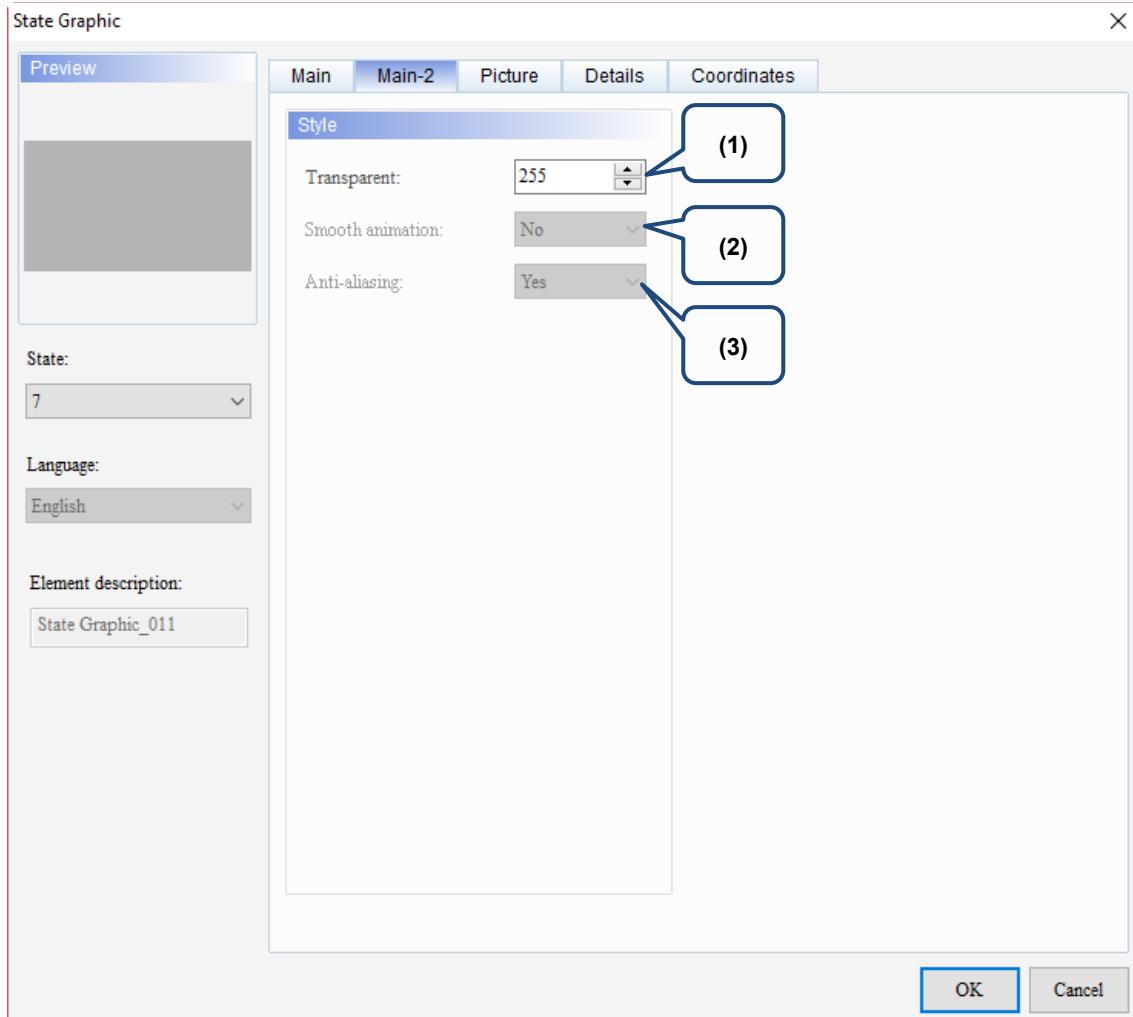


Figure 12.1.3 Main-2 property page for the State Graphic element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Picture

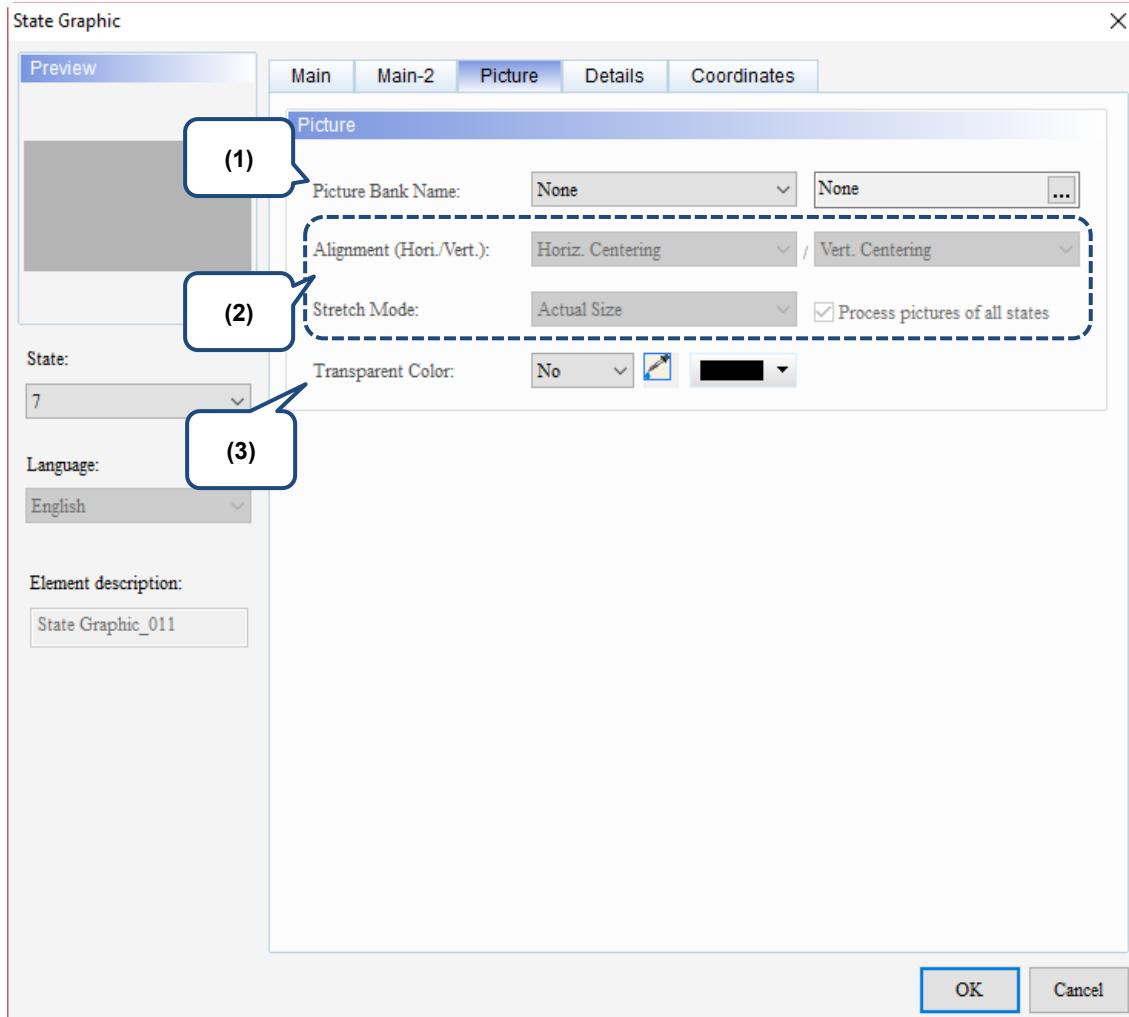
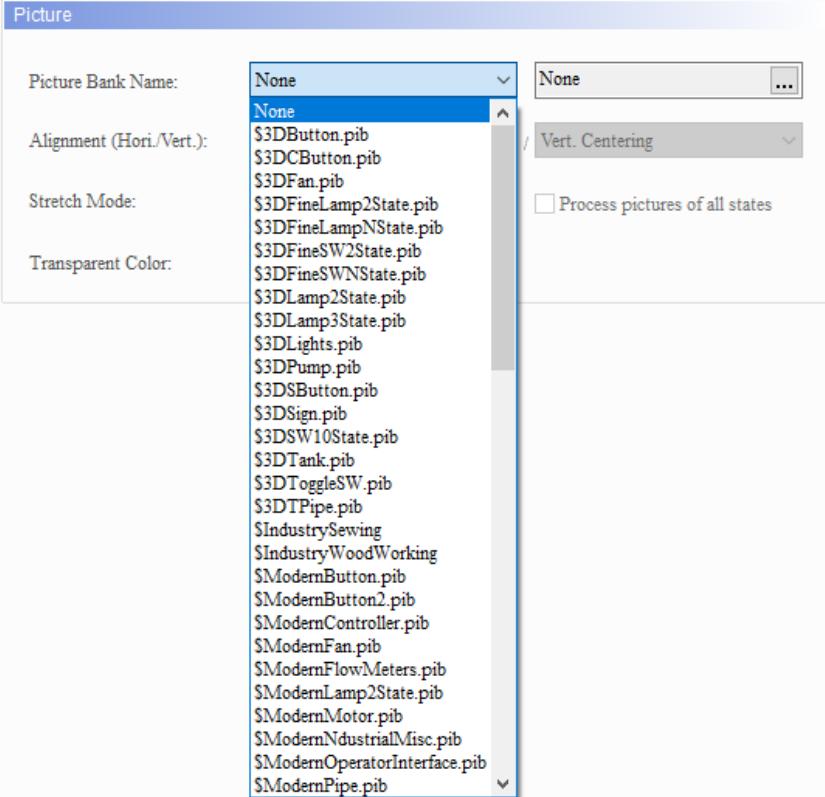
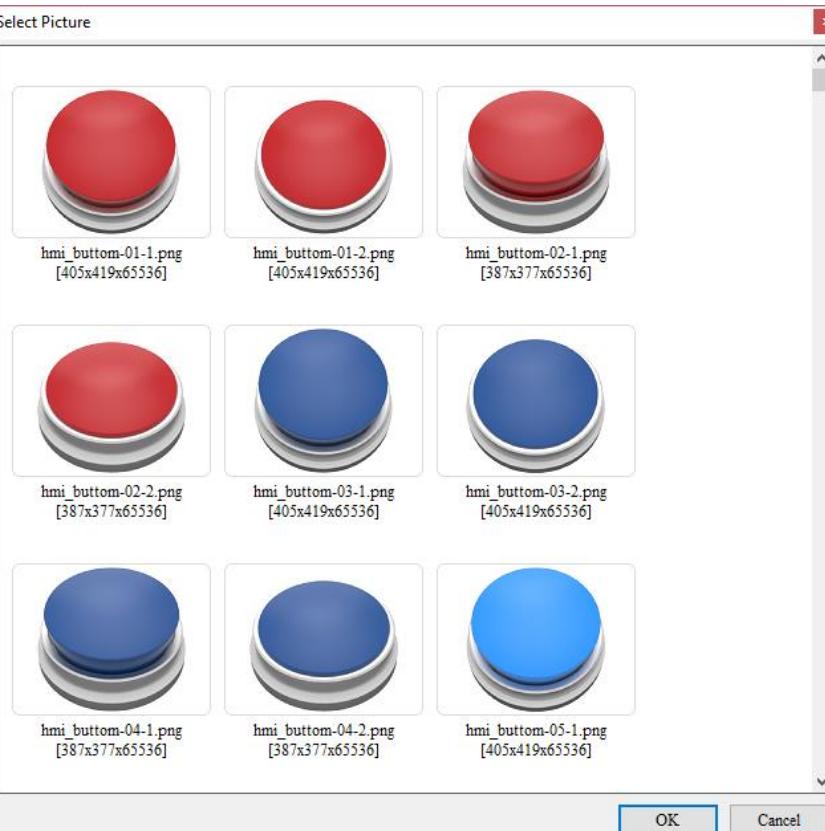
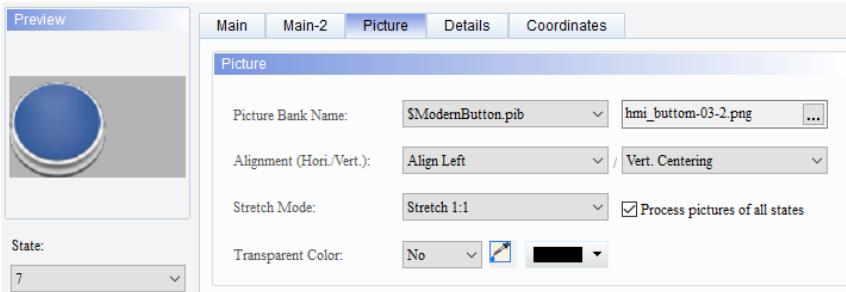


Figure 12.1.4 Picture property page for the State Graphic element

No.	Property	Function description									
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list box to select the picture bank provided by the software and then select the picture you need.</p>  <p>Picture</p> <p>Picture Bank Name: None</p> <p>Alignment (Hori./Vert.): Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p>\$None \$3DFineLamp2State.pib \$3DFineLampNState.pib \$3DFineSW2State.pib \$3DFineSWNState.pib \$3DLamp2State.pib \$3DLamp3State.pib \$3DLights.pib \$3DPump.pib \$3DSButton.pib \$3DSign.pib \$3DSW10State.pib \$3DTank.pib \$3DToggleSW.pib \$3DTPipe.pib \$IndustrySewing \$IndustryWoodWorking \$ModernButton.pib \$ModernButton2.pib \$ModernController.pib \$ModernFan.pib \$ModernFlowMeters.pib \$ModernLamp2State.pib \$ModernMotor.pib \$ModernIndustrialMisc.pib \$ModernOperatorInterface.pib \$ModernPipe.pib</p> <p>Select Picture</p>  <table border="1"> <tbody> <tr> <td> hmi_button-01-1.png [405x419x65536]</td> <td> hmi_button-01-2.png [405x419x65536]</td> <td> hmi_button-02-1.png [387x377x65536]</td> </tr> <tr> <td> hmi_button-02-2.png [387x377x65536]</td> <td> hmi_button-03-1.png [405x419x65536]</td> <td> hmi_button-03-2.png [405x419x65536]</td> </tr> <tr> <td> hmi_button-04-1.png [387x377x65536]</td> <td> hmi_button-04-2.png [387x377x65536]</td> <td> hmi_button-05-1.png [405x419x65536]</td> </tr> </tbody> </table> <p>OK Cancel</p>	 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]	 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]	 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]
 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]									
 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]									
 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]									

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No.	Property	Function description									
	Alignment	<p>You can use the alignment options to set how pictures are aligned.</p>  <p>The screenshot shows the 'Picture' tab of the properties dialog. It includes a preview window showing a blue button, a state dropdown set to '7', and a main configuration area. In the main area, 'Picture Bank Name' is set to '\$ModernButton.pic' with 'hmi_button-03-2.png' selected. 'Alignment (Hori./Vert.)' is set to 'Align Left' and 'Vert. Centering'. 'Stretch Mode' is set to 'Stretch 1:1'. A checkbox 'Process pictures of all states' is checked. A 'Transparent Color' section shows a color swatch set to 'No' and a brush icon.</p>									
(2)	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Assuming that the element has multiple states and some pictures do not fill the full element display area, if you select the <b>Process pictures of all states</b> check box, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size									
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
(3)	Transparent Color	<ul style="list-style-type: none"> <li>Specify a color in the picture and turn this color into transparent.</li> <li> is for selecting the transparent color. When you set the Foreground Color to blue, you can use  to select the white part in the calendar, and the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</li> </ul> <p>Foreground Color: </p> 									

## ■ Details

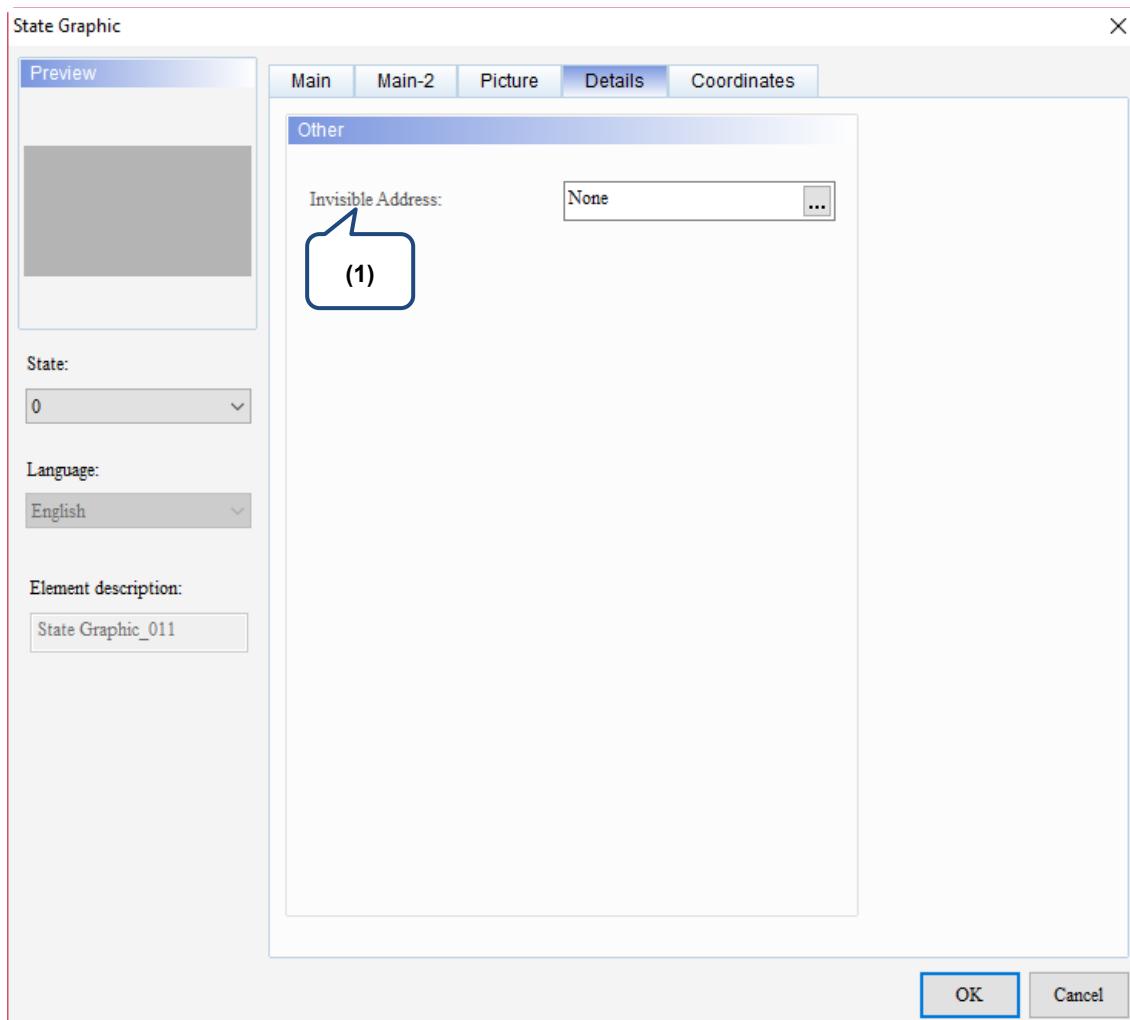


Figure 12.1.5 Details property page for the State Graphic element

No.	Property	Function description						
(1)	Invisible Address	When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.						
		<table border="1"> <tr> <td>Invisible Address is Off</td> <td></td> <td>Invisible Address \$9.0 OFF</td> </tr> <tr> <td>Invisible Address is On</td> <td><div style="border: 2px dashed #ccc; padding: 5px;">Element is invisible</div></td> <td>Invisible Address \$9.0 ON</td> </tr> </table>	Invisible Address is Off		Invisible Address \$9.0 OFF	Invisible Address is On	<div style="border: 2px dashed #ccc; padding: 5px;">Element is invisible</div>	Invisible Address \$9.0 ON
Invisible Address is Off		Invisible Address \$9.0 OFF						
Invisible Address is On	<div style="border: 2px dashed #ccc; padding: 5px;">Element is invisible</div>	Invisible Address \$9.0 ON						

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## ■ Coordinates

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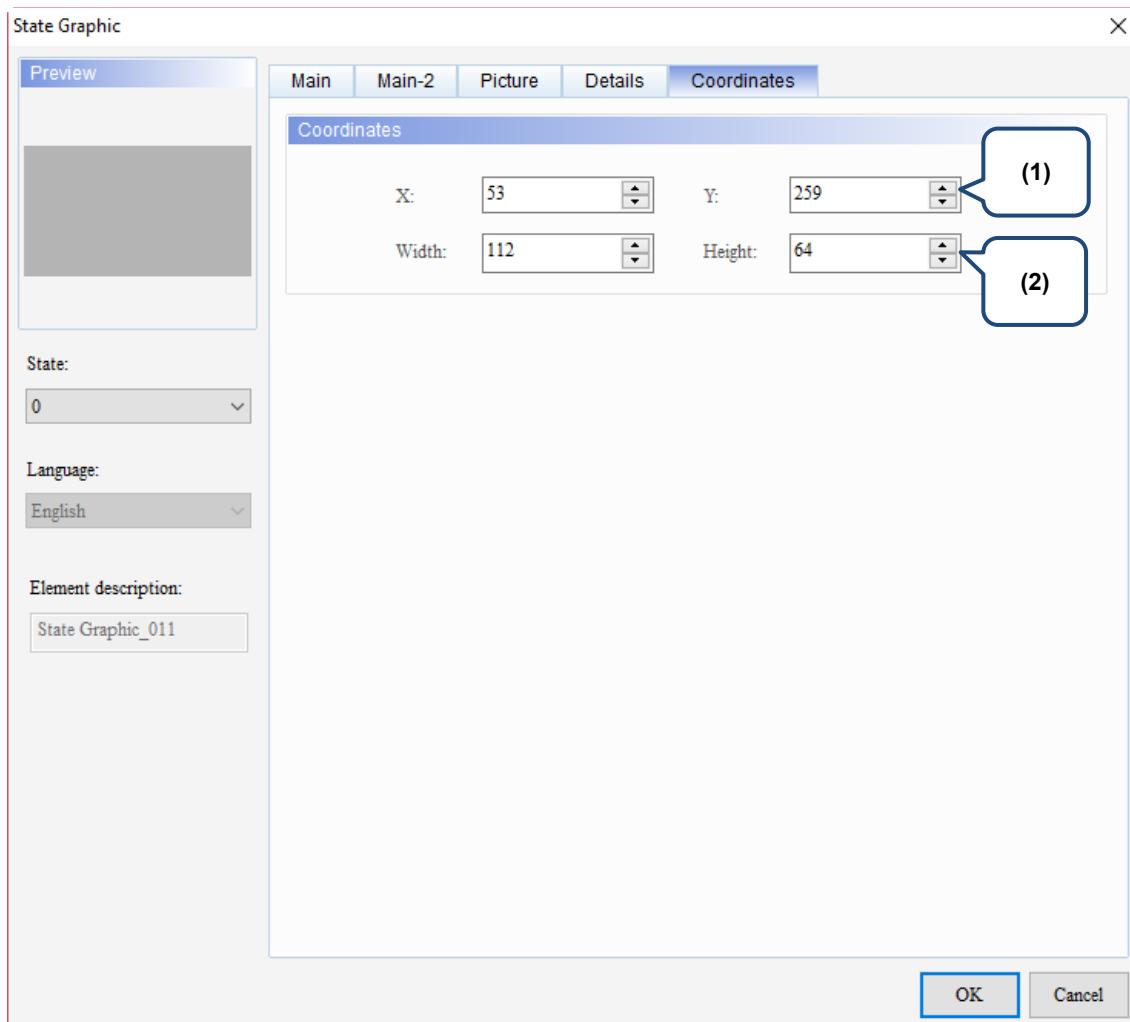


Figure 12.1.6 Coordinates property page for the State Graphic element

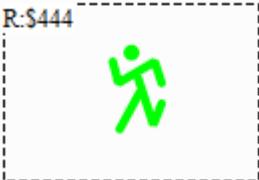
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 12.2 Animated Graphic

You can create multiple state pictures or import .GIF images with the Animated Graphic element. The previous version of DOPSoft splits a GIF file into multiple images, and then you need to set the corresponding states one by one, which is inconvenient for programming. The new version of DOPSoft has improved the method for importing GIF images, which is one state corresponds to one GIF image.

The Read Address of the Animated Graphic element enables the read values to correspond to the switching graphics set in the Animated Graphic element, as well as specifying the target position for the element to move to. Refer to Table 12.2.1 for the Animated Graphic example.

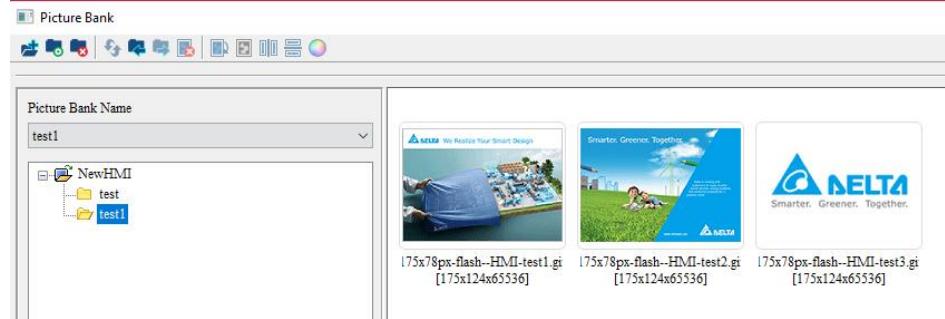
Table 12.2.1 Animated Graphic example

Animated Graphic	
Animated Graphic element	
	Read Address
Read Address	\$444
	
Set the properties for the Animated Graphic element	<ul style="list-style-type: none"> <li>■ Set the State Counts to 3; this means to import three GIF images.</li> <li>■ Select Yes for Clear Picture; this means the graphic of the previous state does not stay when the HMI switches to the next graphic.</li> </ul>

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### Animated Graphic

- Create a new picture bank named “test1” and import three GIF images.



- Go to the Picture page of the Animated Graphic element, and import images for State 0, State 1, and State 2 respectively.

Import File

	State 0	 R:\$444: We Realize Your Smart Design
	State 1	 R:\$444 Greener Together
	State 2	 R:\$444

Go to [Options] > [Clock Macro]:

- \$445 indicates [Read Address+1], which is the X coordinate (horizontal axis) of the Animated Graphic element.
- \$446 indicates [Read Address+2], which is the Y coordinate (vertical axis) of the Animated Graphic element.

Edit Clock Macro

```
*[&Clock Macro]
1 $445 = $445 + 1
2 $446 = $446 + 1
3 IF $444 == 3 then goto label 1
4   $444 = $444 + 1
5 IF $444 < 3 then goto label 2
6
7 label 1
8 $444 = 0
9
10 label 2
11 IF $445 >= 800
12 IF $446 >= 480
13   $445 = 0
14   $446 = 0
15 ENDIF
16 ENDIF|
```

The screenshot shows the 'Clock Macro' editor window with the following code:

```
*[&Clock Macro]
1 $445 = $445 + 1
2 $446 = $446 + 1
3 IF $444 == 3 then goto label 1
4   $444 = $444 + 1
5 IF $444 < 3 then goto label 2
6
7 label 1
8 $444 = 0
9
10 label 2
11 IF $445 >= 800
12 IF $446 >= 480
13   $445 = 0
14   $446 = 0
15 ENDIF
16 ENDIF|
```

**Animated Graphic**

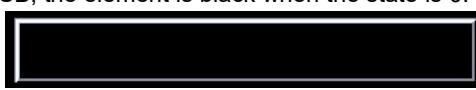
After you compile and download the screen data to the HMI, these three GIF images keep switching, and the positions are changed according to the memory addresses read by the horizontal and vertical axes.



Execution results



Table 12.2.2 Data Type of Animated Graphic

Animated Graphic	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 states for the State Counts.</p> <p><b>Detail</b></p> <p>Data Type: Word</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 256</p>
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>■ LSB is to first convert the data in the register to binary format, and then use the lowest non-zero bit to determine the current state of the object.</li> <li>■ If the Data Type is LSB, you can set 1 to 16 states except for State 0.</li> </ul> <p><b>Detail</b></p> <p>Data Type: LSB</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 16</p> <ul style="list-style-type: none"> <li>■ To display State 0, select LSB (Support State 0) for the Data Type.</li> </ul> <p><b>Detail</b></p> <p>Data Type: LSB</p> <p>Data Format: Word LSB <b>LSB (Support State 0)</b></p> <p>State Counts: 16</p> <ul style="list-style-type: none"> <li>■ If you selected LSB, the element is black when the state is 0.</li> </ul>  <ul style="list-style-type: none"> <li>■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in units of Word.</li> </ul>

Animated Graphic																																																													
Data Type	State Counts																																																												
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>The examples in the following table show how the state value is determined with the lowest non-zero bit of the binary value converted from a decimal value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.</li> </ul> <table border="1"> <thead> <tr> <th>Decimal</th><th>Binary</th><th>State value</th></tr> </thead> <tbody> <tr> <td><b>0</b></td><td><b>0000000000000000</b></td><td><u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u></td></tr> <tr> <td>1</td><td>0000000000000001</td><td>The lowest non-zero bit is bit 0, State = 1.</td></tr> <tr> <td>2</td><td>0000000000000010</td><td>The lowest non-zero bit is bit 1, State = 2.</td></tr> <tr> <td><b>3</b></td><td><b>0000000000000011</b></td><td><u>The lowest non-zero bit is bit 0. State = 1.</u></td></tr> <tr> <td>4</td><td>00000000000000100</td><td>The lowest non-zero bit is bit 2, State = 3.</td></tr> <tr> <td><b>7</b></td><td><b>00000000000000111</b></td><td><u>The lowest non-zero bit is bit 0. State = 1.</u></td></tr> <tr> <td>8</td><td>0000000000001000</td><td>The lowest non-zero bit is bit 3, State = 4.</td></tr> <tr> <td>16</td><td>00000000000010000</td><td>The lowest non-zero bit is bit 4, State = 5.</td></tr> <tr> <td>32</td><td>00000000000100000</td><td>The lowest non-zero bit is bit 5, State = 6.</td></tr> <tr> <td>64</td><td>00000000001000000</td><td>The lowest non-zero bit is bit 6, State = 7.</td></tr> <tr> <td>128</td><td>00000000010000000</td><td>The lowest non-zero bit is bit 7, State = 8.</td></tr> <tr> <td>256</td><td>000000001000000000</td><td>The lowest non-zero bit is bit 8, State = 9.</td></tr> <tr> <td>512</td><td>000000010000000000</td><td>The lowest non-zero bit is bit 9, State = 10.</td></tr> <tr> <td>1024</td><td>000001000000000000</td><td>The lowest non-zero bit is bit 10, State = 11.</td></tr> <tr> <td>2048</td><td>000010000000000000</td><td>The lowest non-zero bit is bit 11, State = 12.</td></tr> <tr> <td>4096</td><td>0001000000000000000</td><td>The lowest non-zero bit is bit 12, State = 13.</td></tr> <tr> <td>8192</td><td>00100000000000000000</td><td>The lowest non-zero bit is bit 13, State = 14.</td></tr> <tr> <td>16384</td><td>01000000000000000000</td><td>The lowest non-zero bit is bit 14, State = 15.</td></tr> <tr> <td>32768</td><td>10000000000000000000</td><td>The lowest non-zero bit is bit 15, State = 16.</td></tr> </tbody> </table>	Decimal	Binary	State value	<b>0</b>	<b>0000000000000000</b>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<b>3</b>	<b>0000000000000011</b>	<u>The lowest non-zero bit is bit 0. State = 1.</u>	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.	<b>7</b>	<b>00000000000000111</b>	<u>The lowest non-zero bit is bit 0. State = 1.</u>	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	00000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	00000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	00000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	00000000010000000	The lowest non-zero bit is bit 7, State = 8.	256	000000001000000000	The lowest non-zero bit is bit 8, State = 9.	512	000000010000000000	The lowest non-zero bit is bit 9, State = 10.	1024	000001000000000000	The lowest non-zero bit is bit 10, State = 11.	2048	000010000000000000	The lowest non-zero bit is bit 11, State = 12.	4096	0001000000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	00100000000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	01000000000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	10000000000000000000	The lowest non-zero bit is bit 15, State = 16.
Decimal	Binary	State value																																																											
<b>0</b>	<b>0000000000000000</b>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>																																																											
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128	00000000010000000	The lowest non-zero bit is bit 7, State = 8.																																																											
256	000000001000000000	The lowest non-zero bit is bit 8, State = 9.																																																											
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16384	01000000000000000000	The lowest non-zero bit is bit 14, State = 15.																																																											
32768	10000000000000000000	The lowest non-zero bit is bit 15, State = 16.																																																											

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When you double-click the Animated Graphic, the property page is shown as follows.

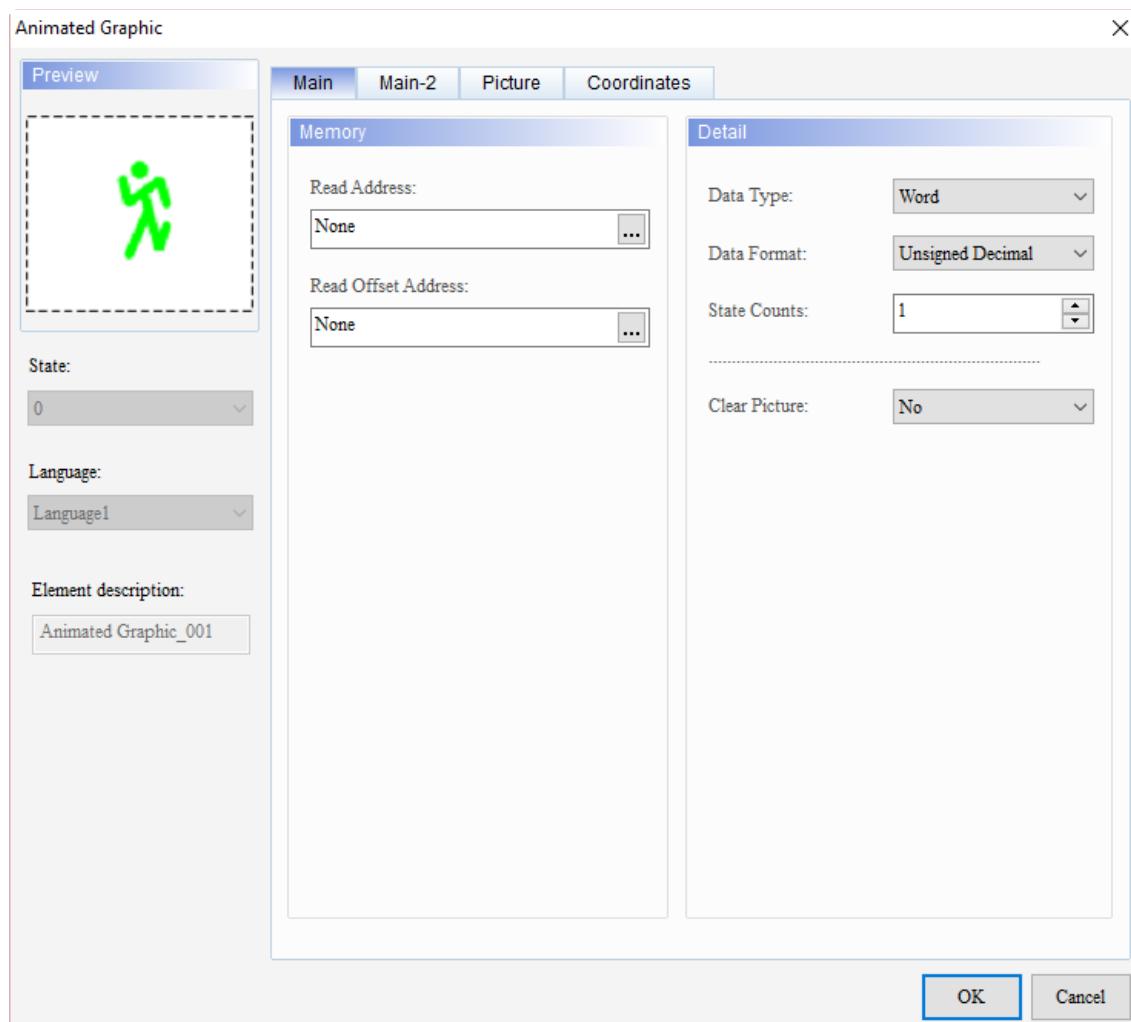


Figure 12.2.1 Properties of Animated Graphic

Figure 12.2.3 Function page of Animated Graphic

Animated Graphic	
Function page	Description
Preview	Animated Graphic elements support viewing the multiple state values but do not support the multi-language data display.
Main	Set the Read Address, Read Offset Address, Data Type, Data Format, State Counts, and Clear Picture.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

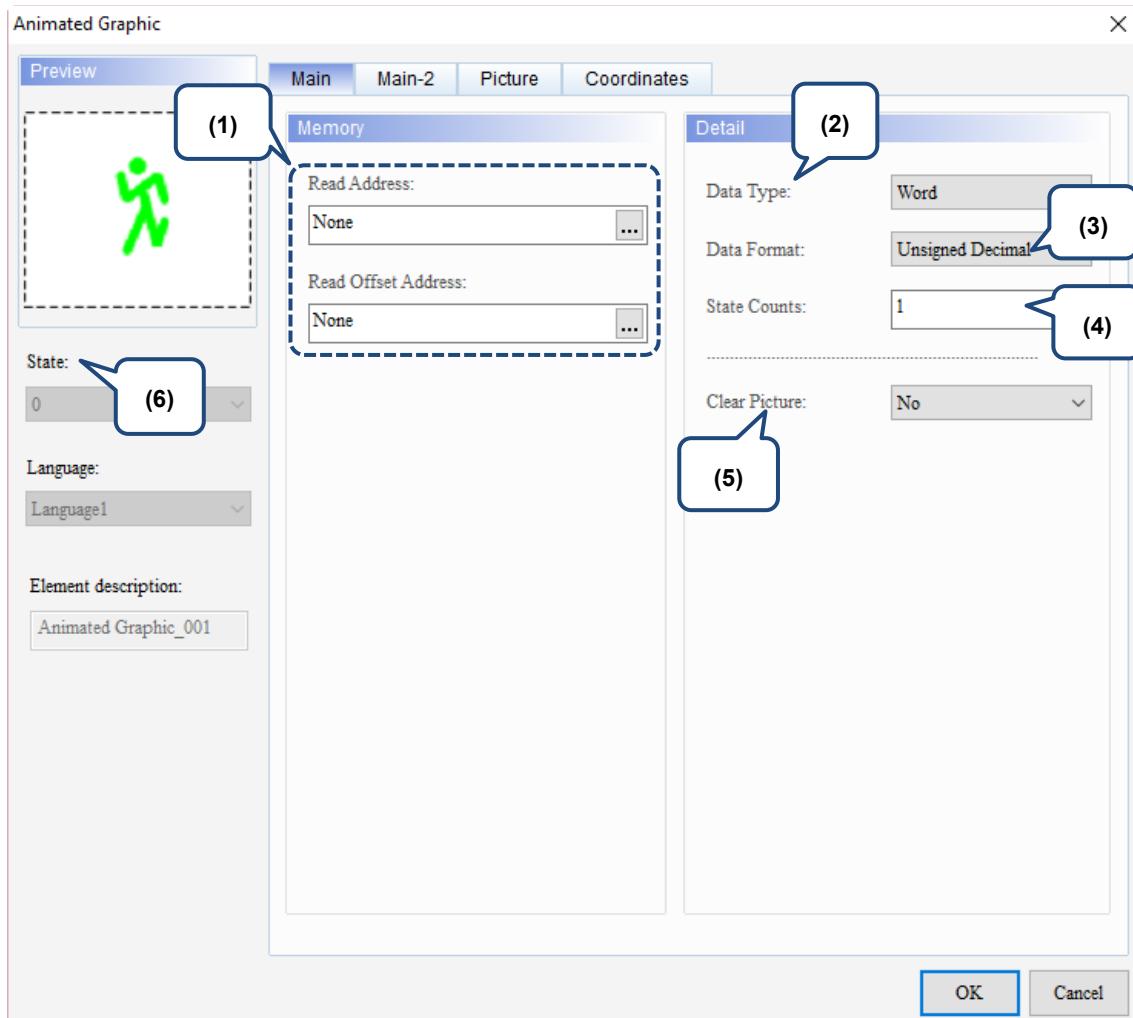
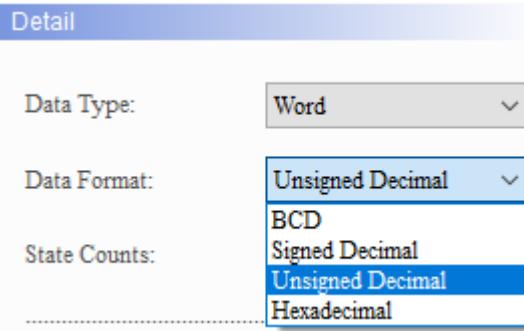
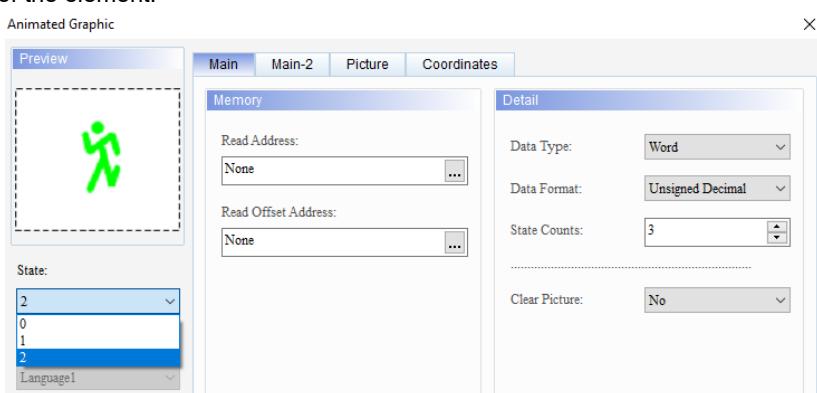


Figure 12.2.2 Main property page for the Animated Graphic element

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>■ You can select the internal memory or the controller register address.</li> <li>■ The Animated Graphic switches according to the value of the Read Address.</li> <li>■ [Read Address+1] is the position where the horizontal axis (X) of the Animated Graphic element moves.</li> <li>■ [Read Address+2] is the position where the vertical axis (Y) of the Animated Graphic element moves.</li> <li>■ Select Link Name or Device type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Read Offset Address	Refer to the instructions in Appendix D Write and Read Offset Addresses.
(2)	Data Type	There are three data types: Word, LSB, and LSB (Support State 0). Refer to Table 12.2.2 for details.

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No.	Property	Function description
(3)	Data Format	<ul style="list-style-type: none"> <li>You can select the Data Format only when the Data Type is Word.</li> <li>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</li> </ul> 
(4)	State Counts	Set the total state count for the Animated Graphic element. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; and if the Data Type is LSB (Support State 0), you can set 17 states. Refer to Table 12.2.2 for details.
(5)	Clear Picture	<ul style="list-style-type: none"> <li>The default setting is Yes, indicating that the HMI clears the graphic of the previous state during animation and when switching the state graphics.</li> <li>When you select No for Clear Picture, the HMI displays the graphic of the previous state when switching to the next graphic.</li> </ul>
(6)	State	<p>By switching the State, you can preview or change the settings for each state of the element.</p> 

## ■ Main-2

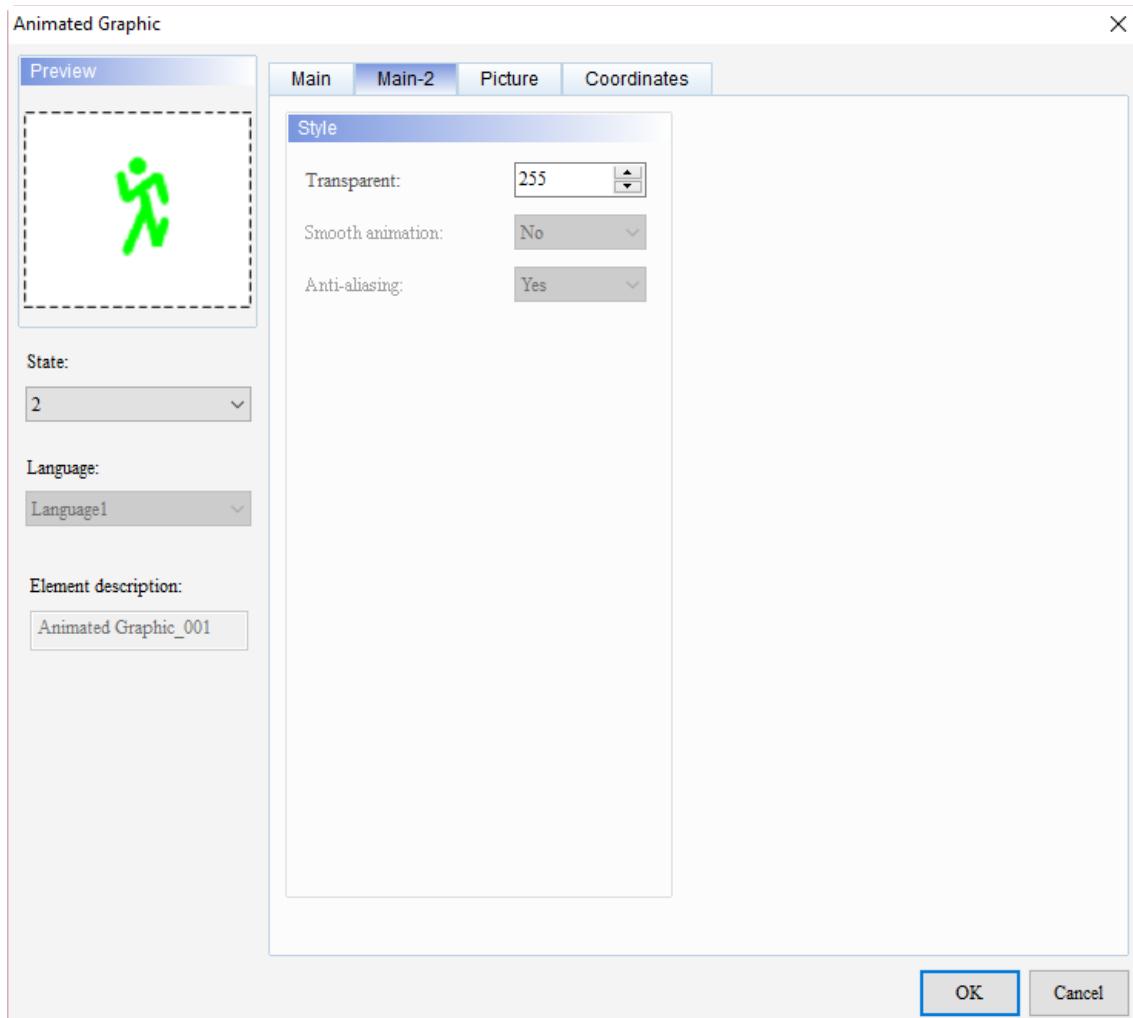


Figure 12.2.3 Main-2 property page for the Animated Graphic element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Picture

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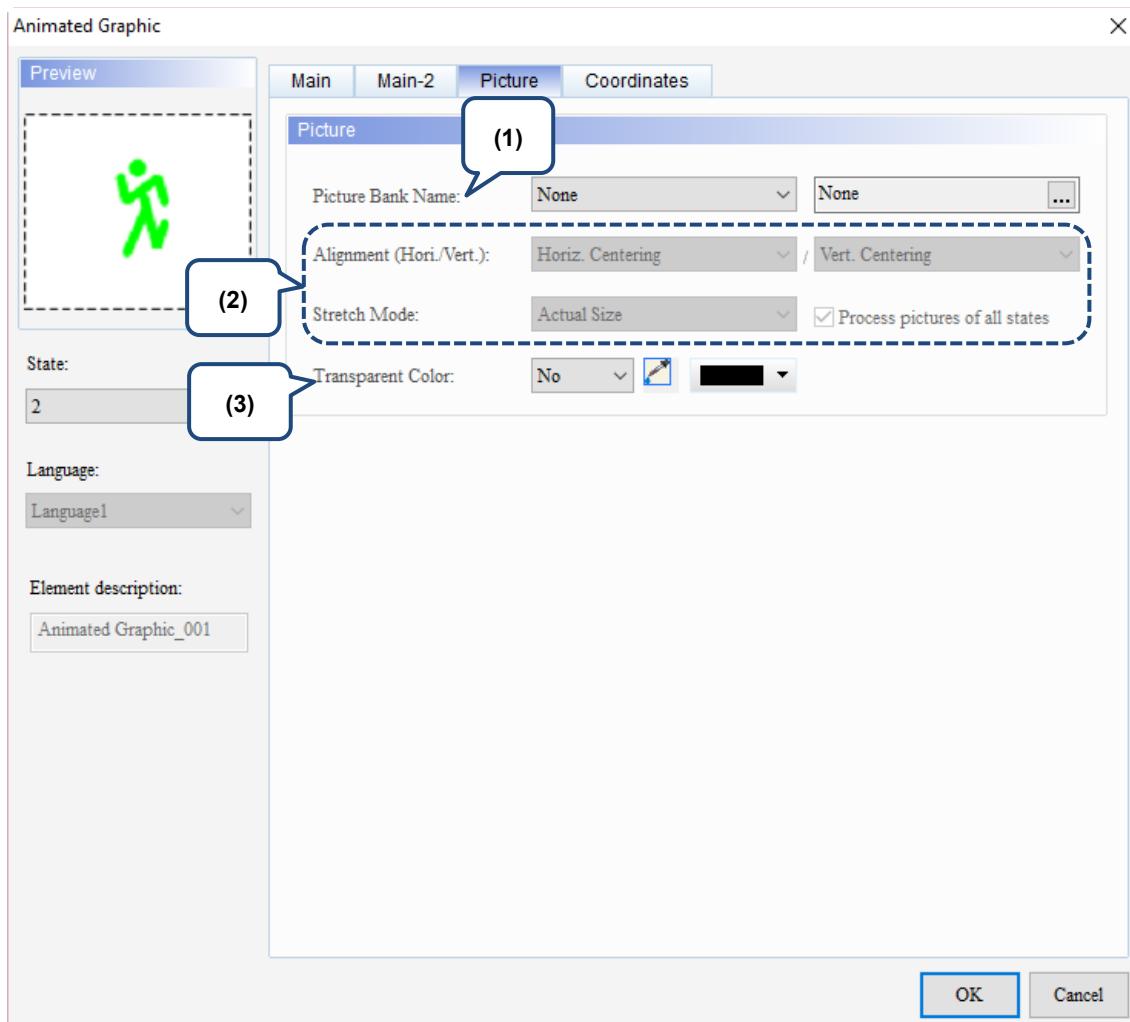
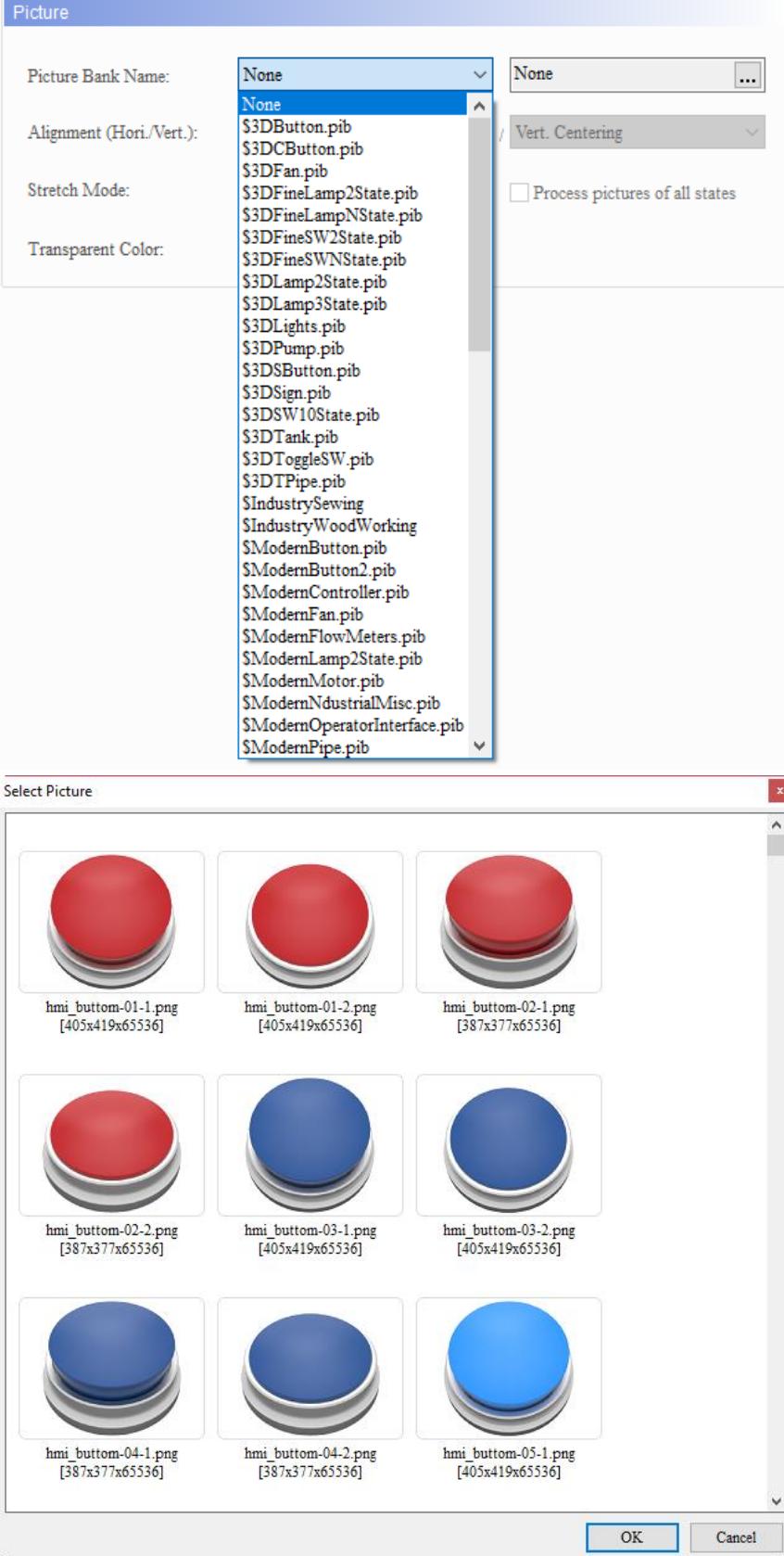
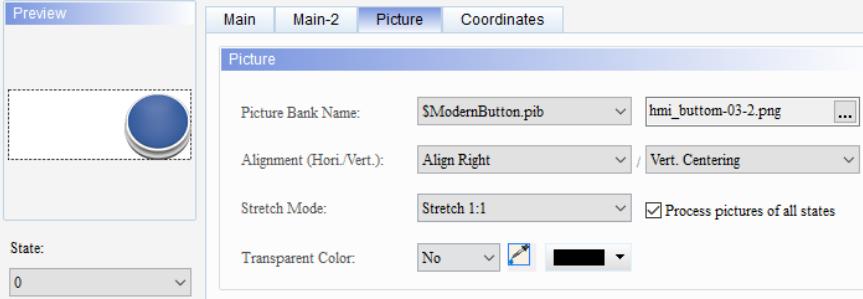


Figure 12.2.4 Picture property page for the Animated Graphic element

No.	Property	Function description									
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list box to select the picture bank provided by the software and then select the picture you need.</p>  <p>Picture Bank Name:</p> <ul style="list-style-type: none"> <li>None</li> <li>None</li> <li>\$3DButton.pib</li> <li>\$3DCButton.pib</li> <li>\$3DFan.pib</li> <li>\$3DFineLamp2State.pib</li> <li>\$3DFineLampNState.pib</li> <li>\$3DFineSW2State.pib</li> <li>\$3DFineSWNState.pib</li> <li>\$3DLamp2State.pib</li> <li>\$3DLamp3State.pib</li> <li>\$3DLights.pib</li> <li>\$3DPump.pib</li> <li>\$3DSButton.pib</li> <li>\$3DSign.pib</li> <li>\$3DSW10State.pib</li> <li>\$3DTank.pib</li> <li>\$3DToggleSW.pib</li> <li>\$3DTPipe.pib</li> <li>\$IndustrySewing</li> <li>\$IndustryWoodWorking</li> <li>\$ModernButton.pib</li> <li>\$ModernButton2.pib</li> <li>\$ModernController.pib</li> <li>\$ModernFan.pib</li> <li>\$ModernFlowMeters.pib</li> <li>\$ModernLamp2State.pib</li> <li>\$ModernMotor.pib</li> <li>\$ModernIndustrialMisc.pib</li> <li>\$ModernOperatorInterface.pib</li> <li>\$ModernPipe.pib</li> </ul> <p>Select Picture</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;"> hmi_button-01-1.png [405x419x65536]</td> <td style="text-align: center; padding: 5px;"> hmi_button-01-2.png [405x419x65536]</td> <td style="text-align: center; padding: 5px;"> hmi_button-02-1.png [387x377x65536]</td> </tr> <tr> <td style="text-align: center; padding: 5px;"> hmi_button-02-2.png [387x377x65536]</td> <td style="text-align: center; padding: 5px;"> hmi_button-03-1.png [405x419x65536]</td> <td style="text-align: center; padding: 5px;"> hmi_button-03-2.png [405x419x65536]</td> </tr> <tr> <td style="text-align: center; padding: 5px;"> hmi_button-04-1.png [387x377x65536]</td> <td style="text-align: center; padding: 5px;"> hmi_button-04-2.png [387x377x65536]</td> <td style="text-align: center; padding: 5px;"> hmi_button-05-1.png [405x419x65536]</td> </tr> </table> <p style="text-align: right;">OK Cancel</p>	 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]	 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]	 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]
 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]									
 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]									
 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]									

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No.	Property	Function description									
	Alignment	<p>You can use the alignment options to set how pictures are aligned.</p> <p>Animated Graphic</p> 									
(2)	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Stretch All</td> <td>Stretch 1:1</td> <td>Actual Size</td> </tr> <tr> <td>If you select Stretch All, the picture displays in its actual size based on the element width and length.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> <ul style="list-style-type: none"> <li>Assuming that the element has multiple states and some pictures do not fill the full element display area, if you select the <b>Process pictures of all states</b> check box, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture displays in its actual size based on the element width and length.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size									
If you select Stretch All, the picture displays in its actual size based on the element width and length.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									
											
(3)	Transparent Color	<ul style="list-style-type: none"> <li>Specifies a color in the picture and turn this color into transparent.</li> <li> is for selecting the transparent color. When you set the Foreground Color to blue, you can use  to select the white part in the calendar, and the software changes the white part into transparent, which you can see becomes identical to the element foreground color.</li> </ul> <p>Foreground Color: </p> 									

## ■ Coordinates

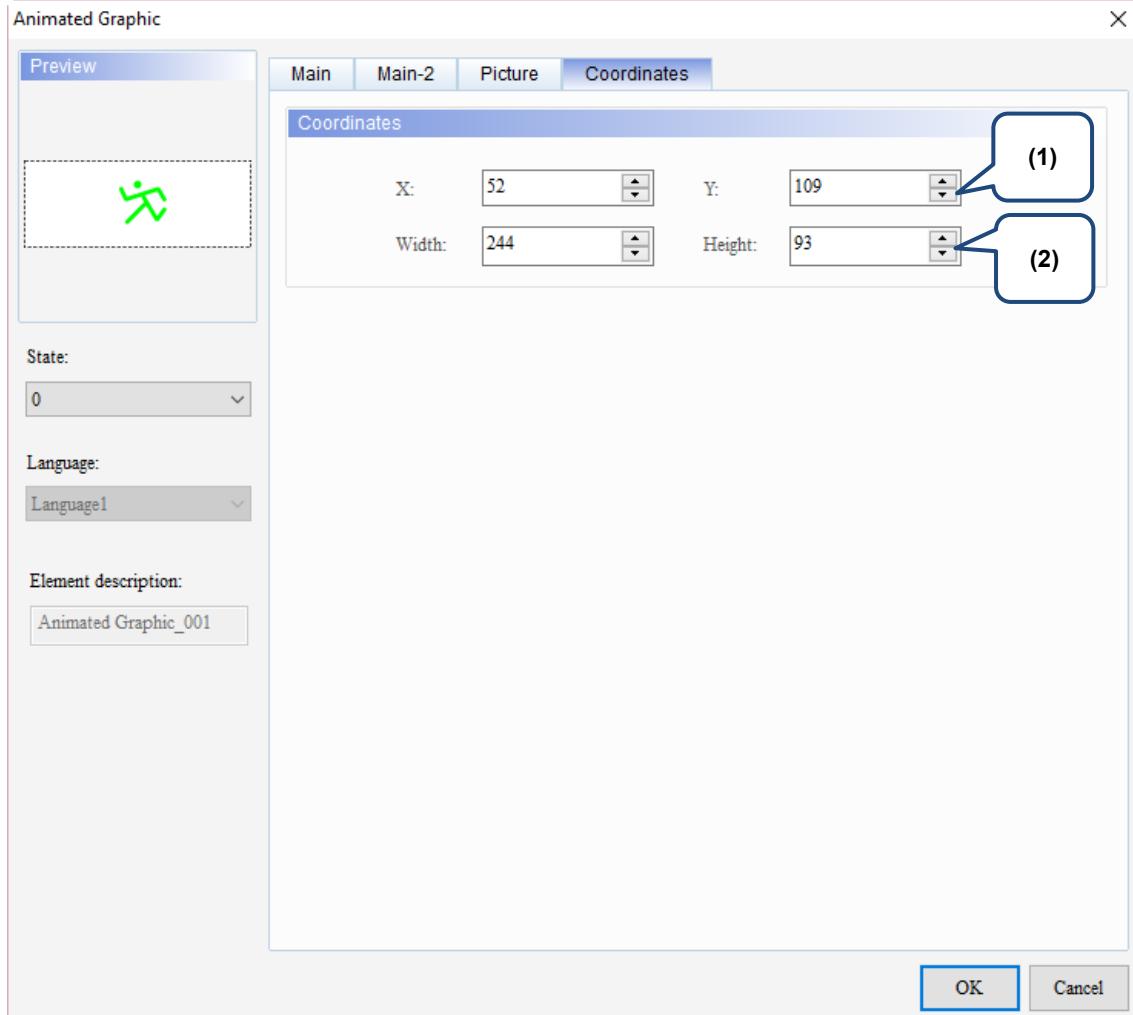


Figure 12.2.5 Coordinates property page for the Animated Graphic element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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## 12.3 Real-time Image

The Real-time Image is mainly for you to use the ImgTrans.dll library provided by DOPSoft to write external applications and upload graphics to the HMI. Multiple Real-time Image elements can be displayed in one editing screen. The software dynamically configures the available memory capacity according to the created Real-time Image elements and the sizes of the graphics to upload. Refer to Table 12.3.1 for the Real-time Image example.

### 1. Data structure definition:

```
typedef struct _ETHER_INFO
```

```
{
```

```
    char      szIP[32];  
    WORD     IPPort;
```

```
} ETHER_INFO;
```

,szIP is a string indicating the IP address of the Ethernet communication

,IPPort is the port of the Ethernet communication

```
typedef struct _COMM_INFO
```

```
{
```

```
    char      szCOM[10];
```

```
    unsigned long dwStation
```

```
    ETHER_INFO EtherInfo;
```

```
} COMM_INFO;
```

,szCOM is a string, and the input values are COM1, COM2, COM3, ...; if you are using Ethernet, set this string to "ETHERNET".

,If there is no station number, set dwStation to -1 (if using Ethernet, set dwStation to -1);

if there is a station number, set dwStation to a function which is greater than 0.

### 2. Function list:

- (1) int hmOpen(const COMM\_INFO\* pCommInfo);
- (2) int hmSendImageFromFile(LPCTSTR szFileName);
- (3) int hmSendImageFromFileByStation(LPCTSTR szFileName, int nStation);
- (4) HANDLE hmAsyncSendImageFromFile(LPCTSTR szFileName);
- (5) HANDLE hmAsyncSendImageFromFileByStation(LPCTSTR szFileName, int nStation);
- (6) int hmSendImage(HBITMAP hbmp);
- (7) int hmSendImageByStation(HBITMAP hbmp, int nStation);
- (8) HANDLE hmAsyncSendImage(HBITMAP hbmp);
- (9) HANDLE hmAsyncSendImageByStation(HBITMAP hbmp, int nStation);
- (10) int hmAbortAction();
- (11) int hmClose();

### 3. Function description:

(1) Function: int hmOpen(const COMM\_INFO\* pCommInfo);

Input value: COMM\_INFO structure

Return value: 1 is success; 0 is failure

Description: enable the HMI communication and input the string for COM Port, such as COM1 and COM2.

(2) Function: int hmSendImageFromFile(LPCTSTR szFileName);

Input value: graphic file name

Return value: 1 is success; 0 is failure

Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI. This function is a synchronous function, and this function does not return the execution result until the data transfer is complete.

(3) Function: int hmSendImageFromFileByStation(LPCTSTR szFileName, int nStation);

Input value: graphic file name; HMI station number (must be greater than 0)

Return value: 1 is success; 0 is failure

Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI with the specified station number. This function is a synchronous function, and this function does not return the execution result until the data transfer is complete.

(4) Function: HANDLE hmAsyncSendImageFromFile(LPCTSTR szFileName);

Input value: graphic file name

Return value: 0 is failure; non-zero value is the Thread Handle

Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data is transferred to the HMI. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.

(5) Function: HANDLE hmAsyncSendImageFromFileByStation(LPCTSTR szFileName, int nStation);

Input value: graphic file name; HMI station number (must be greater than 0)

Return value: 0 is failure; non-zero value is the Thread Handle

Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI with the specified station number. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.

(6) Function: int hmSendImage(HBITMAP hbmp);

Input value: Windows HBITMAP Handle

Return value: 1 is success; 0 is failure

Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI. This function is a synchronous function, and this function does not return the execution result until the data transfer is complete.

(7) Function: int hmSendImageByStation(HBITMAP hbmp, int nStation);

Input value: Windows HBITMAP Handle; HMI station number (must be greater than 0)

Return value: 1 is success; 0 is failure

Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI with the specified station number. This function is a synchronous function, and this function does not return the execution result until the data transfer is complete.

(8) Function: HANDLE hmAsyncSendImage(HBITMAP hbmp);

Input value: Windows HBITMAP Handle

Return value: 0 is failure; non-zero value is the Thread Handle

Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.

(9) Function: HANDLE hmAsyncSendImageByStation(HBITMAP hbmp, int nStation);

Input value: Windows HBITMAP Handle; HMI station number (must be greater than 0)

Return value: 0 is failure; non-zero value is the Thread Handle

Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI with the specified station number. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.

(10) Function: int hmAbortAction();

Input value: none

Return value: 0 is failure; 1 is success

Description: abort the graphics transfer of the asynchronous function.

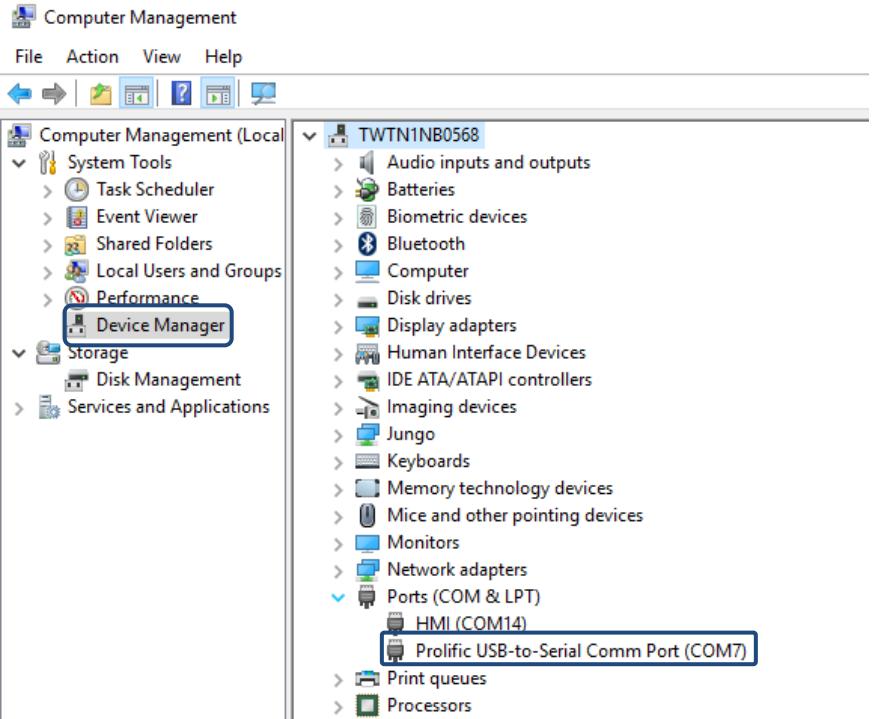
(11) Function: int hmClose();

Input value: none

Return value: 0 is failure; 1 is success

Description: disable the HMI communication. This function is automatically called when ImgTrans.dll ends.

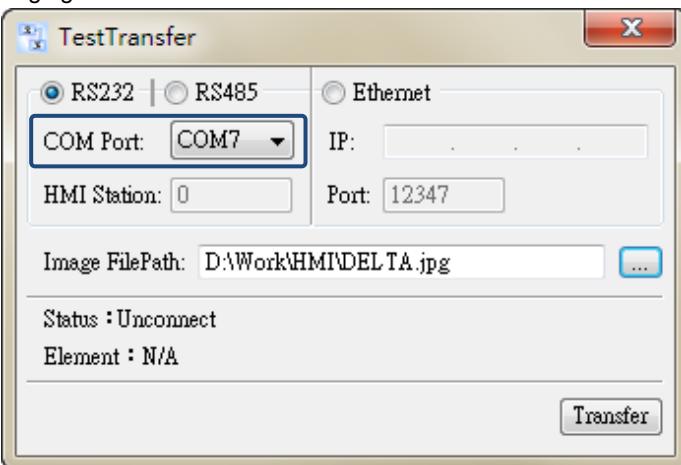
Table 12.3.1 Real-time Image example

Real-time Image							
Create Real-time Image element	Create a Real-time Image element on the HMI editing screen. 						
Detail settings	This is a communication port that connects the HMI to the PC, which is set to COM2 and transmits with the RS232 communication interface. <table border="1"> <thead> <tr> <th>HMI Station</th><th>Interface</th><th>COM Port</th></tr> </thead> <tbody> <tr> <td>1</td><td>RS232</td><td>COM2</td></tr> </tbody> </table>	HMI Station	Interface	COM Port	1	RS232	COM2
HMI Station	Interface	COM Port					
1	RS232	COM2					
Compile the screen	After creating a Real-time Image element and setting its communication interface and port, compile and download the screen data to the HMI.						
Execute TestTransfer.exe	<ul style="list-style-type: none"> <li>■ Use a 9-pin transmission line and a null modem (crossover cable) to connect the PC to the HMI.</li> <li>■ Click [Control Panel] &gt; [Administrative Tools] &gt; [Computer Management] &gt; [Device Manager] &gt; [Ports] to view the connection port of the PC, as shown in the following figure.</li> </ul> 						

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**Real-time Image**

- Open [This PC], go to the following path [C:\Program Files\Delta Industrial Automation\DopSoft 4.00.11.xx\Utility\ImgTrans], and select [TestTransfer.exe]. Open this tool, set the COM port to COM7, and select the image file to upload. In this example, the image file DELTA.jpg located in D:\ is selected. See the following figure.

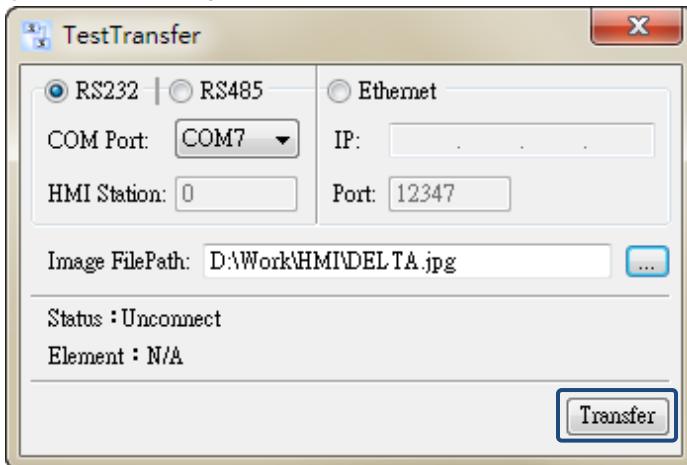


Execute  
TestTransfer.exe

- The following figure is the selected DELTA.jpg file image.

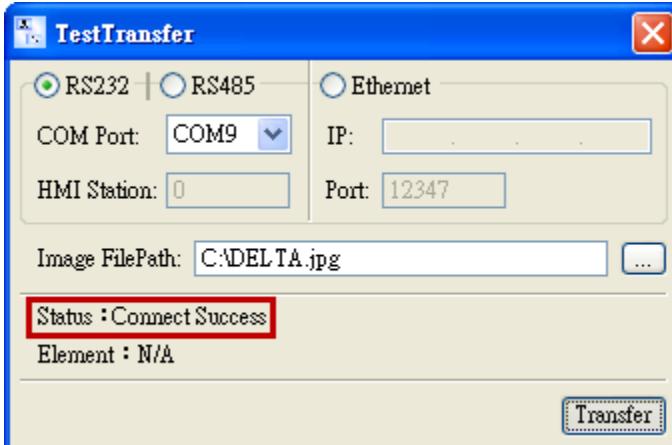


- After you select the image file to upload, click Transfer.



**Real-time Image**

- If the connection is successful, the Status displays "Connect Success".



Execution results

- The Real-time Image element on the HMI displays the uploaded image.



When you double-click the Real-time Image element, the property page is shown as follows.

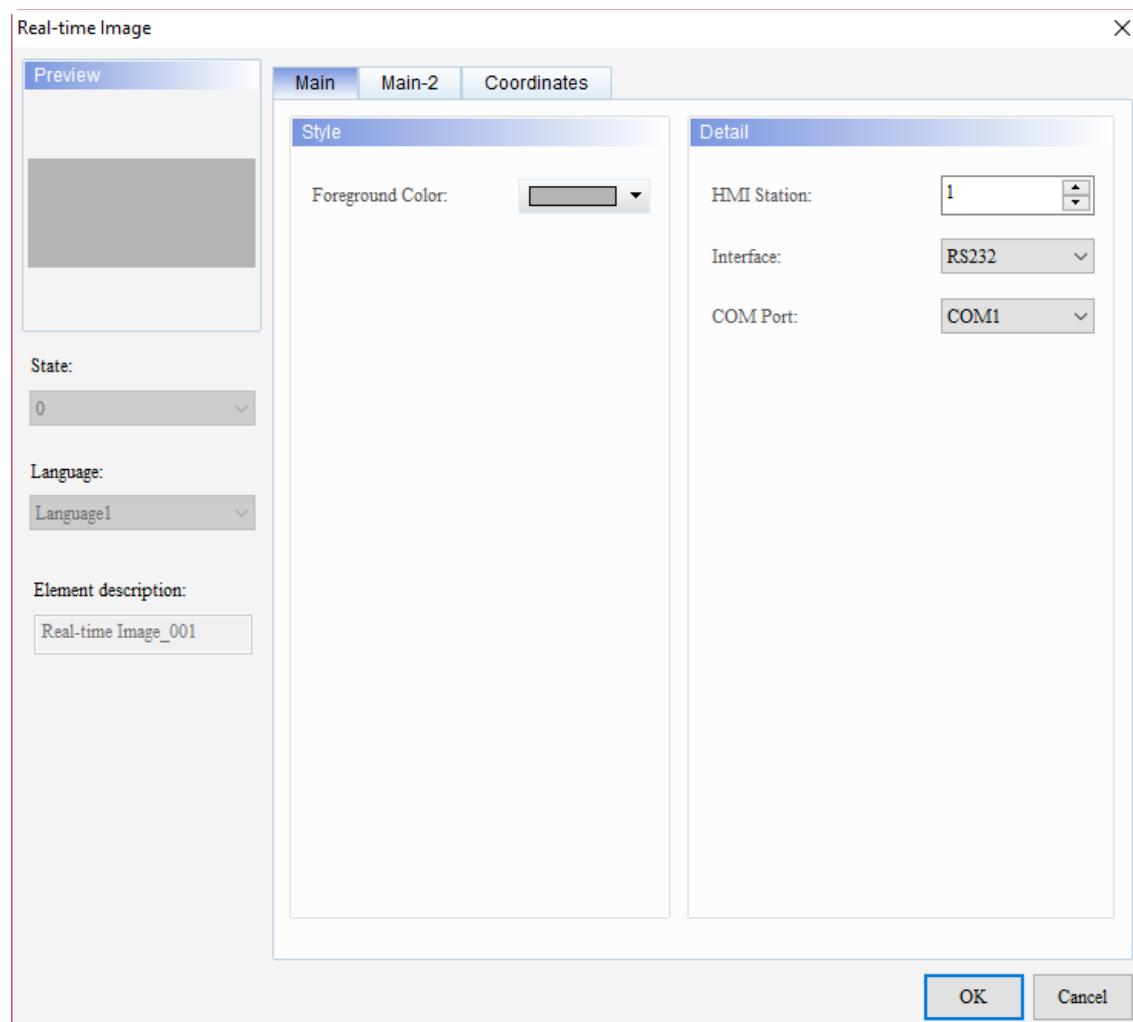


Figure 12.3.1 Properties of Real-time Image

Table 12.3.2 Function page of Real-time Image

Real-time Image	
Function page	Description
Preview	The Real-time Image element does not support multiple state values and multi-language data display.
Main	Set the Foreground Color, HMI Station, Interface, and COM Port.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

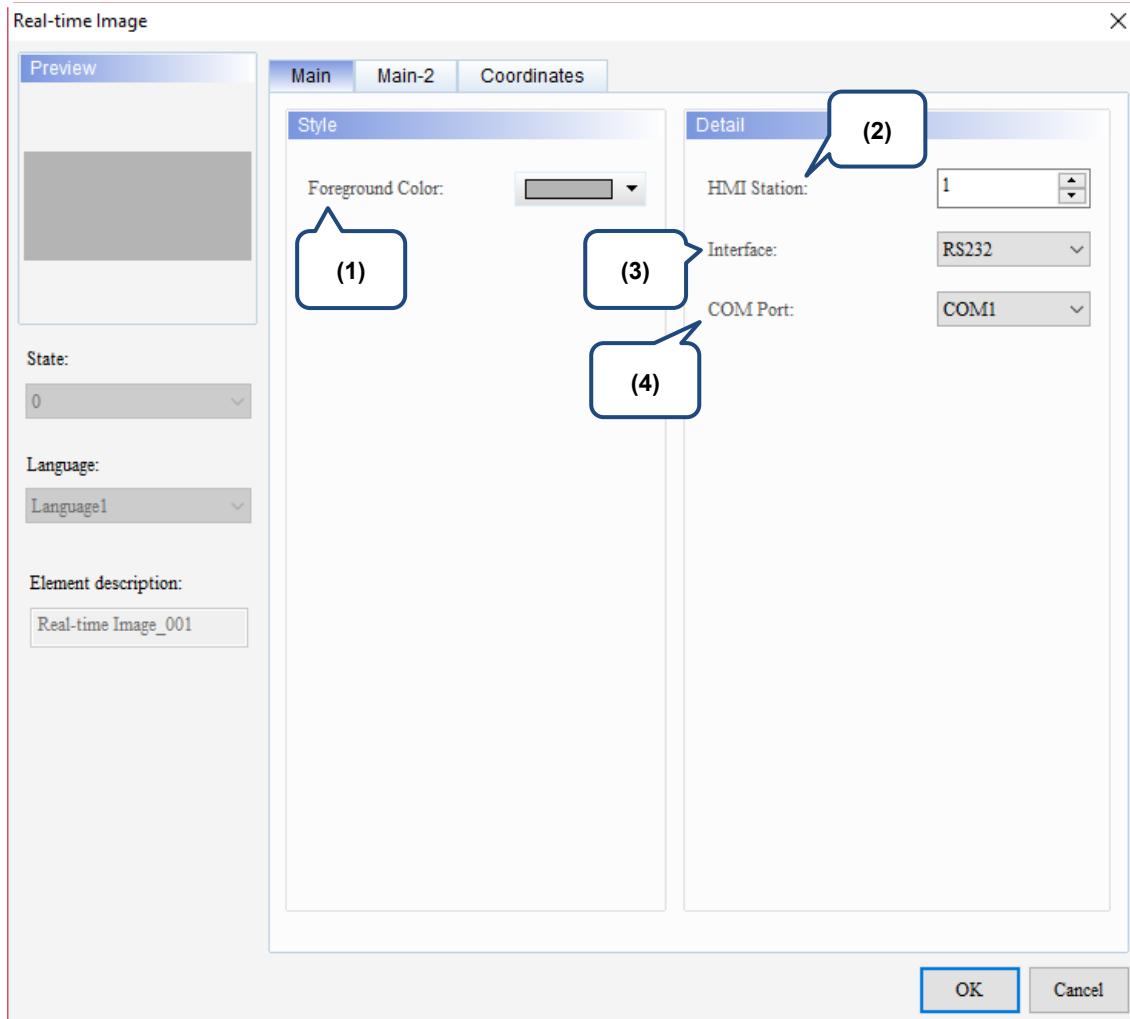


Figure 12.3.2 Main property page for the Real-time Image element

No.	Property	Function description
(1)	Foreground Color	<p>Set the foreground color of the element.</p>  <p style="text-align: center;">↓</p> 
(2)	HMI Station	The HMI Station number option is mainly for the RS485 transmission with the setting range from 1 to 255, and the default is 1. When you use RS485 to connect multiple HMIs in series, you can use this HMI Station number to distinguish each HMI.

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No.	Property	Function description
(3)	Interface	<ul style="list-style-type: none"> <li>The transmission modes include RS232 and RS485.</li> </ul> <p><b>Detail</b></p> <p>HMI Station: <input type="text" value="1"/></p> <p>Interface: <input type="button" value="RS232"/></p> <p>COM Port: <input type="button" value="RS232"/> <input type="button" value="RS485"/></p> <ul style="list-style-type: none"> <li>The RS232 communication ports are COM1 and COM2.</li> <li>The RS485 communication ports are COM2 and COM3.</li> </ul>
(4)	COM Port	<ul style="list-style-type: none"> <li>The communication ports include COM1, COM2, COM3, and All LAN (Ethernet). Different communication ports are available depending on the transmission mode.</li> </ul> <p><b>Detail</b></p> <p>HMI Station: <input type="text" value="1"/></p> <p>Interface: <input type="button" value="RS232"/></p> <p>COM Port: <input type="button" value="COM1"/> <input type="button" value="COM1"/> <input type="button" value="COM2"/> <input type="button" value="All LAN"/></p> <p><b>Detail</b></p> <p>HMI Station: <input type="text" value="1"/></p> <p>Interface: <input type="button" value="RS485"/></p> <p>COM Port: <input type="button" value="COM2"/> <input type="button" value="COM2"/> <input type="button" value="COM3"/> <input type="button" value="All LAN"/></p> <ul style="list-style-type: none"> <li>Note that the COM ports refer to the communication ports on the HMI, so you cannot use the same COM port for transmission and for connecting the PLC. For example, if COM1 is selected for PLC communication, then you can only select COM2 or COM3 for transmission. If COM1 is selected for PLC communication and RS232 is selected as the transmission mode, then you can only select COM2 for transmission.</li> <li>If the communication port is selected as All LAN (Ethernet), the Interface option is grayed out and cannot be set.</li> </ul> <p><b>Detail</b></p> <p>HMI Station: <input type="text" value="1"/></p> <p>Interface: <input type="button" value="RS485"/></p> <p>COM Port: <input type="button" value="All LAN"/></p>

## ■ Main-2

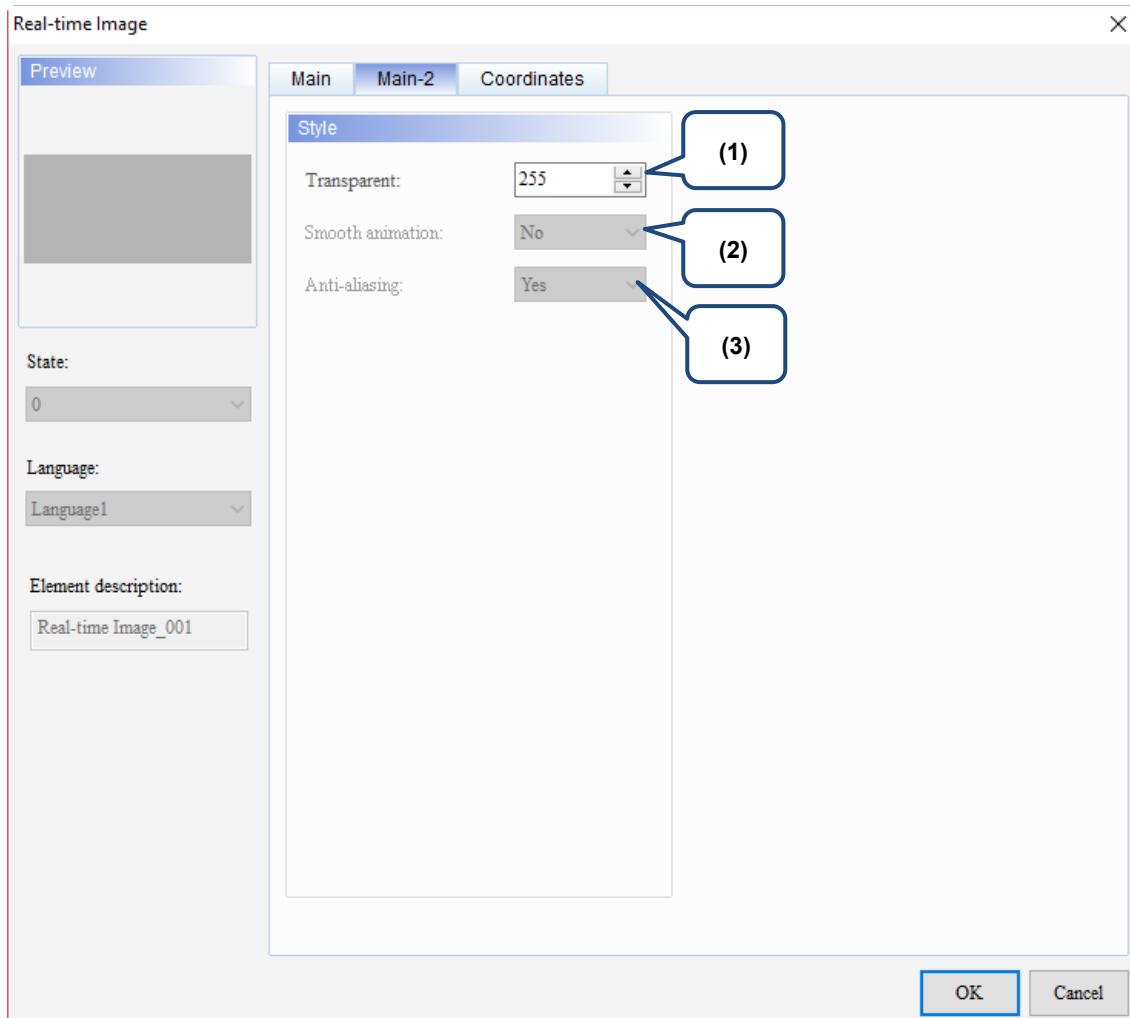


Figure 12.3.3 Main-2 property page for the Real-time Image element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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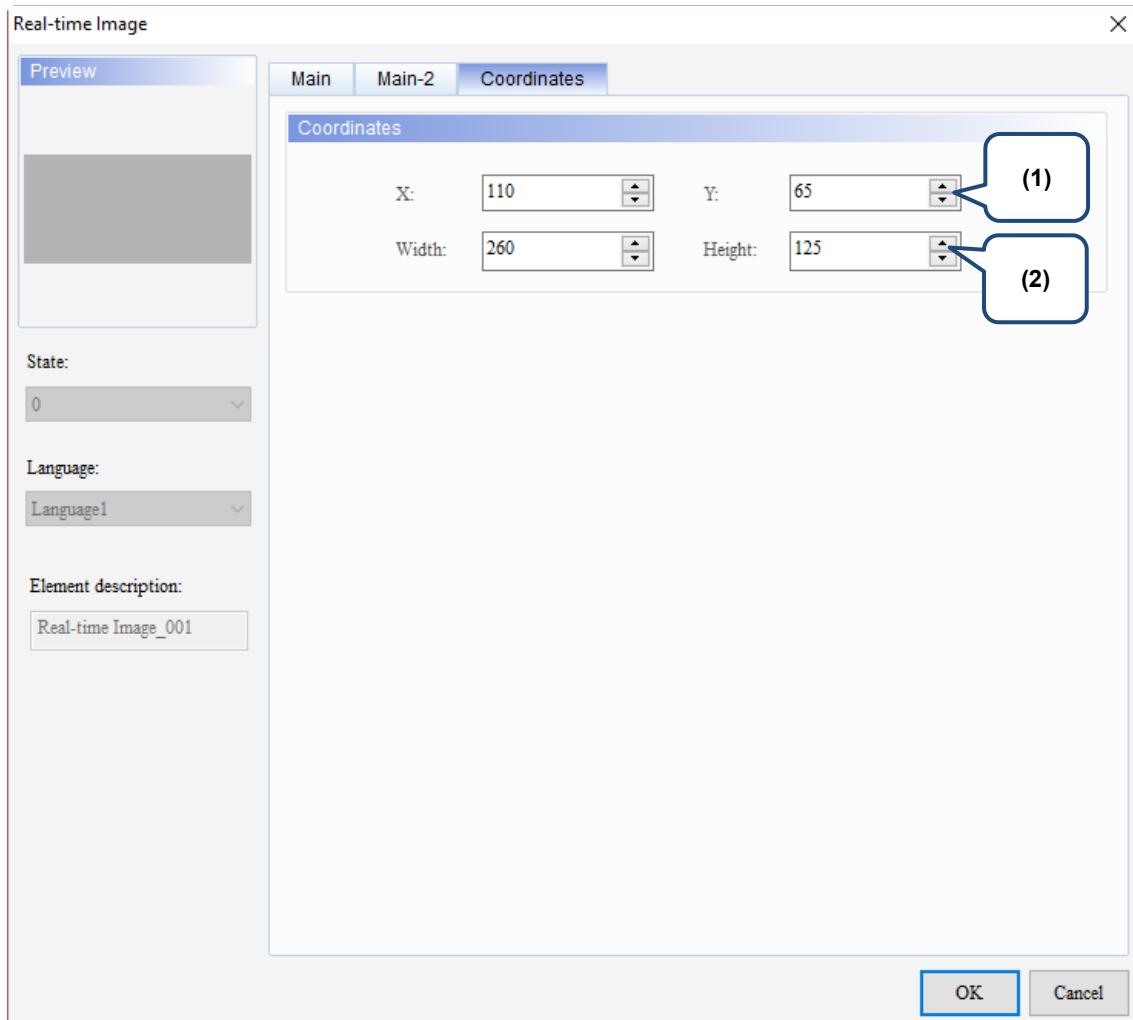
**■ Coordinates**

Figure 12.3.4 Coordinates property page for the Real-time Image element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

The following is the library path and function description.

Library	
Library path	C:\Program Files\Delta Industrial Automation\DopSoft 4.00.11.xx\Utility\ImgTrans
Library description	<ul style="list-style-type: none"> <li>■ Load ImgTrans.dll.</li> <li>■ Data structure definition:</li> <pre>typedef struct _COMM_INFO {     char szCOM[8]; } COMM_INFO; , szCOM is a string, and the input values are COM1, COM2, COM3...</pre> <li>■ Function examples:</li> <ol style="list-style-type: none"> <li>(1) int hmOpen(const COMM_INFO* pCommlInfo);</li> <li>(2) int hmSendImageFromFile(LPCTSTR szFileName);</li> <li>(3) HANDLE hmAsyncSendImageFromFile(LPCTSTR szFileName);</li> <li>(4) int hmSendImage(HBITMAP hbmp);</li> <li>(5) HANDLE hmAsyncSendImage(HBITMAP hbmp);</li> <li>(6) int hmAbortAction();</li> <li>(7) int hmClose();</li> </ol> <li>■ Function description:</li> <ol style="list-style-type: none"> <li>(1) Function: int hmOpen(const COMM_INFO* pCommlInfo);       Input value: COMM_INFO structure       Return value: 1 is success; 0 is failure       Description: enable the HMI communication and input the string for COM Port, such as COM1 and COM2.</li> <li>(2) Function: int SendImageFromFile(LPCTSTR szFileName);       Input value: graphic file name       Return value: 1 is success; 0 is failure       Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI. This function is a synchronous function, and this function does not return the execution result until the data transfer is complete.</li> <li>(3) Function: HANDLE hmAsyncSendImageFromFile(LPCTSTR szFileName);       Input value: graphic file name       Return value: 0 is failure; non-zero value is the Thread Handle       Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.</li> <li>(4) Function: int hmSendImage(HBITMAP hbmp);       Input value: Windows HBITMAP Handle       Return value: 1 is success; 0 is failure       Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI. This function is a synchronous function, and this function does not return the execution result until the data transfer is complete.</li> <li>(5) Function: HANDLE hmAsyncSendImage(HBITMAP hbmp);       Input value: Windows HBITMAP Handle       Return value: 0 is failure; non-zero value is the Thread Handle       Description: after the input graphic format is converted to the width/height and bits of the element on the HMI, the graphic data starts to be transferred to the HMI. This function is an asynchronous function, and you can use the Thread Handle that is currently transferring the graphic data to perform related operations.</li> </ol> </ul>

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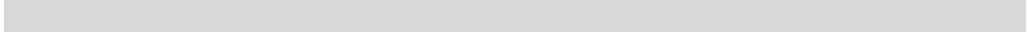
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# Input

---

# 13

This chapter provides the usage and setting details for the Input elements.

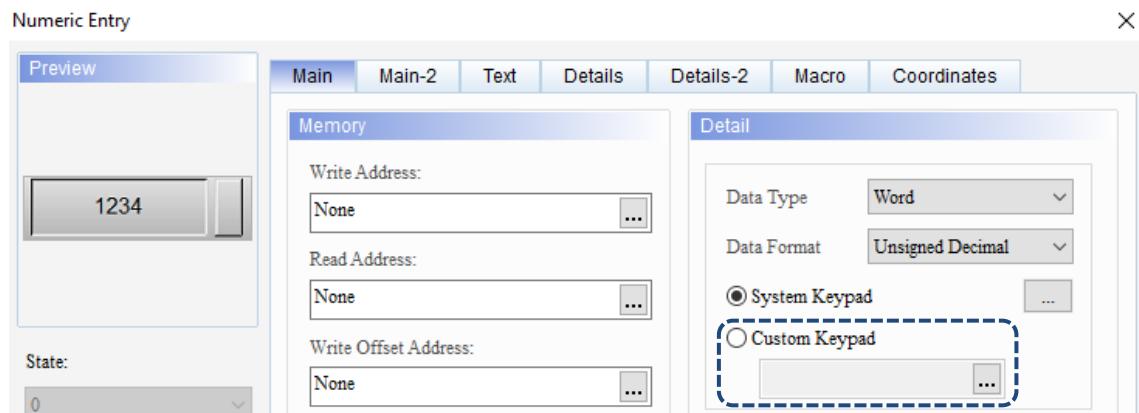


13.1	Numeric Entry .....	13-2
13.2	Character Entry .....	13-33
13.3	Barcode Input .....	13-56
13.4	Multi-language Input .....	13-72
13.5	Multi-line text input .....	13-88

# 13

## 13.1 Numeric Entry

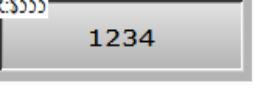
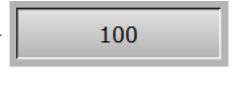
With the keypad provided by the Numeric Entry element, you can input a value to the set Write Address. Next, you can read the value with the Read Address of the Numeric Display element, and then the value is displayed on the HMI.



Note: the Custom Keypad provided for the Numeric Entry, Character Entry, and Barcode Input elements does not support DOP-B, DOP-H, and HMC series HMIs.

Refer to Table 13.1.1 for the Numeric Entry example.

Table 13.1.1 Numeric Entry example

Numeric Entry			
	Numeric Entry element	Numeric Display element	
Address settings	Write Address 	Read Address 	\$555
Detail settings	Numeric Entry element		
	Data Type Word	Data Format Unsigned Decimal	Integer Digits 4
Execution results	After creating the elements, compile and download the elements to the HMI. Next, input 100 with the Numeric Entry element, and then the Numeric Display element will display the input value. Input a value of 100 and the value is written to the specified address (\$555)		
			
	Numeric Entry	Numeric Display	

Numeric Entry supports three data types: Word, Double Word, and Quad Word. The allowable range of the Numeric Entry value is as shown in Table 13.1.2.

Table 13.1.2 Numeric Entry allowable range

Numeric Entry		
	Data Format	Allowable range
Word	BCD	0 to 9999
	Signed BCD	-999 to +9999
	Signed Decimal	-32768 to +32767
	Unsigned Decimal	0 to 65535
	Hex	0 to 0xFFFF
	Binary	0 to 0xFFFF
Double Word	Data Format	Allowable range
	BCD	0 to 99999999
	Signed BCD	-99999999 to +99999999
	Signed Decimal	-2147483648 to +2147483647
	Unsigned Decimal	0 to 4294697295
	Hex	0 to 0xFFFFFFFF
Quad Word	Binary	0 to 0xFFFFFFFF
	Floating	0 to 99999999
	Data Format	Allowable range
	BCD	0 to 9999999999999999
	Signed BCD	-9999999999999999 to +9999999999999999
	Signed Decimal	-9223372036854775808 to +9223372036854775807
	Unsigned Decimal	0 to 18446744073709551615
	Hex	0 to 0xffffffffffff
	Binary	0 to 0xffffffffffff
	Floating	0 to 9999999999999999

When you double-click the Numeric Entry, the property page is shown as follows.

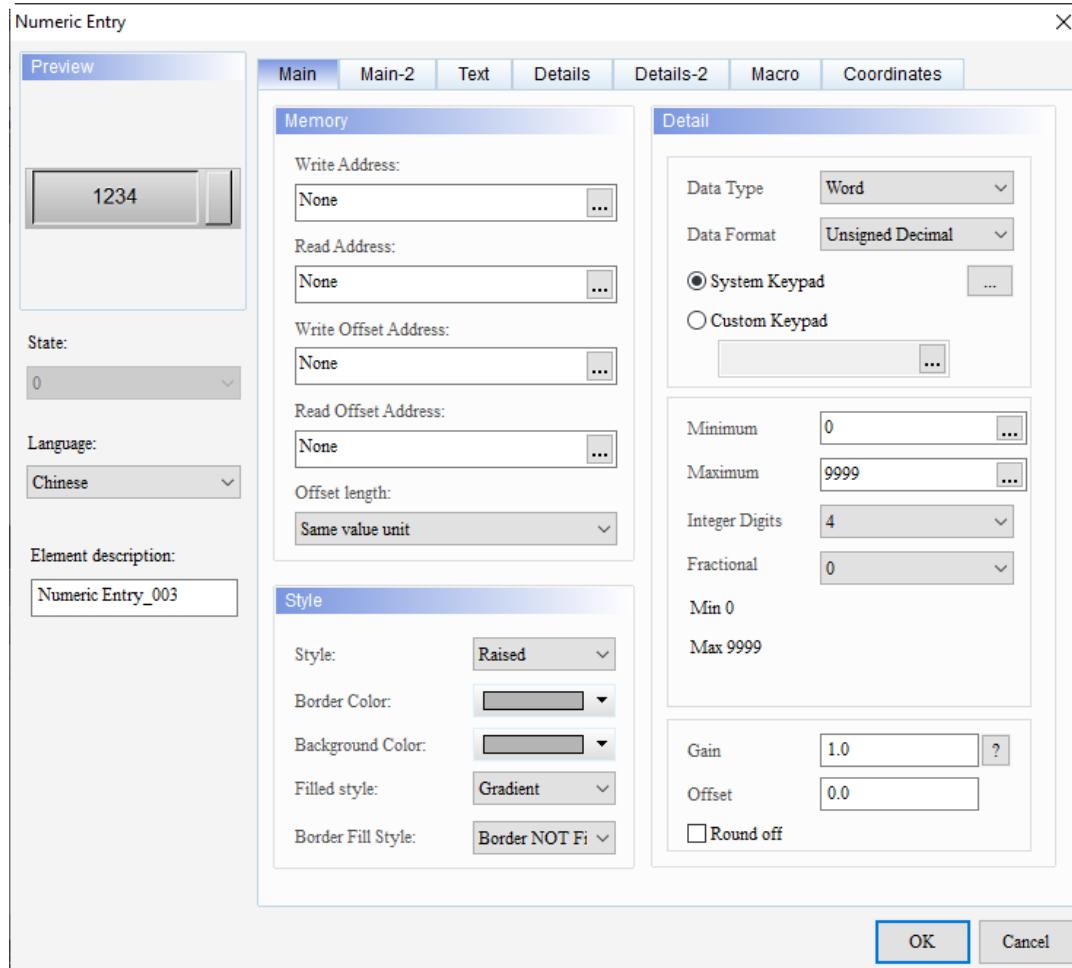


Figure 13.1.1 Properties of Numeric Entry

Table 13.1.3 Function page of Numeric Entry

Numeric Entry	
Function page	Description
Preview	Numeric Entry elements do not support multiple state values and multi-language data display.
Main	Set the Read Address, Write Address, Read Offset Address, and Write Offset Address. Set the Style, Background Color, Border Color, Filled style, and Border Fill Style. Set the Data Type, Data Format, Integer Digits, Fractional (Digits), Min, Max, Gain, and Offset.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text font, size, color, and alignment options.
Details	Set the Input Mode, Interlock State, Interlock Display, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, Prefix Zero, Show overrange message, User Security Level, Set Low Security, Mark as Asterisk (*), Show ##### when overrange, and Word arrangement.
Details-2	Set the Type, Unit and Address for the Source and Display, Custom formula, and Percentage.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

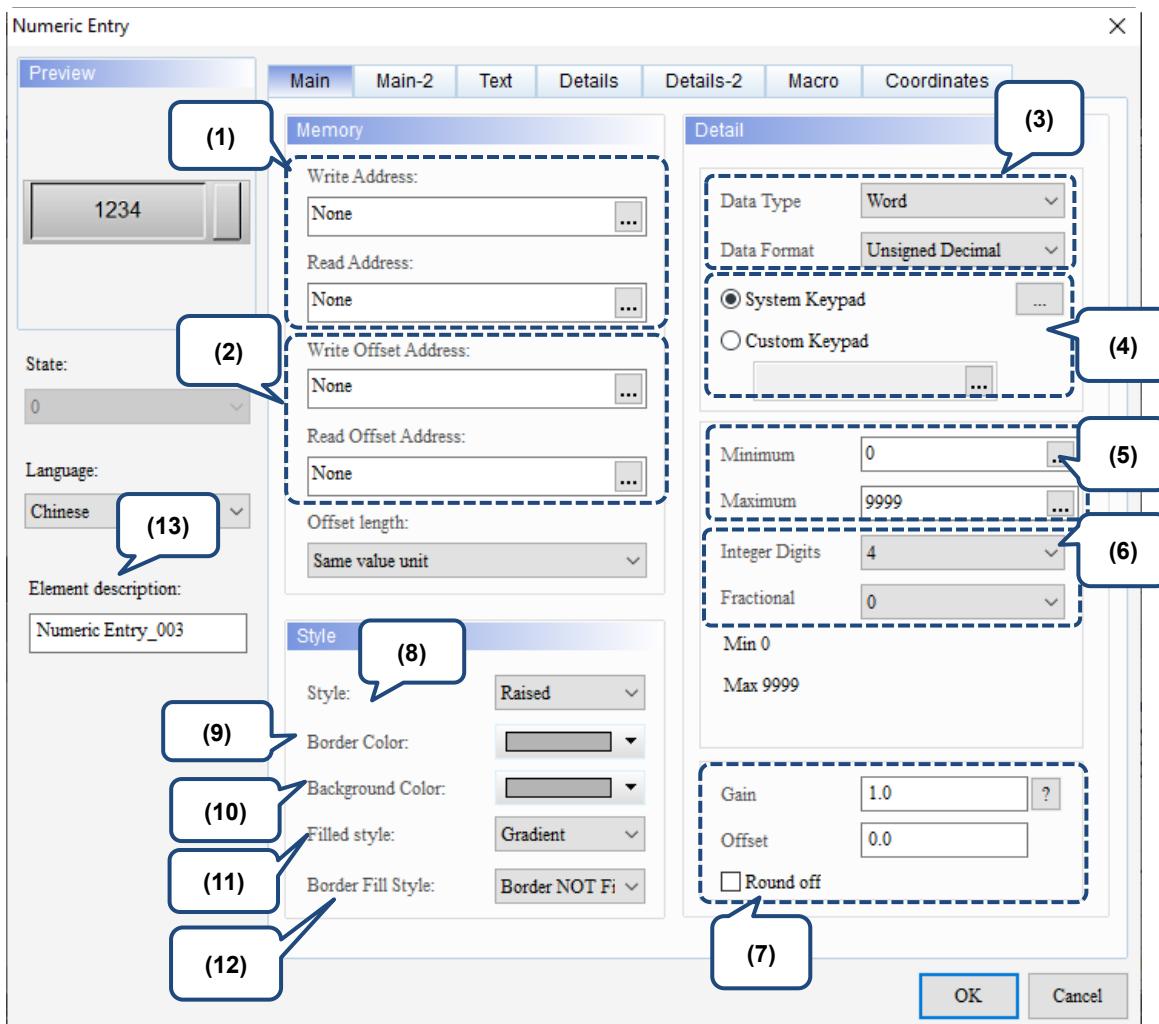
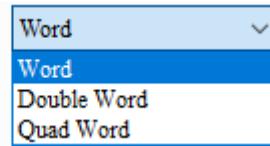
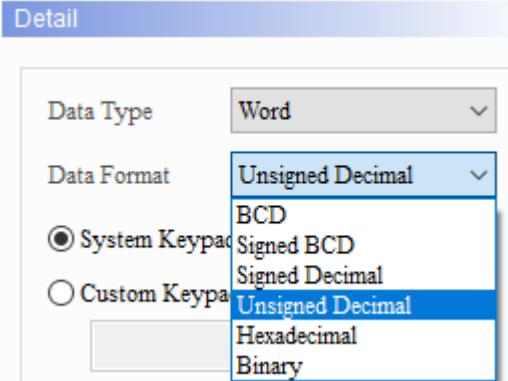
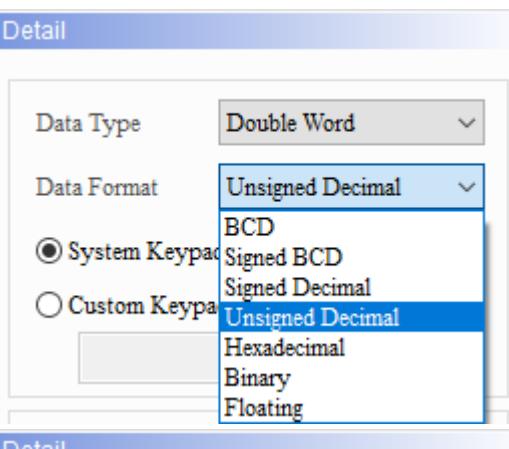
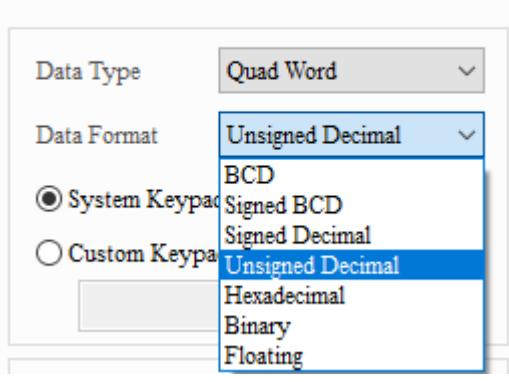
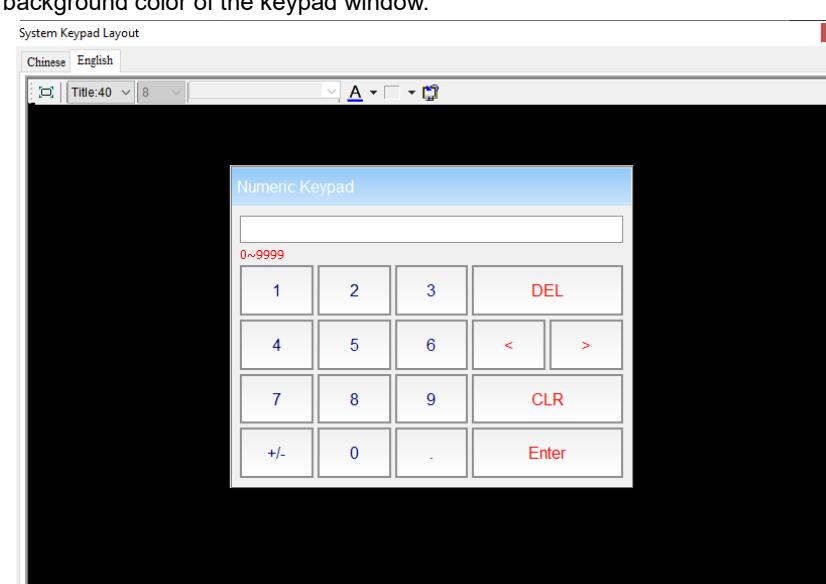


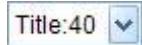
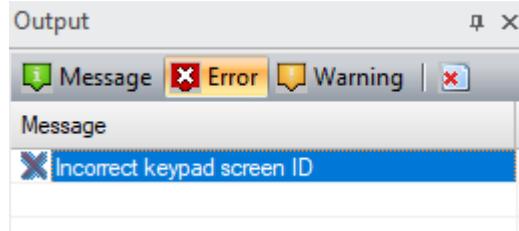
Figure 13.1.2 Main property page for the Numeric Entry element

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Read Address	
(2)	Write Offset Address	
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.

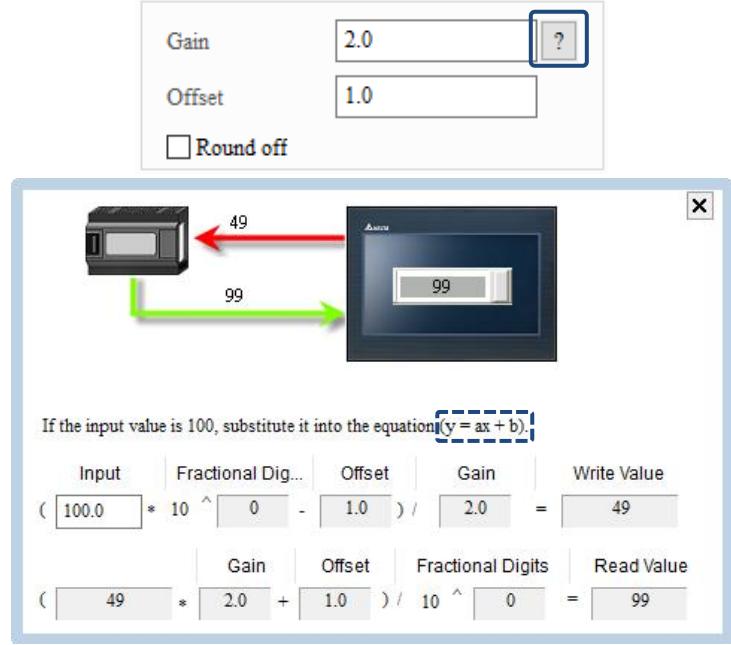
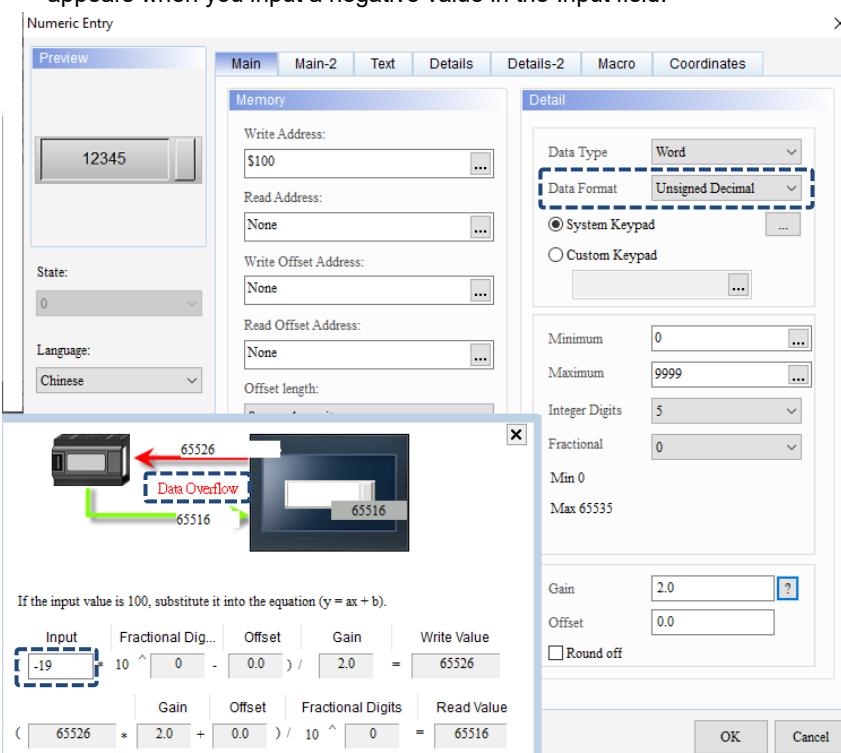
No.	Property	Function description																							
(3)	Data Type	<ul style="list-style-type: none"> <li>There are three Data Types.</li> </ul>  <ul style="list-style-type: none"> <li>If Quad Word is being used, only the internal memory and certain PLC brands are supported, as shown in the following table:</li> </ul> <table border="1"> <thead> <tr> <th>Brand</th><th>Model number</th></tr> </thead> <tbody> <tr> <td rowspan="3">Delta</td><td>15MC</td></tr> <tr><td>15MC TCP</td></tr> <tr><td>10EMC</td></tr> <tr> <td rowspan="2">Omron</td><td>NJ FINS TCP</td></tr> <tr><td>NJ/NX FINS UDP</td></tr> <tr> <td>Beckhoff</td><td>TWINCAT TCP</td></tr> <tr> <td rowspan="2">SIEMENS</td><td>S7-1200</td></tr> <tr><td>S7-1500</td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>The internal memory is only available for the DOP-112 and DOP-115 models. When the Data Type is Quad Word, the internal registers can be up to 200000 sets. However, the expanded internal memory is only used to set the screen elements. The internal registers used in the macro remain as 65536 sets (\$0 - \$65535).</li> </ul> <table border="1"> <thead> <tr> <th>Access type</th><th>Device type</th><th>Storage range</th></tr> </thead> <tbody> <tr> <td>Word</td><td>\$n</td><td>\$0 - \$199999</td></tr> <tr> <td>Bit</td><td>\$n.b</td><td>\$0.0 - \$199999.15</td></tr> </tbody> </table> <p>Note: n = Word (0 - 199999); b = Bit (0 - 15).</p>	Brand	Model number	Delta	15MC	15MC TCP	10EMC	Omron	NJ FINS TCP	NJ/NX FINS UDP	Beckhoff	TWINCAT TCP	SIEMENS	S7-1200	S7-1500	Access type	Device type	Storage range	Word	\$n	\$0 - \$199999	Bit	\$n.b	\$0.0 - \$199999.15
Brand	Model number																								
Delta	15MC																								
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Omron	NJ FINS TCP																								
	NJ/NX FINS UDP																								
Beckhoff	TWINCAT TCP																								
SIEMENS	S7-1200																								
	S7-1500																								
Access type	Device type	Storage range																							
Word	\$n	\$0 - \$199999																							
Bit	\$n.b	\$0.0 - \$199999.15																							
	Data Format	<ul style="list-style-type: none"> <li>When the Data Type is Word, the supported data formats are as follows.</li> </ul> 																							

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No.	Property	Function description
(3)	Data Format	<ul style="list-style-type: none"> <li>When the Data Type is Double Word or Quad Word, the supported data formats are as follows.</li> </ul>   <ul style="list-style-type: none"> <li>When the Data Type is Double Word and the Data Format is Floating, the integer and fractional digits support only 7 digits in total. When this limit is exceeded, the software displays a warning message.</li> <li>When the Data Type is Quad Word and the Data Format is Floating, the integer and fractional digits support only 15 digits in total. When this limit is exceeded, the software displays a warning message.</li> </ul>
(4)	System Keypad	<p>In the System Keypad Layout window, you can adjust the size of the keypad window, title size, font size / type / color of the numeric display, and the background color of the keypad window.</p> 

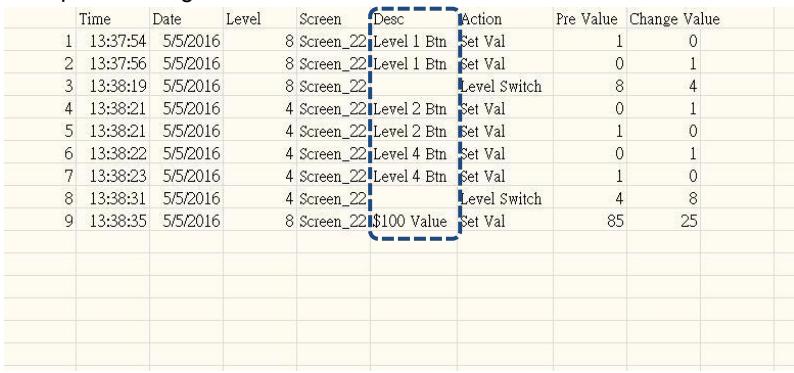
No.	Property	Function description																															
(4)	System Keypad	 Select the size of the System Keypad.																															
		 Set the title column height.																															
		 Set the font size.																															
		 Set the font type.																															
		 Set the font color.																															
		 Set the background color.																															
		 Default size.																															
(5)	Custom Keypad	You can select the Custom Keypad function only if there is a Keypad Screen in the editing screen. When there is no Keypad Screen, the following message displays when you compile. 																															
		The allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.																															
(6)	Minimum / Maximum	<table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Word</td><td>BCD</td><td>0 to 9999</td></tr> <tr> <td>Signed BCD</td><td>-999 to +9999</td></tr> <tr> <td>Signed Decimal</td><td>-32768 to +32767</td></tr> <tr> <td>Unsigned Decimal</td><td>0 to 65535</td></tr> <tr> <td>Hex</td><td>0 to 0xFFFF</td></tr> <tr> <td>Binary</td><td>0 to 0xFFFF</td></tr> <tr> <td rowspan="10">Double Word</td><td>BCD</td><td>0 to 99999999</td></tr> <tr> <td>Signed BCD</td><td>-9999999 to +9999999</td></tr> <tr> <td>Signed Decimal</td><td>-2147483648 to +2147483647</td></tr> <tr> <td>Unsigned Decimal</td><td>0 to 4294967295</td></tr> <tr> <td>Hex</td><td>0 to 0xFFFFFFFF</td></tr> <tr> <td>Binary</td><td>0 to 0xFFFFFFFF</td></tr> <tr> <td>Floating</td><td>0 to 9999999</td></tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	Binary	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-9999999 to +9999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295	Hex	0 to 0xFFFFFFFF	Binary	0 to 0xFFFFFFFF	Floating	0 to 9999999
Data Type	Data Format	Allowable range																															
Word	BCD	0 to 9999																															
	Signed BCD	-999 to +9999																															
	Signed Decimal	-32768 to +32767																															
	Unsigned Decimal	0 to 65535																															
	Hex	0 to 0xFFFF																															
	Binary	0 to 0xFFFF																															
Double Word	BCD	0 to 99999999																															
	Signed BCD	-9999999 to +9999999																															
	Signed Decimal	-2147483648 to +2147483647																															
	Unsigned Decimal	0 to 4294967295																															
	Hex	0 to 0xFFFFFFFF																															
	Binary	0 to 0xFFFFFFFF																															
	Floating	0 to 9999999																															
	<ul style="list-style-type: none"> <li>■ You can set the displaying number of integer digits and the number of decimal places.</li> <li>■ The number of decimal places here is not really a decimal value, but just the display format. Only when Floating is selected for the Data Format, the Fractional setting is the actual decimal.</li> </ul>																																
	<ul style="list-style-type: none"> <li>■ The formula for gain and offset is <math>y = (a)x + (b)</math>.</li> </ul>																																
	<table border="1"> <tr> <td>y</td> <td>a</td> <td>x</td> <td>b</td> </tr> <tr> <td>Result</td> <td>Gain value</td> <td>Input value</td> <td>Offset value</td> </tr> </table>	y	a	x	b	Result	Gain value	Input value	Offset value																								
y	a	x	b																														
Result	Gain value	Input value	Offset value																														
<ul style="list-style-type: none"> <li>■ If the set Gain or Offset value is a decimal, set the Data Format to Floating.</li> </ul>																																	

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No.	Property	Function description																																								
(7)	Gain and Offset	<ul style="list-style-type: none"> <li>The Numeric Entry element provides an estimation button to make it easier for users to understand the gain and offset calculations, which is shown as follows:</li> </ul>  <p>If the input value is 100, substitute it into the equation (<math>y = ax + b</math>).</p> <table border="1"> <tr> <td>Input</td> <td>Fractional Digits</td> <td>Offset</td> <td>Gain</td> <td>Write Value</td> </tr> <tr> <td>( 100.0 ) * 10 ^ 0 - 1.0 ) / 2.0 = 49</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Gain</td> <td>Offset</td> <td>Fractional Digits</td> <td>Read Value</td> </tr> <tr> <td></td> <td>( 49 * 2.0 + 1.0 ) / 10 ^ 0 = 99</td> <td></td> <td></td> <td></td> </tr> </table> <ul style="list-style-type: none"> <li>If you select the <b>Round off</b> check box, the calculation results are rounded off before displayed on the Numeric Display element.</li> <li>When the Data Format is Unsigned Decimal, a message "Data Overflow" appears when you input a negative value in the Input field.</li> </ul>  <p>If the input value is 100, substitute it into the equation (<math>y = ax + b</math>).</p> <table border="1"> <tr> <td>Input</td> <td>Fractional Digits</td> <td>Offset</td> <td>Gain</td> <td>Write Value</td> </tr> <tr> <td>( -19 ) * 10 ^ 0 - 0.0 ) / 2.0 = 65526</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Gain</td> <td>Offset</td> <td>Fractional Digits</td> <td>Read Value</td> </tr> <tr> <td></td> <td>( 65526 * 2.0 + 0.0 ) / 10 ^ 0 = 65516</td> <td></td> <td></td> <td></td> </tr> </table>	Input	Fractional Digits	Offset	Gain	Write Value	( 100.0 ) * 10 ^ 0 - 1.0 ) / 2.0 = 49						Gain	Offset	Fractional Digits	Read Value		( 49 * 2.0 + 1.0 ) / 10 ^ 0 = 99				Input	Fractional Digits	Offset	Gain	Write Value	( -19 ) * 10 ^ 0 - 0.0 ) / 2.0 = 65526						Gain	Offset	Fractional Digits	Read Value		( 65526 * 2.0 + 0.0 ) / 10 ^ 0 = 65516			
Input	Fractional Digits	Offset	Gain	Write Value																																						
( 100.0 ) * 10 ^ 0 - 1.0 ) / 2.0 = 49																																										
	Gain	Offset	Fractional Digits	Read Value																																						
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	Gain	Offset	Fractional Digits	Read Value																																						
	( 65526 * 2.0 + 0.0 ) / 10 ^ 0 = 65516																																									

No.	Property	Function description								
(8)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
(9)	Border Color	<ul style="list-style-type: none"> <li>■ Set the border color of the element.</li> <li>■ When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul>								
(10)	Background Color	<ul style="list-style-type: none"> <li>■ Set the background color of the element.</li> <li>■ When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul>								
(11)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Gradient</td> <td style="width: 50%;"></td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>	Gradient		Fixed (Solid)					
Gradient										
Fixed (Solid)										

13

No.	Property	Function description																																																																																	
(12)	Border Fill Style	<ul style="list-style-type: none"> <li>The border display of the Entry elements on the DOP-100 series models is different from that on the DOP-B series models. To have the border display effect be the same as that on the DOP-B series models, when you open the DOP-B project on a DOP-100 series model, the border is displayed with solid color.</li> <li>The default Border Fill Style for the DOP-100 series models is Border NOT Fill, meaning the border of the element is displayed with a gradient color.</li> </ul>	<table border="1" style="width: 100px; height: 40px; margin-bottom: 10px;"> <tr> <td style="text-align: center;">Border NOT Fill (gradient color)</td> <td style="background-color: #e0e0e0; width: 40px;"></td> </tr> </table> <table border="1" style="width: 100px; height: 40px;"> <tr> <td style="text-align: center;">Border Fill (solid color)</td> <td style="background-color: #e0e0e0; width: 40px;"></td> </tr> </table>	Border NOT Fill (gradient color)		Border Fill (solid color)																																																																													
Border NOT Fill (gradient color)																																																																																			
Border Fill (solid color)																																																																																			
(13)	Element description	Record the element actions to be executed. The record is written in the CSV file of the Operation Log Table so users can know what actions have been done.	 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr><td>1 13:37:54</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>Level 1 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>2 13:37:56</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>Level 1 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>3 13:38:19</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td></td><td>Level Switch</td><td>8</td><td>4</td></tr> <tr><td>4 13:38:21</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 2 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>5 13:38:21</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 2 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>6 13:38:22</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 4 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>7 13:38:23</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 4 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>8 13:38:31</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td></td><td>Level Switch</td><td>4</td><td>8</td></tr> <tr><td>9 13:38:35</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>\$100 Value</td><td>Set Val</td><td>85</td><td>25</td></tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3 13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4	4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6 13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1	7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8 13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8	9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																												
1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																												
2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																												
3 13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4																																																																												
4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																												
5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																												
6 13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1																																																																												
7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																												
8 13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8																																																																												
9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																												

## ■ Main-2

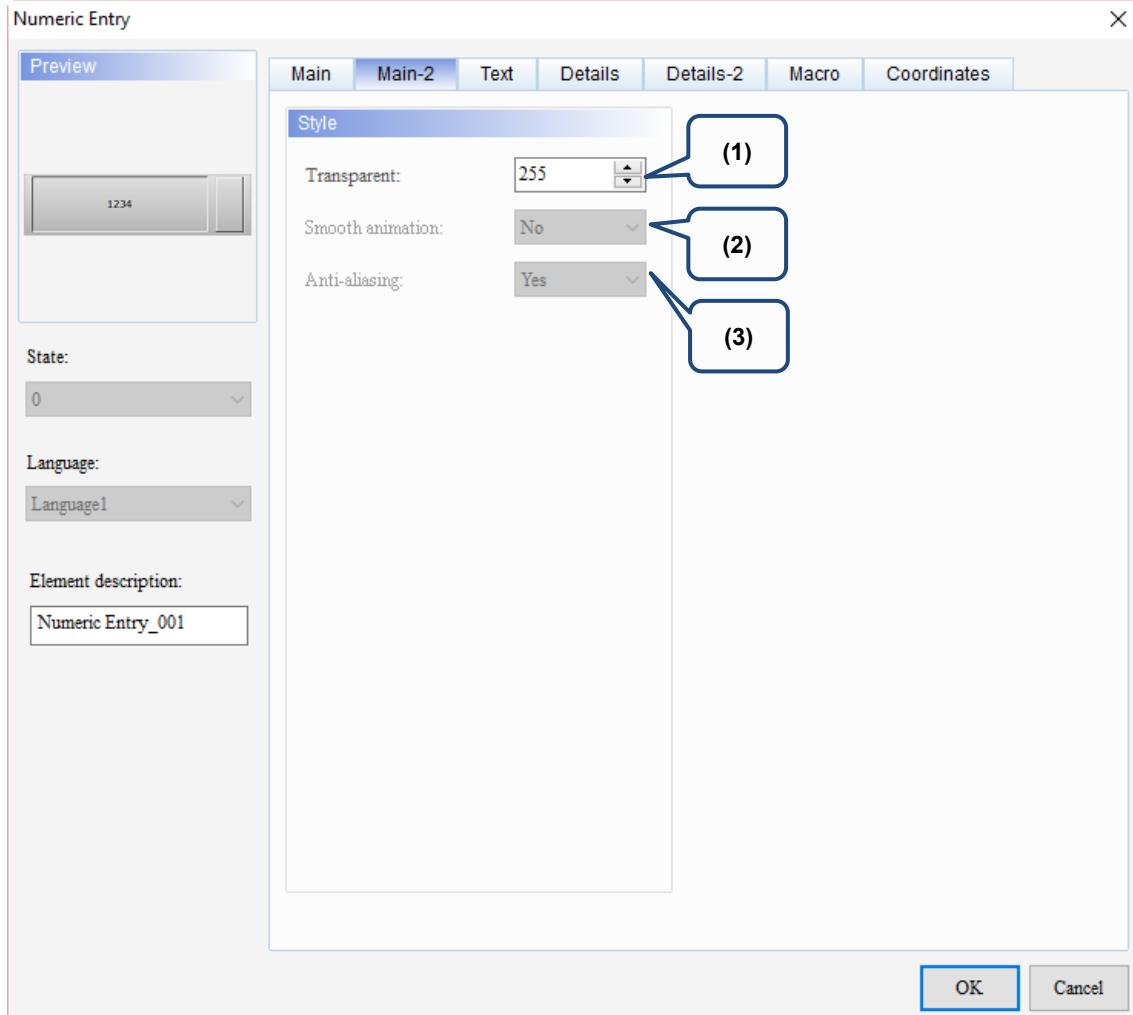


Figure 13.1.3 Main-2 property page for the Numeric Entry element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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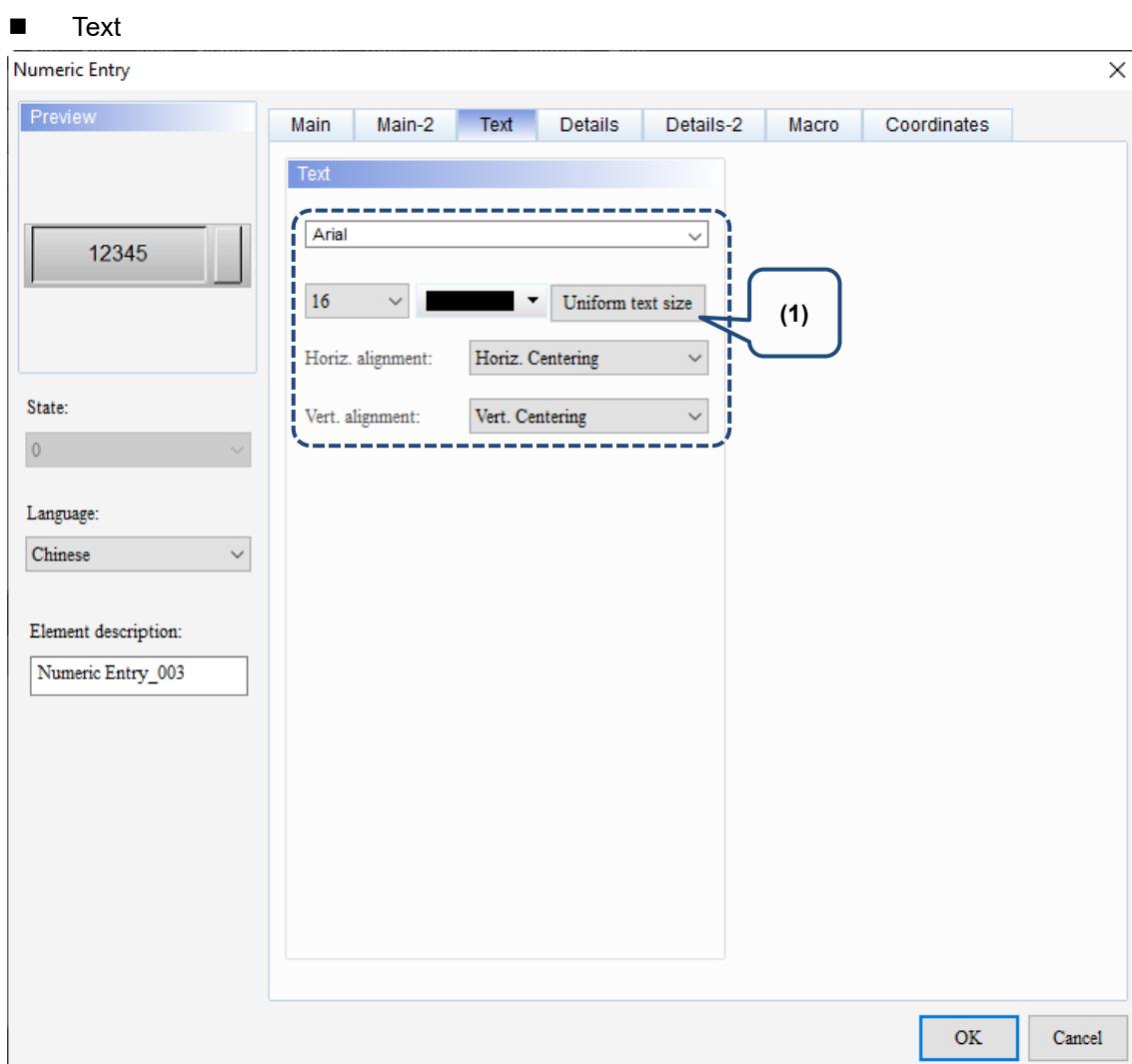


Figure 13.1 4 Text property page for the Numeric Entry element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

## ■ Details

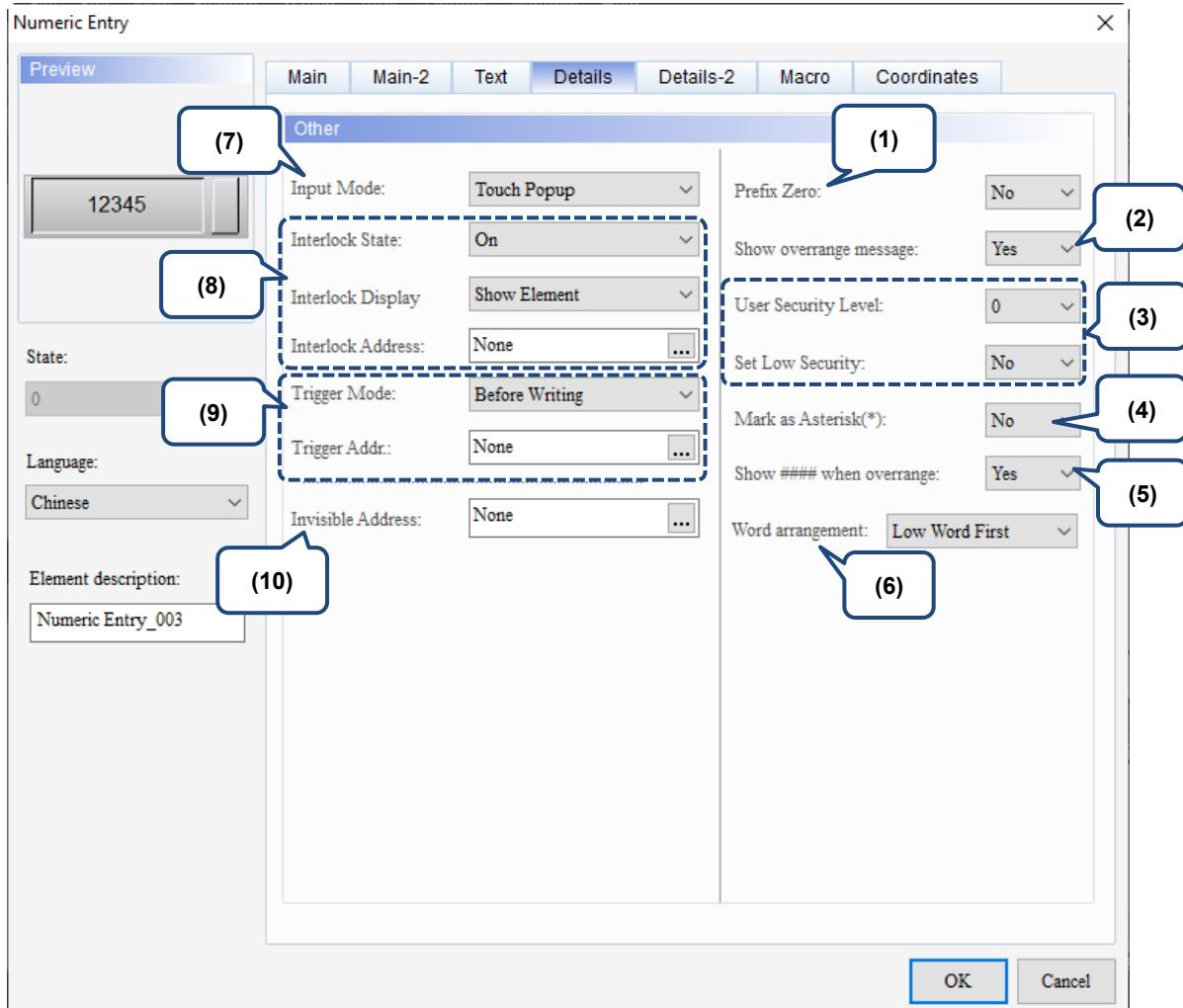
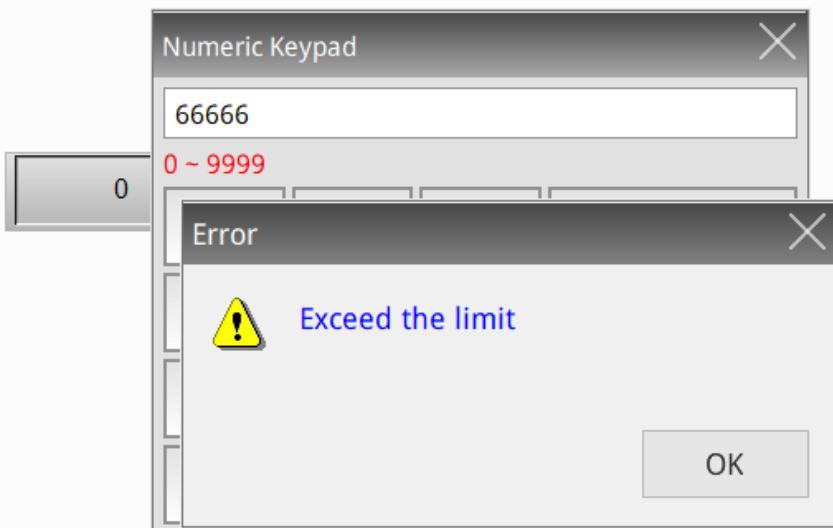
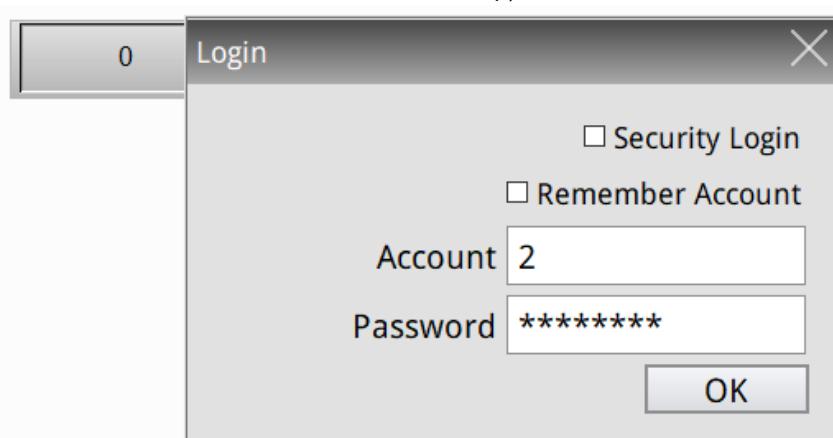


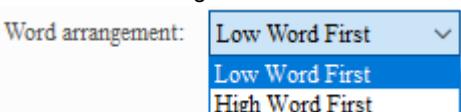
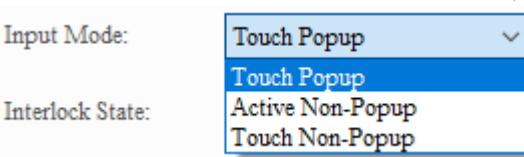
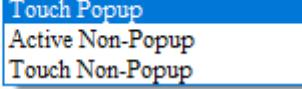
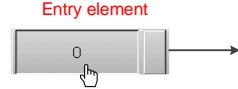
Figure 13.1.5 Details property page for the Numeric Entry element

No.	Property	Function description				
(1)	Prefix Zero	<p>The Prefix Zero function determines how many zeros to add according to the set Integer Digits. Refer to the following example.</p> <p style="color: red; text-align: center;">Integer Digits is 5</p> <table style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;"> <input checked="" type="checkbox"/> Prefix Zero           </td> <td style="width: 50%;"> <input type="checkbox"/> Prefix Zero           </td> </tr> <tr> <td>00181</td> <td>181</td> </tr> </table>	<input checked="" type="checkbox"/> Prefix Zero	<input type="checkbox"/> Prefix Zero	00181	181
<input checked="" type="checkbox"/> Prefix Zero	<input type="checkbox"/> Prefix Zero					
00181	181					

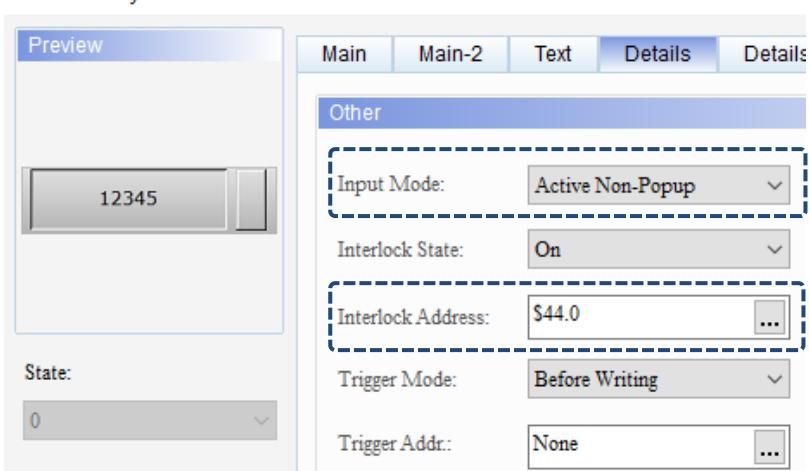
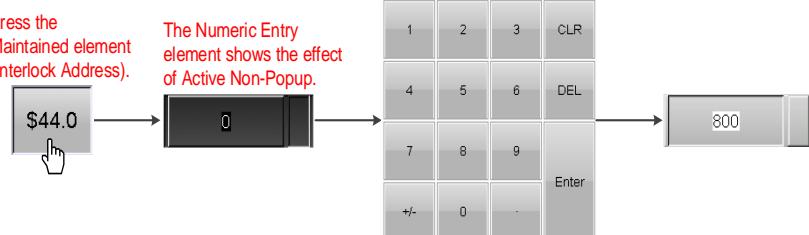
13

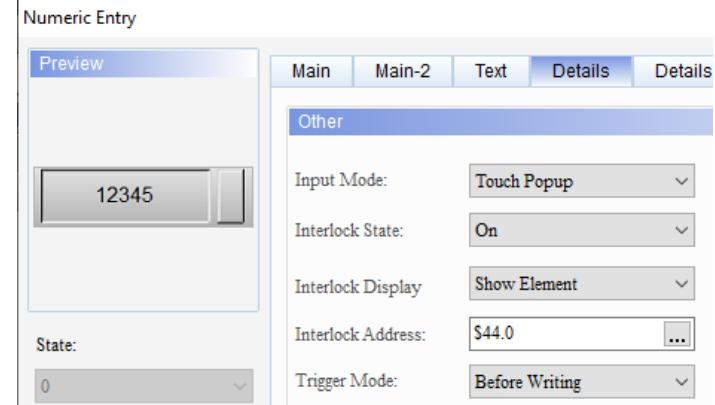
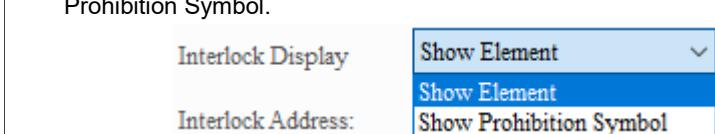
13

No.	Property	Function description								
(2)	Show overrange message	<p>If you set Show overrange message to Yes, the following error message appears when you input a value exceeding the allowable range.</p> 								
(3)	User Security Level Set Low Security	<ul style="list-style-type: none"> <li>You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> </ul> <table border="1"> <tr> <td>User Security Level:</td> <td>0</td> </tr> <tr> <td>Set Low Security:</td> <td>0</td> </tr> <tr> <td>Mark as Asterisk(*):</td> <td>1 2 3 4 5 6 7</td> </tr> <tr> <td>Show ##### when overrange:</td> <td>0</td> </tr> </table> <ul style="list-style-type: none"> <li>After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password with the Password Table element; refer to Section 5.7.2 Password Table Setup).</li> </ul>  <ul style="list-style-type: none"> <li>If you specify Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.</li> </ul>	User Security Level:	0	Set Low Security:	0	Mark as Asterisk(*):	1 2 3 4 5 6 7	Show ##### when overrange:	0
User Security Level:	0									
Set Low Security:	0									
Mark as Asterisk(*):	1 2 3 4 5 6 7									
Show ##### when overrange:	0									

No.	Property	Function description
(4)	Mark as Asterisk (*)	If you specify Mark as Asterisk (*) to Yes, the value appears as asterisks when you input a value to the Numeric Keypad, as shown in the following figure: 
(5)	Show ##### when overrange	<ul style="list-style-type: none"> <li>If you specify Show ##### when overrange to Yes, the value appears in ##### when you input a value that is not within the defined minimum and maximum range.</li> <li>When you set the Minimum as 10 and the Maximum as 50 and enable this function, since the default value of the Numeric Entry element is 0 which is not within the set range of 10 - 50, the value appears in #.</li> </ul> 
(6)	Word arrangement	You can swap the high and low words using the Word arrangement function with the options of Low Word First and High Word First. 
(7)	Input Mode	<ul style="list-style-type: none"> <li>The types of Input Mode include Touch Popup, Active Non-Popup, and Touch Non-Popup.</li> <li>Touch Popup is the default Input Mode for the Numeric Entry element.</li> </ul> <p>Input Mode: </p> <p>Interlock State: </p> <ul style="list-style-type: none"> <li>Touch Popup means that after the Numeric Entry element is pressed, the Numeric Keypad will appear.</li> </ul> <p style="color: red;">When the popup keypad appears, enter the value with the keypad. Then, press ENT.</p> <p>Touch the Numeric Entry element   </p>

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No.	Property	Function description
(7)	Input Mode	<p>■ The Numeric Keypad will not appear with the Input Mode set as Active Non-Popup or Touch Non-Popup. You must create an additional Keypad element.</p> <p>■ Active Non-Popup must be used with Interlock Address. Set the Input Mode for the Numeric Entry element as Active Non-Popup and the Interlock Address as \$44.0. Then, create a Maintained element and set its Write Address as \$44.0.</p> <p><b>Numeric Entry</b></p>  <p>Press the Maintained element (Interlock Address). The Numeric Entry element shows the effect of Active Non-Popup.</p>  <p>■ Like the case of Active Non-Popup, the Numeric Keypad will not appear when the Input Mode is set as Touch Non-Popup, so you must create an additional Keypad element.</p> <p>Use the Keypad element to input values.</p> 

No.	Property	Function description			
(8)	Interlock State	<ul style="list-style-type: none"> <li>The Interlock Address is for enabling the operation of another element and has to be used with Interlock State. If Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if Interlock State is set to On, the Interlock Address is operable when this Interlock State is on.</li> <li>The following describes how it works:           <ol style="list-style-type: none"> <li>First, create a Maintained button and set its Write Address as \$44.0. Next, set the Write Address as \$555 and the Interlock Address as \$44.0 for the Numeric Entry element.</li> <li>In order for the Numeric Entry element \$555 to become operable, you need to first press the Maintained button \$44.0 to enable \$555.</li> </ol>  </li> </ul>			
	Interlock Address	 <ul style="list-style-type: none"> <li>There are two modes for the Interlock Display, Show Element and Show Prohibition Symbol.</li> </ul> 			
	Interlock Display	<table border="1"> <tr> <td>Show Element</td> <td></td> </tr> <tr> <td>Show Prohibition Symbol</td> <td></td> </tr> </table>	Show Element		Show Prohibition Symbol
Show Element					
Show Prohibition Symbol					

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No.	Property	Function description				
(9)	Trigger Mode	<ul style="list-style-type: none"> <li>The Trigger Modes include Before Writing and After Writing.           <table border="1" style="margin-left: 20px;"> <tr> <td>Before Writing</td> <td>After Writing</td> </tr> <tr> <td>Trigger Addr. must be set to on before the value changes.</td> <td>Value is changed before the Trigger Addr. is set to on.</td> </tr> </table> </li> <li>The triggering function only switches the set Trigger Addr. to on, so if triggering again is required, you need to set the Trigger Addr. to off.</li> </ul> <p>Flowchart of Before Writing:</p> <p>Flowchart of After Writing:</p>	Before Writing	After Writing	Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.
Before Writing	After Writing					
Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.					
	Trigger Addr.	<p>When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</p>				
(10)	Invisible Address	<p>Numeric Entry</p>				

## ■ Details-2

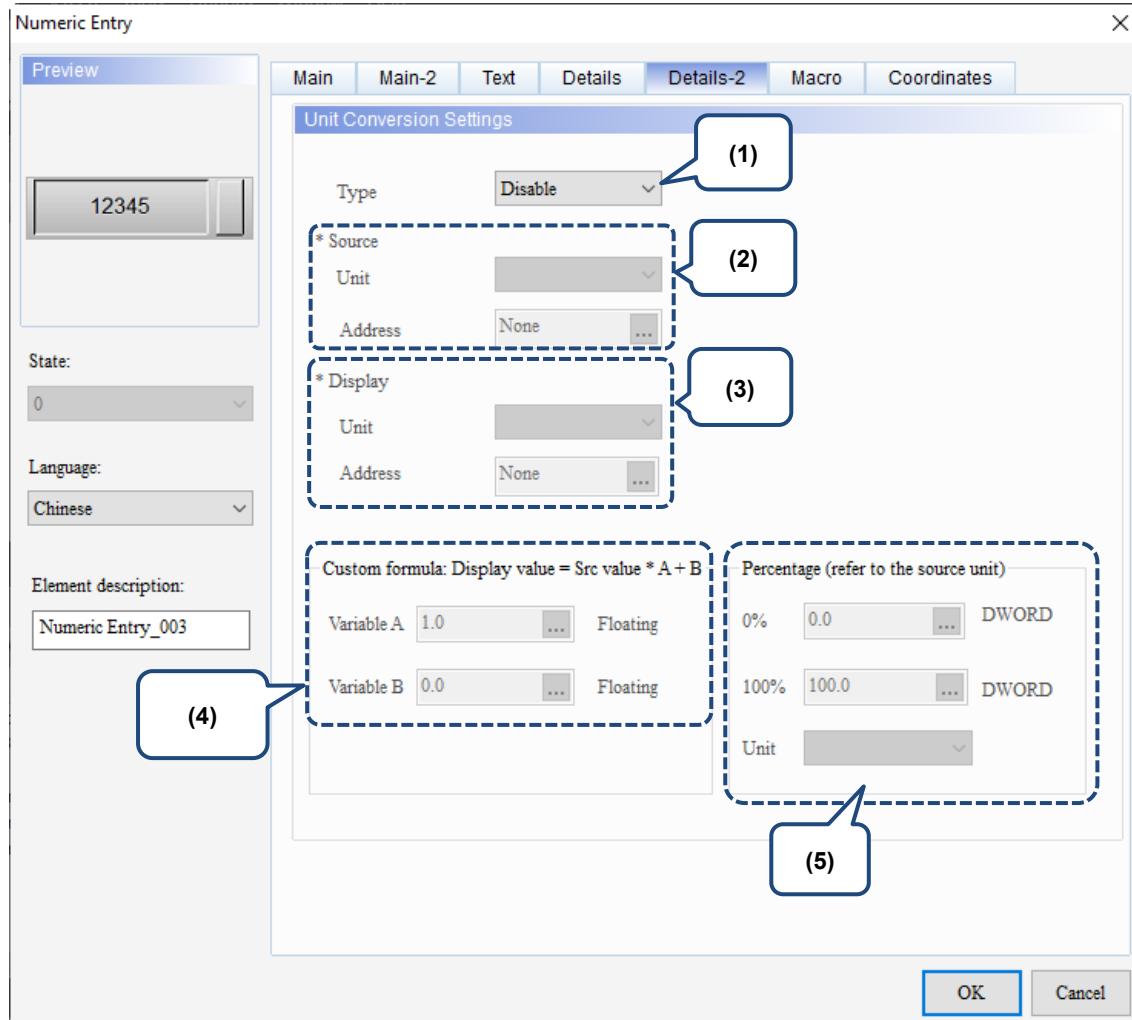
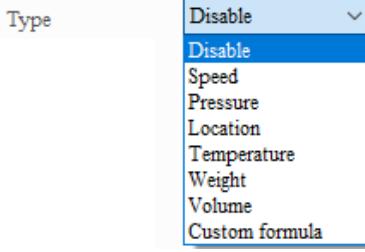
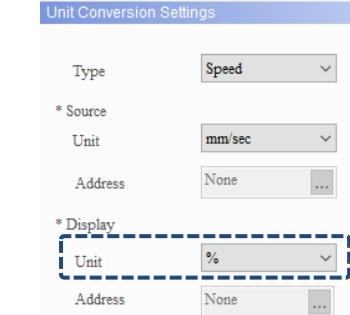
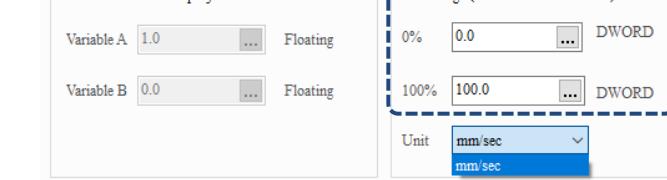
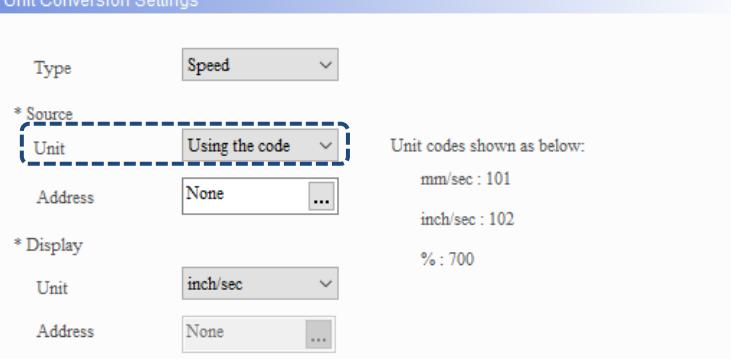
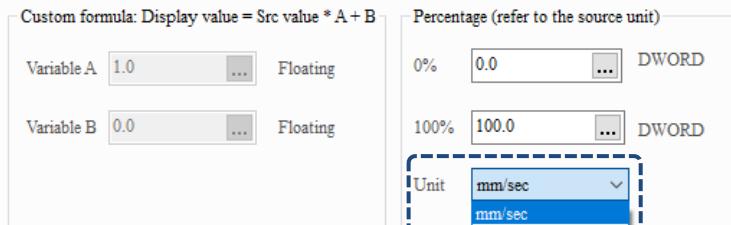


Figure 13.1.6 Details-2 property page for the Numeric Entry element

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No.	Property	Function description																										
(1)	Type	<ul style="list-style-type: none"> <li>You can select the conversion type, including Speed, Pressure, Location, Temperature, Weight, Volume, and Custom formula.</li> </ul>  <ul style="list-style-type: none"> <li>If you select Disable, it means the value does not need conversion.</li> <li>When selecting the Custom formula for the Type, you have to enter values for Variable A and Variable B. The unit of Variable A and Variable B is Floating, and the formula is [Display value = Source value * A + B].</li> </ul> <p>The screenshot shows the 'Unit Conversion Settings' dialog. The 'Type' dropdown is set to 'Custom formula'. The 'Custom formula' section contains fields for 'Variable A' (value 1.0, floating point) and 'Variable B' (value 0.0, floating point). To the right, there's a panel for 'Percentage (refer to the source unit)' with fields for '0%' (0.0), '100%' (100.0), and 'Unit' (DWORD).</p>																										
(2)	Source	<ul style="list-style-type: none"> <li>The unit is subject to change based on the selected Type. The following table lists the corresponding units for each type.</li> </ul> <table border="1"> <thead> <tr> <th>Type</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Speed</td> <td>mm/sec</td> </tr> <tr> <td>inch/sec</td> </tr> <tr> <td>%</td> </tr> <tr> <td colspan="2">Using the code</td> </tr> <tr> <td rowspan="3">Pressure</td> <td>kg/cm</td> </tr> <tr> <td>bar</td> </tr> <tr> <td>%</td> </tr> <tr> <td colspan="2">Using the code</td> </tr> <tr> <td rowspan="3">Location (position)</td> <td>mm</td> </tr> <tr> <td>inch</td> </tr> <tr> <td>%</td> </tr> <tr> <td colspan="2">Using the code</td> </tr> <tr> <td rowspan="3">Temperature</td> <td>°F</td> </tr> <tr> <td>°C</td> </tr> <tr> <td>%</td> </tr> <tr> <td colspan="2">Using the code</td> </tr> </tbody> </table>	Type	Unit	Speed	mm/sec	inch/sec	%	Using the code		Pressure	kg/cm	bar	%	Using the code		Location (position)	mm	inch	%	Using the code		Temperature	°F	°C	%	Using the code	
Type	Unit																											
Speed	mm/sec																											
	inch/sec																											
	%																											
Using the code																												
Pressure	kg/cm																											
	bar																											
	%																											
Using the code																												
Location (position)	mm																											
	inch																											
	%																											
Using the code																												
Temperature	°F																											
	°C																											
	%																											
Using the code																												

No.	Property	Function description			
		Type	Unit		
(2)	Source	Weight	ton		
			kN		
			g		
			oz		
			%		
		Using the code			
		Volume	L		
			ml		
			kL		
			%		
			Using the code		
<ul style="list-style-type: none"> <li>When you select % (Percentage) or Using the code as the unit for either the Source or Display, the Percentage setting section is enabled. When the Percentage setting section allows data input, you need to define the values for 0% and 100% which unit setting refers to the Source.</li> </ul>					
					
					
					
					

# 13

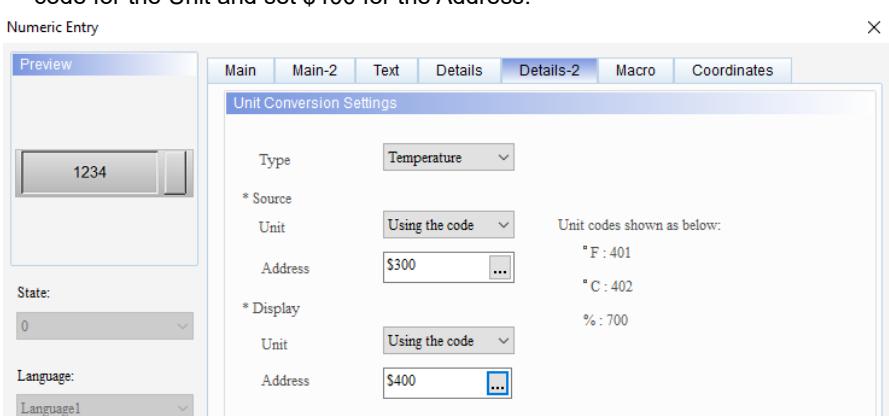
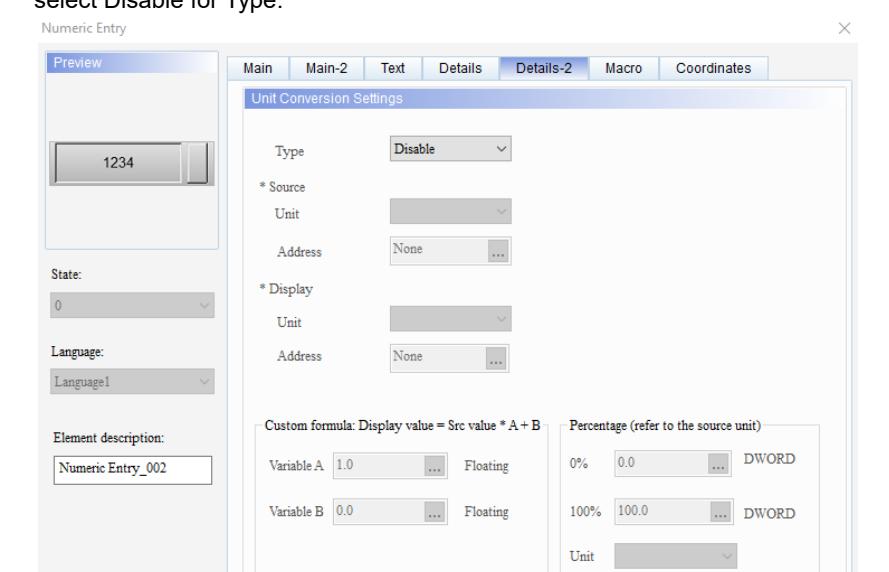
No.	Property	Function description																																																					
(2)	Source	<ul style="list-style-type: none"> <li>■ When you select Using the code as the unit, it means you can enter variables to specify the unit codes for the Source and Display. The unit codes are as follows:</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Type</th><th>Unit</th><th>Code</th></tr> </thead> <tbody> <tr> <td rowspan="3">Speed</td><td>mm/sec</td><td>101</td></tr> <tr><td>inch/sec</td><td>102</td></tr> <tr><td>%</td><td>700</td></tr> <tr> <td rowspan="3">Pressure</td><td>kg/cm</td><td>201</td></tr> <tr><td>bar</td><td>202</td></tr> <tr><td>%</td><td>700</td></tr> <tr> <td rowspan="3">Location (position)</td><td>mm</td><td>301</td></tr> <tr><td>inch</td><td>302</td></tr> <tr><td>%</td><td>700</td></tr> <tr> <td rowspan="3">Temperature</td><td>°F</td><td>401</td></tr> <tr><td>°C</td><td>402</td></tr> <tr><td>%</td><td>700</td></tr> <tr> <td rowspan="5">Weight</td><td>ton</td><td>501</td></tr> <tr><td>kN</td><td>502</td></tr> <tr><td>g</td><td>503</td></tr> <tr><td>oz</td><td>504</td></tr> <tr><td>%</td><td>700</td></tr> <tr> <td rowspan="4">Volume</td><td>L</td><td>601</td></tr> <tr><td>ml</td><td>602</td></tr> <tr><td>kL</td><td>603</td></tr> <tr><td>%</td><td>700</td></tr> </tbody> </table>			Type	Unit	Code	Speed	mm/sec	101	inch/sec	102	%	700	Pressure	kg/cm	201	bar	202	%	700	Location (position)	mm	301	inch	302	%	700	Temperature	°F	401	°C	402	%	700	Weight	ton	501	kN	502	g	503	oz	504	%	700	Volume	L	601	ml	602	kL	603	%	700
Type	Unit	Code																																																					
Speed	mm/sec	101																																																					
	inch/sec	102																																																					
	%	700																																																					
Pressure	kg/cm	201																																																					
	bar	202																																																					
	%	700																																																					
Location (position)	mm	301																																																					
	inch	302																																																					
	%	700																																																					
Temperature	°F	401																																																					
	°C	402																																																					
	%	700																																																					
Weight	ton	501																																																					
	kN	502																																																					
	g	503																																																					
	oz	504																																																					
	%	700																																																					
Volume	L	601																																																					
	ml	602																																																					
	kL	603																																																					
	%	700																																																					
		<ul style="list-style-type: none"> <li>■ User-defined address is available only when you select Using the code for the unit.</li> <li>■ If you select Using the code as the unit for both the Source and Display, do not use the same address.</li> </ul>																																																					
(3)	Display	<ul style="list-style-type: none"> <li>■ Refer to the Source description for details about the units.</li> <li>■ User-defined address is available only when you select Using the code for the unit.</li> <li>■ If you select Using the code as the unit for both the Source and Display, do not use the same address.</li> </ul>																																																					
(4)	Custom formula	<ul style="list-style-type: none"> <li>■ You can input external / internal memory addresses and constants for both Variable A and Variable B.</li> <li>■ When selecting the Custom formula for the Type, you have to enter values for Variable A and Variable B. The unit of Variable A and Variable B is Floating, and the formula is [Display value = Source value * A + B].</li> </ul>																																																					
(5)	Percentage settings	<ul style="list-style-type: none"> <li>■ You can input external / internal memory addresses and constants for both setting values of 0% and 100%.</li> <li>■ When you select % (Percentage) or Using the code as the unit for either the Source or Display, the Percentage setting section is enabled.</li> <li>■ The unit is subject to change based on the Source unit setting. Take the speed setting for example. If you select % (Percentage) or Using the code as the Source unit, you can select mm/sec or inch/sec from the Unit drop-down list box in the Percentage setting section; if you select mm/sec for the Source unit, mm/sec is the only unit available in the Percentage setting section.</li> </ul>																																																					

Refer to the Unit Conversion examples in Tables 13.1.4 to 13.1.6.

Table 13.1.4 Unit conversion example

Unit conversion (fixed unit)							
Address settings	Numeric Display element (Display)		Numeric Entry element (Source)				
	Read Address	\$10	Write Address				
Detail settings	Numeric Display / Numeric Entry elements						
	Data Type	Data Format	Integer Digits				
	Word	Unsigned Decimal	5				
	<ul style="list-style-type: none"> <li>Double-click the Numeric Display element and go to the Details-2 page. Select Temperature for the Type, °F for the Source Unit, and °C for the Display Unit.</li> </ul>						
Unit settings	<ul style="list-style-type: none"> <li>Since the Numeric Entry element does not need unit conversion, set the Type to Disable.</li> </ul>						
Execution results	<p>After creating the elements, compile and download the elements to the HMI. Then, enter 50 (°F) to the Numeric Entry element and the Numeric Display element will convert the temperature to 10 (°C).</p> <table style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Display (°C)</td> <td style="width: 50%;">Source (°F)</td> </tr> <tr> <td></td> <td></td> </tr> </table>			Display (°C)	Source (°F)		
Display (°C)	Source (°F)						

Table 13.1.5 Unit conversion example

Unit conversion (Using the code)					
Address settings	Numeric Entry element		Numeric Entry element (Source)		Numeric Entry element (Display)
	Read Address	\$10	Write Address	\$300	Write Address
	W:\$10	#####	W:\$300	#####	W:\$400
Detail settings	Numeric Entry element				
	Data Type	Data Format	Integer Digits	Fractional (Digits)	
	Word	Unsigned Decimal	5	0	
Unit settings	<ul style="list-style-type: none"> <li>■ Double-click the Numeric Entry element of \$10 and go to the Details-2 page. Select Temperature for the Type. For the Source settings, select Using the code for the Unit and set \$300 for the Address; for the Display settings, select Using the code for the Unit and set \$400 for the Address.</li> </ul> 				
	<ul style="list-style-type: none"> <li>■ Since the Numeric Entry elements of \$300 and \$400 do not need unit conversion, select Disable for Type.</li> </ul> 				

**Unit conversion (Using the code)**

- After creating the elements, compile and download the elements to the HMI, and then enter 50 for \$10.

Execution results



- Enter 401 (means °F) for \$300 and enter 402 (means °C) for \$400, and then \$10 converts the value to 10 (°C).

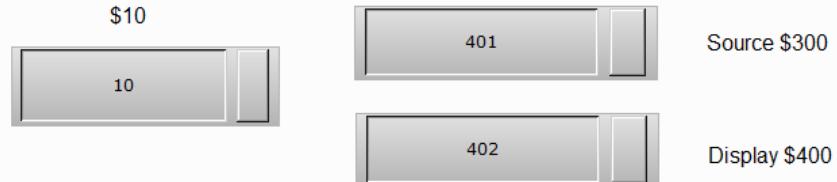


Table 13.1.6 Unit conversion example

Unit conversion (%)															
Address settings	Numeric Display element		Numeric Entry element (Source)												
	Read Address	\$10	Write Address												
	W:\$10 #####		W:\$300 #####												
Detail settings	Numeric Display / Numeric Entry elements														
	Data Type	Data Format	Integer Digits      Fractional (Digits)												
	Word	Unsigned Decimal	5      0												
<ul style="list-style-type: none"> <li>■ Double-click the Numeric Display element of \$10. Go to the Details-2 page, select Temperature for the Type, and set the Source unit to % and the Display unit to °C.</li> </ul>															
<div style="background-color: #e0f2ff; border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>Unit Conversion Settings</b> </div> <div style="border: 1px solid #ccc; padding: 10px;"> <p>Type: Temperature</p> <p>* Source</p> <p>Unit: %</p> <p>Address: None</p> <p>* Display</p> <p>Unit: °C</p> <p>Address: None</p> </div>															
<ul style="list-style-type: none"> <li>■ Set the percentage 0% to 30.0 and 100% to 1000.0.</li> <li>■ Since the Source unit is %, the percentage setting unit can be °F or °C. In this example, °F is used as the unit.</li> </ul>															
<div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <p>Percentage (refer to the source unit)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">0%</td> <td style="width: 10%;">30.0</td> <td style="width: 10%; text-align: right;">DWORD</td> </tr> <tr> <td>100%</td> <td>1000.0</td> <td style="text-align: right;">DWORD</td> </tr> <tr> <td>Unit:</td> <td style="border: 1px solid #ccc; padding: 2px;">°F</td> <td style="text-align: right;">°F</td> </tr> <tr> <td></td> <td style="border: 1px solid #ccc; padding: 2px;">°F</td> <td style="text-align: right;">°C</td> </tr> </table> </div> <div style="border: 1px solid #ccc; padding: 10px;"> <p>■ Since the Numeric Entry element of \$10 does not need unit conversion, select Disable for the Type.</p> </div>				0%	30.0	DWORD	100%	1000.0	DWORD	Unit:	°F	°F		°F	°C
0%	30.0	DWORD													
100%	1000.0	DWORD													
Unit:	°F	°F													
	°F	°C													
<div style="border: 1px solid #ccc; padding: 10px;"> <p>Numeric Entry</p> <p>Preview: 1234</p> <p>Main Main-2 Text Details Details-2 Macro Coordinates</p> <p>Unit Conversion Settings</p> <p>Type: Disable</p> <p>* Source</p> <p>Unit:</p> <p>Address: None</p> <p>* Display</p> <p>Unit:</p> <p>Address: None</p> </div>															

## Execution results

**Unit conversion (%)**

- After creating the elements, compile and download the elements to the HMI. The value for the Numeric Entry element of \$10 is 0, so the Numeric Display element displays 30, meaning the value for 0% is 30.



- If you set \$10 to 100, the Numeric Display element displays 1000, meaning the value for 100% is 1000.



## ■ Macro

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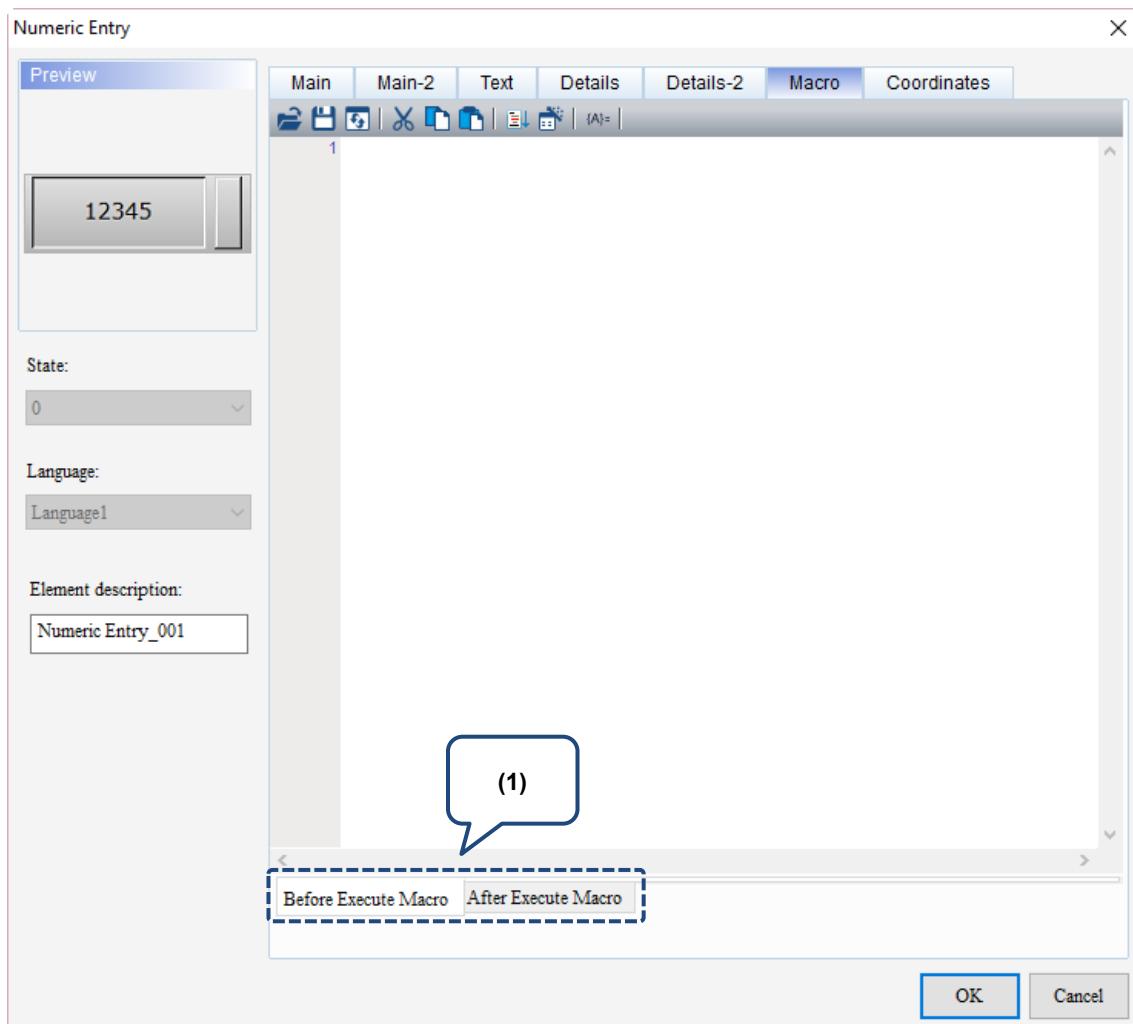
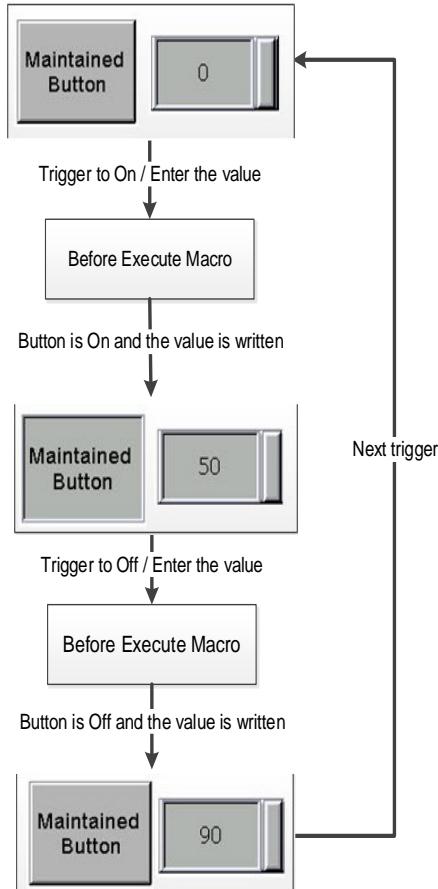


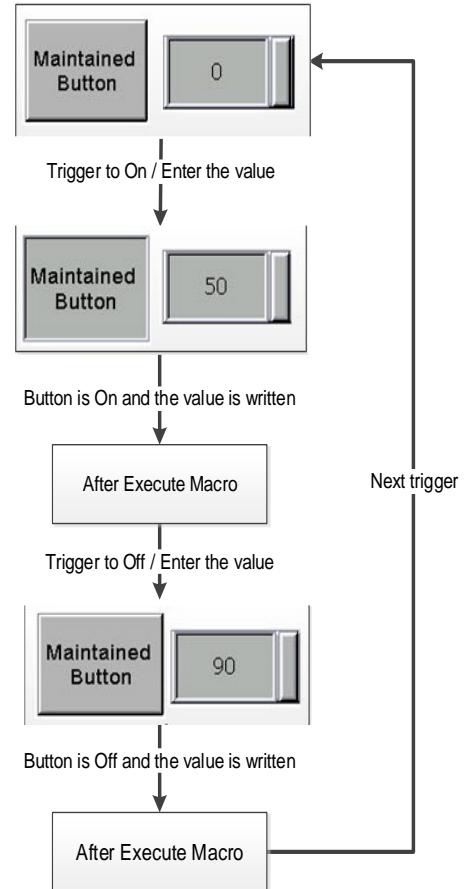
Figure 13.1.7 Macro property page for the Numeric Entry element

No.	Property	Function description
(1)	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands, and then execute the action of the button. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button, and then execute the macro commands. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.

Flowchart of Before Execute Macro:



Flowchart of After Execute Macro:



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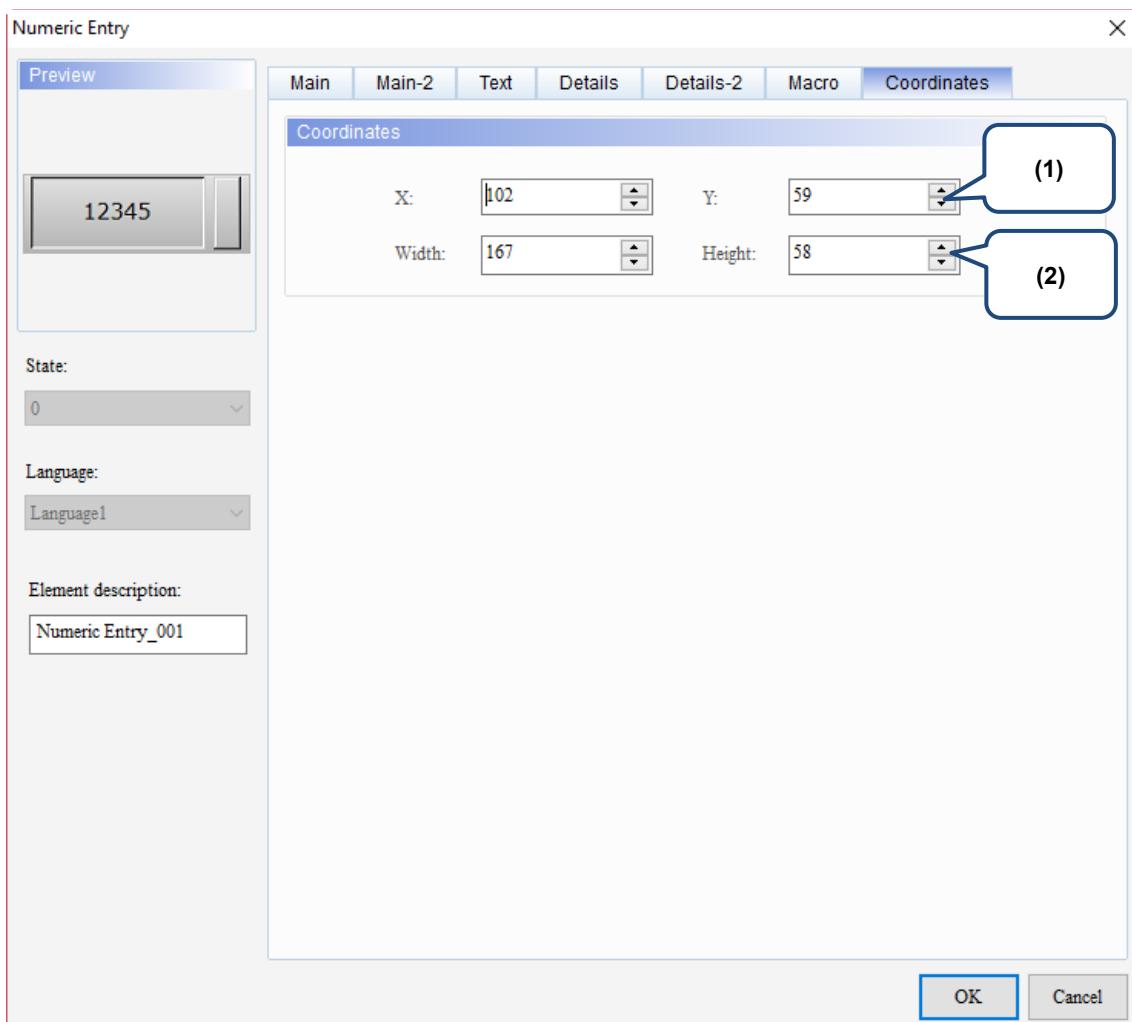
**■ Coordinates**

Figure 13.1.8 Coordinates property page for the Numeric Entry element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 13.2 Character Entry

The Character Entry element supports only the ASCII code input. Therefore, the format of the display and input is character. You can switch to the ASCII input mode with the ALT key as shown in the following figure.



Figure 13.2.1 ASCII keyboard



Figure 13.2.2 ASCII keyboard

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The following conversion table shows the conversion between data formats and characters from A to G. The remaining characters can be deduced with the same pattern.

Unsigned Decimal	Hexadecimal	Character
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G

Table 13.2.1 ASCII code conversion table

According to Table 13.2.1, if you input the character A to the Character Entry element, the Numeric Entry element will display 65 (Unsigned Decimal).



Table 13.2.2 Character Entry example

Character Entry			
Address settings	Character Entry element		Numeric Entry element
	Write Address	\$555	Write Address
	W:\$555 *****		W:\$555 # # # #
Detail settings	Character Entry element		
	String Length	4	
Execution results	Numeric Entry element		
	Data Type	Data Format	Integer Digits Fractional (Digits)
	Word	Unsigned Decimal	4 0
After creating the elements, compile and download the elements to the HMI. Next, input A to the Character Entry element, and then the Numeric Entry element will display 65 which is converted from the corresponding ASCII code.			

When you double-click the Character Entry, the property page is shown as follows.

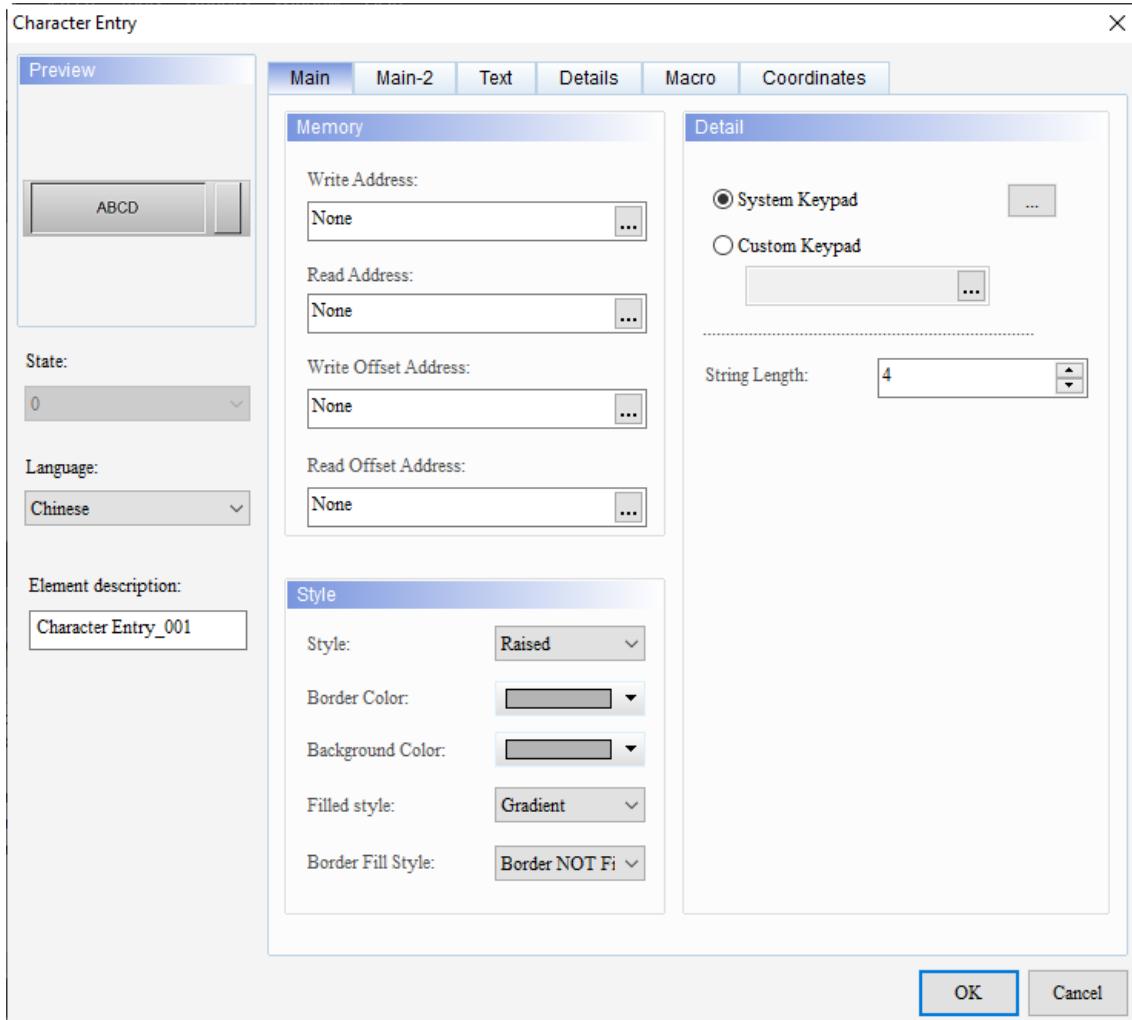


Figure 13.2.3 Properties of Character Entry

Table 13.2.3 Function page of Character Entry

Character Entry	
Function page	Description
Preview	Character Entry elements do not support multiple state values and multi-language data display.
Main	Set the Read Address, Write Address, Read Offset Address, Write Offset Address; set the Style, Background Color, Border Color, Filled style, Border Fill Style, and String Length.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the displaying text font, size, color, and alignment options.
Details	Set the Input Mode, Interlock State, Interlock Display, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, Mark as Asterisk (*), and Insufficient string length zero.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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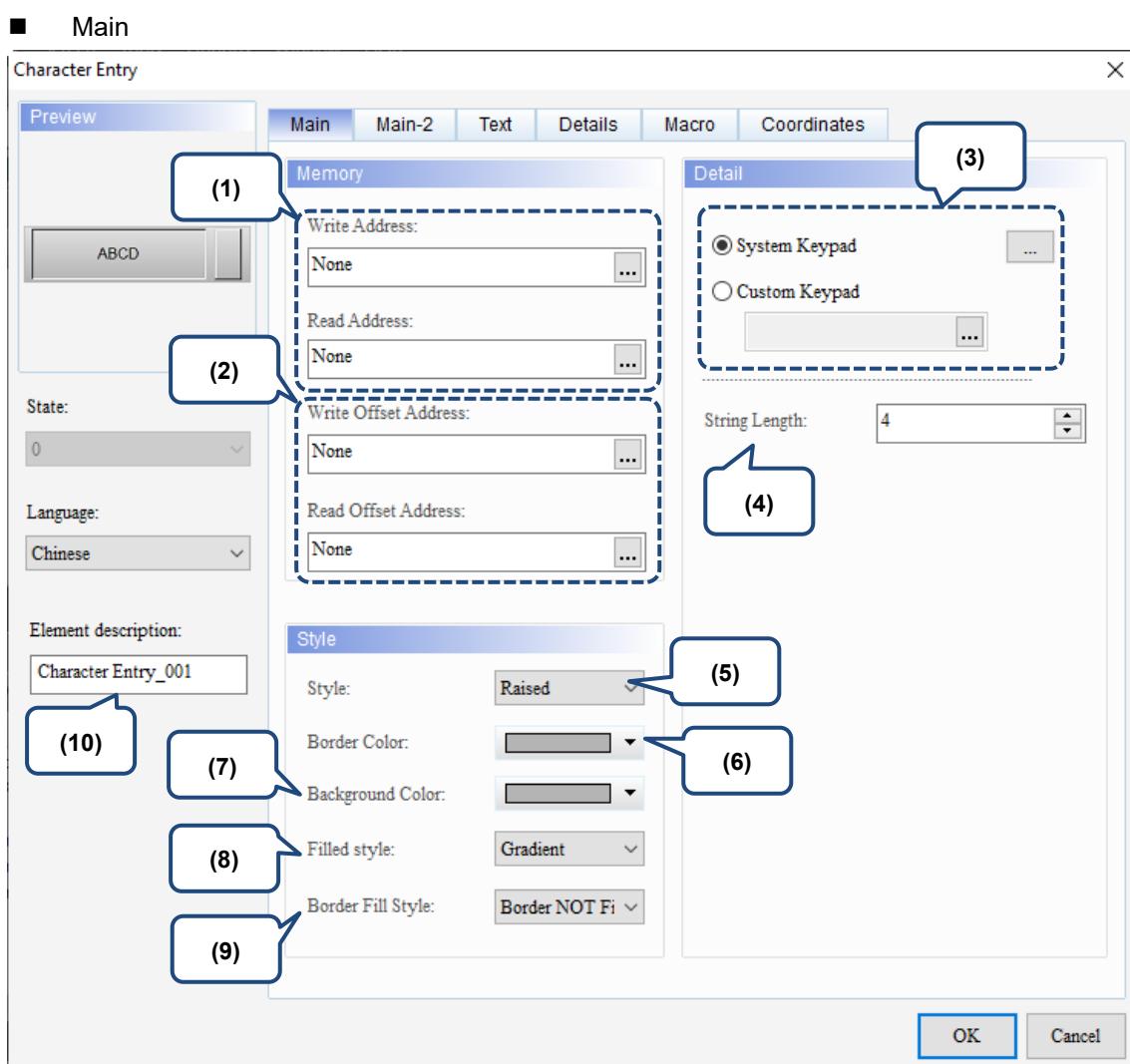
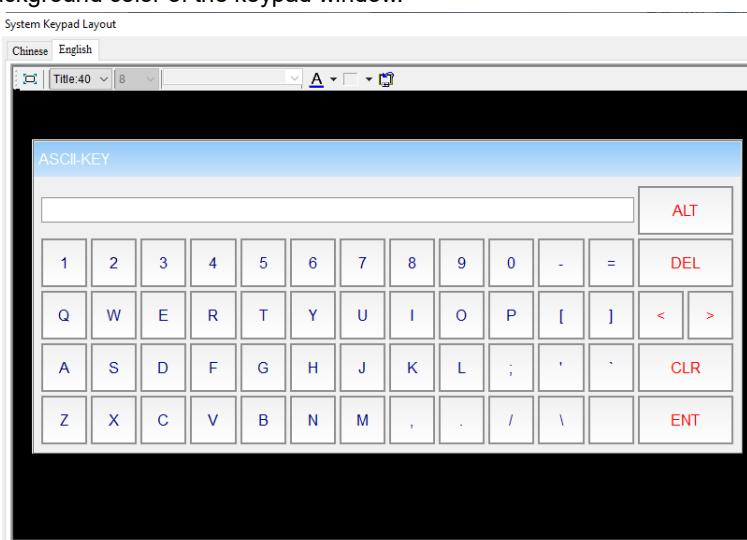
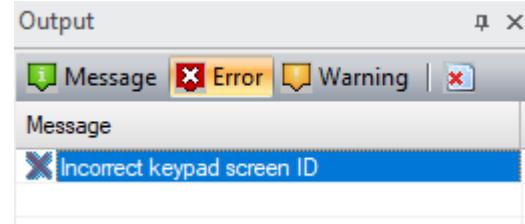
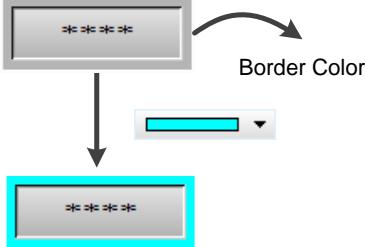
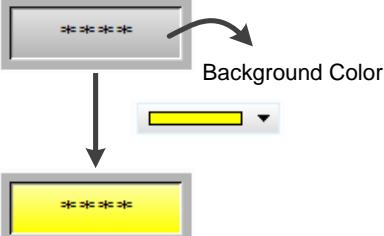
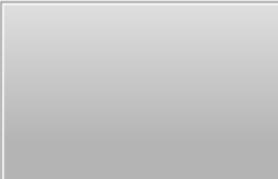
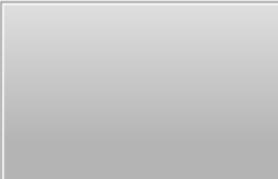
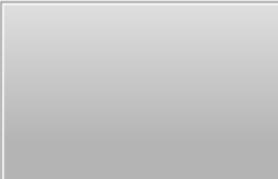
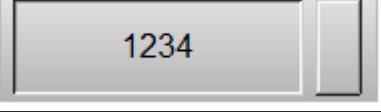
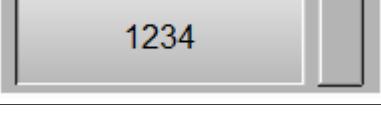
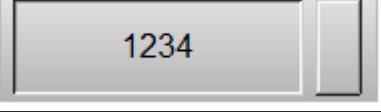
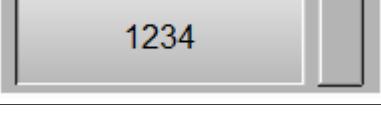
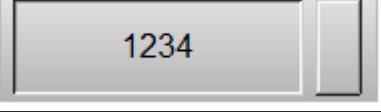
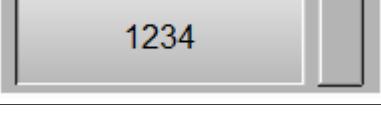


Figure 13.2.4 Main property page for the Character Entry element

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Read Address	
(2)	Write Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
	Read Offset Address	

No.	Property	Function description														
	System Keypad	<p>In the System Keypad Layout window, you can adjust the size of the keypad window, title size, font size / type / color of the numeric display, and the background color of the keypad window.</p> 														
(3)		<table border="1"> <tr> <td></td><td>Select the size of the System Keypad.</td></tr> <tr> <td><input type="button" value="Title:40"/></td><td>Set the title column height.</td></tr> <tr> <td><input type="button" value="10"/></td><td>Set the font size.</td></tr> <tr> <td><input type="button" value="Arial"/></td><td>Set the font type.</td></tr> <tr> <td></td><td>Set the font color.</td></tr> <tr> <td></td><td>Set the background color.</td></tr> <tr> <td></td><td>Default size.</td></tr> </table>		Select the size of the System Keypad.	<input type="button" value="Title:40"/>	Set the title column height.	<input type="button" value="10"/>	Set the font size.	<input type="button" value="Arial"/>	Set the font type.		Set the font color.		Set the background color.		Default size.
	Select the size of the System Keypad.															
<input type="button" value="Title:40"/>	Set the title column height.															
<input type="button" value="10"/>	Set the font size.															
<input type="button" value="Arial"/>	Set the font type.															
	Set the font color.															
	Set the background color.															
	Default size.															
	Custom Keypad	<p>You can select the Custom Keypad function only if there is a Keypad Screen in the editing screen. When there is no Keypad Screen, the following message displays when you compile.</p> 														
(4)	String Length	The range of the String Length is 1 - 256.														
(5)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken	Transparent										
Standard	Raised	Sunken	Transparent													

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No.	Property	Function description				
(6)	Border Color	<ul style="list-style-type: none"> <li>Set the border color of the element.</li> <li>When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul> 				
(7)	Background Color	<ul style="list-style-type: none"> <li>Set the background color of the element.</li> <li>When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul> 				
(8)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1"> <tr> <td>Gradient</td> <td></td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						
(9)	Border Fill Style	<ul style="list-style-type: none"> <li>The border display of the Entry elements on the DOP-100 series models is different from that on the DOP-B series models. To have the border display effect be the same as that on the DOP-B series models, when you open the DOP-B project on a DOP-100 series model, the border is displayed with solid color.</li> <li>The default Border Fill Style for the DOP-100 series models is Border NOT Fill, meaning the border of the element is displayed with a gradient color.</li> </ul> <table border="1"> <tr> <td>Border NOT Fill (gradient color)</td> <td></td> </tr> <tr> <td>Border Fill (solid color)</td> <td></td> </tr> </table>	Border NOT Fill (gradient color)		Border Fill (solid color)	
Border NOT Fill (gradient color)						
Border Fill (solid color)						

No.	Property	Function description																																																																																
(8)	Element description	<p>Record the element actions to be executed. The record is written in the CSV file of the Operation Log Table so users can know what actions have been done.</p> <table border="1"> <thead> <tr> <th>Time</th><th>Date</th><th>Level</th><th>Screen</th><th>Desc</th><th>Action</th><th>Pre Value</th><th>Change Value</th></tr> </thead> <tbody> <tr> <td>1 13:37:54</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>Level 1 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr> <td>2 13:37:56</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>Level 1 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr> <td>3 13:38:19</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>Level 1 Btn</td><td>Set Val</td><td>8</td><td>4</td></tr> <tr> <td>4 13:38:21</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 2 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr> <td>5 13:38:21</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 2 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr> <td>6 13:38:22</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 2 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr> <td>7 13:38:23</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 4 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr> <td>8 13:38:31</td><td>5/5/2016</td><td>4</td><td>Screen_22</td><td>Level 4 Btn</td><td>Set Val</td><td>4</td><td>8</td></tr> <tr> <td>9 13:38:35</td><td>5/5/2016</td><td>8</td><td>Screen_22</td><td>\$100 Value</td><td>Set Val</td><td>85</td><td>25</td></tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0	2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1	3 13:38:19	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	8	4	4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0	6 13:38:22	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1	7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0	8 13:38:31	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	4	8	9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25
Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																											
1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0																																																																											
2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1																																																																											
3 13:38:19	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	8	4																																																																											
4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																											
5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0																																																																											
6 13:38:22	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1																																																																											
7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0																																																																											
8 13:38:31	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	4	8																																																																											
9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25																																																																											

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## ■ Main-2

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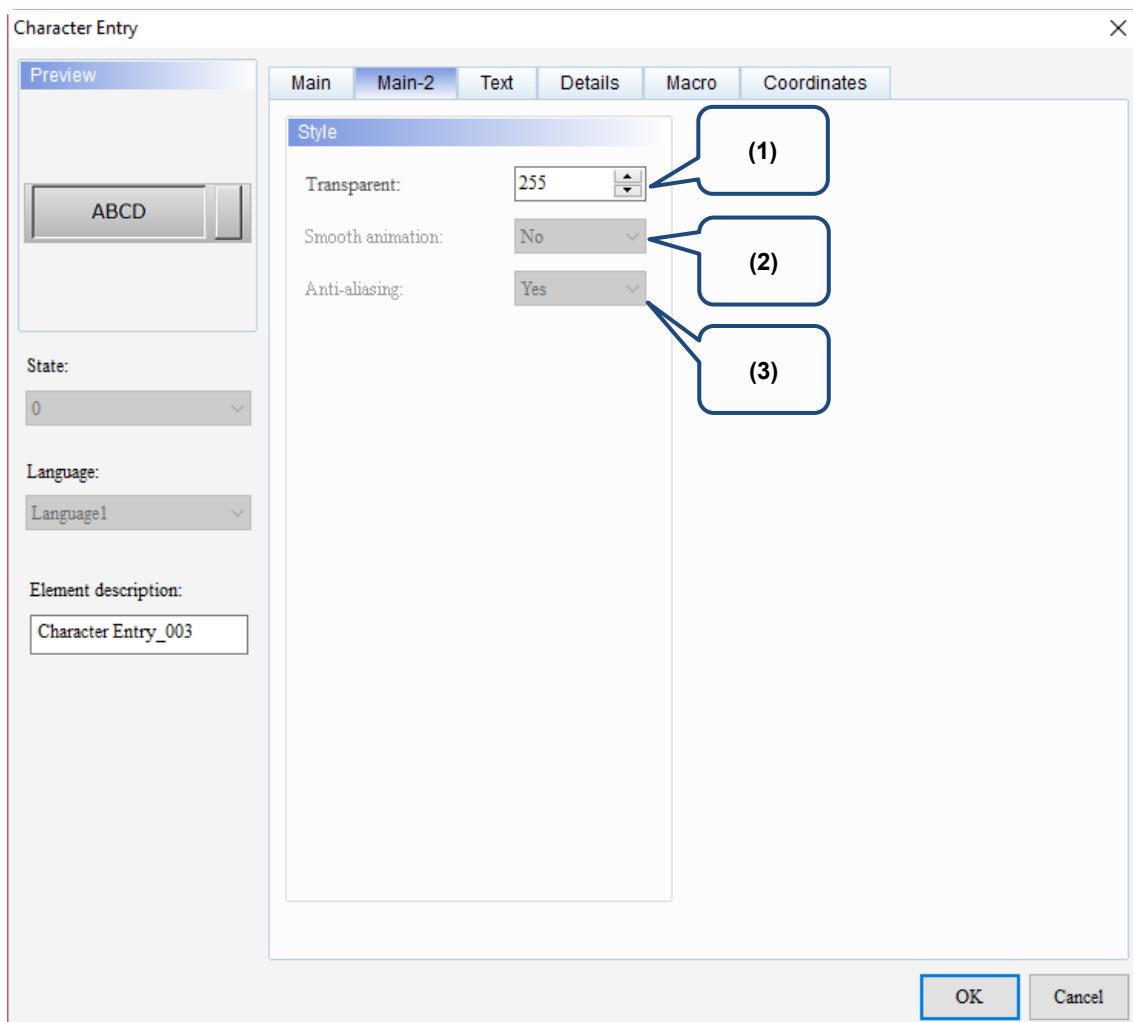


Figure 13.2.5 Main-2 property page for the Character Entry element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

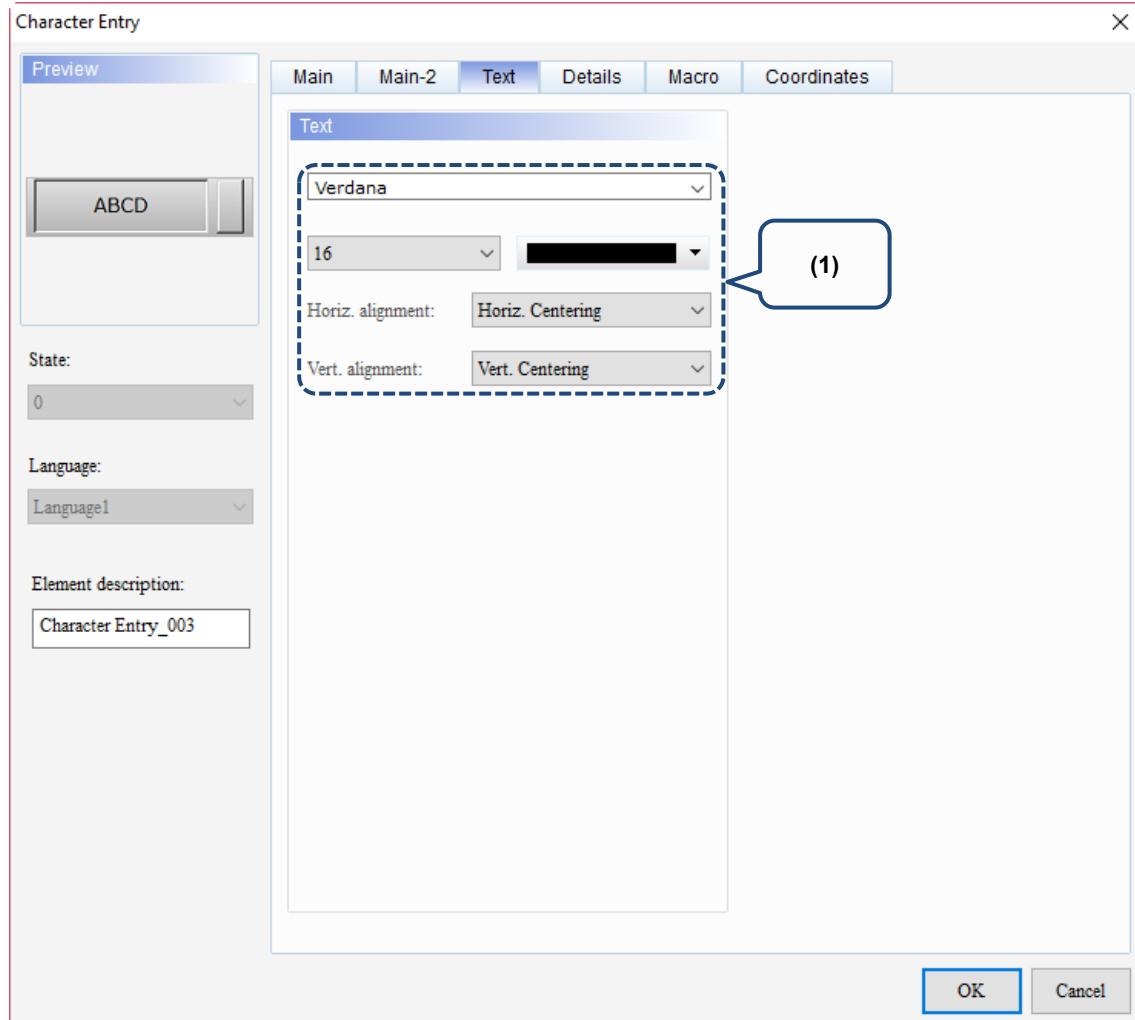


Figure 13.2.6 Text property page for the Character Entry element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

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## ■ Details

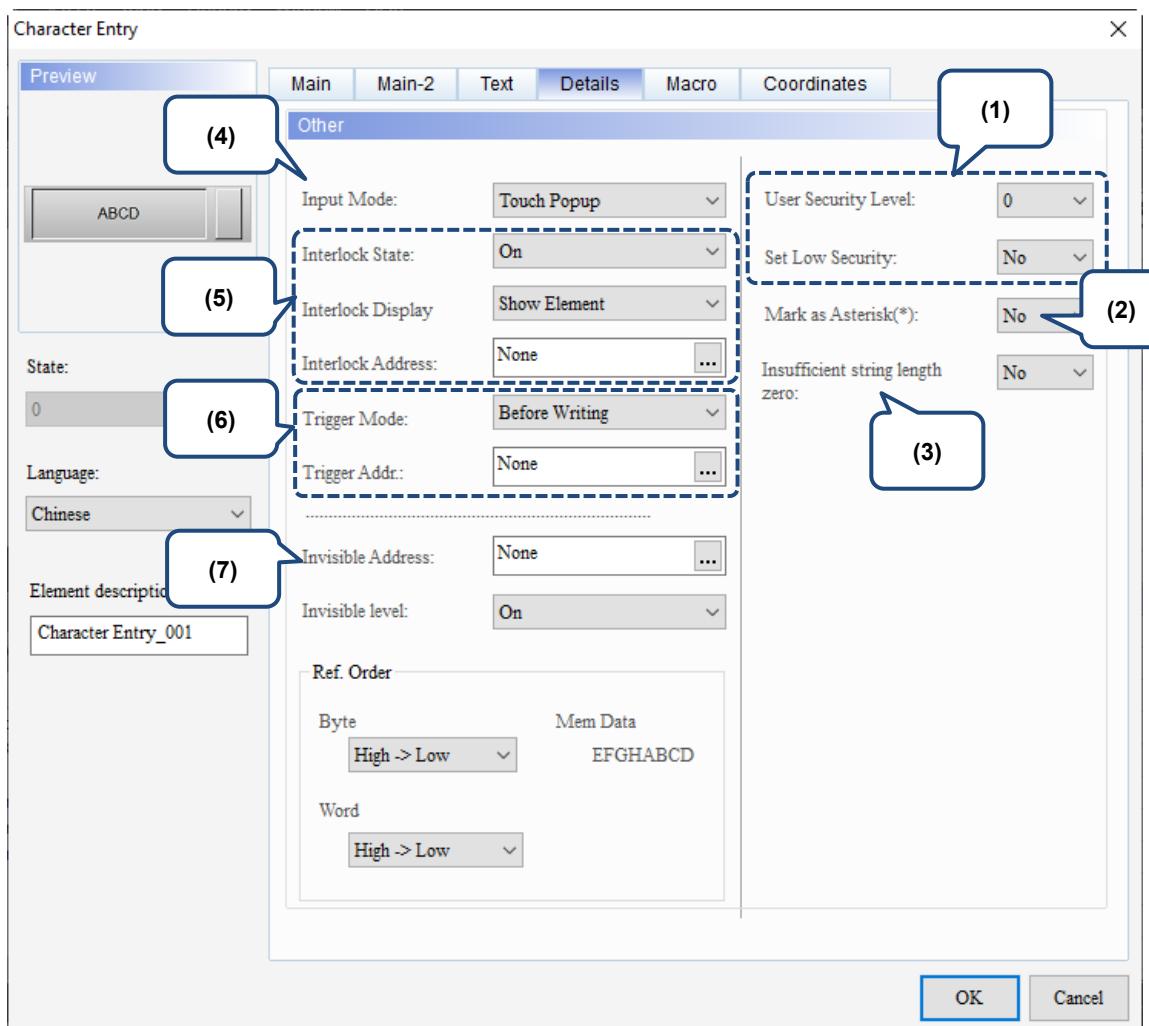
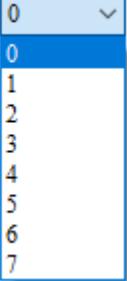
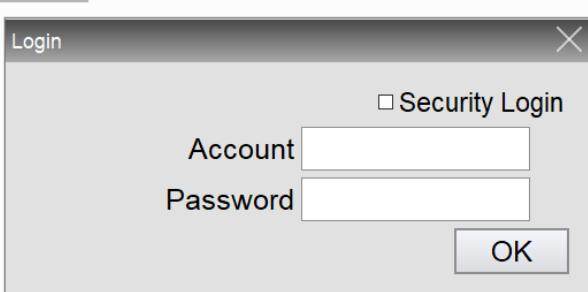
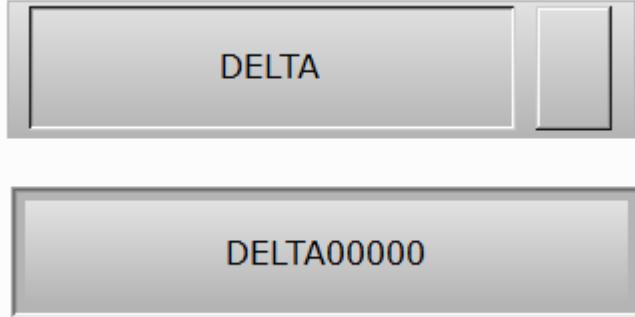
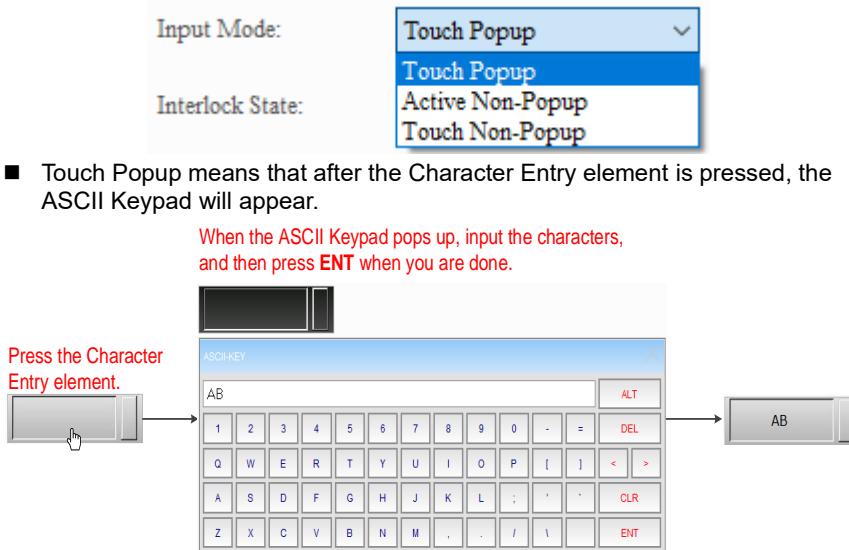
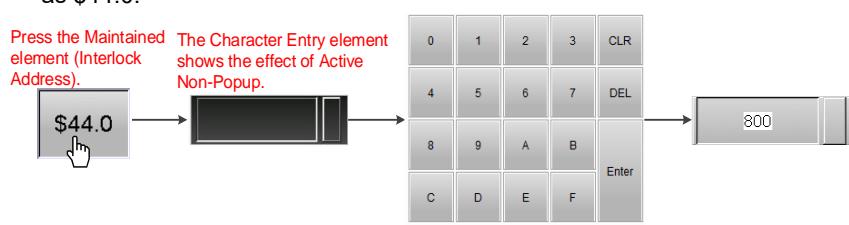
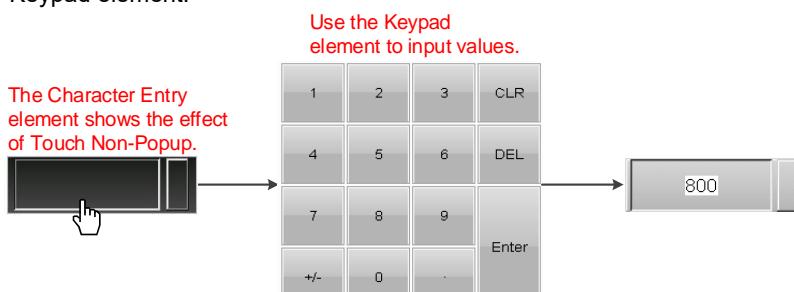
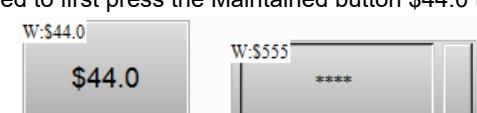
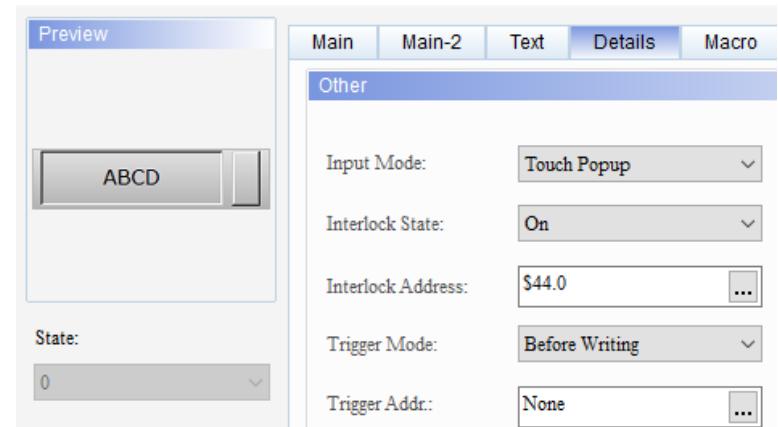


Figure 13.2.7 Details property page for the Character Entry element

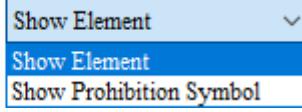
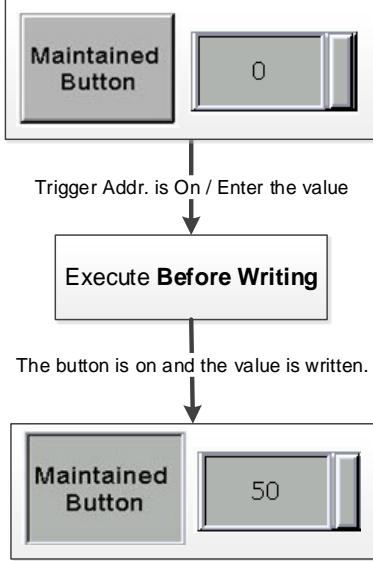
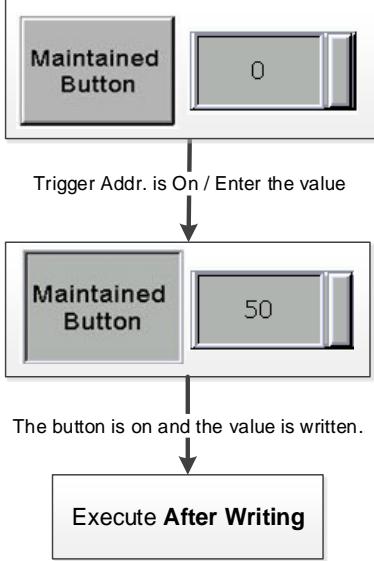
No.	Property	Function description
(1)	User Security Level Set Low Security	<p>■ You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</p> <p>User Security Level:</p>  <p>Set Low Security:</p> <p>Mark as Asterisk(*):</p> <p>Show ##### when overrange:</p>
(2)	Mark as Asterisk (*)	<p>■ After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password with the Password Table element; refer to Section 5.7.2 Password Table Setup).</p>  <p>■ If you specify Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.</p> <p>If you specify Mark as Asterisk (*) to Yes, the value appears as asterisks when you input a value to the ASCII Keypad, as shown in the following figure:</p> 

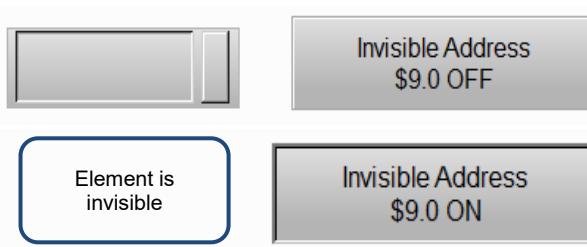
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No.	Property	Function description
(3)	Insufficient string length zero	<p>When the length of the input string is less than the set length, the remaining characters will be filled in with zeros for display.</p> 
(4)	Input Mode	<ul style="list-style-type: none"> <li>The types of Input Mode include Touch Popup, Active Non-Popup, and Touch Non-Popup. Touch Popup is the default Input Mode for the Character Entry element.</li> </ul> <p><b>Input Mode:</b> Touch Popup</p> <p><b>Interlock State:</b> Touch Popup Active Non-Popup Touch Non-Popup</p> <ul style="list-style-type: none"> <li>Touch Popup means that after the Character Entry element is pressed, the ASCII Keypad will appear.</li> </ul> <p>When the ASCII Keypad pops up, input the characters, and then press ENT when you are done.</p>  <ul style="list-style-type: none"> <li>The ASCII Keypad will not appear when you press the Character Entry elements with the Input Mode set as Active Non-Popup or Touch Non-Popup. You must create an additional Keypad element.</li> <li>Active Non-Popup must be used with Interlock Address. Set the Input Mode as Active Non-Popup and the Interlock Address as \$44.0 for the Character Entry element. Then, create a Maintained element and set its Write Address as \$44.0.</li> </ul> <p>Press the Maintained element (Interlock Address). The Character Entry element shows the effect of Active Non-Popup.</p> 

No.	Property	Function description																																				
(4)	Input Mode	<p>■ Like the case of Active Non-Popup, the ASCII Keypad will not appear when the Input Mode is set as Touch Non-Popup, so you must create an additional Keypad element.</p> <p>The Character Entry element shows the effect of Touch Non-Popup.</p>  <p style="color: red; margin-left: 20px;">Use the Keypad element to input values.</p>																																				
(5)	Interlock State	<p>■ The Interlock Address is for enabling the operation of another element and has to be used with Interlock State. If Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if Interlock State is set to On, the Interlock Address is operable when this Interlock State is on.</p> <p>■ The following describes how it works:</p> <ol style="list-style-type: none"> <li>First, create a Maintained button and set its Write Address as \$44.0. Next, set the Write Address as \$555 and the Interlock Address as \$44.0 for the Character Entry element.</li> <li>In order for the Character Entry element \$555 to become operable, you need to first press the Maintained button \$44.0 to enable \$555.</li> </ol>  <p>Character Entry</p>  <table border="1"> <tr> <td>Preview</td> <td>Main</td> <td>Main-2</td> <td>Text</td> <td>Details</td> <td>Macro</td> </tr> <tr> <td>ABCD</td> <td>Input Mode:</td> <td colspan="4">Touch Popup</td> </tr> <tr> <td></td> <td>Interlock State:</td> <td colspan="4">On</td> </tr> <tr> <td></td> <td>Interlock Address:</td> <td colspan="4">\$44.0</td> </tr> <tr> <td></td> <td>Trigger Mode:</td> <td colspan="4">Before Writing</td> </tr> <tr> <td></td> <td>Trigger Addr.:</td> <td colspan="4">None</td> </tr> </table>	Preview	Main	Main-2	Text	Details	Macro	ABCD	Input Mode:	Touch Popup					Interlock State:	On					Interlock Address:	\$44.0					Trigger Mode:	Before Writing					Trigger Addr.:	None			
Preview	Main	Main-2	Text	Details	Macro																																	
ABCD	Input Mode:	Touch Popup																																				
	Interlock State:	On																																				
	Interlock Address:	\$44.0																																				
	Trigger Mode:	Before Writing																																				
	Trigger Addr.:	None																																				

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No.	Property	Function description			
		<ul style="list-style-type: none"> <li>There are two modes for the Interlock Display, Show Element and Show Prohibition Symbol.</li> </ul>			
(5)	Interlock Display	Interlock Display			
		Show Element			
	Trigger Mode	Show Prohibition Symbol			
		<ul style="list-style-type: none"> <li>The Trigger Modes include Before Writing and After Writing.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">Before Writing</td> <td style="padding: 2px;">After Writing</td> </tr> <tr> <td style="padding: 2px;">Trigger Addr. must be set to on before the value changes.</td> <td style="padding: 2px;">Value is changed before the Trigger Addr. is set to on.</td> </tr> </table>		Before Writing	After Writing
Before Writing	After Writing				
Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.				
(6)	Trigger Addr.	<ul style="list-style-type: none"> <li>The triggering function only switches the set Trigger Addr. to on, so if triggering again is required, you need to set the Trigger Addr. to off.</li> </ul> <p>Flowchart of Before Writing:</p> 			
		<p>Flowchart of After Writing:</p> 			

No.	Property	Function description
(7)	Invisible Address	<p>When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</p>  <p><b>Character Entry</b></p> <p><b>Preview</b></p> <p>ABCD</p> <p><b>State:</b> 0</p> <p><b>Language:</b> Chinese</p> <p><b>Main</b> <b>Main-2</b> <b>Text</b> <b>Details</b> <b>Macro</b></p> <p><b>Other</b></p> <p><b>Invisible Address:</b> \$9.0</p>

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## EASCII instructions

The DOP-100 series support EASCII by default. You can enter the contents by simply creating a Keypad Screen or Keypad element. Refer to the following example descriptions for more details.

- The default of this function is Yes meaning the HMI can support Swedish.
- There are IBM and ISO/IEC 8859-1 defined Extended ASCII. The EASCII version is different in every operating system, but most of them follow the characters defined in ISO/IEC 8859-1. Microsoft adopts the definition of ISO/IEC 8859-1, so the HMI also adopts the definition of ISO/IEC 8859-1.

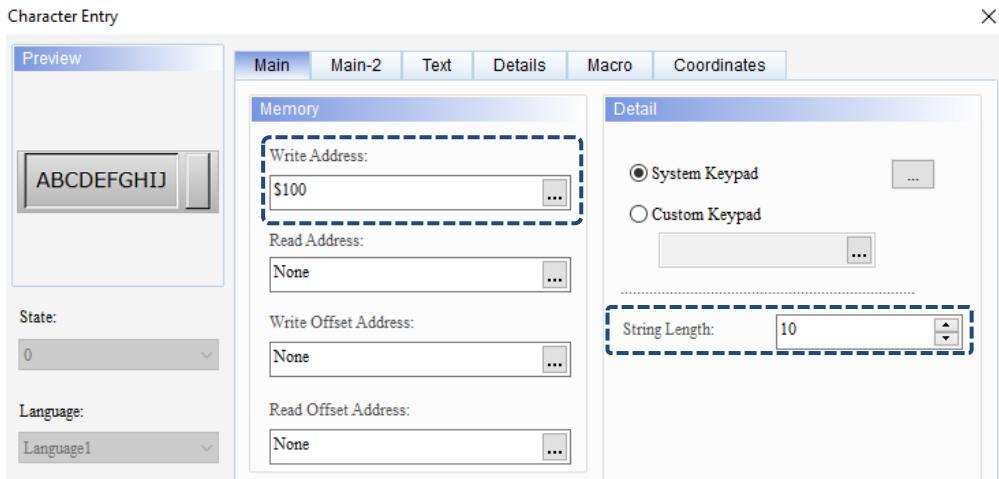
The supported extended characters are shown in the following table:

Character						
€	—	¬	¿	Ò	å	ø
,	~		À	Ó	æ	ù
f	™	®	Á	Ô	ç	ú
”	š	-	Â	Õ	è	û
...	>	°	Ã	Ö	é	ü
†	œ	±	Ä	×	ê	ý
‡	ž	²	Å	Ø	ë	þ
^	Ÿ	³	Æ	Ù	ì	ÿ
%o	í	'	Ç	Ú	í	
Š	¢	µ	È	Û	î	
⟨	£	¶	É	Ü	ï	
Œ	¤	.	Ê	Ý	ð	
Ž	¥	,	Ë	Þ	ñ	
‘	¡	¹	Ì	ß	ò	
’	§	º	Í	à	ó	
“	”	»	Î	á	ô	
”	©	¼	Ï	â	õ	
•	a	½	Ð	ã	ö	
—	«	¾	Ñ	ä	÷	

### Method 1: Keypad element.

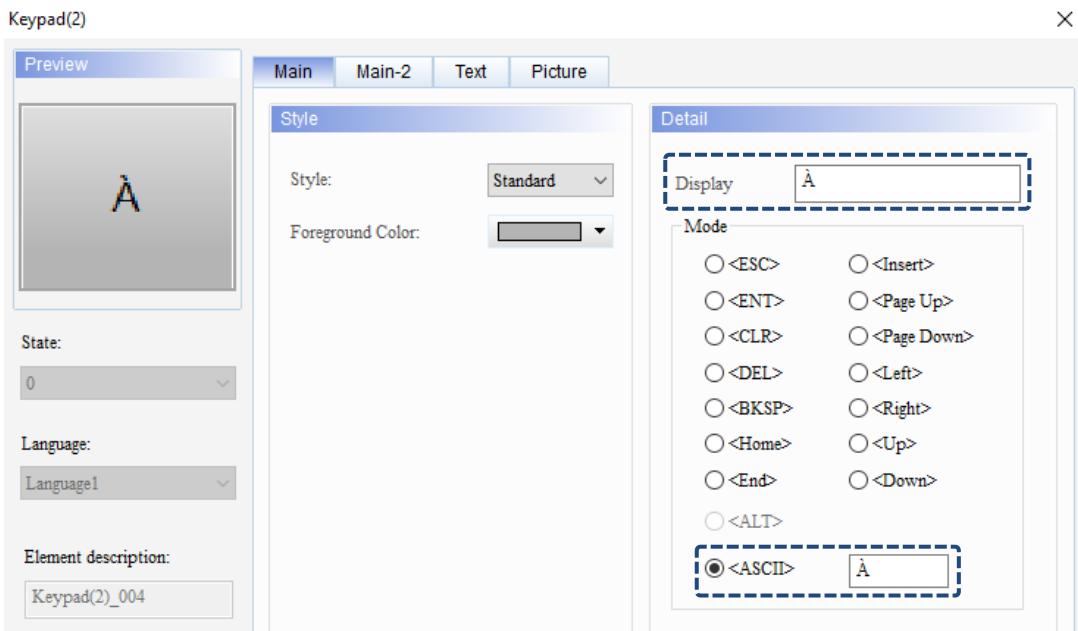
The following explains how the Keypad element works with EASCII.

1. Create a Character Entry element: set the Write Address to \$100 and String Length to 10.

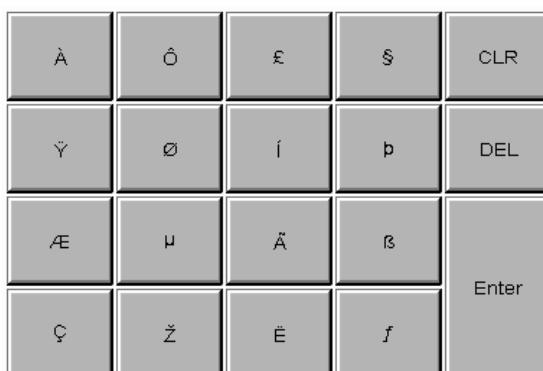


2. Create a Keypad(2) element:

- (1) Enter any of the earlier mentioned extended characters to the ASCII Display field.

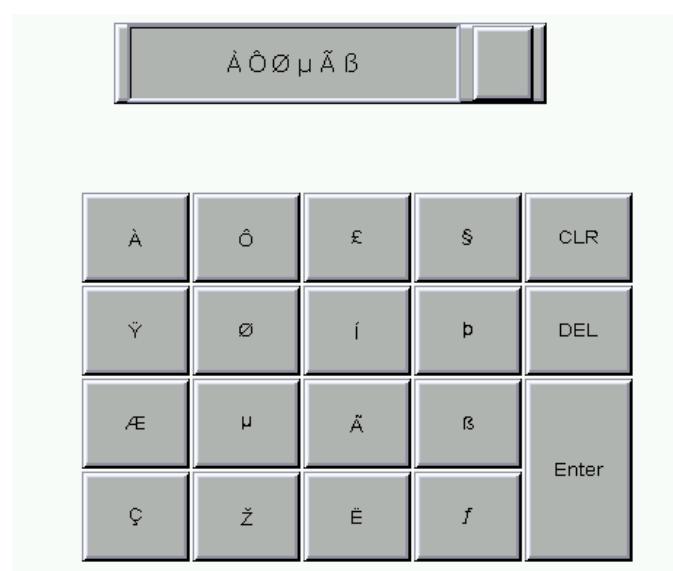


- (2) Continue with the previous step and complete the settings for all characters.



3. **Compile and download:** after completing all settings, compile and download the elements to the HMI.

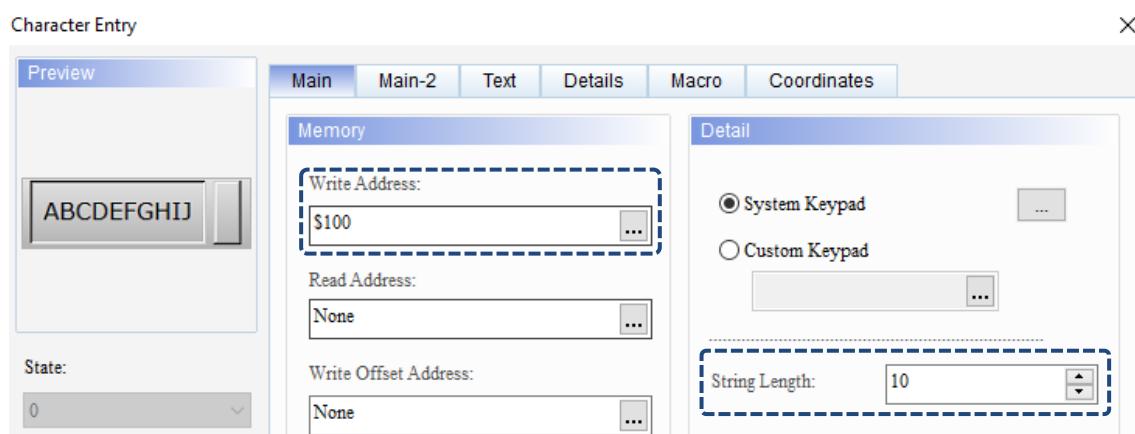
First, press the Character Entry element, and then press the extended characters on the keypad. When you are done inputting, press **Enter**.



### Method 2: Keypad Screen.

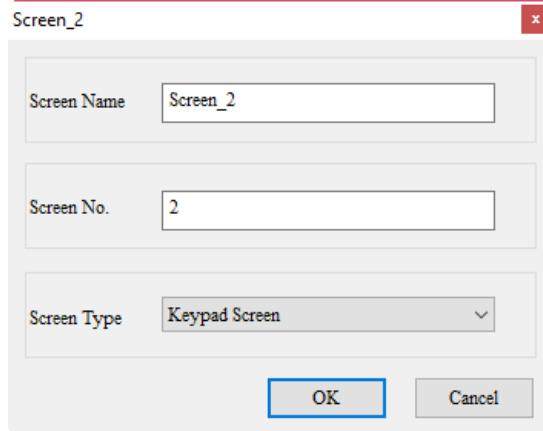
The following explains how to create a Keypad Template with the Keypad Screen to work with EASCII.

1. **Create a Character Entry element:** set the Write Address to \$100 and String Length to 10.



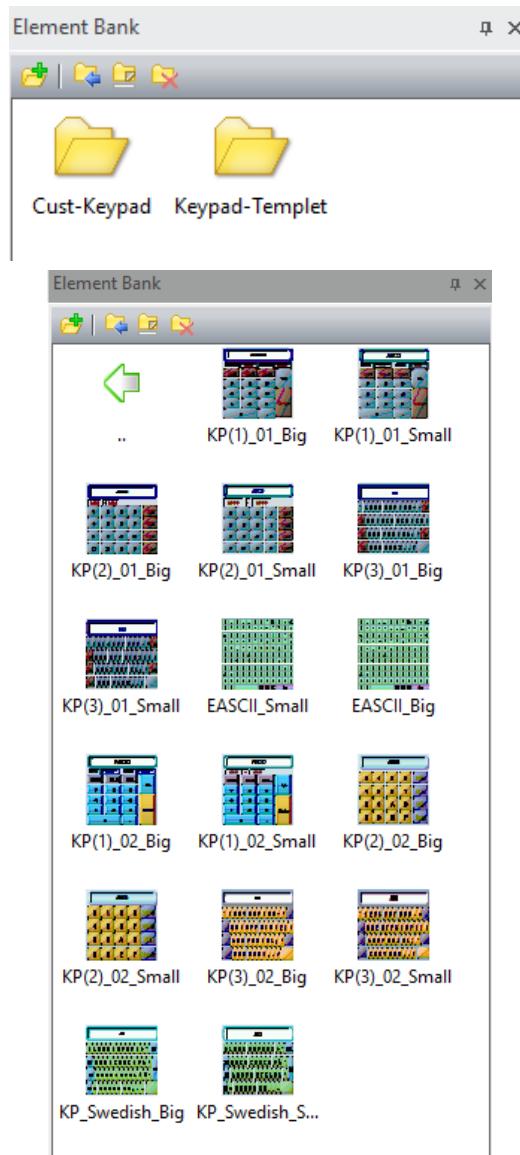
## 2. Create a Keypad Screen:

- (1) Create a new screen and set the Screen Type as Keypad Screen.



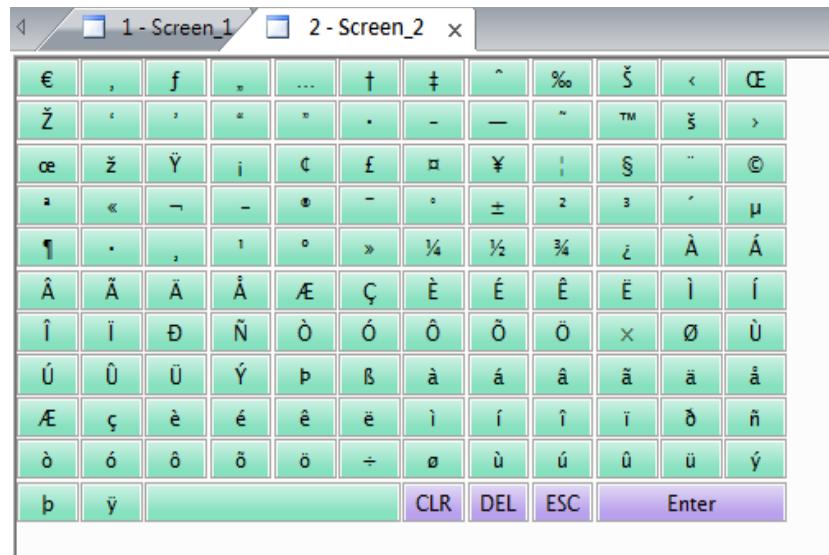
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- (2) Go to the Element Bank, select Keypad-Template, and create an EASCII\_Small template keypad.



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- (3) The following figure is how the keypad looks like.



3. **Compile and download:** after completing all settings, compile and download the elements to the HMI.

First, press the Character Entry element, then the Keypad Template element appears, and then you can input the Extended ASCII characters.



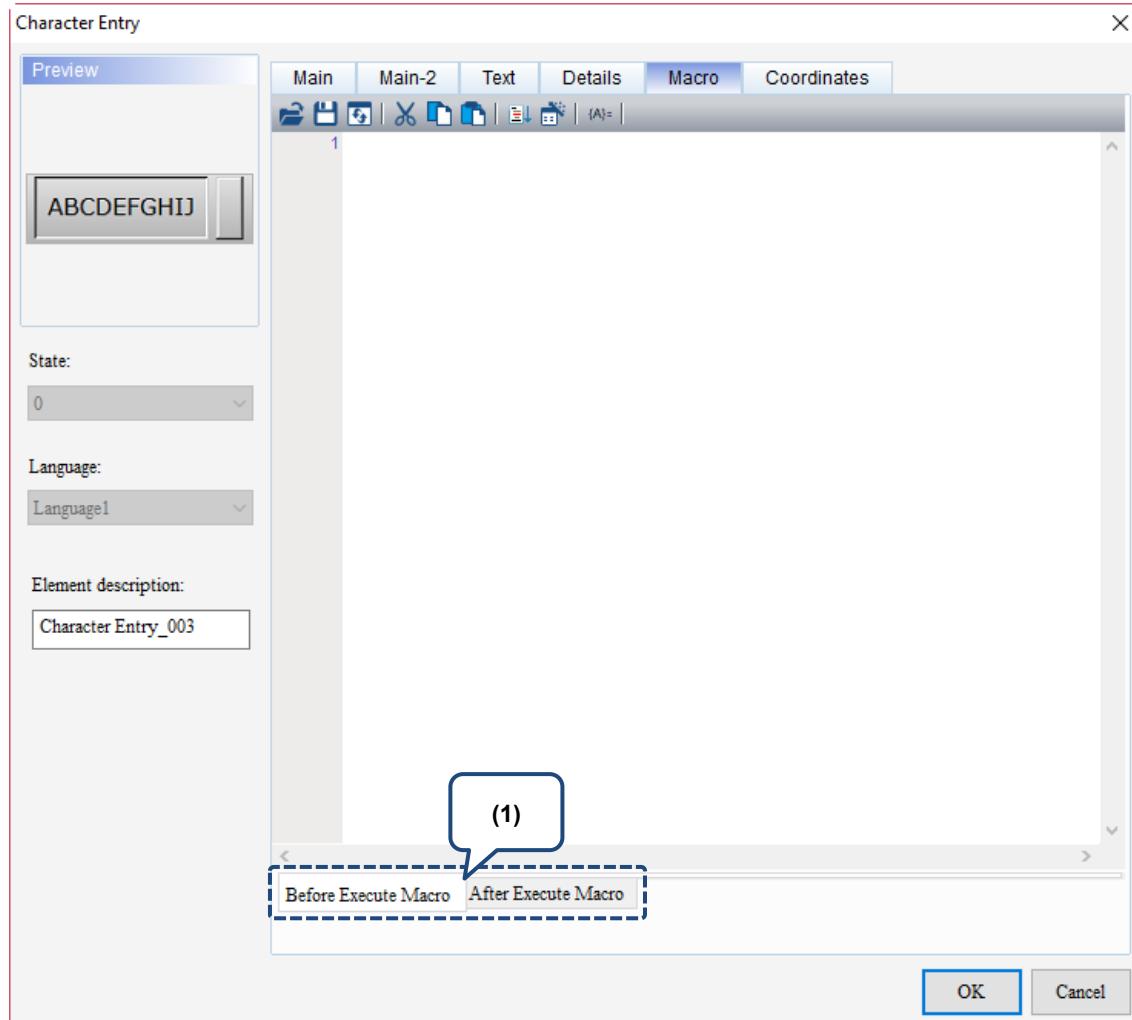
**■ Macro**

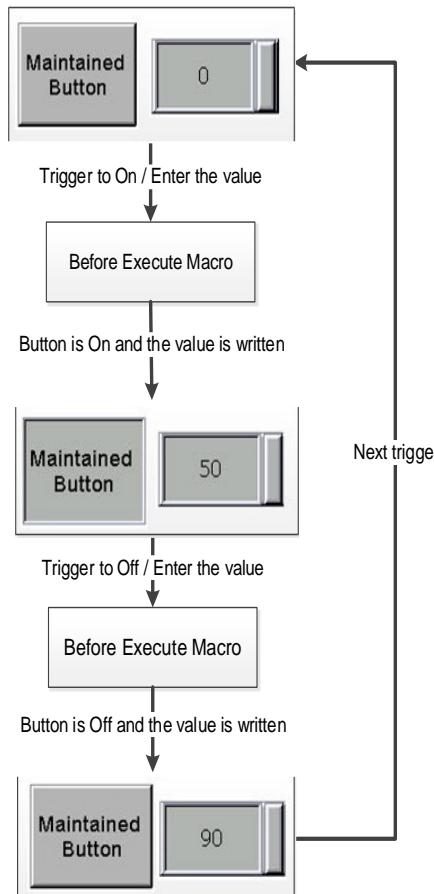
Figure 13.2.8 Macro property page for the Character Entry element

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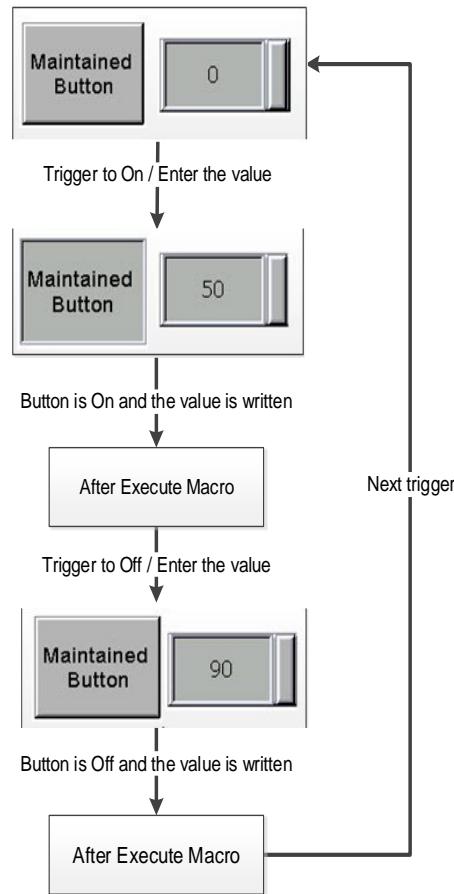
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No.	Property	Function description
(1)	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands, and then execute the action of the button. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button, and then execute the macro commands. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.

Flowchart of Before Execute Macro:



Flowchart of After Execute Macro:



## ■ Coordinates

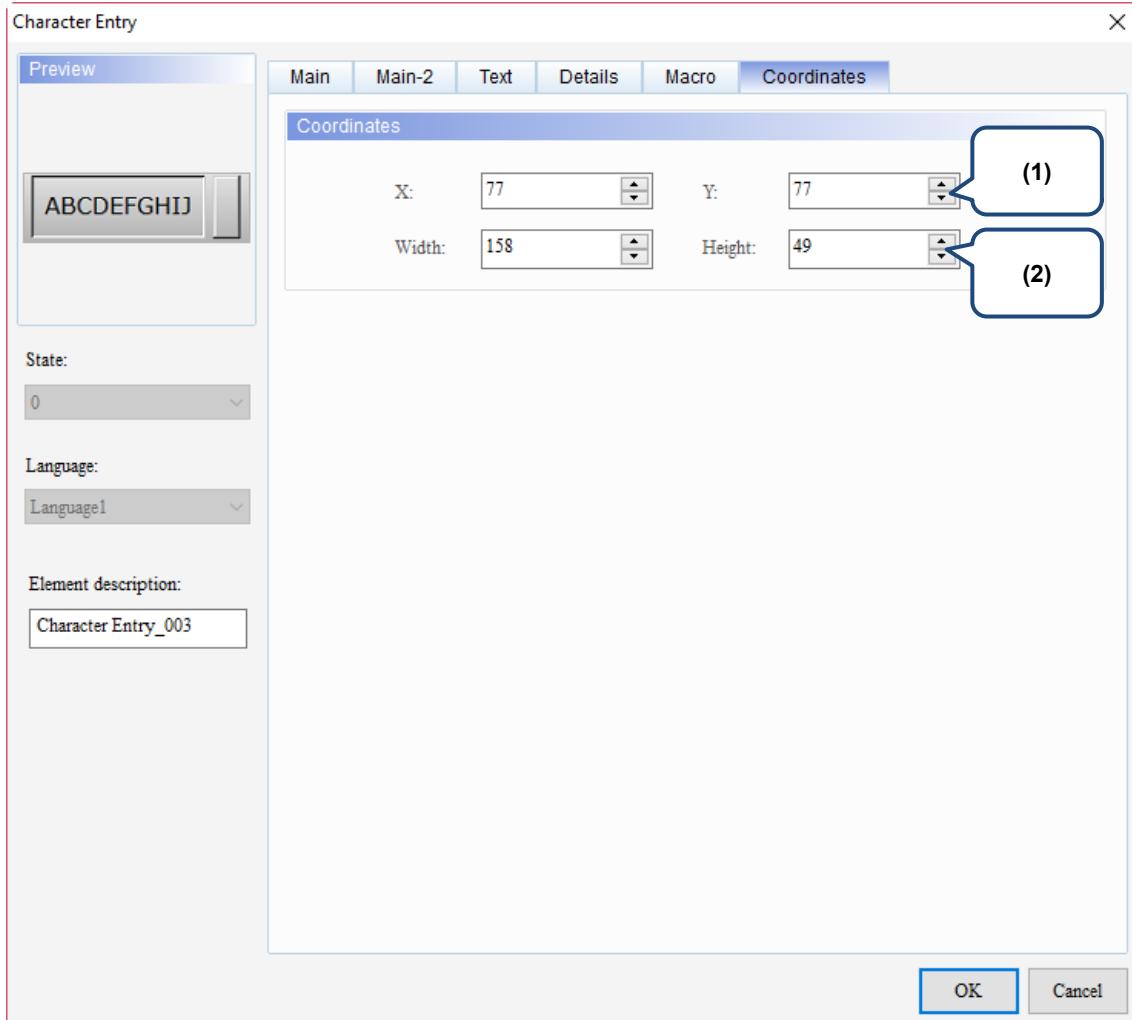


Figure 13.2.9 Coordinates property page for the Character Entry element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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## 13.3 Barcode Input

The Barcode Input element supports only the 1D barcode input of ASCII code. Therefore, the format is character for both the display and input.

The barcode reader supported by the HMI is a scanning device that does not require additional drivers. Refer to Table 13.3.1 for the Barcode Input example.

Table 13.3.1 Barcode Input example

Barcode Input					
	Barcode Input element				
Address settings	<table border="1"> <tr> <td>Write Address</td><td>\$555</td></tr> <tr> <td>W:\$555</td><td>*****</td></tr> </table>	Write Address	\$555	W:\$555	*****
Write Address	\$555				
W:\$555	*****				
Detail					
Detail settings	<p><input checked="" type="radio"/> System Keypad <input style="border: none; background-color: #f0f0f0; padding: 2px 5px; margin-left: 10px;" type="button" value="..."/></p> <p><input type="radio"/> Custom Keypad <input style="border: none; background-color: #f0f0f0; padding: 2px 5px; margin-left: 10px;" type="button" value="..."/></p> <p>String Length: <input style="width: 40px; border: 1px solid #ccc; border-radius: 2px; padding: 2px 5px; margin-left: 10px;" type="text" value="10"/> <input style="border: none; background-color: #f0f0f0; padding: 2px 5px; margin-left: 10px;" type="button" value="..."/></p>				
Execution results	<ul style="list-style-type: none"> <li>After creating the element, compile and download the element to the HMI, and then connect the barcode reader to the HMI. The HMI will beep once it recognizes the barcode reader.</li> <li>Press the Barcode Input element first. When the element starts flashing, scan the barcode, and the codes are displayed on the Barcode Input element.</li> </ul> <p>Press the Barcode Input element.      Wait till the Barcode Input element starts flashing.      Scan the barcode.</p>				

When you double-click the Barcode Input, the property page is shown as follows.

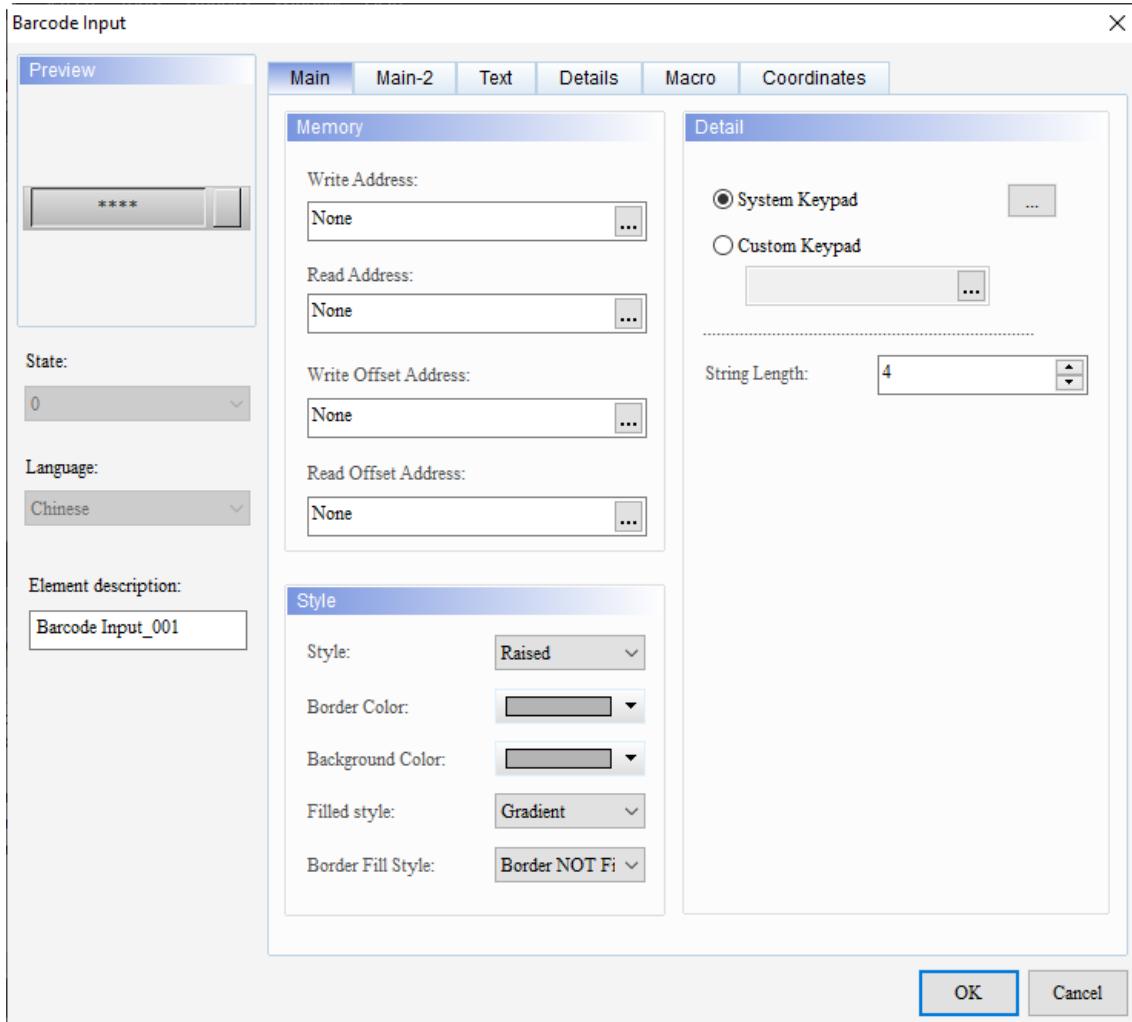


Figure 13.3.1 Properties of Barcode Input

Table 13.3.2 Function page of Barcode Input

Barcode Input	
Function page	Description
Preview	Barcode Input elements do not support multiple state values and multi-language data display.
Main	Set the Read Address, Write Address, Read Offset Address, Write Offset Address; set the Style, Background Color, Border Color, Filled style, Border Fill Style, and String Length.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the displaying text font, size, color, and alignment options.
Details	Set the Input Mode, Interlock State, Interlock Display Mode, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, and Mark as Asterisk (*).
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

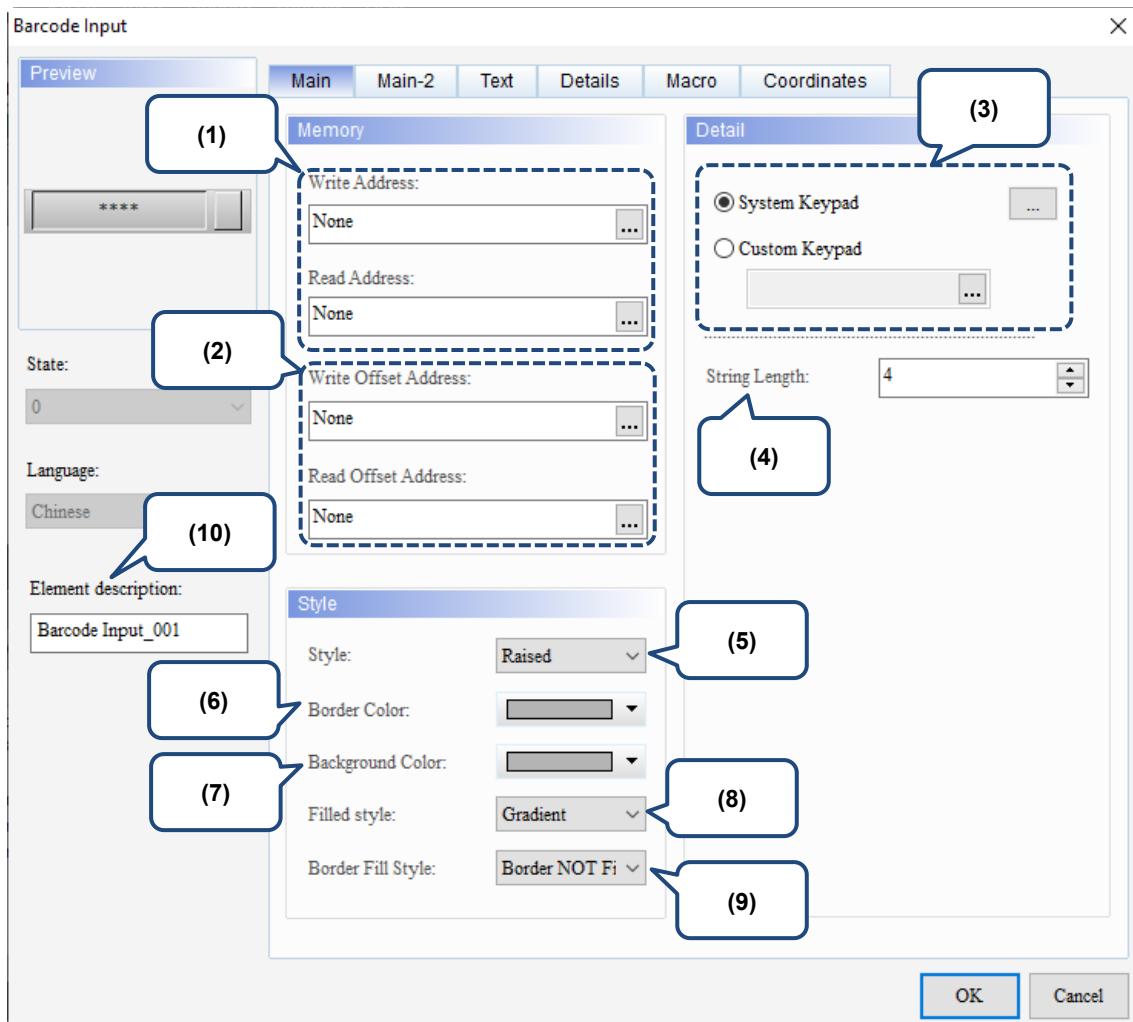
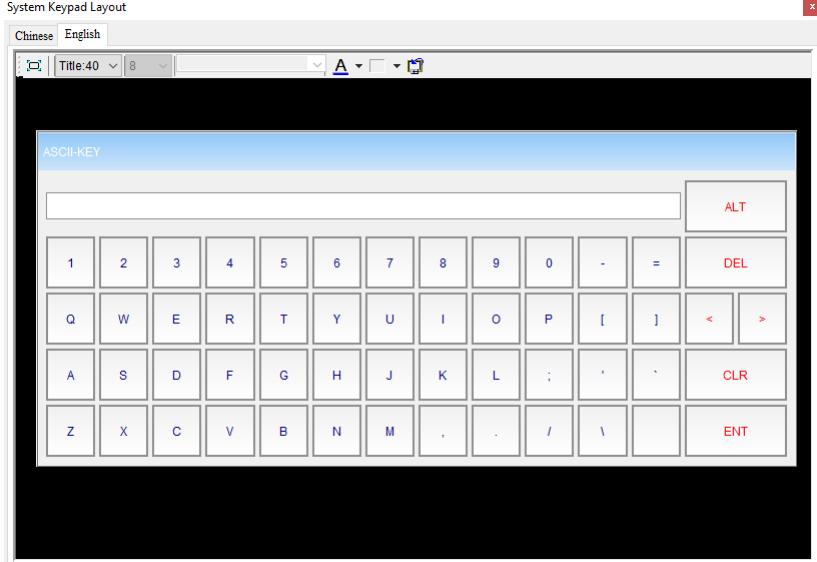
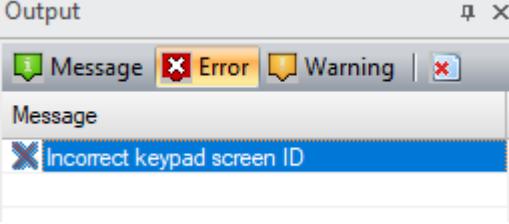
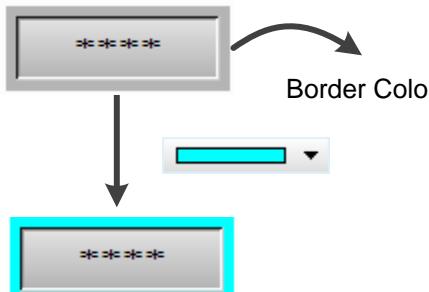
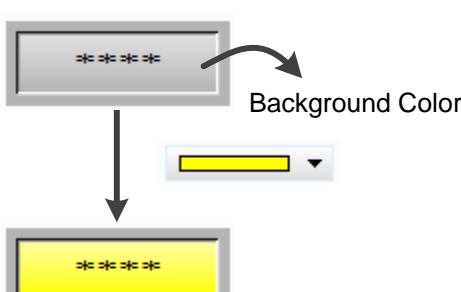


Figure 13.3.2 Main property page for the Barcode Input element

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Read Address	
(2)	Write Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
	Read Offset Address	

No.	Property	Function description														
	System Keypad	<p>In the System Keypad Layout window, you can adjust the size of the keypad window, title size, font size / type / color of the numeric display, and the background color of the keypad window.</p> 														
(3)		<table border="1"> <tr> <td></td><td>Select the size of the System Keypad.</td></tr> <tr> <td> Title:40</td><td>Set the title column height.</td></tr> <tr> <td> 10</td><td>Set the font size.</td></tr> <tr> <td> Arial</td><td>Set the font type.</td></tr> <tr> <td> A</td><td>Set the font color.</td></tr> <tr> <td></td><td>Set the background color.</td></tr> <tr> <td></td><td>Default size.</td></tr> </table>		Select the size of the System Keypad.	Title:40	Set the title column height.	10	Set the font size.	Arial	Set the font type.	A	Set the font color.		Set the background color.		Default size.
	Select the size of the System Keypad.															
Title:40	Set the title column height.															
10	Set the font size.															
Arial	Set the font type.															
A	Set the font color.															
	Set the background color.															
	Default size.															
	Custom Keypad	<ul style="list-style-type: none"> <li>You can select the Custom Keypad function only if there is a Keypad Screen in the editing screen.</li> <li>When there is no Keypad Screen, the following message displays when you compile.</li> </ul> 														
(4)	String Length	The range of the String Length is 1 - 256.														
(5)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1"> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken	Transparent										
Standard	Raised	Sunken	Transparent													

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No.	Property	Function description				
(6)	Border Color	<ul style="list-style-type: none"> <li>Set the border color of the element.</li> <li>When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul> 				
(7)	Background Color	<ul style="list-style-type: none"> <li>Set the background color of the element.</li> <li>When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul> 				
(8)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1"> <tr> <td>Gradient</td> <td></td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						
(9)	Border Fill Style	<ul style="list-style-type: none"> <li>The border display of the Entry elements on the DOP-100 series models is different from that on DOP-B series models. To have the border display effect be the same as that on the DOP-B series models, when you open the DOP-B project on a DOP-100 series model, the border is displayed with solid color.</li> <li>The default Border Fill Style for the DOP-100 series models is Border NOT Fill, meaning the border of the element is displayed with a gradient color.</li> </ul> <table border="1"> <tr> <td>Border NOT Fill (gradient color)</td> <td></td> </tr> <tr> <td>Border Fill (solid color)</td> <td></td> </tr> </table>	Border NOT Fill (gradient color)		Border Fill (solid color)	
Border NOT Fill (gradient color)						
Border Fill (solid color)						

No.	Property	Function description						
(10)	Element description	Record the element actions to be executed. The record is written in the CSV file of the Operation Log Table so users can know what actions have been done.						

Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value
1 13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0
2 13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1
3 13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4
4 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1
5 13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0
6 13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1
7 13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0
8 13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8
9 13:38:35	5/5/2016	8	Screen_22	\$100 Value	Set Val	85	25

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## ■ Main-2

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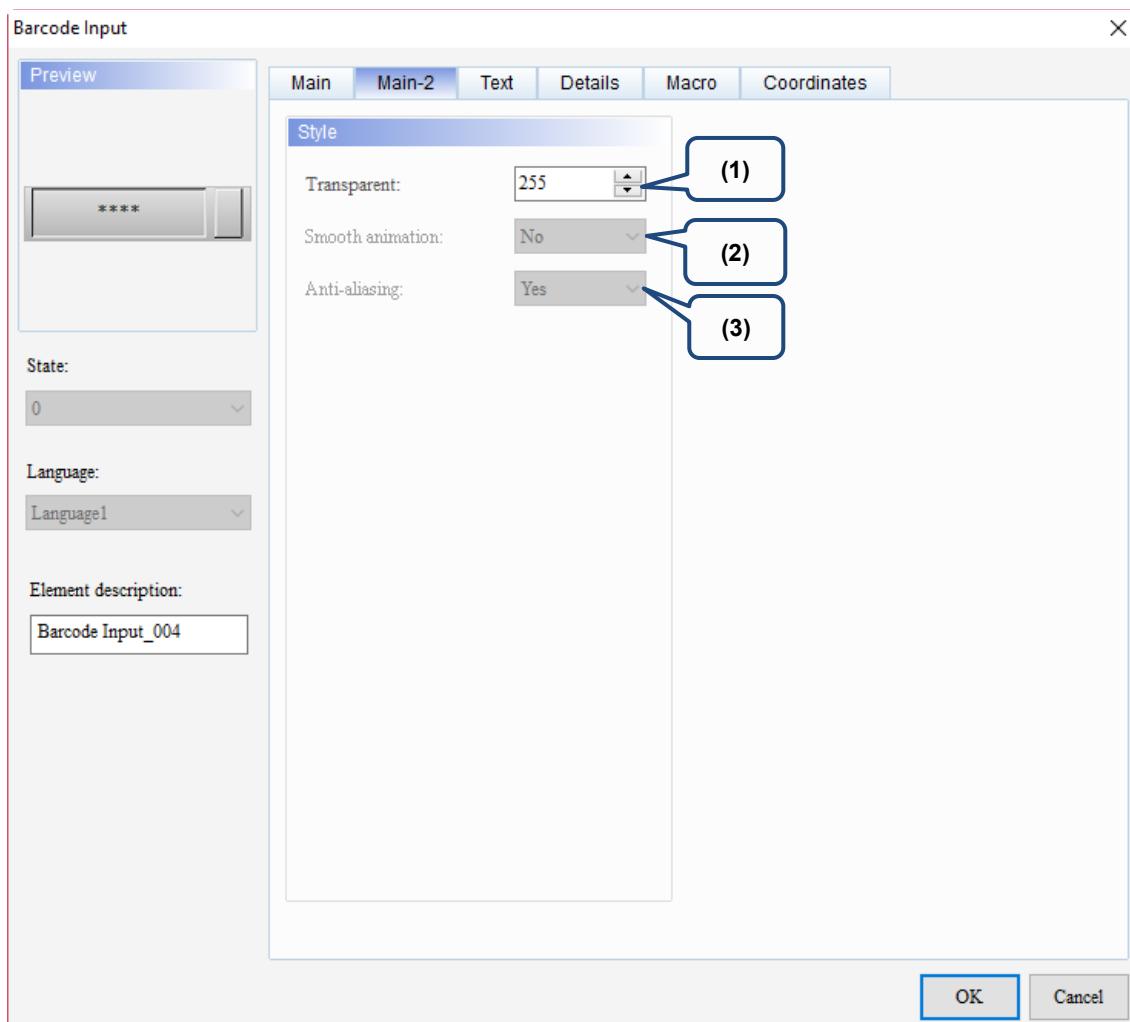


Figure 13.3.3 Main-2 property page for the Barcode Input element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

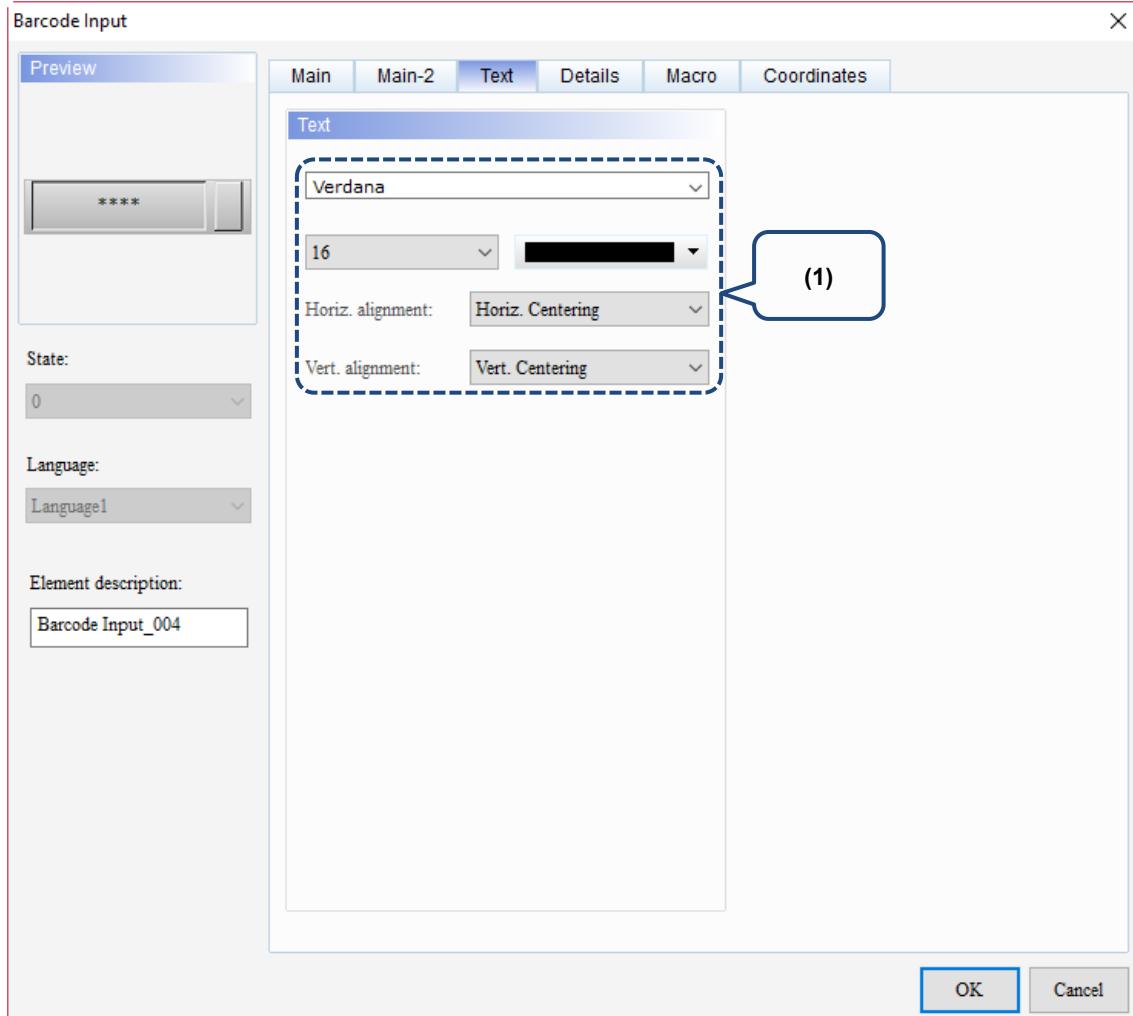


Figure 13.3.4 Text property page for the Barcode Input element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

## ■ Details

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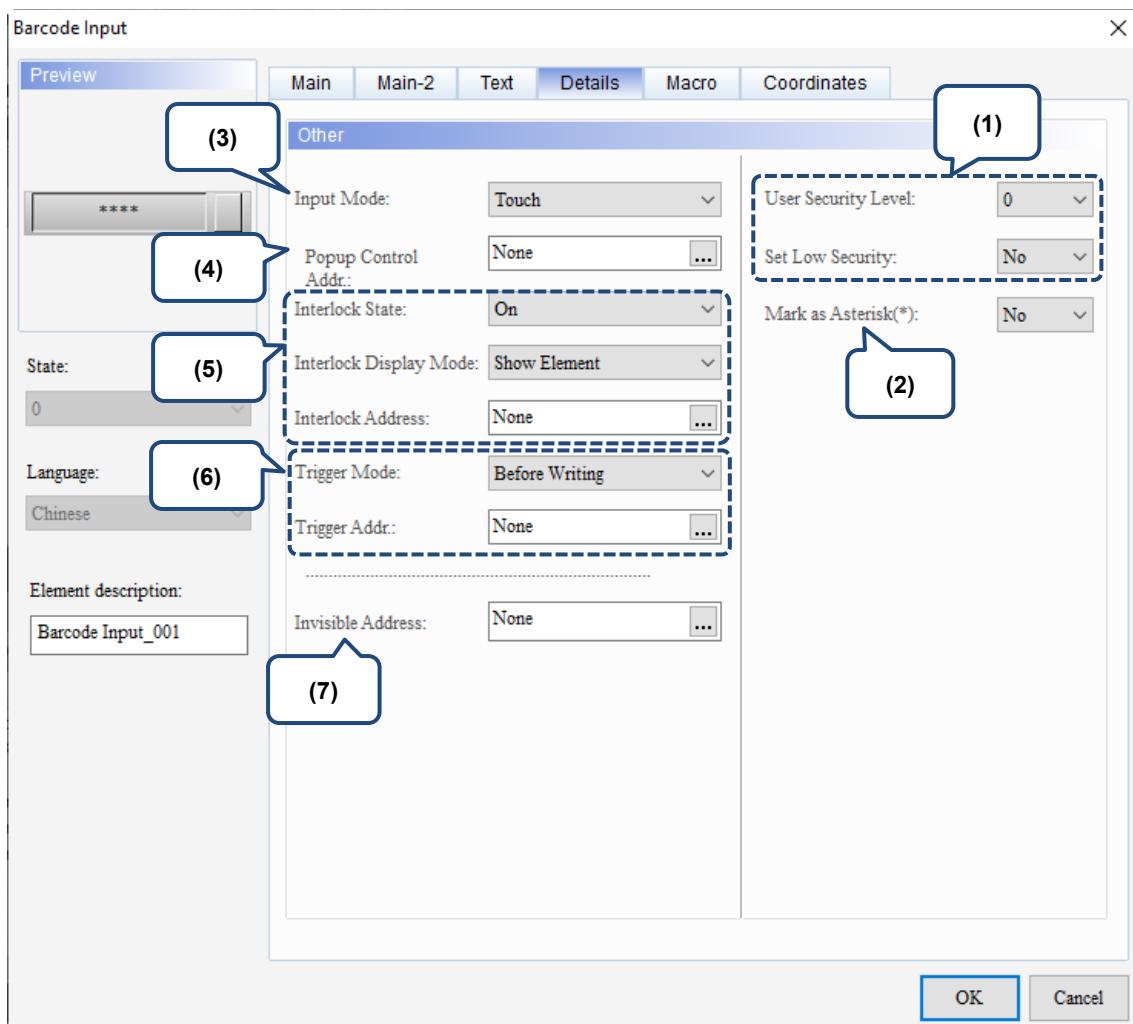
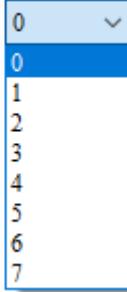
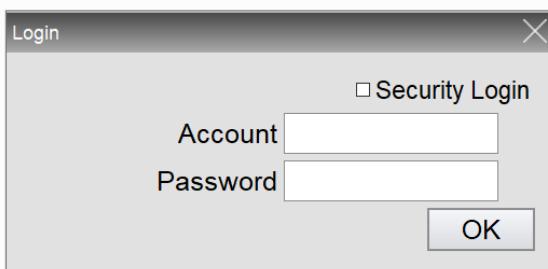
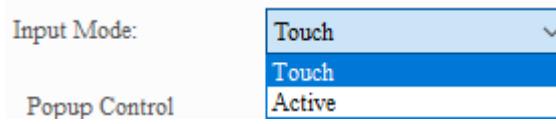
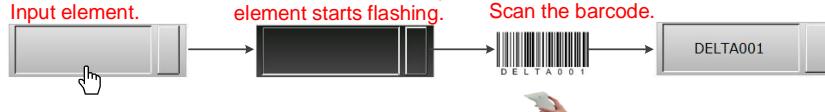
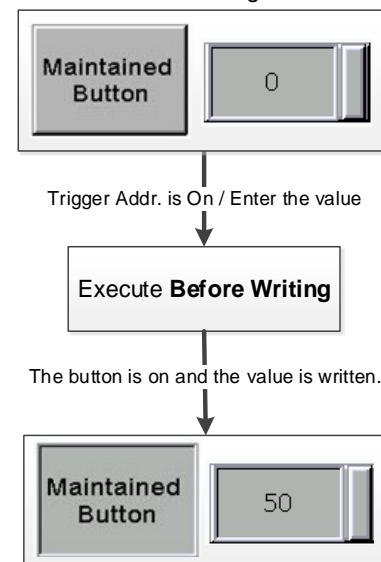
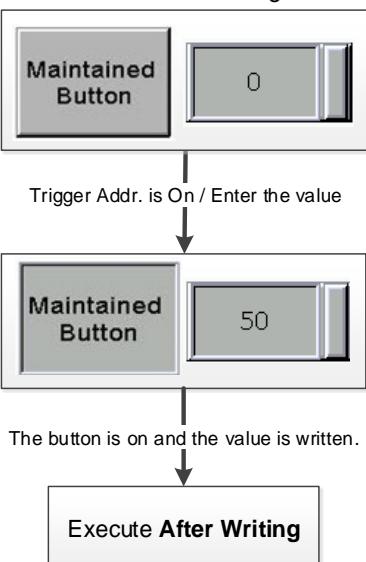


Figure 13.3.5 Details property page for the Barcode Input element

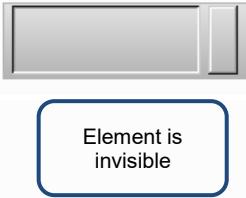
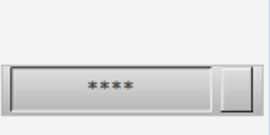
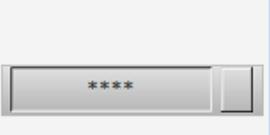
No.	Property	Function description
(1)	User Security Level	<p>■ You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</p> <p>User Security Level:</p>  <p>Set Low Security:</p> <p>Mark as Asterisk(*):</p>
	Set Low Security	<p>■ After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password with the Password Table element; refer to Section 5.7.2 Password Table Setup).</p>  <p>■ If you specify Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.</p>
(2)	Mark as Asterisk (*)	<p>If you specify Mark as Asterisk (*) to Yes, the value appears as asterisks when you input a value to the ASCII Keypad, as shown in the following figure:</p> 

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No.	Property	Function description
(3)	Input Mode	<ul style="list-style-type: none"> <li>The types of Input Mode include Touch and Active. Touch is the default Input Mode for the Barcode Input element.</li> </ul> <p><b>Input Mode:</b></p>  <p><b>Popup Control</b></p> <p><b>Press the Barcode Input element.</b> <b>Wait till the Barcode Input element starts flashing.</b> <b>Scan the barcode.</b></p>  <p><b>Wait till the Barcode Use the Keypad element to input the barcode.</b></p> <p><b>Press the Barcode Input element starts Input element. flashing.</b></p>  <ul style="list-style-type: none"> <li>Touch means after the Barcode Input element is pressed and then starts to flash, you scan the barcode or input the barcode using the Custom Keypad. Then, the Barcode Input element will display the barcode.</li> </ul> <p><b>Press the Maintained element (Interlock Address).</b> <b>The Barcode Input element shows the effect of Active flashing.</b> <b>Use the barcode reader to scan the barcode.</b></p>  <p><b>Press the Maintained element (Interlock Address).</b> <b>The Barcode Input element shows the effect of Active flashing.</b> <b>Use the Keypad element to input the barcode.</b></p>  <ul style="list-style-type: none"> <li>Active must be used with Interlock Address. Set the Input Mode as Active and the Interlock Address as \$44.0 for the Barcode Input element. Then, create a Maintained element and set its Write Address as \$44.0.</li> <li>If you set the Input Mode to Active, you can directly use the barcode reader or Keypad element to input the barcode.</li> </ul>
(4)	Popup Control Addr.	<ul style="list-style-type: none"> <li>Set the Popup Control Addr. to determine whether to display the System Keypad or not. If you set the Popup Control Addr. to On, when you press the Barcode Input element, the System Keypad appears on the screen. When the System Keypad appears, the Popup Control Addr. is switched to Off. Before you input the barcode next time, you must set the Popup Control Addr. to On again.</li> <li>The Popup Control Addr. setting is valid only when the Input Mode is set to Touch. If the Input Mode is set to Active, it means the System Keypad will not appear, and thus the setting for the Popup Control Addr. is invalid.</li> <li>The following example illustrates when the Input Mode is set as Touch. Set the Popup Control Addr. of the Barcode Input element to \$556.0. When you press the Barcode Input element, and then press the Popup Control Addr., the ASCII Keypad appears on the screen.</li> </ul> <p><b>Press the Barcode Input element.</b> <b>Press the Maintained element (Popup Control Addr.).</b> <b>When the Popup Control Addr. is on, the System Keypad pops up.</b></p> 

No.	Property	Function description				
(5)	Interlock State	<ul style="list-style-type: none"> <li>The Interlock Address is for enabling the operation of another element and has to be used with Interlock State. If the Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if the Interlock State is set to On, the Interlock Address is operable when this Interlock State is on.</li> <li>The following describes how it works:           <ol style="list-style-type: none"> <li>First, create a Maintained button and set its Write Address as \$44.0. Next, set the Write Address as \$555 and the Interlock Address as \$44.0 for the Barcode Input element.</li> <li>In order for the Barcode Input element \$555 to become operable, you need to first press the Maintained button \$44.0 to enable \$555.</li> </ol>  </li> </ul>				
	Interlock Address	<ul style="list-style-type: none"> <li>There are two Interlock Display Modes, Show Element and Show Prohibition Symbol.</li> </ul> <p>Interlock Display Mode: <b>Show Element</b> <b>Show Element</b> <b>Show Prohibition Symbol</b></p>				
	Interlock Display Mode	<table border="1"> <tr> <td>Show Element</td> <td></td> </tr> <tr> <td>Show Prohibition Symbol</td> <td></td> </tr> </table>	Show Element		Show Prohibition Symbol	
Show Element						
Show Prohibition Symbol						
(6)	Trigger Mode	<ul style="list-style-type: none"> <li>The Trigger Modes include Before Writing and After Writing.</li> </ul> <table border="1"> <tr> <td>Before Writing</td> <td>After Writing</td> </tr> <tr> <td>Trigger Addr. must be set to on before the value changes.</td> <td>Value is changed before the Trigger Addr. is set to on.</td> </tr> </table> <ul style="list-style-type: none"> <li>The triggering function only switches the set Trigger Addr. to on, so if triggering again is required, you need to set the Trigger Addr. to off.</li> </ul> <p>Flowchart of Before Writing:</p>  <p>Flowchart of After Writing:</p> 	Before Writing	After Writing	Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.
Before Writing	After Writing					
Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.					
	Trigger Addr.	<p>The button is on and the value is written.</p> <p>The button is on and the value is written.</p>				

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No.	Property	Function description																		
(7)	Invisible Address	<p>When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</p>  <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Barcode Input</p> <p>Element is invisible</p> </div> <div style="text-align: center;"> <p>Invisible Address \$9.0 OFF</p> <p>Invisible Address \$9.0 ON</p> </div> </div> <p><b>Barcode Input</b></p> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p><b>Preview</b></p>  </div> <div style="flex: 4;"> <ul style="list-style-type: none"> <li>Main</li> <li>Main-2</li> <li>Text</li> <li>Details</li> <li>Macro</li> </ul> <p><b>Other</b></p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 30%;">           Input Mode:         </td> <td style="vertical-align: top;">           Touch           <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/> </td> </tr> <tr> <td style="vertical-align: top;">           Popup Control Addr.:         </td> <td style="vertical-align: top;">           None           <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/> </td> </tr> <tr> <td style="vertical-align: top;">           Interlock State:         </td> <td style="vertical-align: top;">           On           <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/> </td> </tr> <tr> <td style="vertical-align: top;">           Interlock Display Mode:         </td> <td style="vertical-align: top;">           Show Element           <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/> </td> </tr> <tr> <td style="vertical-align: top;">           Interlock Address:         </td> <td style="vertical-align: top;">           None           <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/> </td> </tr> <tr> <td style="vertical-align: top;">           Trigger Mode:         </td> <td style="vertical-align: top;">           Before Writing           <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/> </td> </tr> <tr> <td style="vertical-align: top;">           Trigger Addr.:         </td> <td style="vertical-align: top;">           None           <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/> </td> </tr> <tr> <td colspan="2" style="text-align: right; padding-top: 10px;">           .....         </td> </tr> <tr> <td style="vertical-align: top;">           Invisible Address:         </td> <td style="vertical-align: top;">           \$9.0           <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/> </td> </tr> </table> </div> </div>	Input Mode:	Touch <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>	Popup Control Addr.:	None <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>	Interlock State:	On <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>	Interlock Display Mode:	Show Element <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>	Interlock Address:	None <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>	Trigger Mode:	Before Writing <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>	Trigger Addr.:	None <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>	.....		Invisible Address:	\$9.0 <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>
Input Mode:	Touch <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>																			
Popup Control Addr.:	None <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>																			
Interlock State:	On <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>																			
Interlock Display Mode:	Show Element <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>																			
Interlock Address:	None <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>																			
Trigger Mode:	Before Writing <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>																			
Trigger Addr.:	None <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>																			
.....																				
Invisible Address:	\$9.0 <input style="width: 20px; height: 20px; border: 1px solid #ccc;" type="button" value="..."/>																			

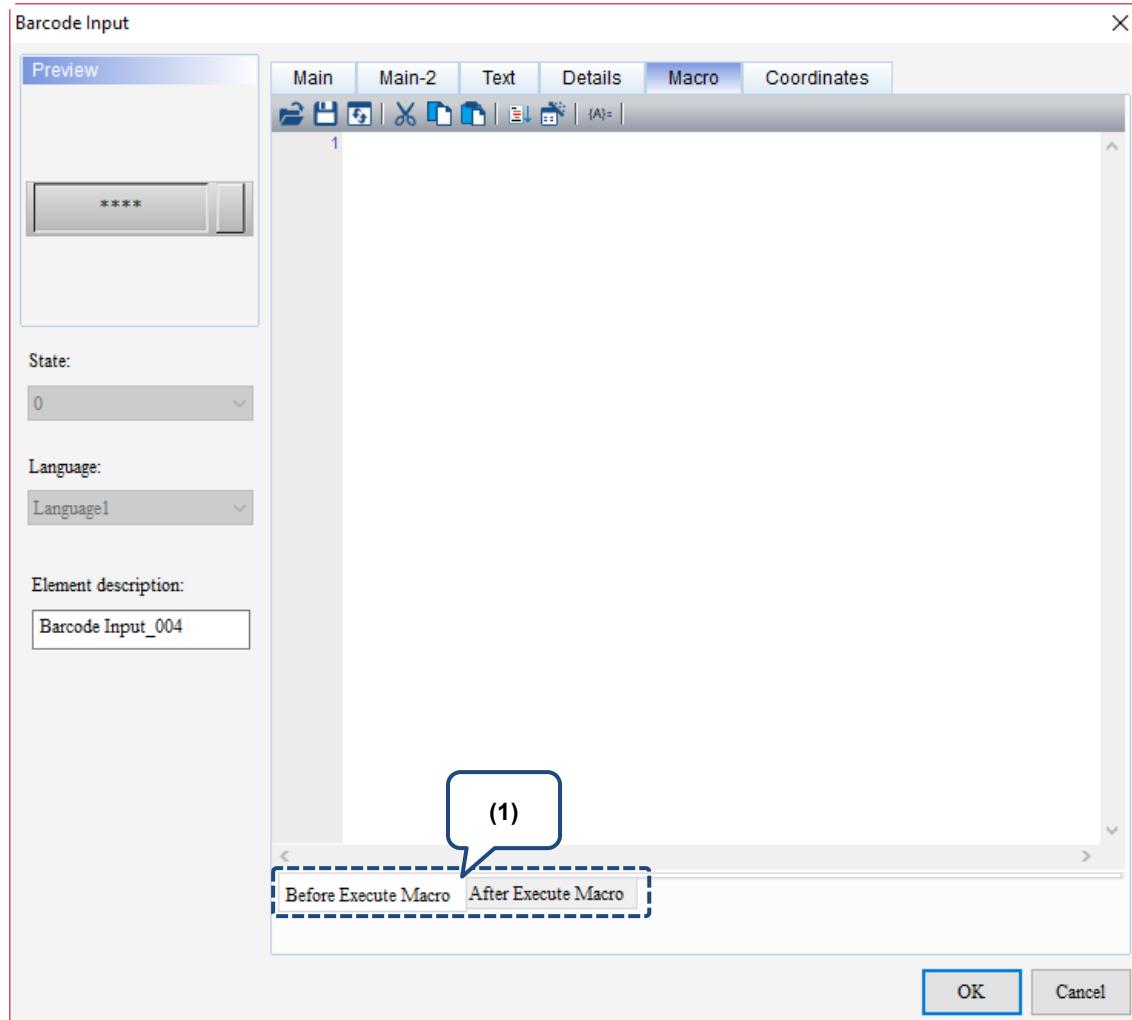
**■ Macro**

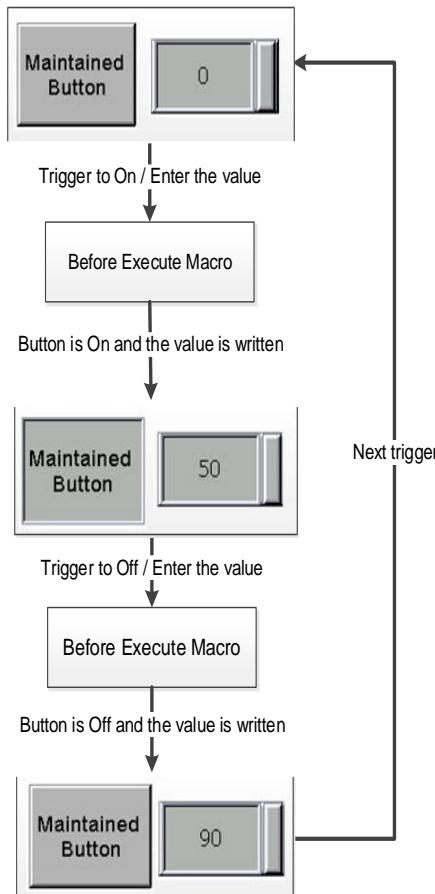
Figure 13.3.6 Macro property page for the Barcode Input element

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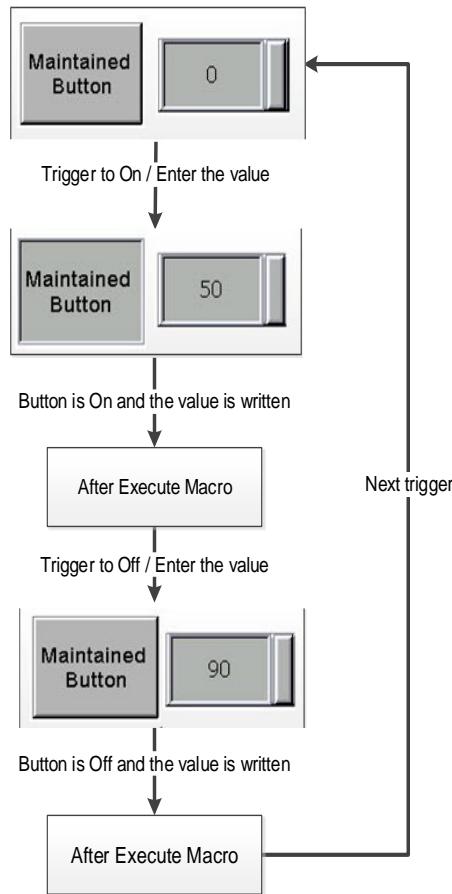
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No.	Property	Function description
(1)	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands, and then execute the action of the button. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button, and then execute the macro commands. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.

Flowchart of Before Execute Macro:



Flowchart of After Execute Macro:



## ■ Coordinates

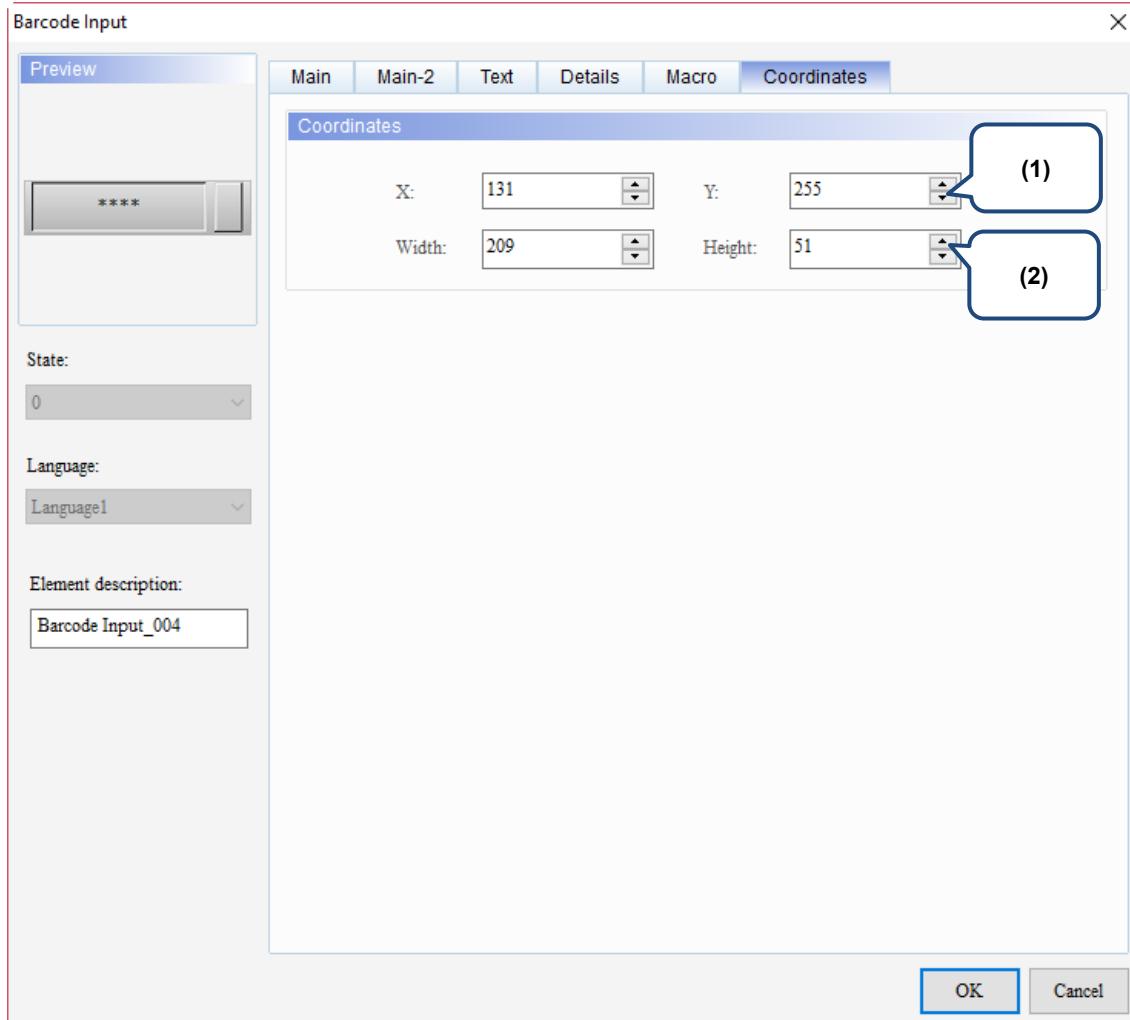


Figure 13.3.7 Coordinates property page for the Barcode Input element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 13.4 Multi-language Input

The Multi-language Input function supports up to 16 languages and you can select the languages to edit the display texts.

Go to [Options] > [Configuration] > [Multi-language Settings] to select the preferred languages.

Then, you can use the Multi-language Input element to enter contents in multiple languages.

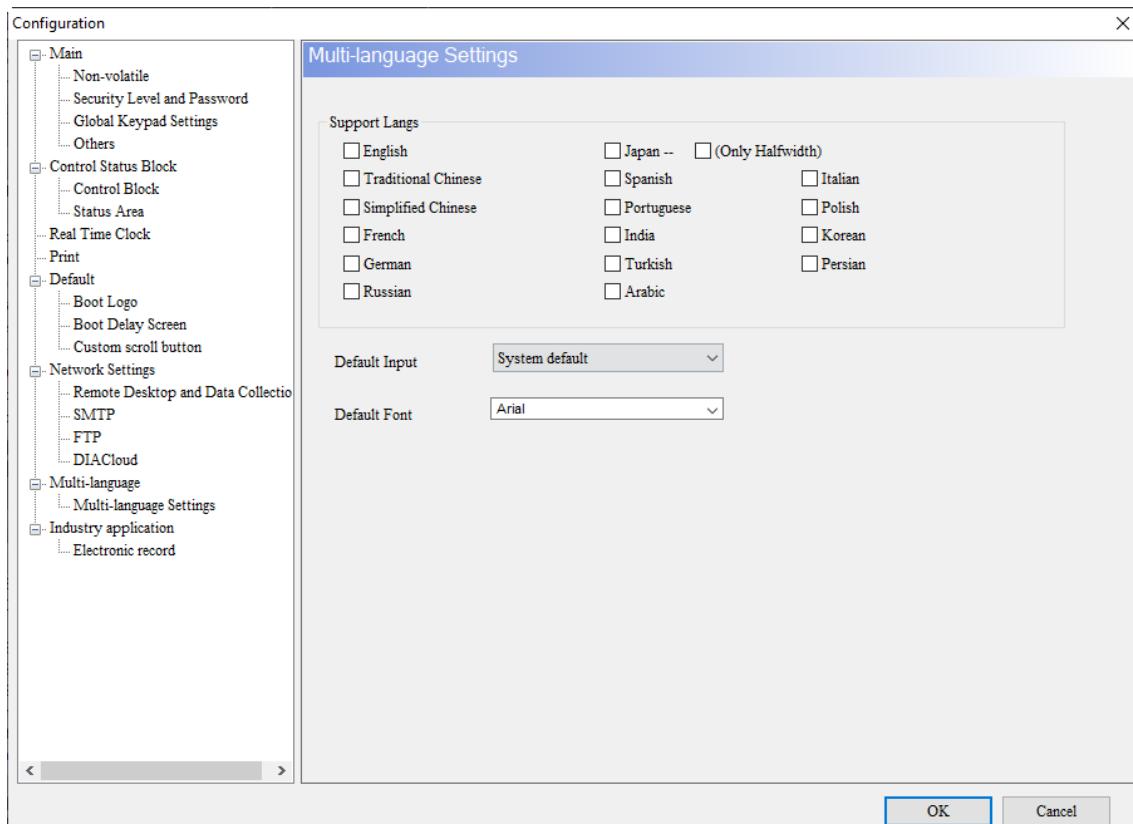


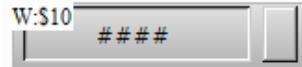
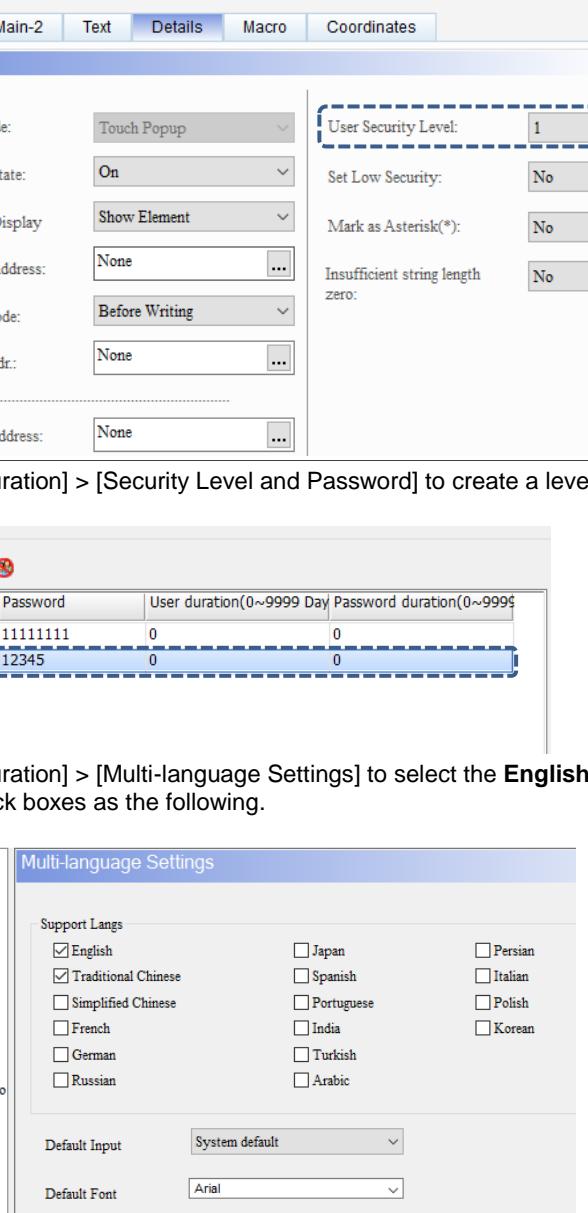
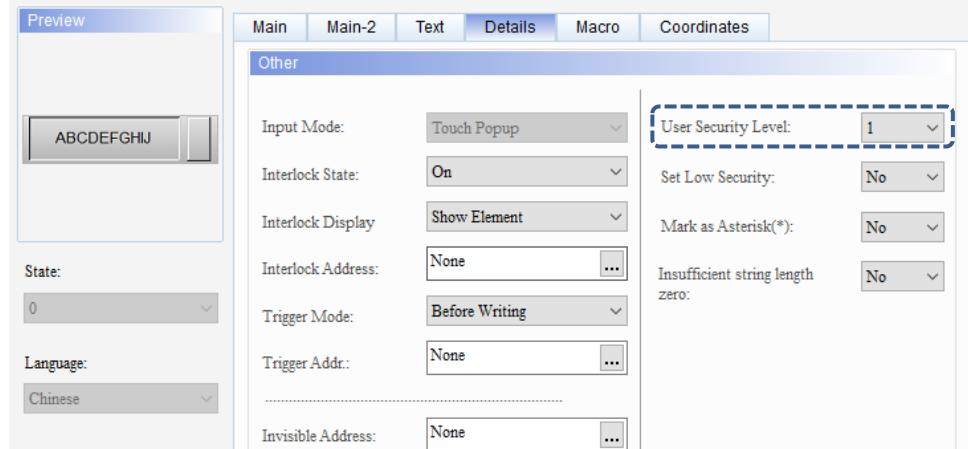
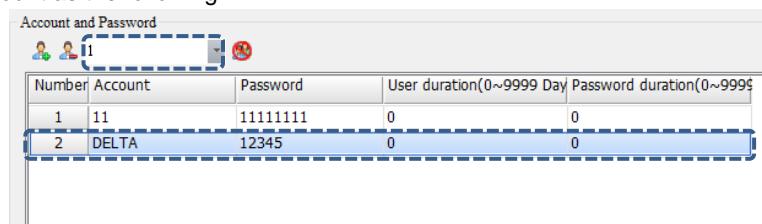
Figure 13.4.1 Multi-language Input

The Multi-language Input element on DOP-100 series models provides various functions, including Enhanced Recipe Group naming, Enhanced Recipe Char format, and account input, so that you can input Unicode characters for the names and content.

Note: the Multi-language Input function does not support online and offline simulations.

Refer to Table 13.4.1 for the Multi-language Input example.

Table 13.4.1 Multi-language Input example

Multi-language Input	
<p><b>Write Address</b></p> 	<ul style="list-style-type: none"> <li>■ Create a Numeric Entry element and set the Write Address to \$10.</li> </ul>
<p><b>Settings</b></p> 	<ul style="list-style-type: none"> <li>■ Set the User Security Level to 1.</li> </ul> <p><b>Multi-language Input</b></p> 
	<ul style="list-style-type: none"> <li>■ Go to [Options] &gt; [Configuration] &gt; [Security Level and Password] to create a level 1 account as the following.</li> </ul> 
	<ul style="list-style-type: none"> <li>■ Go to [Options] &gt; [Configuration] &gt; [Multi-language Settings] to select the <b>English</b> and <b>Traditional Chinese</b> check boxes as the following.</li> </ul>

# 13

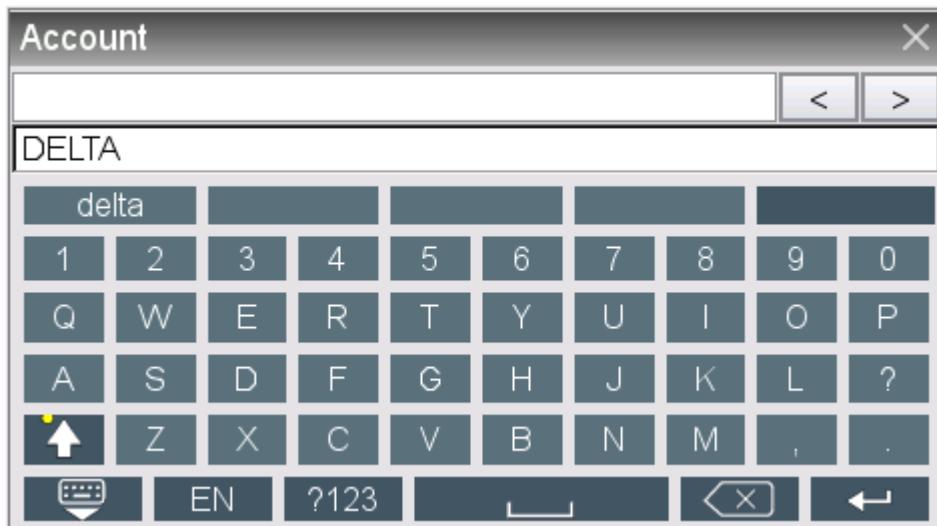
## Multi-language Input

- After creating the elements, compile and download the elements to the HMI.
- Press the Numeric Entry element and the screen will display the following input window.



- Press the Account field and the screen displays the Multi-language Input window.  
Press **ZH\_TW** to switch to EN and input DELTA.

Execution results



- Press **?123** to switch to the numeric keyboard and input 12345 as the password.



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**Multi-language Input**

■ Press **OK** to use the Numeric Entry element.

Execution results

**Login**

0

Security Login

Account DELTA

Password \*\*\*\*\*

OK

**Numeric Keypad**

0 ~ 9999

1	2	3	DEL
4	5	6	< >
7	8	9	CLR
+/-	0	.	ENT



When you double-click the Multi-language Input, the property page is shown as follows.

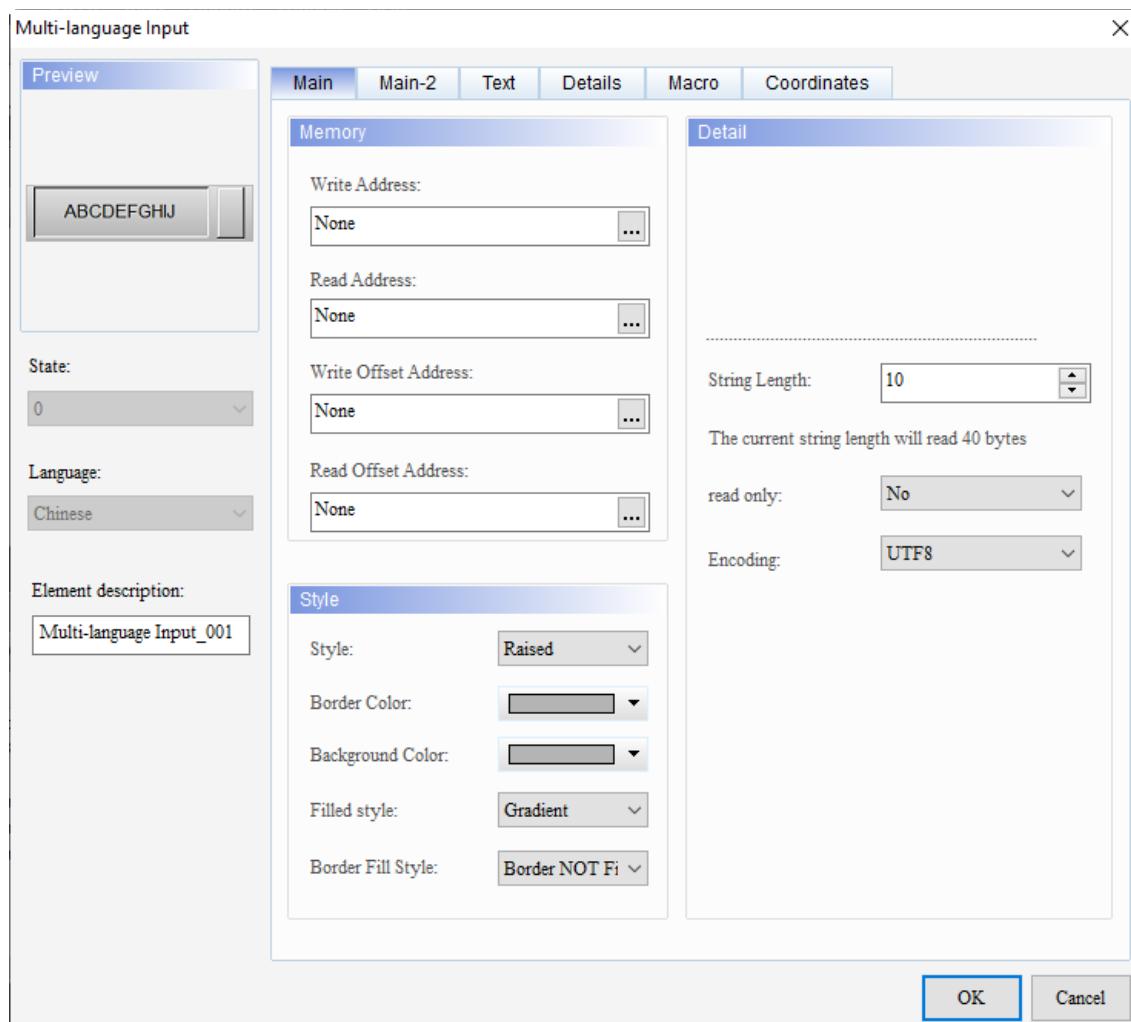


Figure 13.4.2 Properties of Multi-language Input

Table 13.4.2 Function page of Multi-language Input

Multi-language Input	
Function page	Description
Preview	Multi-language Input elements do not support multiple state values and multi-language data display.
Main	Set the Read Address, Write Address, Read Offset Address, Write Offset Address, Style, Background Color, Border Color, Filled style, and Border Fill Style. Set the String Length, read only, and Encoding.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the displaying text font, size, color, and alignment options.
Details	Set the Input Mode, Interlock State, Interlock Display, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, Mark as Asterisk (*), and Insufficient string length zero.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## Main

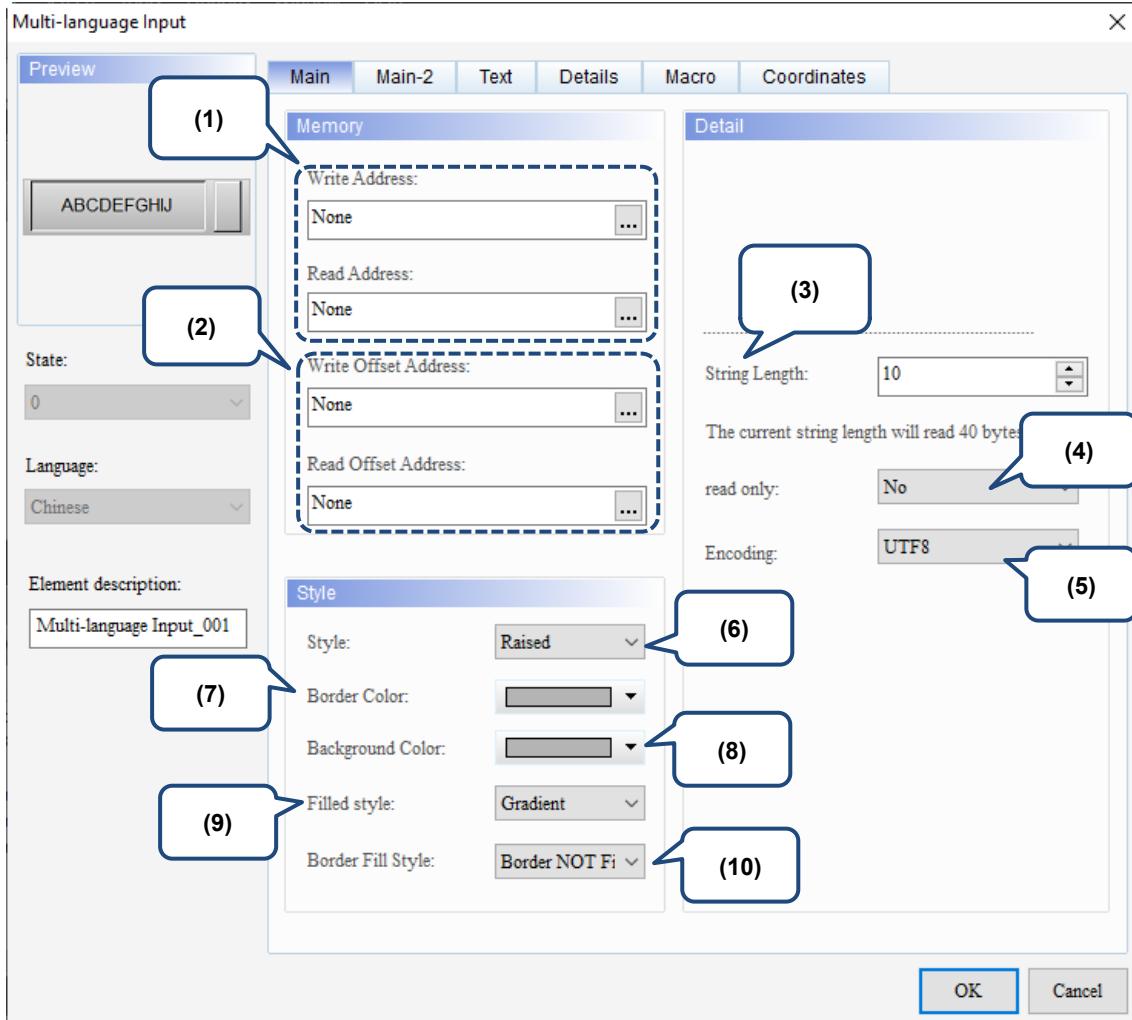
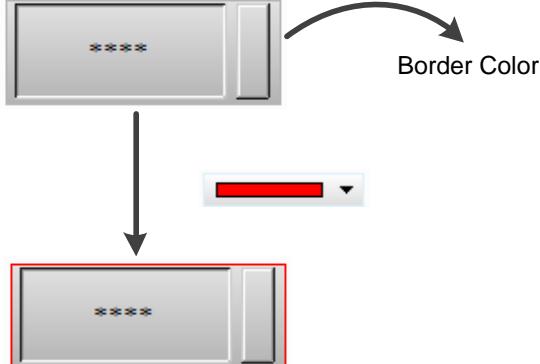
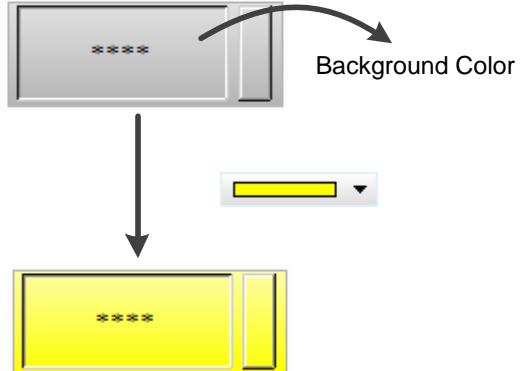


Figure 13.4.3 Main property page for the Multi-language Input element

No.	Property	Function description						
(1)	Write Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>						
	Read Address							
(2)	Write Offset Address							
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.						
(3)	String Length	<ul style="list-style-type: none"> <li>The range of the String Length is 1 - 256.</li> <li>After the length is entered, a prompt will appear underneath indicating the read length in bytes after conversion.</li> </ul>						
(4)	read only	The default is No. If you choose Yes, you will be able to read but not write data.						
(5)	Encoding	There are three encoding formats.						
		<p>Encoding:</p> <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;">         UTF8          UTF8 (selected)          UTF16          JIS       </div>						
(6)	Style	You can change the appearance of the element with this setting. There are four types of element styles:						
		<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Standard</th> <th>Raised</th> <th>Sunken</th> <th>Transparent</th> </tr> <tr> <td>*****</td> <td>*****</td> <td>*****</td> <td>*****</td> </tr> </table>	Standard	Raised	Sunken	Transparent	*****	*****
Standard	Raised	Sunken	Transparent					
*****	*****	*****	*****					

## 13

No.	Property	Function description				
(7)	Border Color	<ul style="list-style-type: none"> <li>Set the border color of the element.</li> <li>When you set the Style to Transparent, the Border Color setting is invalid.</li> </ul> 				
(8)	Background Color	<ul style="list-style-type: none"> <li>Set the background color of the element.</li> <li>When you set the Style to Transparent, the Background Color setting is invalid.</li> </ul> 				
(9)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1"> <tr> <td>Gradient</td> <td></td> </tr> <tr> <td>Fixed (Solid)</td> <td></td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						
(10)	Border Fill Style	<ul style="list-style-type: none"> <li>The border display of the Entry elements on the DOP-100 series models is different from that on the DOP-B series models. To have the border display effect be the same as that on the DOP-B series models, when you open the DOP-B project on a DOP-100 series model, the border is displayed with solid color.</li> <li>The default Border Fill Style for the DOP-100 series models is Border NOT Fill, meaning the border of the element is displayed with a gradient color.</li> </ul> <table border="1"> <tr> <td>Border NOT Fill (gradient color)</td> <td></td> </tr> <tr> <td>Border Fill (solid color)</td> <td></td> </tr> </table>	Border NOT Fill (gradient color)		Border Fill (solid color)	
Border NOT Fill (gradient color)						
Border Fill (solid color)						

## ■ Main-2

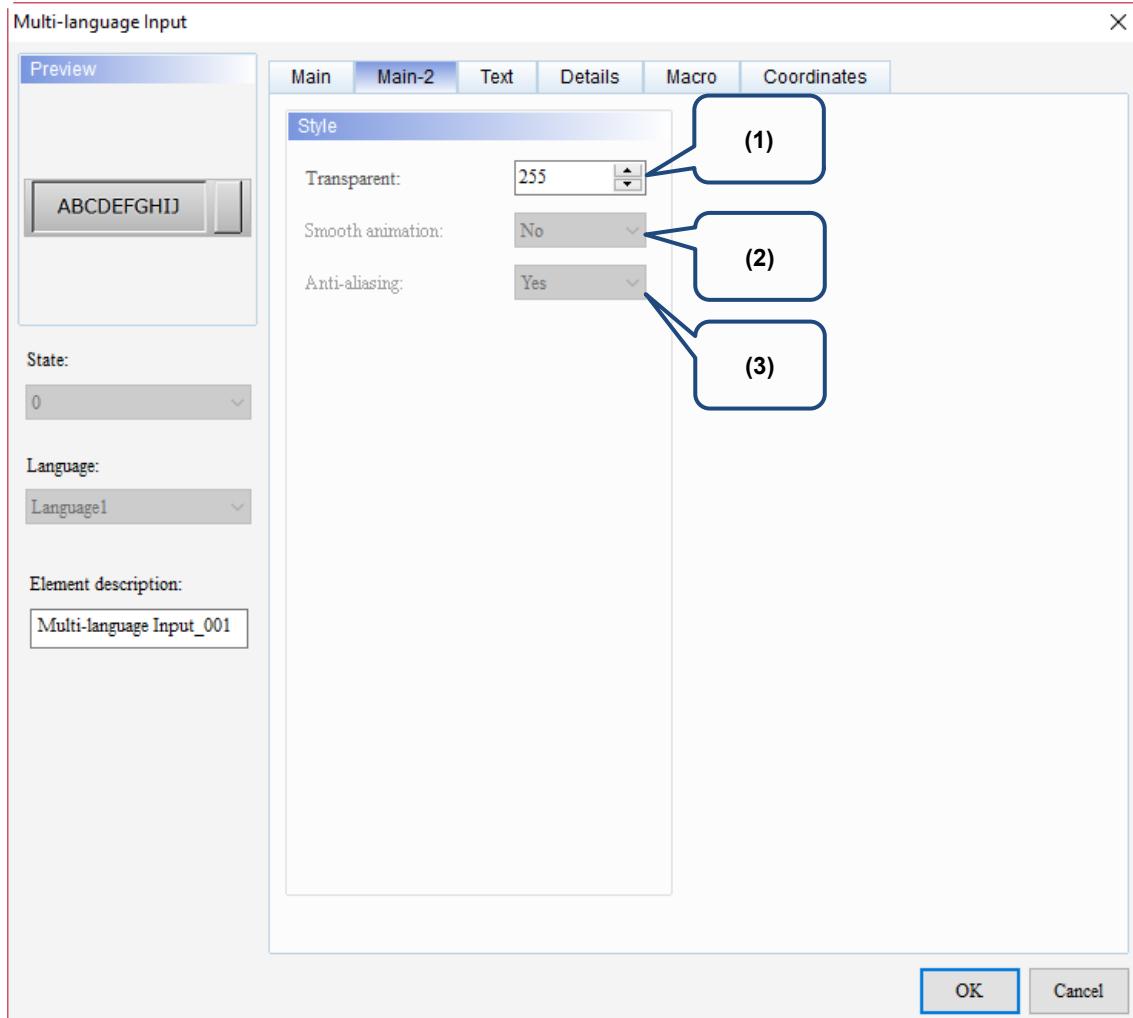


Figure 13.4.4 Main-2 property page for the Multi-language Input element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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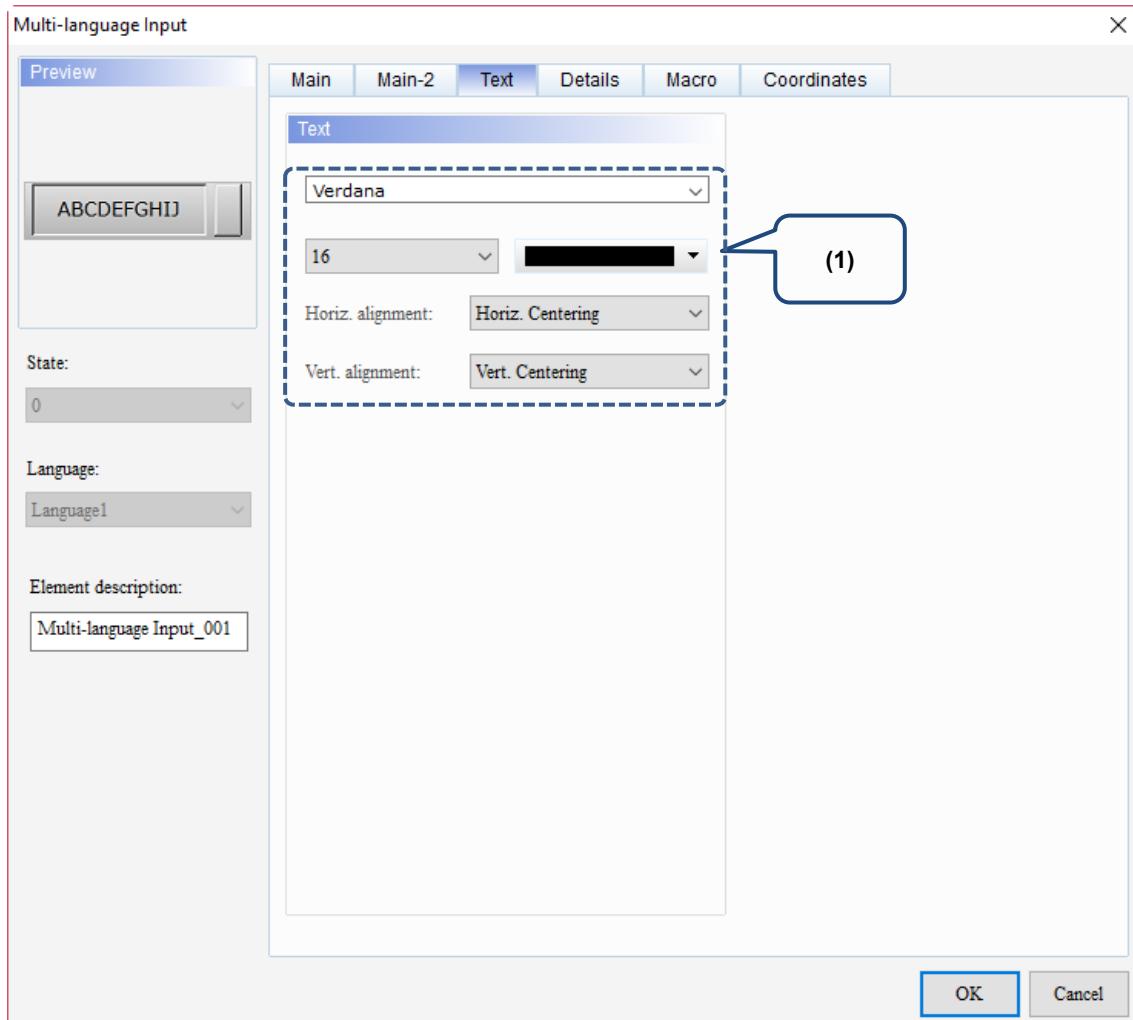
**■ Text**

Figure 13.4 5 Text property page for the Multi-language Input element

No.	Property	Function description
(1)	Text	Set the text properties, including the font, size, color, and alignment.

## ■ Details

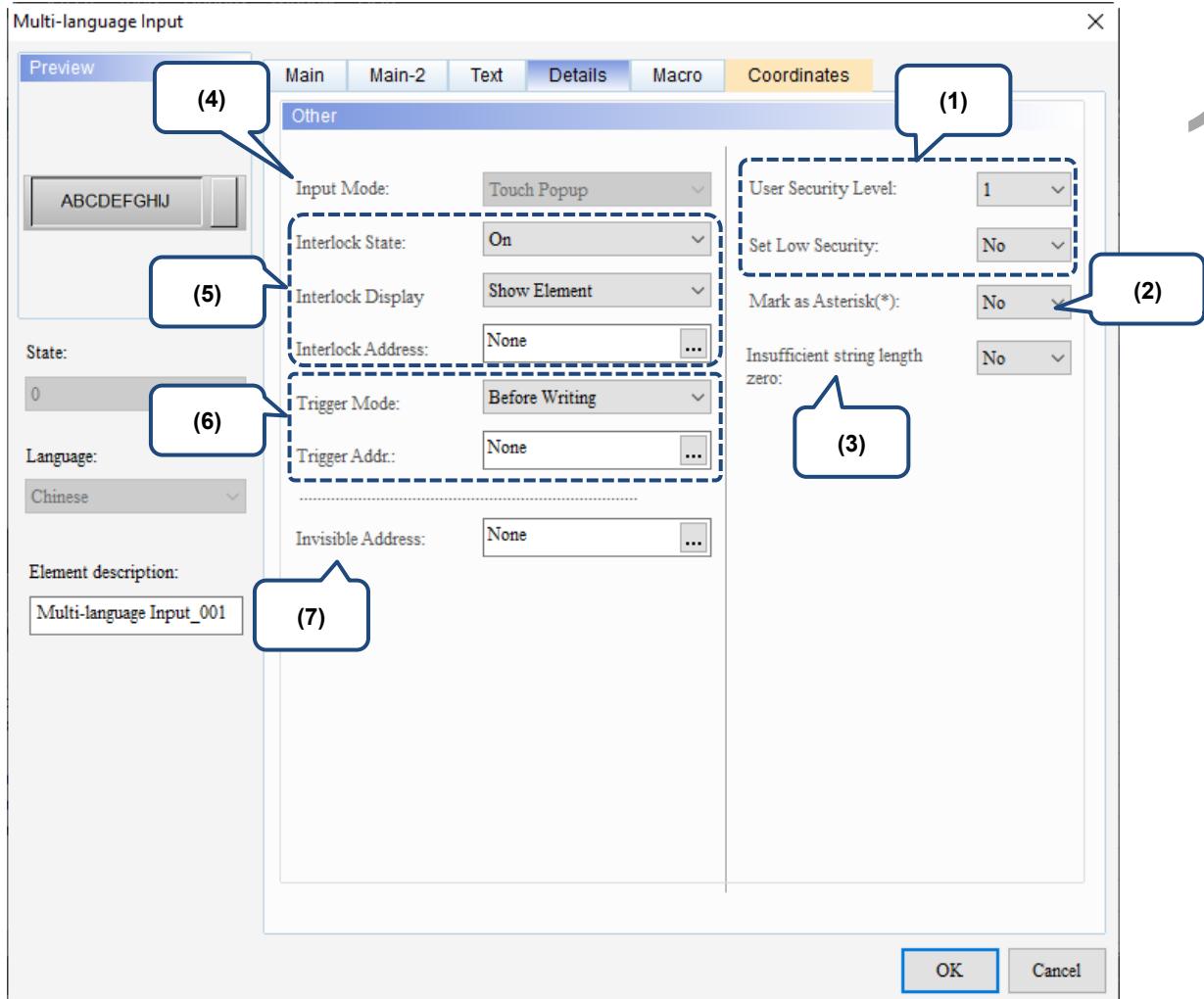
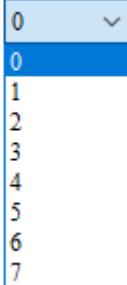
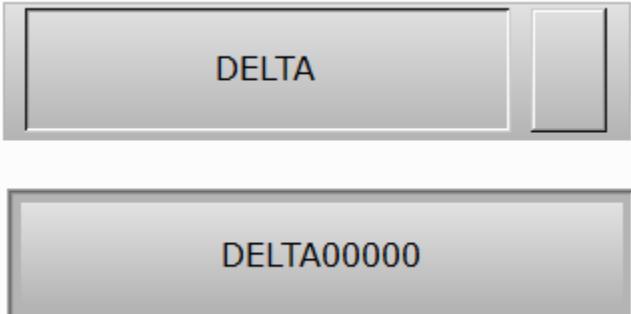
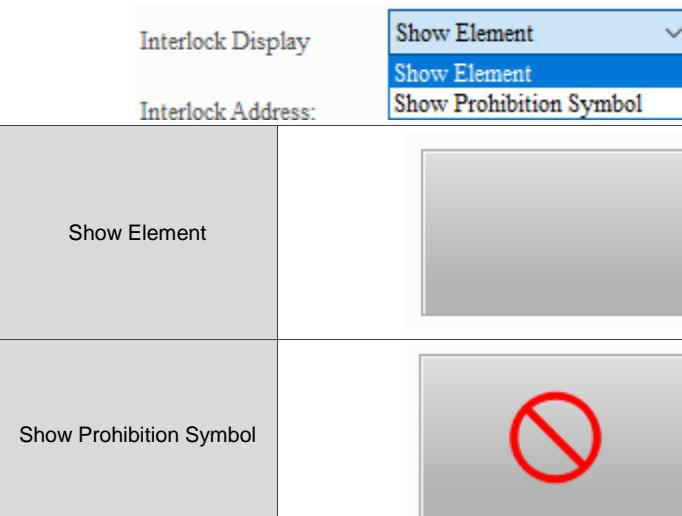


Figure 13.4.6 Details property page for the Multi-language Input element

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## 13

No.	Property	Function description
(1)	User Security Level	<ul style="list-style-type: none"> <li>You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> </ul> <p>User Security Level:</p>  <p>Set Low Security:</p> <p>Mark as Asterisk(*):</p>
	Set Low Security	<ul style="list-style-type: none"> <li>After you set the User Security Level and press the element, a password input window appears to confirm whether the security level password is correct.</li> </ul> 
(2)	Mark as Asterisk (*)	<ul style="list-style-type: none"> <li>If you specify Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.</li> </ul>
(3)	Insufficient string length zero	<p>If you specify Mark as Asterisk (*) to Yes, the value appears as asterisks when you input characters in the Multi-language Input window and press <b>Enter</b>, as shown in the following figure:</p>  <p>When the length of the input string is less than the set length, the remaining characters will be filled in with zeros for display.</p> 
(4)	Input Mode	The Multi-language Input element does not support setting the Input Mode.

No.	Property	Function description							
(5)	Interlock State	<ul style="list-style-type: none"> <li>■ The Interlock Address is for enabling the operation of another element and has to be used with the Interlock State. If the Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if the Interlock State is set to On, the Interlock Address is operable when this Interlock State is on.</li> <li>■ The following describes how it works:           <ol style="list-style-type: none"> <li>a. First, create a Maintained button and set its Write Address as \$44.0. Next, set the Write Address as \$555 and the Interlock Address as \$44.0 for the Multi-language Input element.</li> <li>b. In order for the Multi-language Input element \$555 to become operable, you need to first press the Maintained button \$44.0 to enable \$555.</li> </ol>  </li> </ul>							
	Interlock Address	<ul style="list-style-type: none"> <li>■ There are two modes for the Interlock Display, Show Element and Show Prohibition Symbol.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Interlock Display</td> <td style="width: 70%;"> <div style="display: flex; align-items: center;"> <span>Show Element</span> <span style="margin-left: 10px;">▼</span> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> <span>Show Element</span> <span>Show Prohibition Symbol</span> </div> </td> </tr> <tr> <td style="text-align: center;">Interlock Address:</td> <td style="text-align: center;"> <div style="display: flex; align-items: center;"> <span>Show Element</span> <div style="flex-grow: 1;"></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"></div> </td> </tr> <tr> <td style="text-align: center;">Interlock Display</td> <td style="text-align: center;"> <div style="display: flex; align-items: center;"> <span>Show Element</span> <div style="flex-grow: 1;"></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"></div> </td> </tr> <tr> <td style="text-align: center;">Interlock Display</td> <td style="text-align: center;"> <div style="display: flex; align-items: center;"> <span>Show Prohibition Symbol</span> <div style="flex-grow: 1;"></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"></div> </td> </tr> </table> 	Interlock Display	<div style="display: flex; align-items: center;"> <span>Show Element</span> <span style="margin-left: 10px;">▼</span> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> <span>Show Element</span> <span>Show Prohibition Symbol</span> </div>	Interlock Address:	<div style="display: flex; align-items: center;"> <span>Show Element</span> <div style="flex-grow: 1;"></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"></div>	Interlock Display	<div style="display: flex; align-items: center;"> <span>Show Element</span> <div style="flex-grow: 1;"></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"></div>	Interlock Display
Interlock Display	<div style="display: flex; align-items: center;"> <span>Show Element</span> <span style="margin-left: 10px;">▼</span> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> <span>Show Element</span> <span>Show Prohibition Symbol</span> </div>								
Interlock Address:	<div style="display: flex; align-items: center;"> <span>Show Element</span> <div style="flex-grow: 1;"></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"></div>								
Interlock Display	<div style="display: flex; align-items: center;"> <span>Show Element</span> <div style="flex-grow: 1;"></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"></div>								
Interlock Display	<div style="display: flex; align-items: center;"> <span>Show Prohibition Symbol</span> <div style="flex-grow: 1;"></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"></div>								
Interlock Display	<ul style="list-style-type: none"> <li>■ There are two modes for the Interlock Display, Show Element and Show Prohibition Symbol.</li> </ul>								

## 13

No.	Property	Function description														
(6)	Trigger Mode	<ul style="list-style-type: none"> <li>The Trigger Modes include Before Writing and After Writing.           <table border="1" style="margin-left: 20px;"> <tr> <td>Before Writing</td> <td>After Writing</td> </tr> <tr> <td>Trigger Addr. must be set to on before the value changes.</td> <td>Value is changed before the Trigger Addr. is set to on.</td> </tr> </table> </li> <li>The triggering function only switches the set Trigger Addr. to on, so if triggering again is required, you need to set the Trigger Addr. to off.</li> </ul> <p>Flowchart of Before Writing:      Flowchart of After Writing:</p> <pre> graph TD     subgraph Before_Writing [Flowchart of Before Writing]         A[Trigger Mode] --&gt; B[Maintained Button]         B --&gt; C[0]         C --&gt; D[Execute Before Writing]         D --&gt; E[The button is on and the value is written.]         E --&gt; F[Maintained Button]         F --&gt; G[50]     end      subgraph After_Writing [Flowchart of After Writing]         A --&gt; B         B --&gt; C[0]         C --&gt; D[Execute After Writing]         D --&gt; E[The button is on and the value is written.]         E --&gt; F[Maintained Button]         F --&gt; G[50]     end </pre>	Before Writing	After Writing	Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.										
Before Writing	After Writing															
Trigger Addr. must be set to on before the value changes.	Value is changed before the Trigger Addr. is set to on.															
	Trigger Addr.	When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.														
(7)	Invisible Address	<p>Element is invisible</p> <p>Invisible Address \$9.0 OFF</p> <p>Invisible Address \$9.0 ON</p> <p>Multi-language Input</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="background-color: #e0e0ff;">Preview</th> <th>Main</th> <th>Main-2</th> <th>Text</th> <th>Details</th> <th>Macro</th> </tr> <tr> <td colspan="2" style="height: 100px;"></td> <td colspan="5">           Main Tab: Other            Input Mode: Touch Popup            Interlock State: On            Interlock Display: Show Element            Interlock Address: None            Trigger Mode: Before Writing            Trigger Addr.: None              Invisible Address: \$9.0         </td> </tr> </table>	Preview		Main	Main-2	Text	Details	Macro			Main Tab: Other Input Mode: Touch Popup Interlock State: On Interlock Display: Show Element Interlock Address: None Trigger Mode: Before Writing Trigger Addr.: None  Invisible Address: \$9.0				
Preview		Main	Main-2	Text	Details	Macro										
		Main Tab: Other Input Mode: Touch Popup Interlock State: On Interlock Display: Show Element Interlock Address: None Trigger Mode: Before Writing Trigger Addr.: None  Invisible Address: \$9.0														

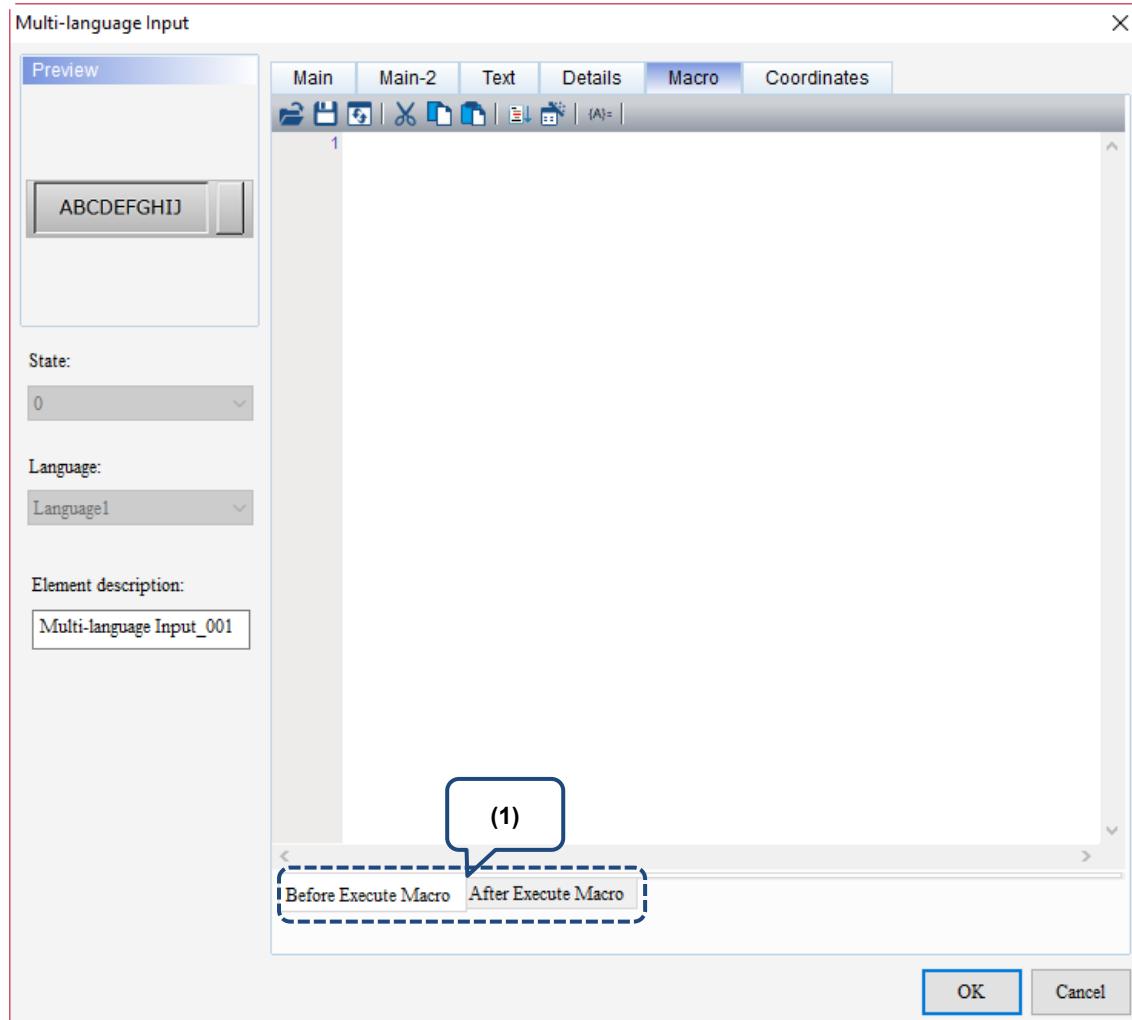
**■ Macro**

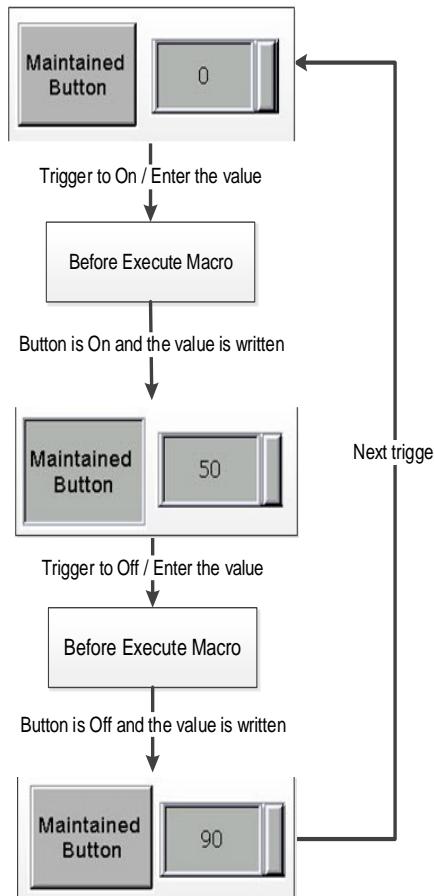
Figure 13.4.7 Macro property page for the Multi-language Input element

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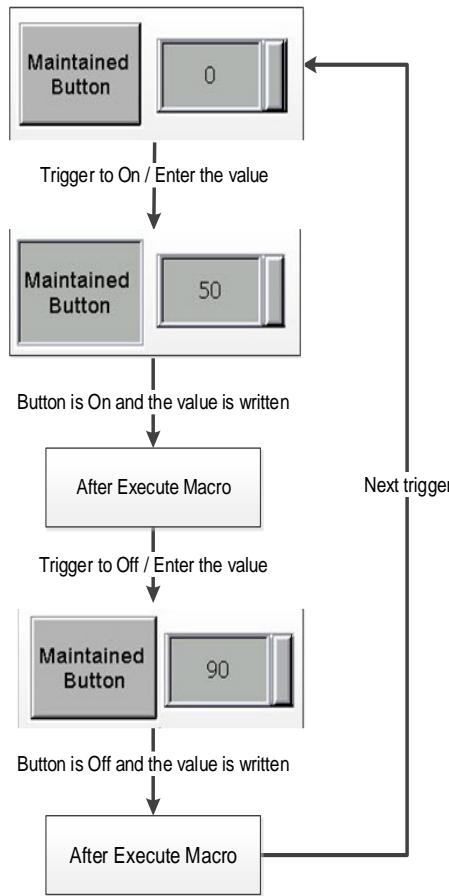
13

No.	Property	Function description
(1)	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands, then execute the action of the button. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button, then execute the macro commands. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.

Flowchart of Before Execute Macro:



Flowchart of After Execute Macro:



## ■ Coordinates

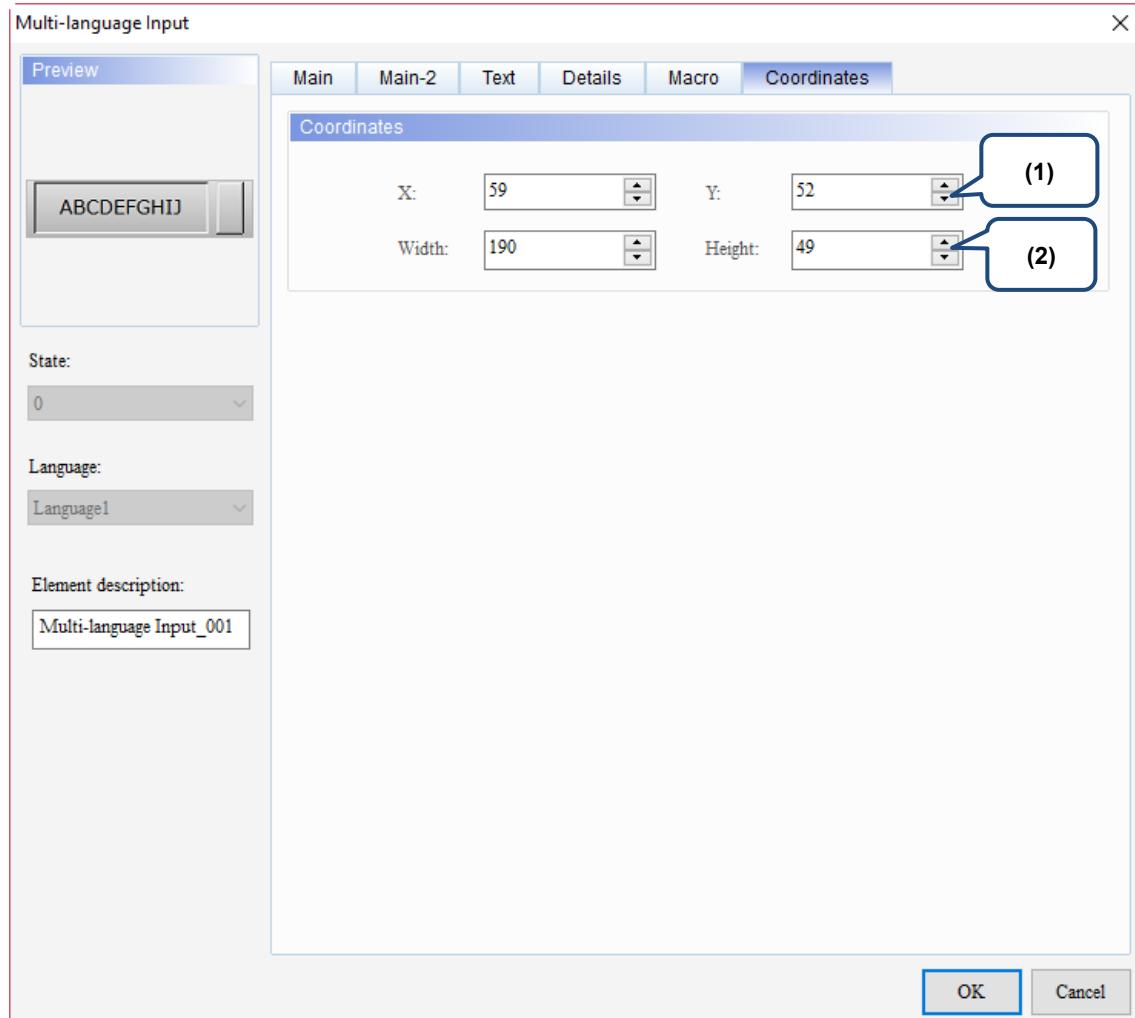


Figure 13.4.8 Coordinates property page for the Multi-language Input element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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# 13

## 13.5 Multi-line text input

This element can be used to view and edit text files and G-code files, and supports multi-language display. Refer to Table 13.5.1 for the Multi-line text input example.

Table 13.5.1 Multi-line text input example

Set the memory addresses to be used as shown in the following figure.

Multi-line text input

Preview Main Coordinates

Other

Interlock State:	On
Interlock Address:	None
Set Selected Row Address:	None
Set Selected Row Trigger:	None
Previous Page Trigger Address:	None
Next Page Trigger Address:	None
Line Up Trigger Address:	None
Line Down Trigger Address:	None

Operation

Theme:	Default
Insert Selected Row Trigger:	None
Increase Selected Row Trigger:	None
Increase Selected Row toText End:	None
Copy Selected Row Trigger:	None
Replace Selected Row Trigger:	None
Cut Selected Row Trigger:	None
Text Clear Trigger Address:	None
Search Trigger Address:	None
Current Selection Row:	None
Total Number of Rows:	None
Editable Trigger Address:	None
Operational Status Address:	None
Address of Search Temporary Area:	None
Address of Text Temporary Storage Area:	None

File

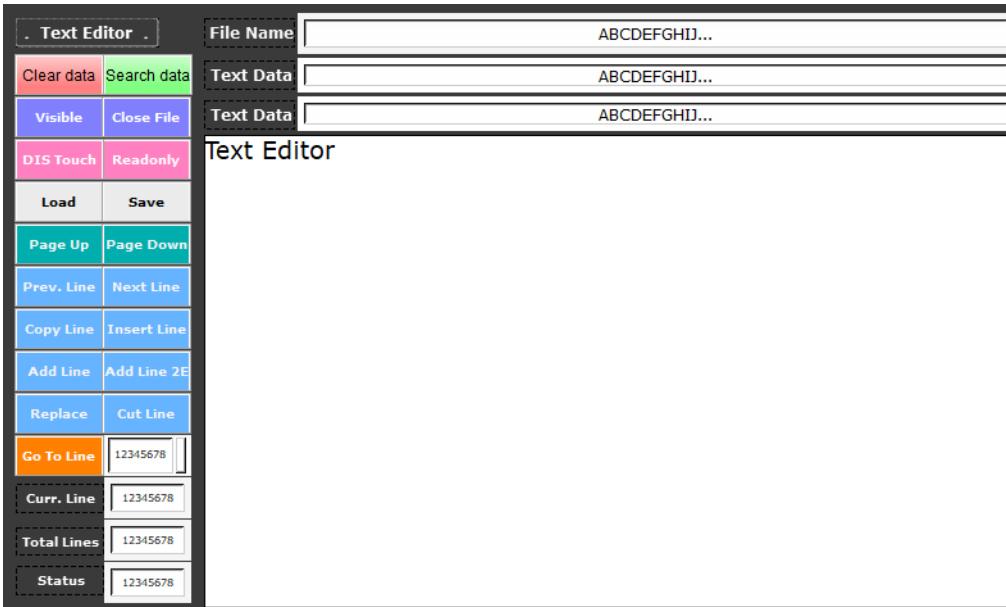
File Close Trigger Address:	None
File Name Address (string length 256):	None
Load File Trigger Address:	None
Save File Trigger Address:	None

Element description: Multi-line text input\_001

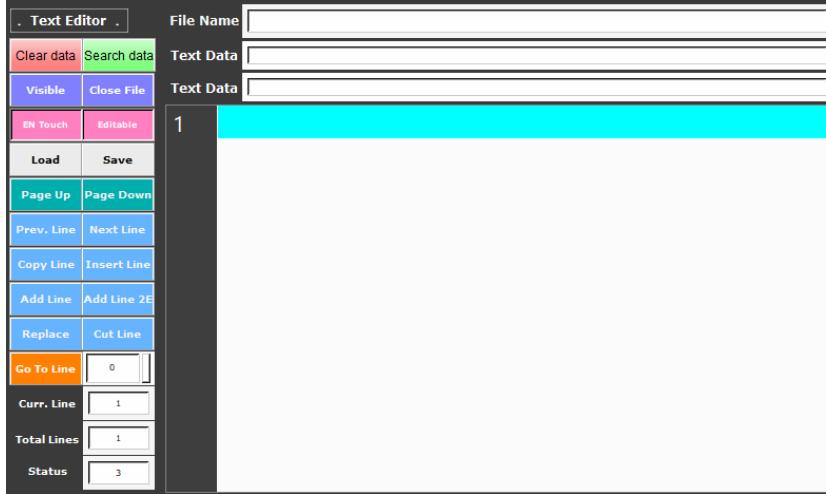
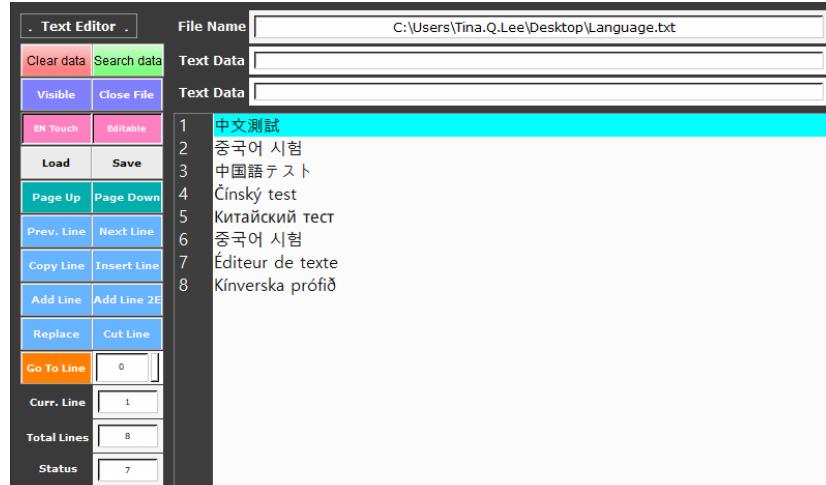
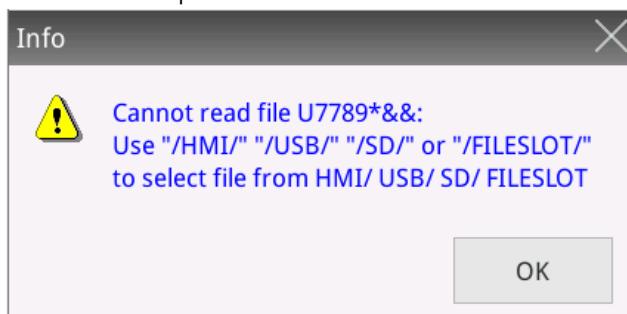
OK Cancel

Create multi-line text input

### Multi-line text input

<p>Create elements</p>	 <p>The screenshot shows a software interface titled "Text Editor". It has a toolbar with buttons for "Text Editor", "Clear data", "Search data", "Visible", "Close File", "DIS Touch", and "Readonly". Below the toolbar are sections for "File Name" (containing "ABCDEFGHIJ..."), "Text Data" (containing "ABCDEFGHIJ..."), and another "Text Data" section (containing "ABCDEFGHIJ..."). A large central area is labeled "Text Editor". At the bottom are buttons for "Load" and "Save", and rows of other buttons like "Page Up", "Page Down", "Prev. Line", "Next Line", etc.</p>
<p>Put the completed text file in the directory to be used</p>	<ul style="list-style-type: none"> <li>■ This example is an offline simulation, so the file is placed in a local directory on the computer. If you want to open a text file stored on a USB drive or SD card, enter /USB/[text file name] or /SD/[text file name] in the File Name field.</li> <li>■ Edit the following text file before putting it in the specific directory.</li> </ul> <p> Language.txt - Notepad</p> <p style="margin-left: 20px;">File Edit Format View Help</p> <p style="margin-left: 20px;">中文測試 중국어 시험 中国語テスト Čínský test Китайский тест 중국어 시험 Éditeur de texte Kinverska prófið</p> <ul style="list-style-type: none"> <li>■ After completing the edits, put the text file in the following directory: C:\Users\Tina.Q.Lee\Desktop.</li> </ul>

## 13

Multi-line text input	
Compile and download the elements to the HMI.	
Download the screen	After the elements are downloaded, the HMI screen displays the following: 
Execution results	<p>■ In the File Name field, enter the path of the text file to be opened: C:\Users\Tina.Q.Lee\Desktop\Language.txt.</p> <p>■ After entering the path, click <b>Load</b>.</p>  <p>The text file content is as follows:</p> <pre> 1 中文測試 2 중국어 시험 3 中国語テスト 4 Čínský test 5 Китайский тест 6 중국어 시험 7 Éditeur de texte 8 Kínverska pröfíð </pre> <p>■ If the entered file path is not correct, the following message appears to provide instructions on how to open the file.</p>  <p>The dialog box contains the following text:</p> <p><b>Info</b></p> <p><b>!</b> Cannot read file U7789*&amp;&amp;: Use "/HMI/" "/USB/" "/SD/" or "/FILESLOT/" to select file from HMI/ USB/ SD/ FILESLOT</p> <p>OK</p>
Open the file	

### Multi-line text input

- For example, to open a file saved in a USB drive, the following path should be entered:  
/USB/Language.txt.

Open the file	<div style="border: 1px solid black; padding: 5px; width: 100%;"> <div style="background-color: #f2f2f2; border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span style="margin-right: 10px;">Text Editor .</span> <span>File Name <input type="text" value="/USB/LANGUAGE.TXT"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Clear data</span> <span>Search data</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Visible</span> <span>Close File</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>EN Touch</span> <span>Editable</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Load</span> <span>Save</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Page Up</span> <span>Page Down</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Prev. Line</span> <span>Next Line</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Copy Line</span> <span>Insert Line</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Add Line</span> <span>Add Line 2E</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Replace</span> <span>Cut Line</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Go To Line</span> <span><input type="text" value="0"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Curr. Line</span> <span><input type="text" value="1"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Total Lines</span> <span><input type="text" value="8"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Status</span> <span><input type="text" value="7"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Text Data</span> <input type="text" value=""/> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Text Data</span> <input type="text" value=""/> </div> <div style="background-color: #00FFFF; color: white; padding: 5px 0;"> <span>1 中文測試 2 중국어 시험 3 中国語テス ト 4 Čínský test 5 Китайский тест 6 중국어 시험 7 Éditeur de texte 8 Kínverska prófið</span> </div> </div>
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- Add text strings to the document by entering text data, and then edit the texts using the functions of Copy Line, Insert Line, Add Line, Add Line 2E, Replace, and Cut Line.

Execution results

Edit the text

- Copy Line Select the text string to be copied and click **Copy Line**. The selected text string will be copied and displayed in the Text Data field.

Enter the text in the Text Data field and click **Insert Line**. The text data will be inserted before the selected line.

Select the 8<sup>th</sup> line and enter "DELTA" in the Text Data field.

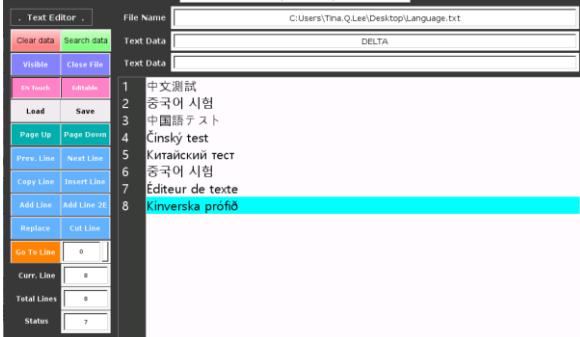
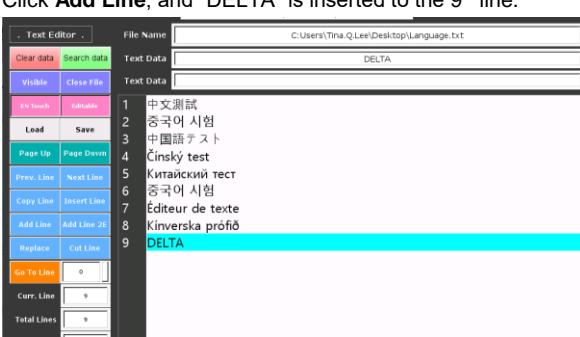
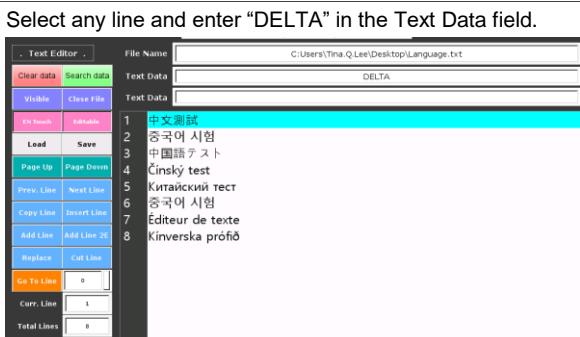
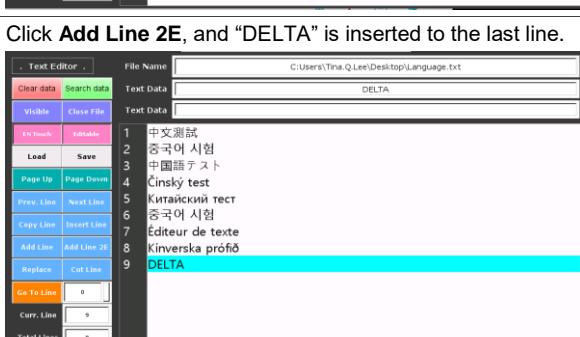
Before inserting	<div style="border: 1px solid black; padding: 5px; width: 100%;"> <div style="background-color: #f2f2f2; border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span style="margin-right: 10px;">Text Editor .</span> <span>File Name <input type="text" value="C:/Users/Tina.Q.Lee/Desktop/Language.txt"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Clear data</span> <span>Search data</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Visible</span> <span>Close File</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>EN Touch</span> <span>Editable</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Load</span> <span>Save</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Page Up</span> <span>Page Down</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Prev. Line</span> <span>Next Line</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Copy Line</span> <span>Insert Line</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Add Line</span> <span>Add Line 2E</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Replace</span> <span>Cut Line</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Go To Line</span> <span><input type="text" value="0"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Curr. Line</span> <span><input type="text" value="8"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Total Lines</span> <span><input type="text" value="8"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Status</span> <span><input type="text" value="7"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Text Data</span> <input type="text" value="DELTA"/> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Text Data</span> <input type="text" value=""/> </div> <div style="background-color: #00FFFF; color: white; padding: 5px 0;"> <span>1 中文測試 2 중국어 시험 3 中国語テス ト 4 Čínský test 5 Китайский тест 6 중국어 시험 7 Éditeur de texte 8 DELTA 9 Kínverska prófið</span> </div> </div>
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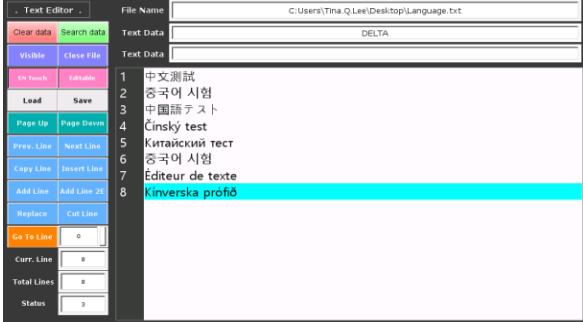
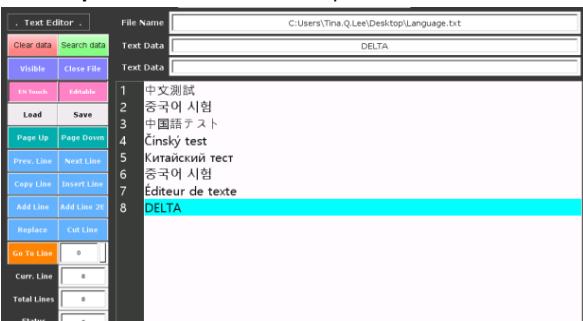
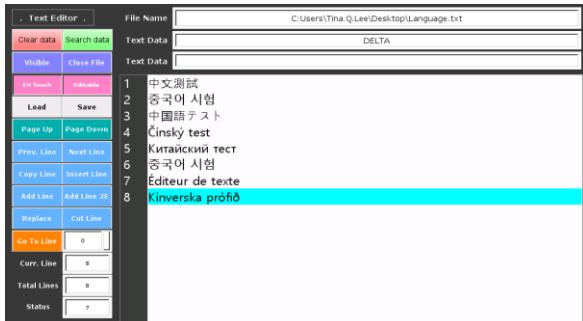
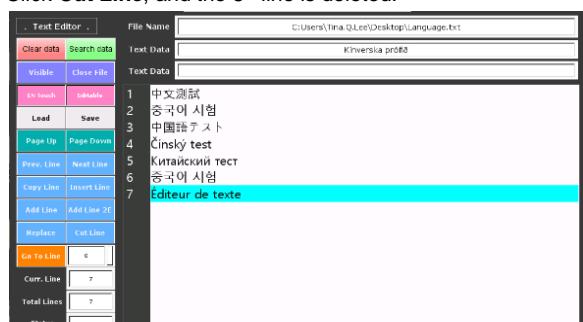
Click **Insert Line**, and "DELTA" is inserted to the 8<sup>th</sup> line.

Insert Line	<div style="border: 1px solid black; padding: 5px; width: 100%;"> <div style="background-color: #f2f2f2; border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span style="margin-right: 10px;">Text Editor .</span> <span>File Name <input type="text" value="C:/Users/Tina.Q.Lee/Desktop/Language.txt"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Clear data</span> <span>Search data</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Visible</span> <span>Close File</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>EN Touch</span> <span>Editable</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Load</span> <span>Save</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Page Up</span> <span>Page Down</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Prev. Line</span> <span>Next Line</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Copy Line</span> <span>Insert Line</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Add Line</span> <span>Add Line 2E</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Replace</span> <span>Cut Line</span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Go To Line</span> <span><input type="text" value="0"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Curr. Line</span> <span><input type="text" value="9"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Total Lines</span> <span><input type="text" value="9"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Status</span> <span><input type="text" value="3"/></span> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Text Data</span> <input type="text" value="DELTA"/> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <span>Text Data</span> <input type="text" value=""/> </div> <div style="background-color: #00FFFF; color: white; padding: 5px 0;"> <span>1 中文測試 2 중국어 시험 3 中国語テス ト 4 Čínský test 5 Китайский тест 6 중국어 시험 7 Éditeur de texte 8 DELTA 9 Kínverska prófið</span> </div> </div>
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After inserting

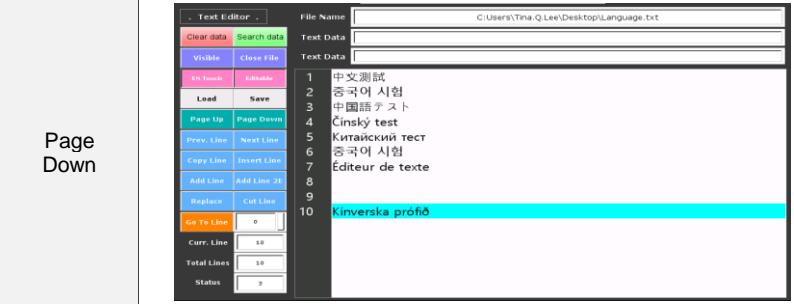
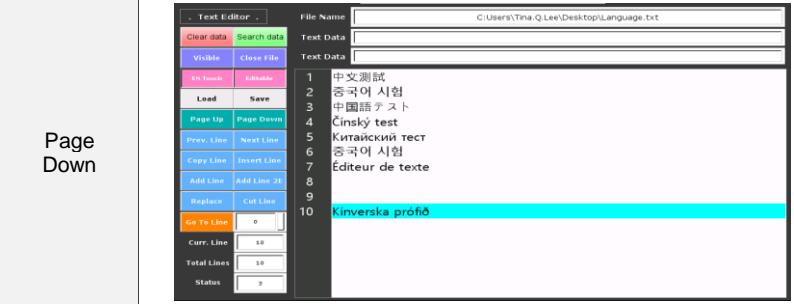
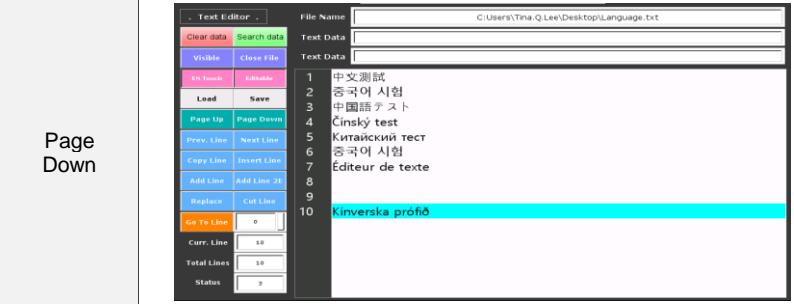
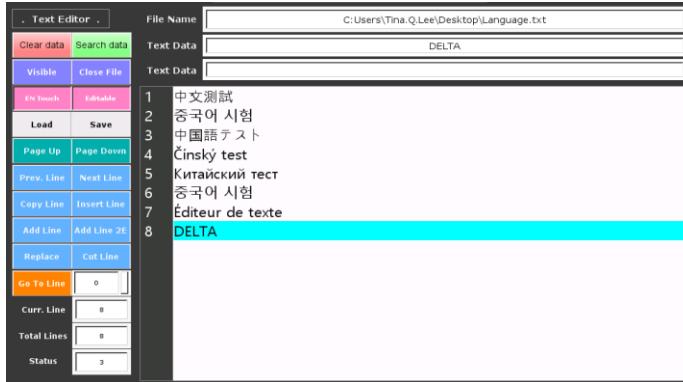
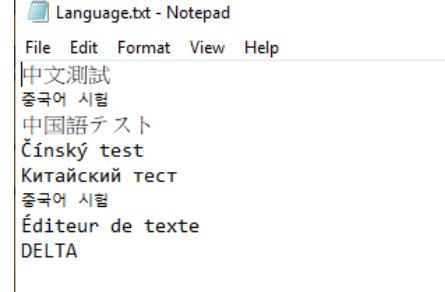
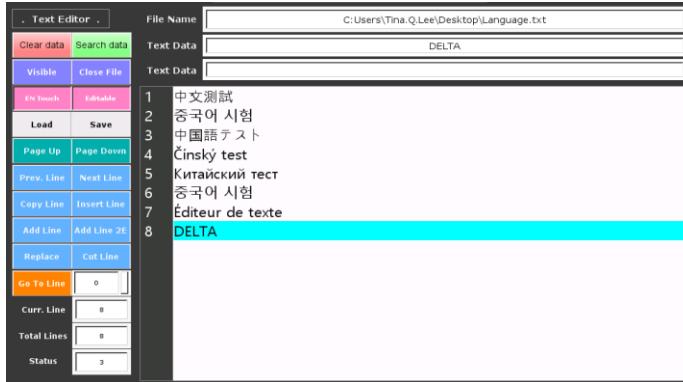
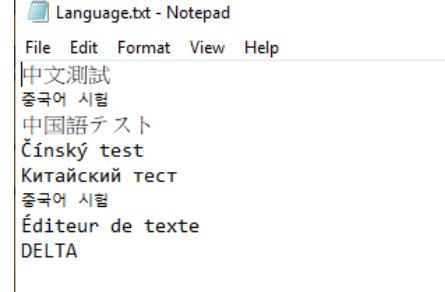
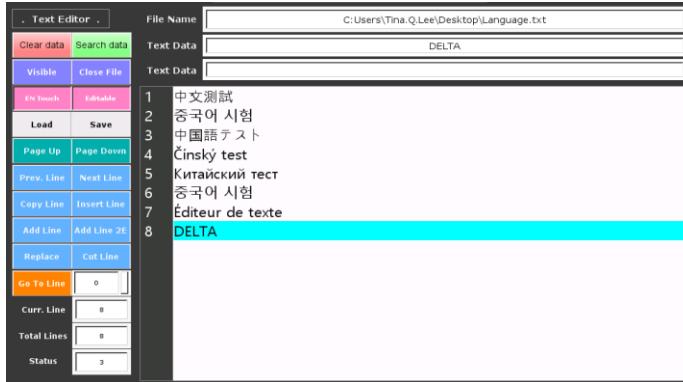
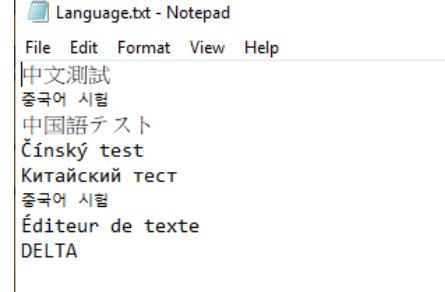
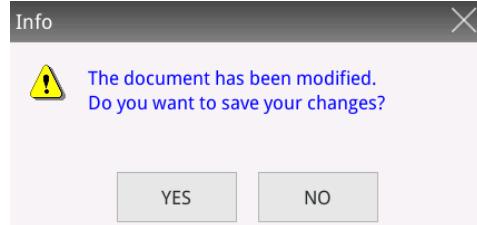
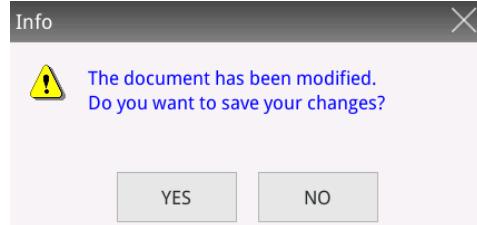
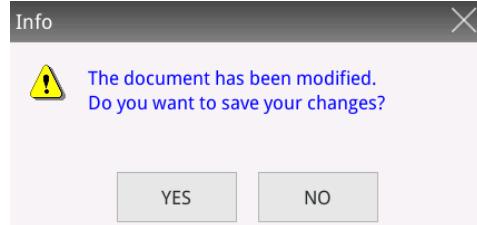
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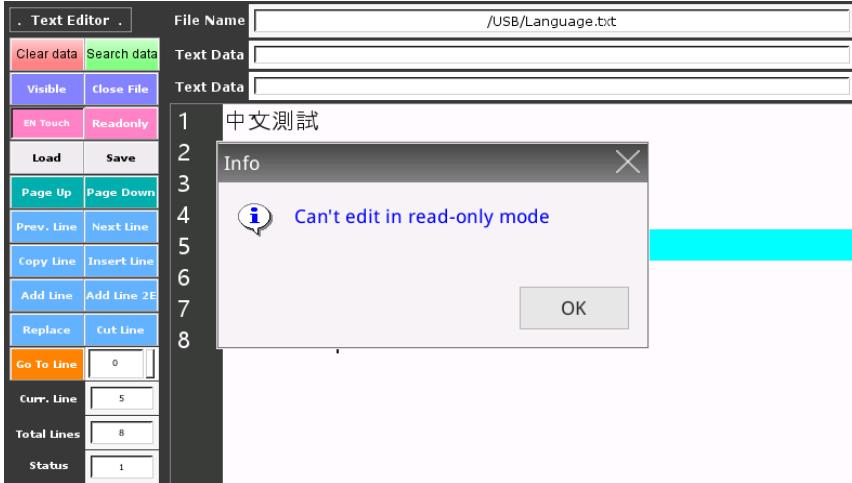
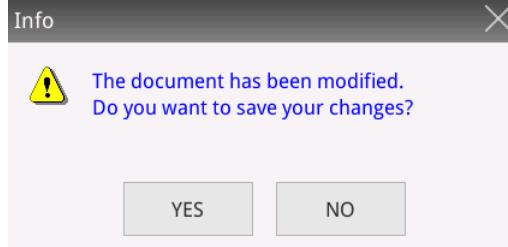
Multi-line text input			
		Enter the text in the Text Data field and click <b>Add Line</b> . The text data will be added after the selected line.	
		<p><b>Before adding</b></p> 	
		<p><b>After adding</b></p> 	
		Enter the text in the Text Data field and click <b>Add Line 2E</b> . The text data will be added to the last line.	
		<p><b>Before adding</b></p> 	
		<p><b>After adding</b></p> 	

Multi-line text input			
		<p>Enter the text in the Text Data field and click <b>Replace</b>. The selected string will be replaced with the entered text.</p>	
<b>Execution results</b>		<p><b>Before replacing</b></p>  <p>Select the 8<sup>th</sup> line and enter “DELTA” in the Text Data field.</p> <p><b>After replacing</b></p>  <p>Click <b>Replace</b>, and the 8<sup>th</sup> line is replaced with “DELTA”.</p>	
<b>Edit the text</b>		<p>Select the line of text to be deleted and click <b>Cut Line</b>, and then the text data is deleted.</p> <p><b>Before deleting</b></p>  <p>Select the 8<sup>th</sup> line.</p> <p><b>After deleting</b></p>  <p>Click <b>Cut Line</b>, and the 8<sup>th</sup> line is deleted.</p>	

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# 13

Multi-line text input					
Switch to specific line	<ul style="list-style-type: none"> <li>■ Click on <b>Page Up</b>, <b>Page Down</b>, <b>Prev. Line</b>, or <b>Next Line</b> to switch to the specific line.</li> <li>■ If the text contents are within one page, the first line is selected when you click <b>Page Up</b> and the last line is selected when you click <b>Page Down</b>.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center; vertical-align: top;">Page Up</td><td>  <p>The screenshot shows the Text Editor interface. The 'Text Data' field contains ten lines of text in various languages. Line 1 is highlighted in blue. The status bar at the bottom shows 'Curr. Line: 1' and 'Total Lines: 10'. The left sidebar has buttons for Page Up, Page Down, Prev. Line, Next Line, and Go To Line.</p> </td></tr> <tr> <td style="text-align: center; vertical-align: top;">Page Down</td><td>  <p>The screenshot shows the Text Editor interface. The 'Text Data' field contains the same ten lines of text. Line 10 is highlighted in blue. The status bar at the bottom shows 'Curr. Line: 10' and 'Total Lines: 10'. The left sidebar has buttons for Page Up, Page Down, Prev. Line, Next Line, and Go To Line.</p> </td></tr> </table>	Page Up	 <p>The screenshot shows the Text Editor interface. The 'Text Data' field contains ten lines of text in various languages. Line 1 is highlighted in blue. The status bar at the bottom shows 'Curr. Line: 1' and 'Total Lines: 10'. The left sidebar has buttons for Page Up, Page Down, Prev. Line, Next Line, and Go To Line.</p>	Page Down	 <p>The screenshot shows the Text Editor interface. The 'Text Data' field contains the same ten lines of text. Line 10 is highlighted in blue. The status bar at the bottom shows 'Curr. Line: 10' and 'Total Lines: 10'. The left sidebar has buttons for Page Up, Page Down, Prev. Line, Next Line, and Go To Line.</p>
Page Up	 <p>The screenshot shows the Text Editor interface. The 'Text Data' field contains ten lines of text in various languages. Line 1 is highlighted in blue. The status bar at the bottom shows 'Curr. Line: 1' and 'Total Lines: 10'. The left sidebar has buttons for Page Up, Page Down, Prev. Line, Next Line, and Go To Line.</p>				
Page Down	 <p>The screenshot shows the Text Editor interface. The 'Text Data' field contains the same ten lines of text. Line 10 is highlighted in blue. The status bar at the bottom shows 'Curr. Line: 10' and 'Total Lines: 10'. The left sidebar has buttons for Page Up, Page Down, Prev. Line, Next Line, and Go To Line.</p>				
Execution results	<ul style="list-style-type: none"> <li>■ Enter “DELTA” in the Text Data field, click the eighth line of text, and click <b>Replace</b>. Then, click <b>Save</b> to save the modified text data. You can open the file on the computer to check whether the data has been modified and saved.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center; vertical-align: top;">Save</td><td>  <p>The screenshot shows the Text Editor interface. The 'Text Data' field contains the same ten lines of text. Line 8 is highlighted in blue and contains the word 'DELTA'. The status bar at the bottom shows 'Curr. Line: 8' and 'Total Lines: 10'. The left sidebar has buttons for Page Up, Page Down, Prev. Line, Next Line, and Go To Line.</p> </td></tr> <tr> <td style="text-align: center; vertical-align: top;"></td><td>  <p>The screenshot shows a Notepad window titled 'Language.txt - Notepad'. The text content is identical to the screenshot above, with line 8 containing 'DELTA'. The menu bar includes File, Edit, Format, View, and Help.</p> </td></tr> </table>	Save	 <p>The screenshot shows the Text Editor interface. The 'Text Data' field contains the same ten lines of text. Line 8 is highlighted in blue and contains the word 'DELTA'. The status bar at the bottom shows 'Curr. Line: 8' and 'Total Lines: 10'. The left sidebar has buttons for Page Up, Page Down, Prev. Line, Next Line, and Go To Line.</p>		 <p>The screenshot shows a Notepad window titled 'Language.txt - Notepad'. The text content is identical to the screenshot above, with line 8 containing 'DELTA'. The menu bar includes File, Edit, Format, View, and Help.</p>
Save	 <p>The screenshot shows the Text Editor interface. The 'Text Data' field contains the same ten lines of text. Line 8 is highlighted in blue and contains the word 'DELTA'. The status bar at the bottom shows 'Curr. Line: 8' and 'Total Lines: 10'. The left sidebar has buttons for Page Up, Page Down, Prev. Line, Next Line, and Go To Line.</p>				
	 <p>The screenshot shows a Notepad window titled 'Language.txt - Notepad'. The text content is identical to the screenshot above, with line 8 containing 'DELTA'. The menu bar includes File, Edit, Format, View, and Help.</p>				
Save	<ul style="list-style-type: none"> <li>■ If the file is not saved after modification and you are opening another file, then the following message appears to remind the user to save the modified text before loading another file.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center; vertical-align: top;"></td><td>  <p>The screenshot shows an 'Info' dialog box. It contains a warning icon and the text: 'The document has been modified. Do you want to save your changes?'. At the bottom are two buttons: 'YES' and 'NO'.</p> </td></tr> </table>		 <p>The screenshot shows an 'Info' dialog box. It contains a warning icon and the text: 'The document has been modified. Do you want to save your changes?'. At the bottom are two buttons: 'YES' and 'NO'.</p>		
	 <p>The screenshot shows an 'Info' dialog box. It contains a warning icon and the text: 'The document has been modified. Do you want to save your changes?'. At the bottom are two buttons: 'YES' and 'NO'.</p>				

Multi-line text input	
Execution results	<p>When the Editable Trigger Address is set to Off, writing to this text file will be prohibited. When you want to write text data, the HMI will display the following message.</p>  <p>The screenshot shows a 'Text Editor' application window. On the left is a vertical toolbar with buttons for Clear data, Search data, Visible, Close File, EN Touch, Readonly, Load, Save, Page Up, Page Down, Prev. Line, Next Line, Copy Line, Insert Line, Add Line, Add Line 2E, Replace, Cut Line, Go To Line, Curr. Line, Total Lines, and Status. The main area displays the text '中文測試' (Chinese Test) across 8 lines. A modal dialog box titled 'Info' is overlaid, containing the message 'Can't edit in read-only mode' with an information icon. An 'OK' button is at the bottom right of the dialog.</p>
Write-protected	<p>Invalid touch</p> <p>If the Interlock Address has been set, when the Interlock Address is ON, you can click the buttons to edit the text data; if the Interlock Address is OFF, the buttons are not available.</p>
Close	<p>Click <b>Close File</b> to close the currently opened file. If the file has been modified before closed, the following window will also be displayed.</p>  <p>The screenshot shows a 'Save' dialog box with a warning icon and the text 'The document has been modified. Do you want to save your changes?'. It includes 'YES' and 'NO' buttons at the bottom.</p>

When you double-click the Multi-line text input, the property page is shown as follows.

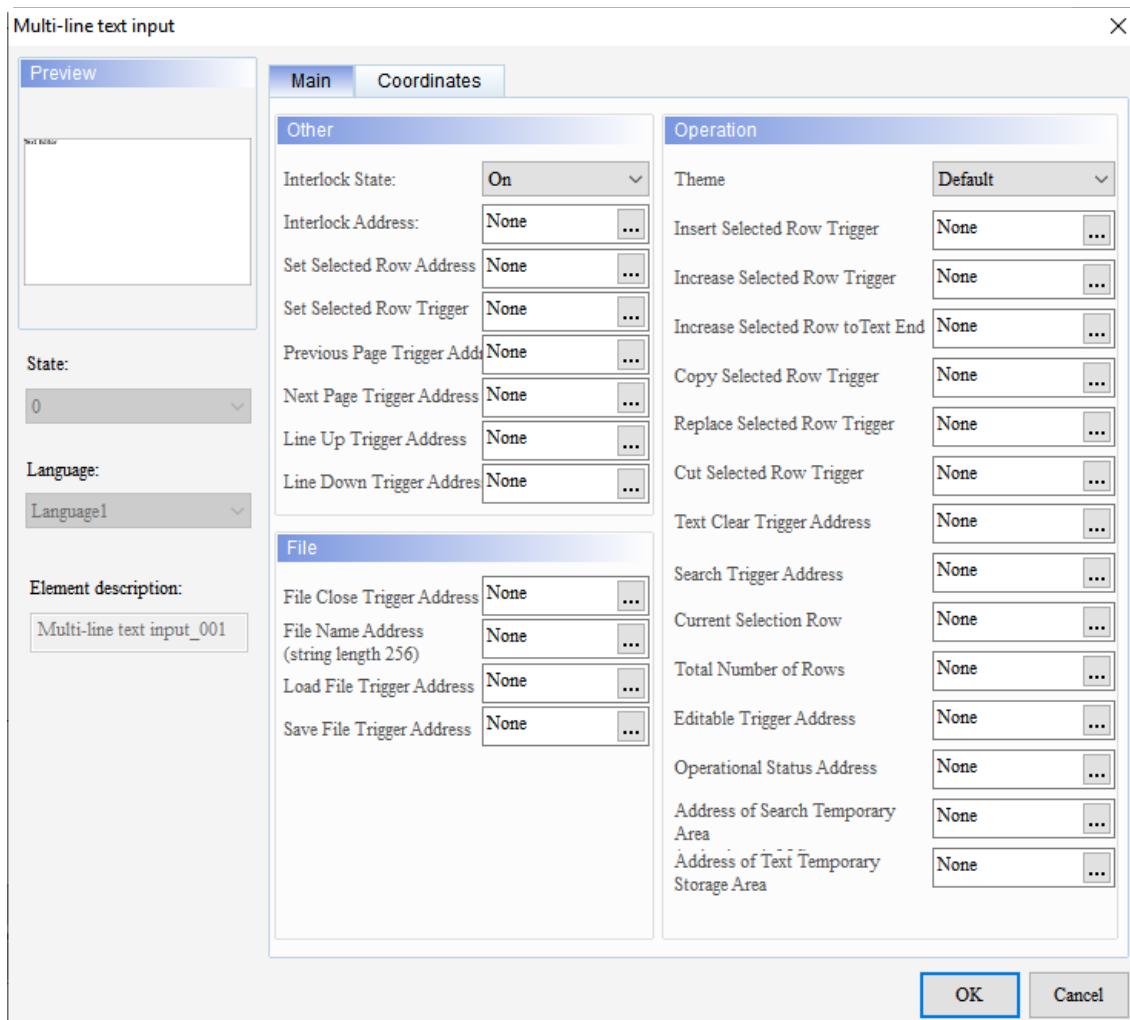


Figure 13.5.1 Properties of Multi-line text input

Table 13.5.2 Function page of Multi-line text input

Multi-line text input	
Function page	Description
Preview	Multi-line text input does not support viewing multiple state values and multi-language data display.
Main	<p>The settings are divided into Other, File, and Operation:</p> <ul style="list-style-type: none"> <li>■ Other: Interlock State, Interlock Address, Set Selected Row Address, Set Selected Row Trigger, Previous Page Trigger Address, Next Page Trigger Address, Line Up Trigger Address, and Line Down Trigger Address.</li> <li>■ File: File Close Trigger Address, File Name Address, Load File Trigger Address, and Save File Trigger Address.</li> <li>■ Operation: Theme, Insert Selected Row Trigger, Increase Selected Row Trigger, Increase Selected Row to Text End, Copy Selected Row Trigger, Replace Selected Row Trigger, Cut Selected Row Trigger, Text Clear Trigger Address, Search Trigger Address, Current Selection Row, Total Number of Rows, Editable Trigger Address, Operational Status Address, Address of Search Temporary Area, and Address of Text Temporary Storage Area.</li> </ul>
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

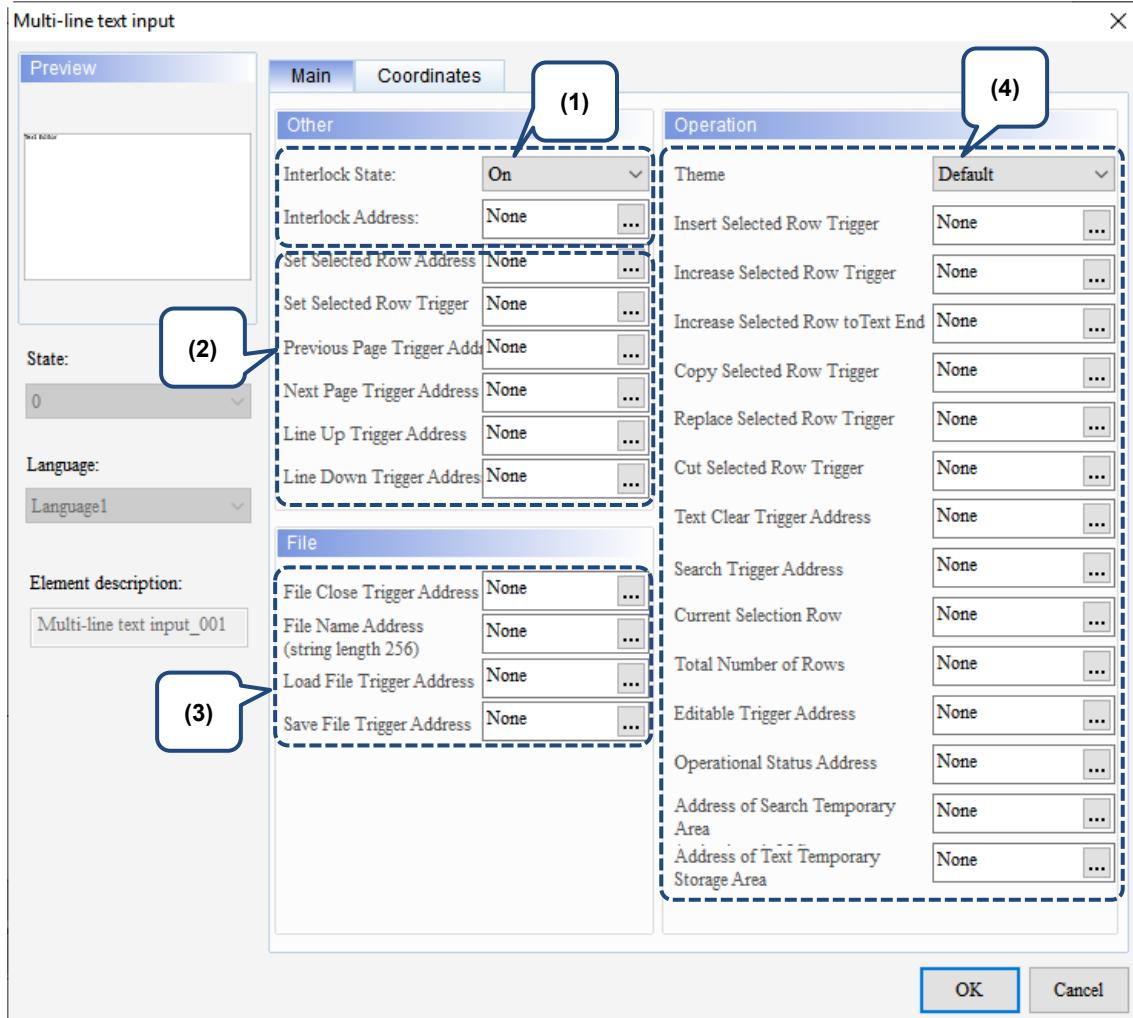
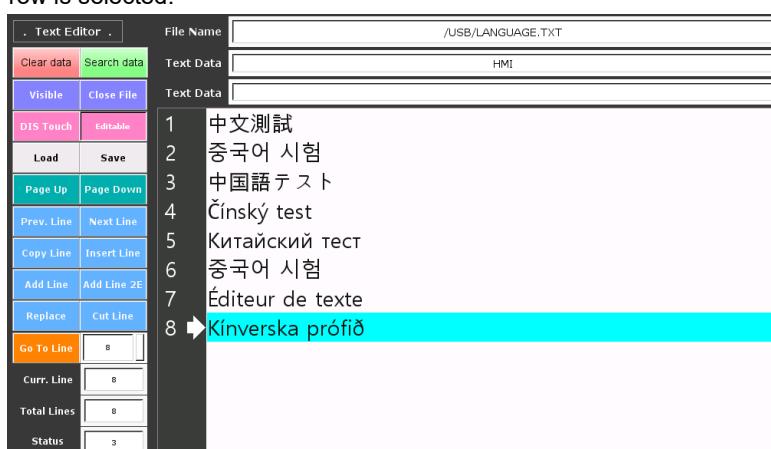
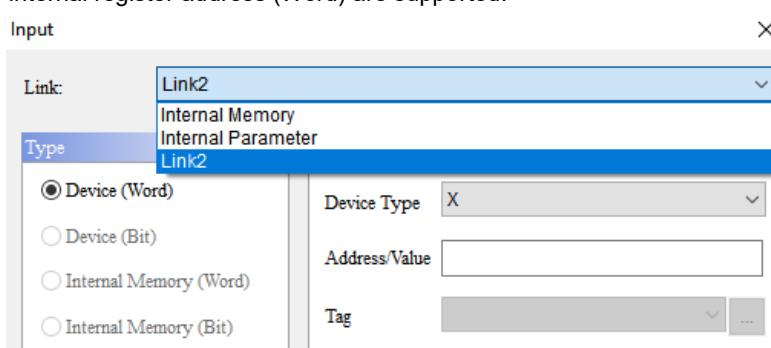
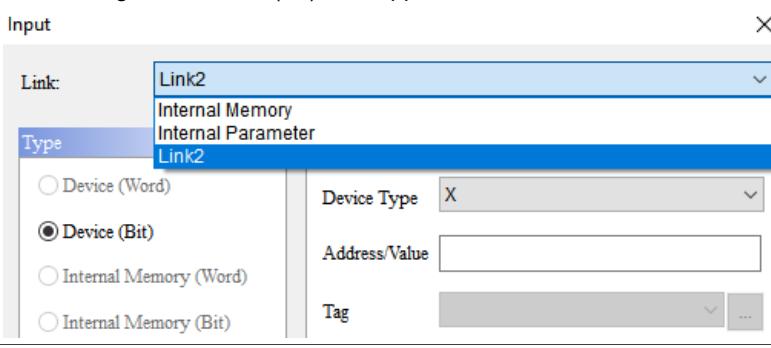


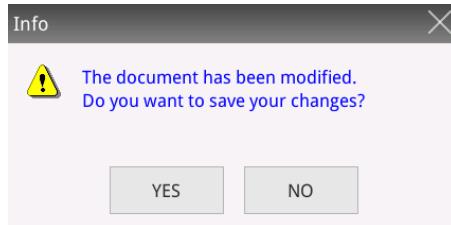
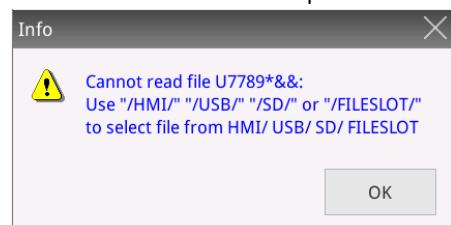
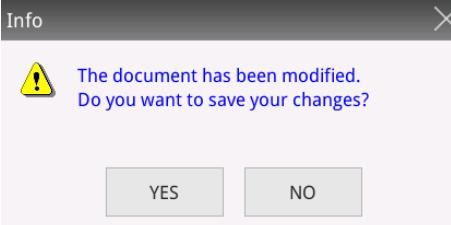
Figure 13.5.2 Main property page for the Multi-line text input element

No.	Property	Function description
(1)	Interlock State	The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is off; on the other hand, if Interlock State is set to On, the Interlock Address is operable when this Interlock State is on.
	Interlock Address	

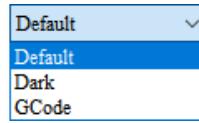
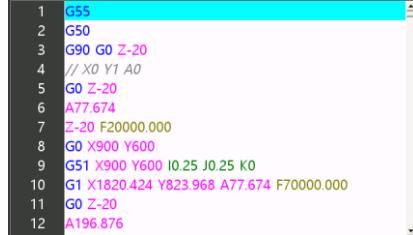
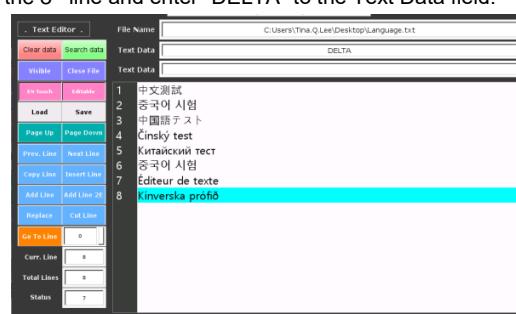
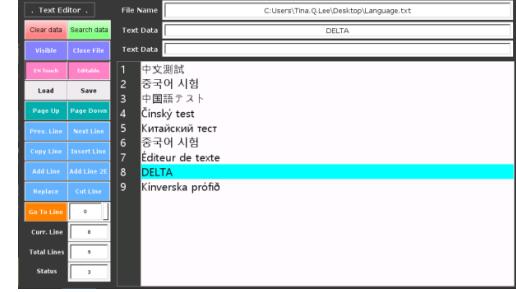
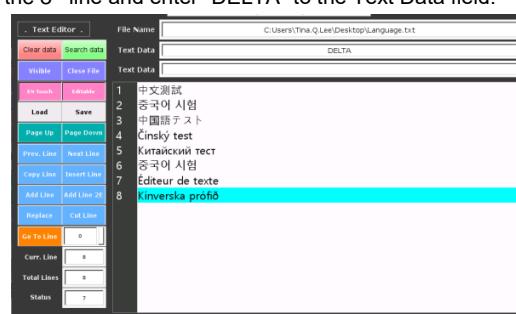
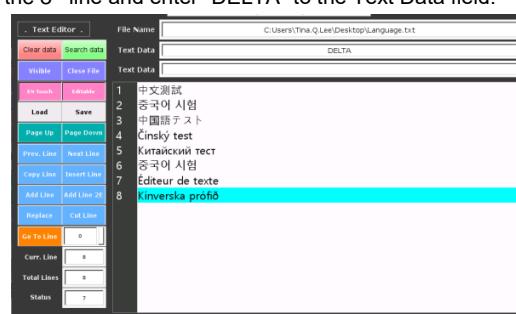
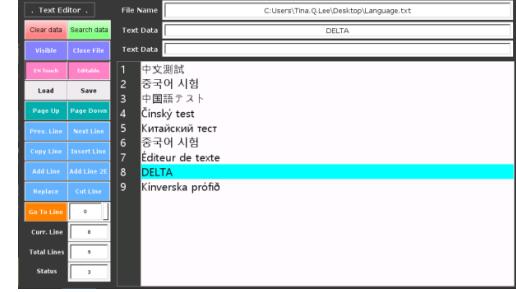
13

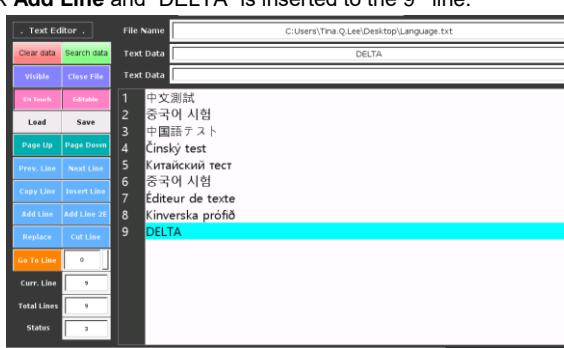
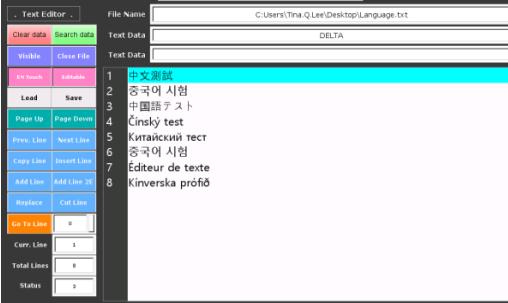
13

No.	Property	Function description
	Set Selected Row Address	<ul style="list-style-type: none"> <li>Specify the line to select with the Set Select Row Address. Then, set the Set Selected Row Trigger to On, and the element will display the selected item.</li> <li>Set to select the eighth row, press the <b>Go To Line</b> button, and the eighth row is selected.</li> </ul> 
(2)	Set Selected Row Trigger	<ul style="list-style-type: none"> <li>For the Set Select Row Address, the controller address (Word) and the internal register address (Word) are supported.</li> </ul>  <ul style="list-style-type: none"> <li>For the Set Selected Row Trigger, the controller address (Bit) and the internal register address (Bit) are supported.</li> </ul> 
	Previous Page Trigger Address	<ul style="list-style-type: none"> <li>When the Previous Page Trigger Address bit is on, the element display switches to the previous page and the bit is automatically cleared once the action is complete.</li> <li>If the text message does not exceed one page, the first line is selected when you click <b>Page Up</b>.</li> <li>For the Previous Page Trigger Address, the controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>
	Next Page Trigger Address	<ul style="list-style-type: none"> <li>When the Next Page Trigger Address bit is on, the element display switches to the next page and the bit is automatically cleared once the action is complete.</li> <li>If the text message does not exceed one page, the last line is selected when you click <b>Page Down</b>.</li> <li>For the Next Page Trigger Address, the controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>

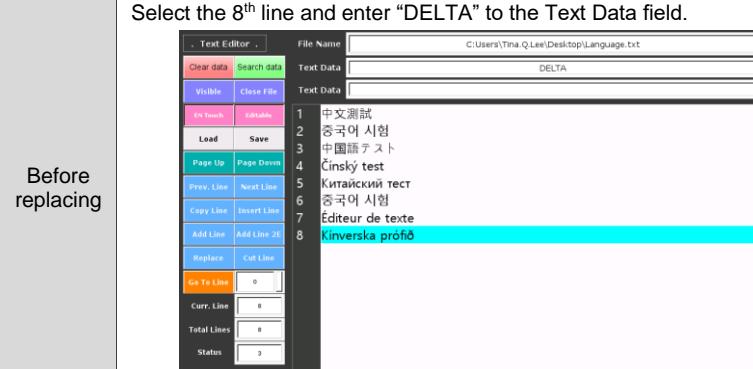
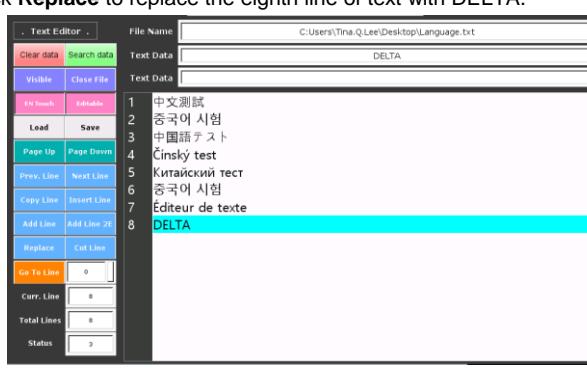
No.	Property	Function description
(2)	Line Up Trigger Address	<ul style="list-style-type: none"> <li>When the Line Up Trigger Address bit is on, the previous line is selected and the bit is automatically cleared once the action is complete.</li> <li>Each time the Line Up Trigger Address is executed, the <b>Curr. Line</b> decreases by 1 automatically to show how many lines are currently selected.</li> <li>For the Line Up Trigger Address, the controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>
	Line Down Trigger Address	<ul style="list-style-type: none"> <li>When the Line Down Trigger Address bit is on, the next line is selected and the bit is automatically cleared once the action is complete.</li> <li>Each time the Line Down Trigger Address is executed, the <b>Curr. Line</b> increases by 1 automatically to show how many lines are currently selected.</li> <li>For the Line Down Trigger Address, the controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>
(3)	File Close Trigger Address	<ul style="list-style-type: none"> <li>Execute the File Close Trigger Address to close the currently opened file.</li> <li>If the file has been modified before closed, the software displays the following window.</li> </ul>  <ul style="list-style-type: none"> <li>For the File Close Trigger Address, the controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>
	File Name Address	<ul style="list-style-type: none"> <li>The File Name Address is used to input the path and file name of the text file to be opened.</li> <li>The length supports a maximum of 256 characters or 512 words.</li> <li>For the File Name Address, the controller address (Word) and the internal register address (Word) are supported.</li> </ul>
	Load File Trigger Address	<ul style="list-style-type: none"> <li>After entering the file name and path, execute the Load File Trigger Address to open the file.</li> <li>The size of the text file to be opened should not exceed 20 MB.</li> <li>If the entered file path is not correct, the HMI displays the following message to remind the user how to enter the correct path.</li> </ul>  <ul style="list-style-type: none"> <li>For the Load File Trigger Address, the controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>
	Save File Trigger Address	<ul style="list-style-type: none"> <li>When the contents of the file undergo any modifications, the modified or added content can be saved through the Save File Trigger Address.</li> <li>If you execute the Load File Trigger Address before saving the file, the HMI displays the following message.</li> </ul>  <ul style="list-style-type: none"> <li>For the Save File Trigger Address, the controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>

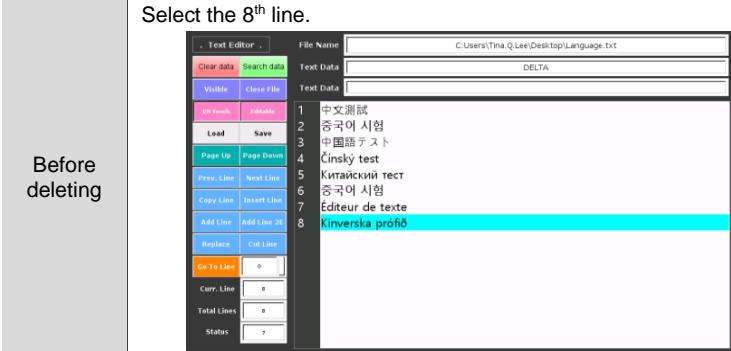
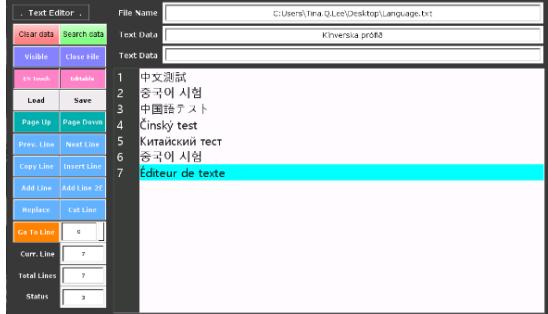
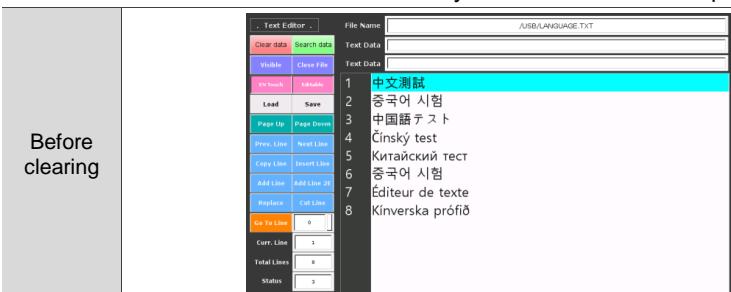
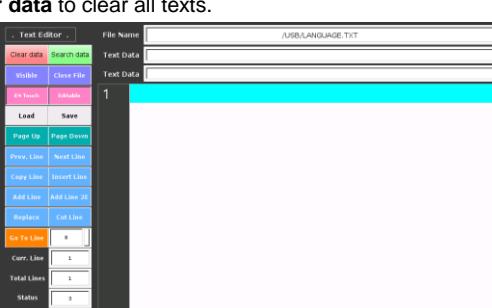
13

No.	Property	Function description			
(4)	Theme	There are three themes: Default, Dark, and GCode. 			
		<b>Default</b> 1 中文測試 2 중국어 시험 3 中国語 テスト 4 Čínský test 5 Китайский тест 6 중국어 시험 7 Éditeur de texte 8 Kinverska prófið			
		<b>Dark</b> 1 中文測試 2 중국어 시험 3 中国語 テスト 4 Čínský test 5 Китайский тест 6 중국어 시험 7 Éditeur de texte 8 DELTA			
	GCode	When you select GCode for the Theme and load an NC file containing G codes, the text appears in color. 			
	Insert Selected Row Trigger	<ul style="list-style-type: none"> <li>When the Insert Selected Row Trigger bit is On, the text data will be inserted before the selected line and this bit will be automatically cleared once the action is complete.</li> </ul> <table border="1"> <tr> <td style="text-align: center; padding: 10px;">Before inserting</td> <td>Select the 8<sup>th</sup> line and enter "DELTA" to the Text Data field.  </td> </tr> <tr> <td style="text-align: center; padding: 10px;">After inserting</td> <td>Click Insert Line and "DELTA" is inserted to the 8<sup>th</sup> line.  </td> </tr> </table> <ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>	Before inserting	Select the 8 <sup>th</sup> line and enter "DELTA" to the Text Data field. 	After inserting
Before inserting	Select the 8 <sup>th</sup> line and enter "DELTA" to the Text Data field. 				
After inserting	Click Insert Line and "DELTA" is inserted to the 8 <sup>th</sup> line. 				

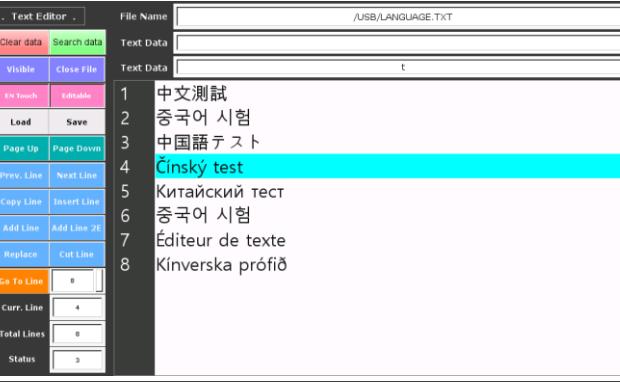
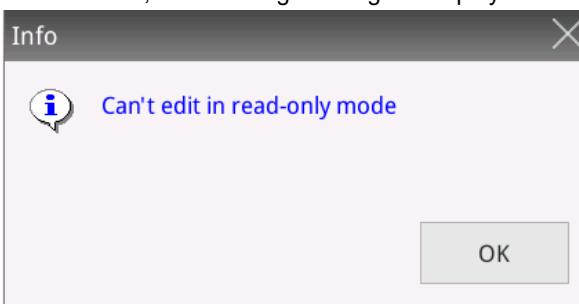
No.	Property	Function description	
(4)	Increase Selected Row Trigger	Before adding	<p>■ When the Increase Selected Row Trigger bit is On, the text data will be inserted after the selected line and this bit will be automatically cleared once the action is complete.</p> <p>Select the 8<sup>th</sup> line and enter “DELTA” to the Text Data field.</p> 
		After adding	<p>Click Add Line and “DELTA” is inserted to the 9<sup>th</sup> line.</p> 
	Increase Selected Row to Text End	Before adding to the end of file	<p>■ The controller address (Bit) and the internal register address (Bit) are supported.</p> <p>Select any line and enter “DELTA” to the Text Data field.</p> 
		After adding to the end of file	<p>Click Add Line 2E, and “DELTA” is inserted to the end of the file.</p> 
		<p>■ The controller address (Bit) and the internal register address (Bit) are supported.</p>	

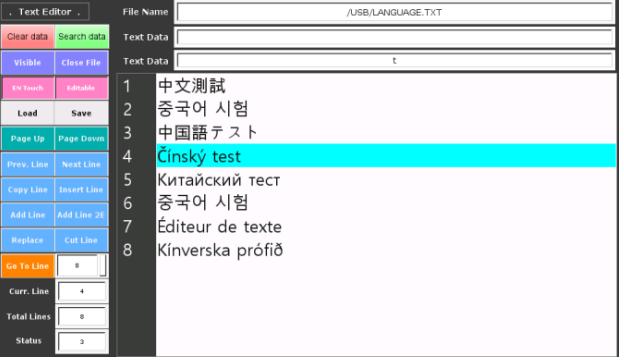
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No.	Property	Function description
	Copy Selected Row Trigger	<ul style="list-style-type: none"> <li>When the Copy Selected Row Trigger bit is on, the current selected line is copied and the bit is automatically cleared once the action is complete.</li> <li>After the copying is complete, the copied text data will be displayed in the text data buffer field.</li> </ul> 
(4)	Replace Selected Row Trigger	<ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul> <p>Before replacing:</p>  <p>After replacing:</p>  <ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>

No.	Property	Function description	
(4)	Cut Selected Row Trigger	<p>Before deleting</p>  <p>Select the 8<sup>th</sup> line.</p>	<p>When the Cut Selected Row Trigger bit is On, the text data will be deleted and this bit will be automatically cleared once the action is complete.</p>
	Text Clear Trigger Address	<p>After deleting</p>  <p>Press <b>Cut Line</b> to delete the eighth line of text.</p>	<p>Press <b>Cut Line</b> to delete the eighth line of text.</p>
		<p>Before clearing</p>  <p>The controller address (Bit) and the internal register address (Bit) are supported.</p>	<p>When the Text Clear Trigger Address bit is On, all text data will be cleared, and this bit will be cleared automatically once the action is complete.</p>
		<p>After clearing</p>  <p>Click <b>Clear data</b> to clear all texts.</p>	<p>The controller address (Bit) and the internal register address (Bit) are supported.</p>

# 13

No.	Property	Function description
(4)	Search Trigger Address	<ul style="list-style-type: none"> <li>The Search Trigger Address must be used with the Address of Search Temporary Area.</li> <li>After a keyword to be searched for is entered in the text search buffer address, the Search Trigger Address is then executed, and the corresponding text line will be displayed.</li> </ul> <p style="text-align: center;">Before searching</p> 
		<p>Executing <b>Search data</b> to search for the entered text, and the corresponding text data is selected.</p> 
	Current Selection Row	<ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>
	Total Number of Rows	<ul style="list-style-type: none"> <li>Displays the number of currently selected lines.</li> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul>
	Editable Trigger Address	<ul style="list-style-type: none"> <li>Displays the total number of lines in the opened file.</li> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul> <p> <ul style="list-style-type: none"> <li>When the Editable Trigger Address is On, you can perform any operation on the texts.</li> <li>When the Editable Trigger Address is Off, if you attempt to perform any operation on the texts, the following message is displayed.</li> </ul> </p> 
		<ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>

No.	Property	Function description																		
	Operational Status Address	<ul style="list-style-type: none"> <li>Refer to the state value for the current status of the file.</li> </ul> <table border="1"> <thead> <tr> <th>State value</th><th>Description</th></tr> </thead> <tbody> <tr><td>1</td><td>Operation in progress</td></tr> <tr><td>2</td><td>Operation canceled</td></tr> <tr><td>3</td><td>Execution success</td></tr> <tr><td>4</td><td>Execution failed / execution error</td></tr> <tr><td>7</td><td>File loading success</td></tr> <tr><td>8</td><td>File saving success</td></tr> <tr><td>9</td><td>File is empty</td></tr> <tr><td>10</td><td>File not found</td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul>	State value	Description	1	Operation in progress	2	Operation canceled	3	Execution success	4	Execution failed / execution error	7	File loading success	8	File saving success	9	File is empty	10	File not found
State value	Description																			
1	Operation in progress																			
2	Operation canceled																			
3	Execution success																			
4	Execution failed / execution error																			
7	File loading success																			
8	File saving success																			
9	File is empty																			
10	File not found																			
(4)	Address of Search Temporary Area	<ul style="list-style-type: none"> <li>The Address of Search Temporary Area must be used with the Search Trigger Address.</li> <li>The length supports a maximum of 256 characters or 512 words.</li> <li>After the keyword to be searched for is entered in the text search buffer address, the Search Trigger Address is then executed, and the corresponding text line will be displayed.</li> </ul> <div style="display: flex; align-items: center;"> <div style="flex: 1; text-align: center; margin-right: 20px;"> <p>Before searching</p>  </div> <div style="flex: 1;"> <p>Executing <b>Search data</b> to search for the entered text and the corresponding text data is selected.</p>  </div> </div> <ul style="list-style-type: none"> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul>																		
	Address of Text Temporary Storage Area	<ul style="list-style-type: none"> <li>The Address of Text Temporary Storage Area is used to input the text to be added or modified, and can be used as the buffer for storing the copied text data.</li> <li>The length supports a maximum of 256 characters or 512 words.</li> </ul>																		

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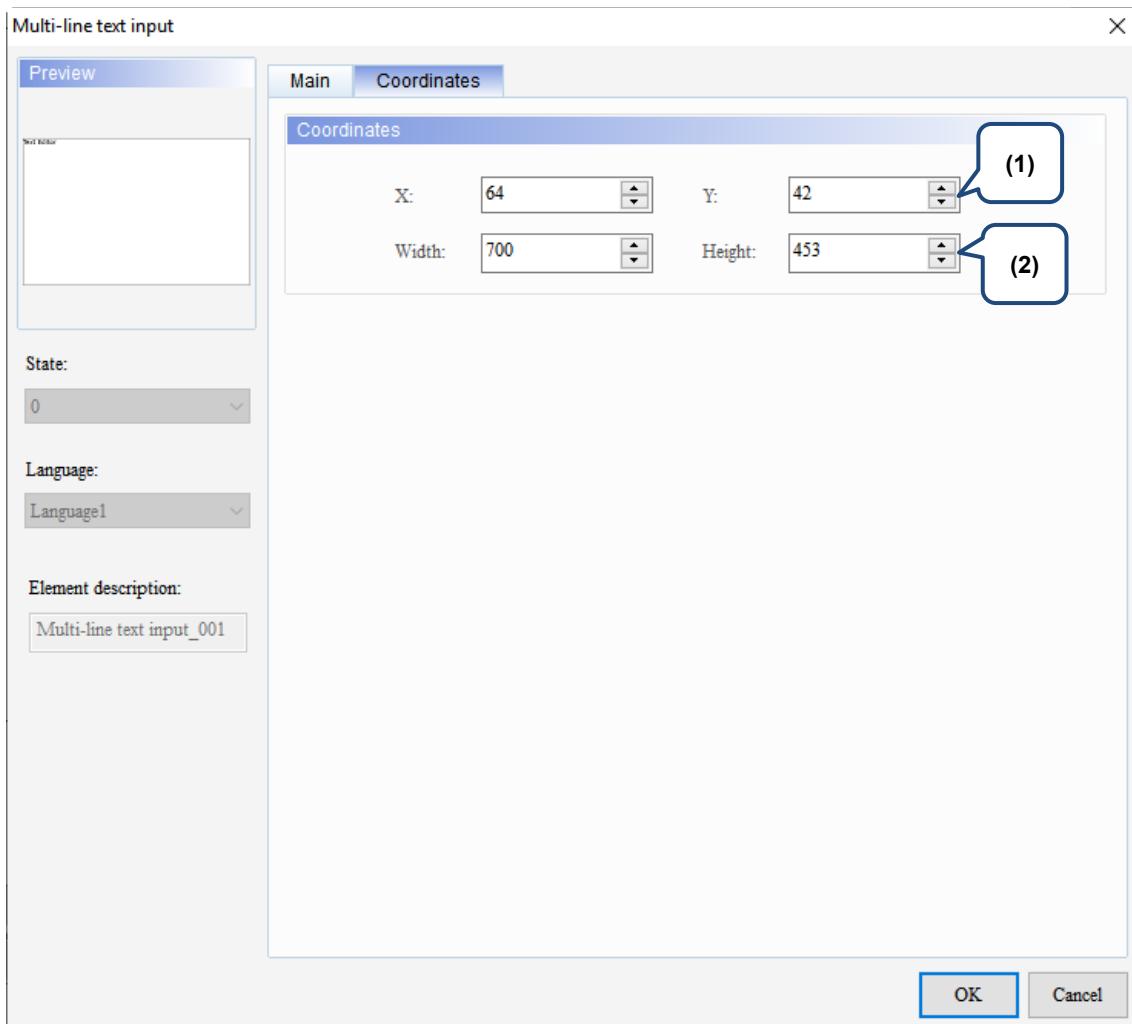
**■ Coordinates**

Figure 13.5.3 Coordinates property page for the Multi-line text input element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

# Curve

# 14

---

This chapter provides the usage and setting details for the Curve elements.

14.1	Trend Graph .....	14-2
14.2	X-Y Chart .....	14-18
14.3	X-Y Distribution .....	14-39
14.4	Curve Input.....	14-50

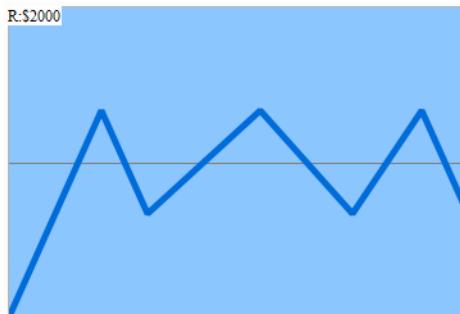
# 14

## 14.1 Trend Graph

Trend Graph is drawn according to the set Address, and you can also define the curve count to be displayed. A Trend Graph element supports up to 4 curves. This element requires using the Curve sampling flag from [Options] > [Configuration] > [Control Status Block] > [Control Block] > [Curve Control] to draw curves. The Curve sampling flags 1 - 4 correspond to the Sampling flags 1 - 4 of the Trend Graph element respectively.

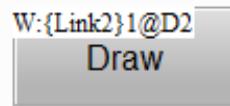
Refer to Table 14.1.1 for the Trend Graph example.

Table 14.1.1 Trend Graph example

Trend Graph																							
Trend Graph element	<p>Create a Trend Graph element and set its parameters.</p> <table border="1"> <thead> <tr> <th colspan="2">Trend Graph element</th> </tr> </thead> <tbody> <tr> <td>Address</td><td>\$2000</td></tr> <tr> <td>Sample Number</td><td>5</td></tr> <tr> <td>Sample Flag</td><td>1</td></tr> <tr> <td>Number of Curves</td><td>1</td></tr> </tbody> </table> <p>Minimum / Maximum Line Weight / Line Color Projection Axis</p>  <table border="1"> <thead> <tr> <th colspan="2">Curve1</th> </tr> </thead> <tbody> <tr> <td>Minimum</td><td>0</td></tr> <tr> <td>Maximum</td><td>1000</td></tr> <tr> <td>Line Weight</td><td>5</td></tr> <tr> <td>Line Color</td><td>Blue</td></tr> <tr> <td>Projection Axis</td><td>No projection</td></tr> </tbody> </table>	Trend Graph element		Address	\$2000	Sample Number	5	Sample Flag	1	Number of Curves	1	Curve1		Minimum	0	Maximum	1000	Line Weight	5	Line Color	Blue	Projection Axis	No projection
Trend Graph element																							
Address	\$2000																						
Sample Number	5																						
Sample Flag	1																						
Number of Curves	1																						
Curve1																							
Minimum	0																						
Maximum	1000																						
Line Weight	5																						
Line Color	Blue																						
Projection Axis	No projection																						
Numeric Entry element	<p>Create 5 Numeric Entry elements. As the Sample Number of the Trend Graph is set to 5, 5 sampling points are used to draw a curve. Then, the set Address \$2000 of the Trend Graph starts reading 5 addresses in sequence, which are \$2000, \$2001, \$2002, \$2003, and \$2004.</p> <table border="1"> <thead> <tr> <th colspan="6">Numeric Entry element</th> </tr> <tr> <th>Write Address</th><th>\$2000</th><th>\$2001</th><th>\$2002</th><th>\$2003</th><th>\$2004</th></tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Numeric Entry element						Write Address	\$2000	\$2001	\$2002	\$2003	\$2004										
Numeric Entry element																							
Write Address	\$2000	\$2001	\$2002	\$2003	\$2004																		

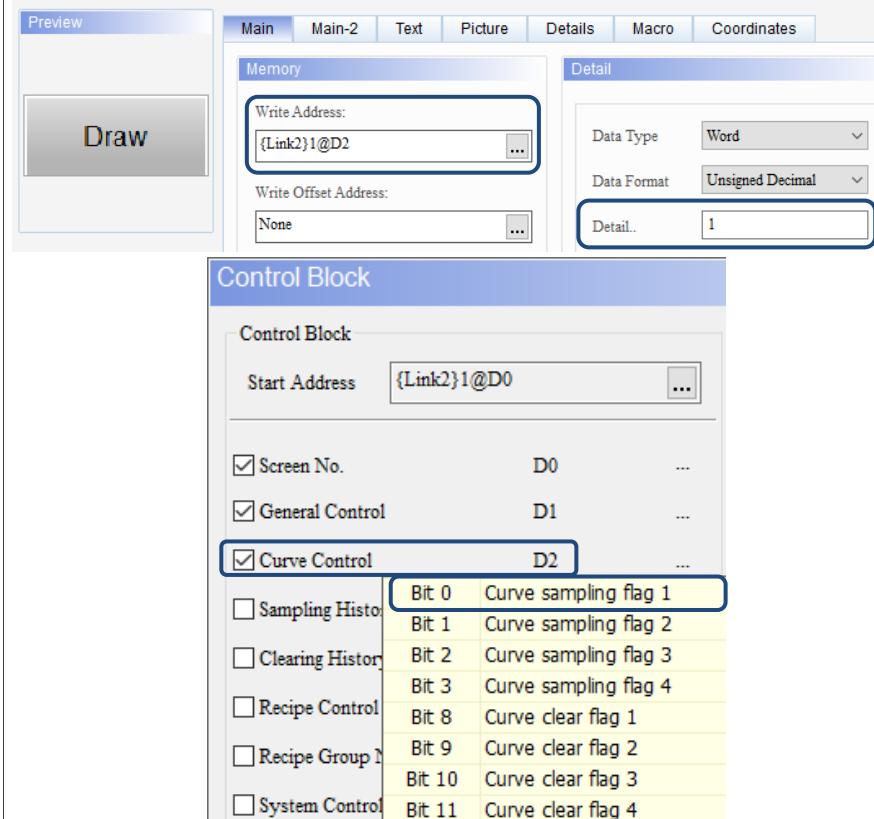
### Trend Graph

- Create a Set Constant element and set its Write Address as D2. This D2 address is for the Curve Control flag in the Control Block.



- Set the Detail.. of the Set Constant element to 1. 1 corresponds to **Bit 0 Curve sampling flag 1**; 2 corresponds to **Bit 1 Curve sampling flag 2**; 4 corresponds to **Bit 2 Curve sampling flag 3**, and so on. You can also find that the Sample Flag setting of the Trend Graph element is 1 as well.

Set Constant

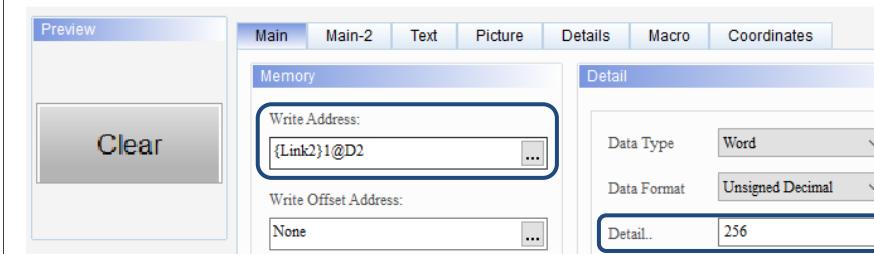


Set Constant element

- Create another Set Constant element and set its Write Address as D2 as well, and set the Detail.. as 256. 256 corresponds to **Bit 8 Curve clear flag 1**.

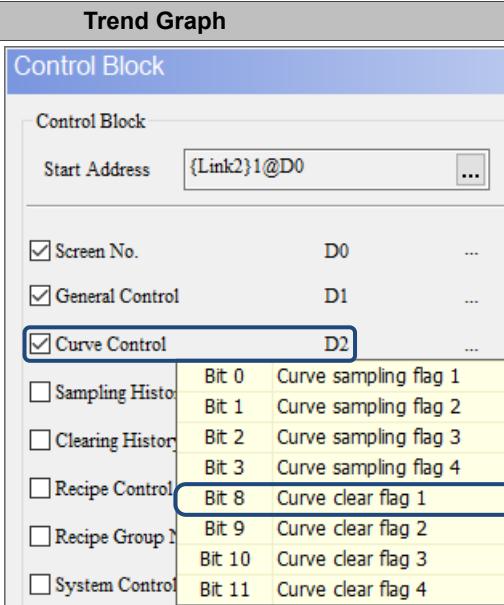


Set Constant

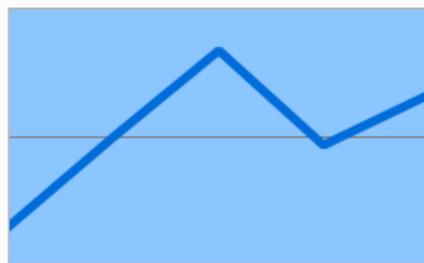


# 14

Set Constant element



- After creating the elements, compile and download the elements to the HMI. Next, enter any values to the Numeric Entry elements, and then press **Draw** to draw the curve.



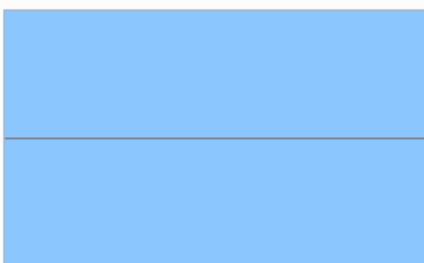
**Draw**

**Clear**

Execution results



- After the curve is drawn, if you press **Clear**, the HMI clears the drawn curve.



**Draw**

**Clear**



When you double-click the Trend Graph, the property page is shown as follows.

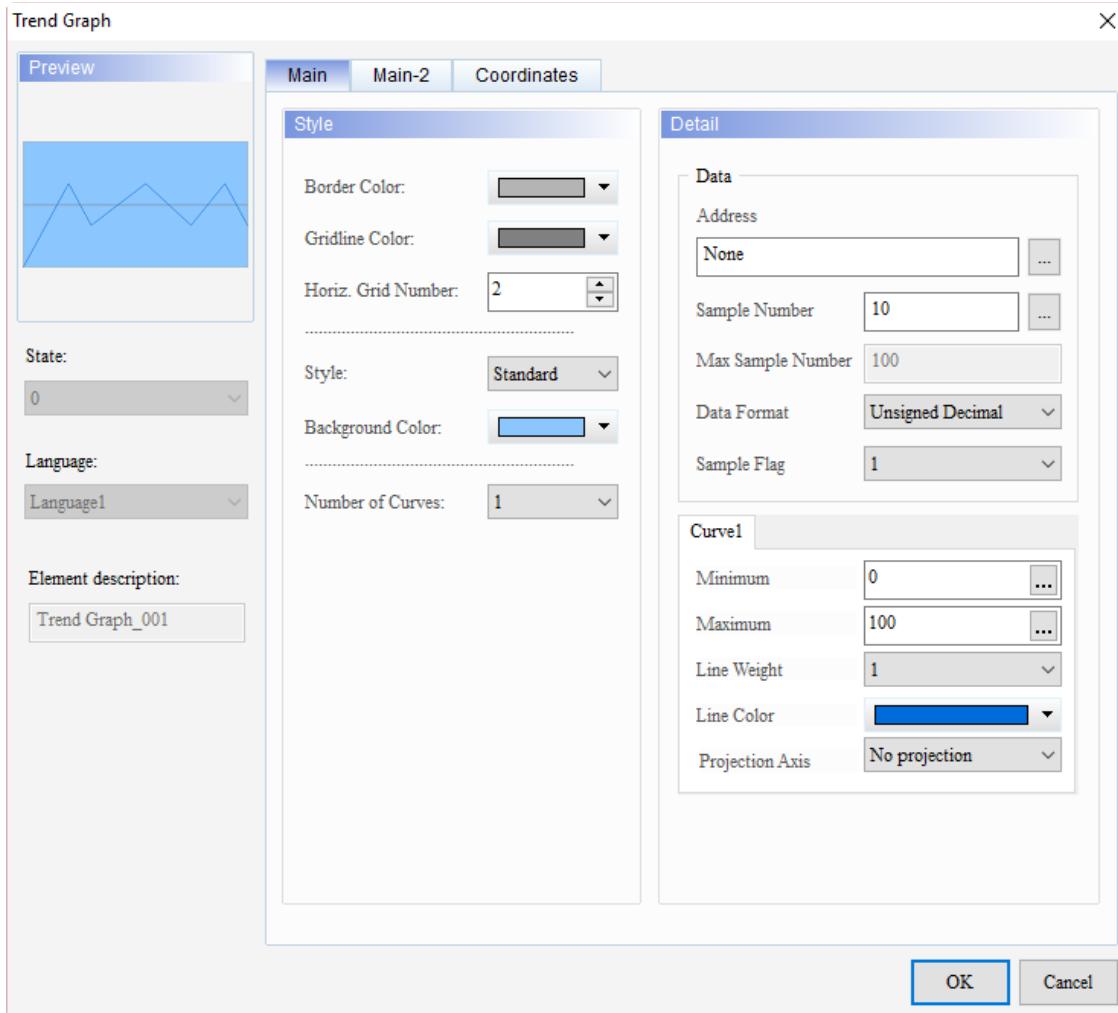


Figure 14.1.1 Properties of Trend Graph

Table 14.1.2 Function page of Trend Graph

Trend Graph	
Function page	Description
Preview	The Trend Graph elements do not support multiple state values and multi-language data display.
Main	Set the Address, Sample Number, Max Sample Number, Data Format, Sample Flag, Minimum, Maximum, Line Weight, Line Color, and Projection Axis. Set the Border Color, Gridline Color, Horiz. Grid Number, Style, Background Color, and Number of Curves.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

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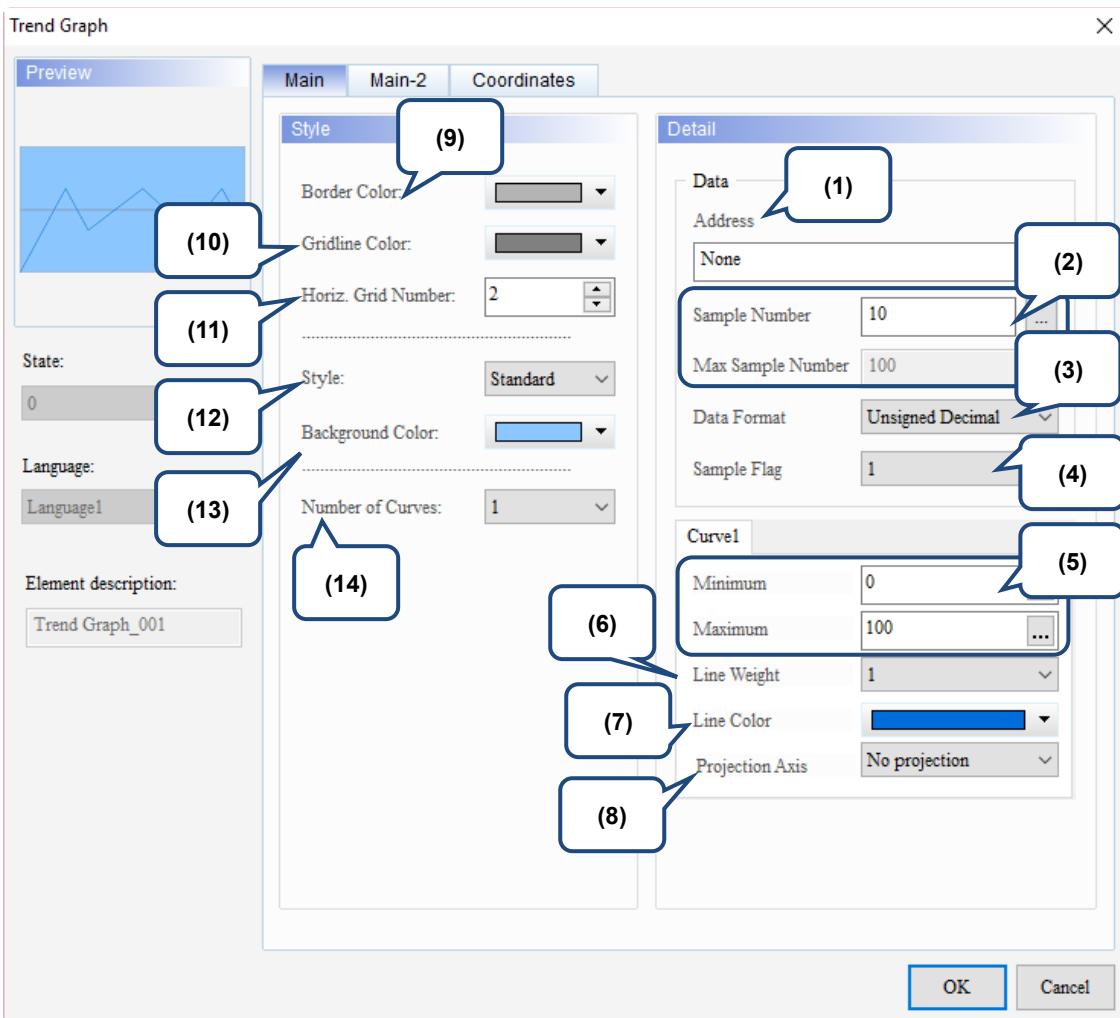
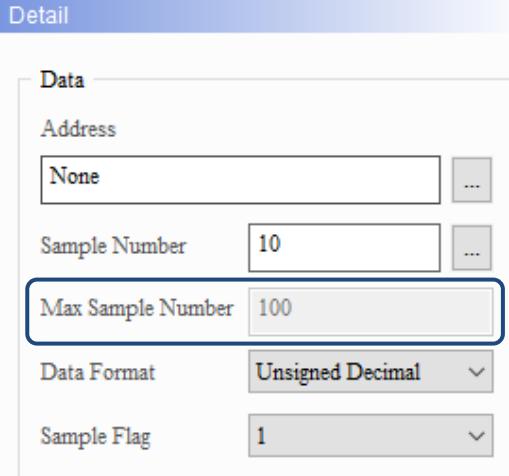
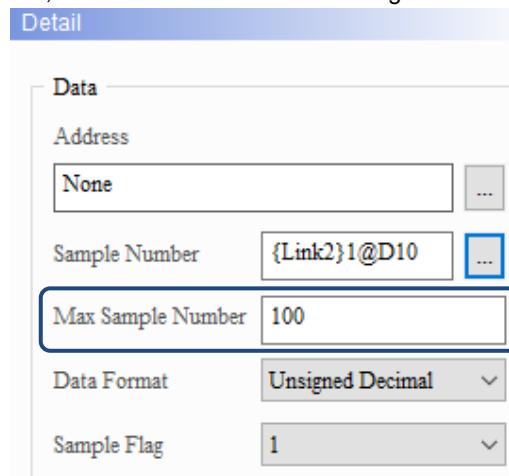
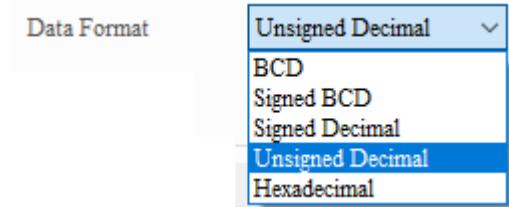
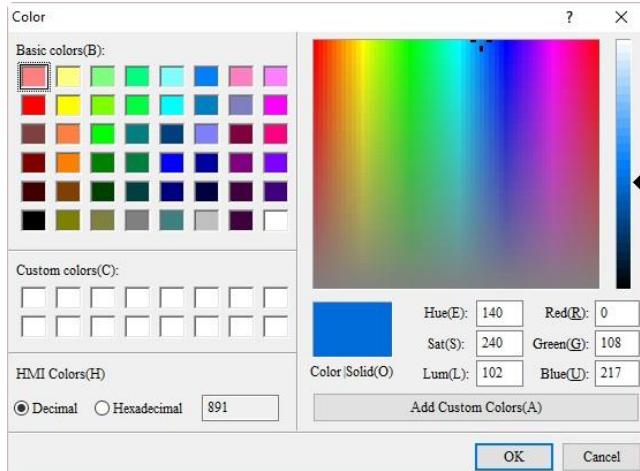
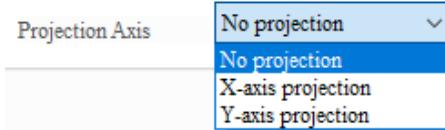
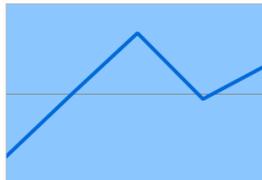
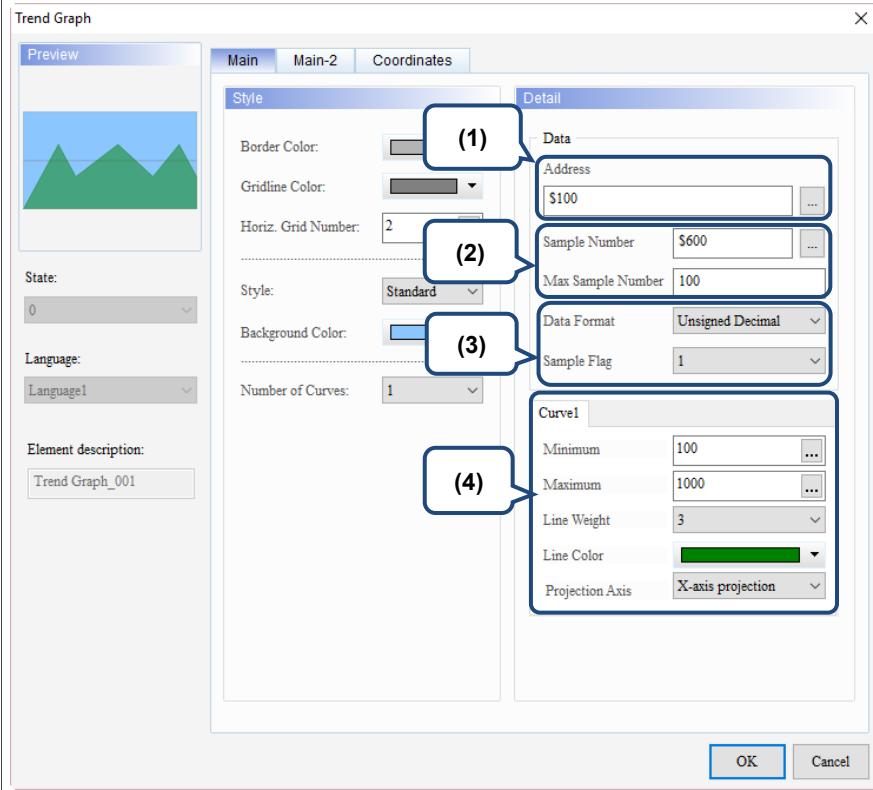


Figure 14.1.2 Main property page for the Trend Graph element

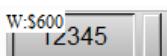
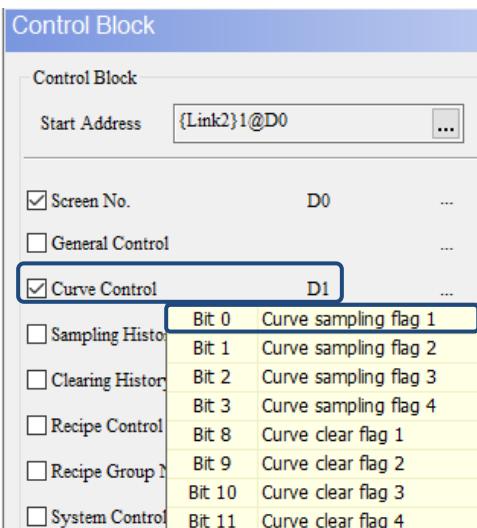
No.	Property	Function description
(1)	Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
(2)	Sample Number / Max Sample Number	<ul style="list-style-type: none"> <li>The number of sampling points is determined by the element width and style. When you set the Style of the Trend Graph element as Standard and its width as 391, then the maximum number of points that can be displayed is 391. But if you set the Style of the Trend Graph element as Raised or Sunken (border width is 7 points) and its width as 391, then the maximum number of points that can be displayed is 377 (<math>391 - (7*2) = 377</math>).</li> <li>Sampling Number can be set as a constant or a variable.</li> <li>When you set the Sample Number as a constant, the Max Sample Number is grayed out and cannot be set.</li> </ul>  <p>When you set the Sample Number as a variable, you can define its read address. Also, you need to set the Max Sample Number, which is determined by the element width. If the set Sample Number is greater than the Max Sample Number, the software refers to the setting of the Max Sample Number.</p> 
(3)	Data Format	<p>Trend Graph supports the following data formats:</p> 

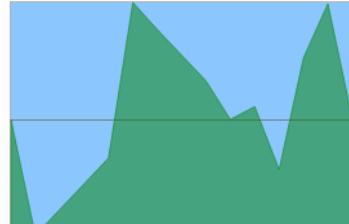
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No.	Property	Function description														
(4)	Sample Flag	<p>There are 4 sampling flags corresponding to the Curve sampling flags 1 - 4 of the Curve Control in the Control Block respectively.</p>														
(5)	Minimum / Maximum	<ul style="list-style-type: none"> <li>You can set the minimum and maximum values as constants or variables.</li> <li>When the minimum and maximum values are variables, the controller address (Word) and the internal register address (Word) are supported.</li> <li>When the minimum and maximum values are constants, the allowable ranges for the minimum and maximum values are subject to change based on the selected Data Type and Data Format.</li> </ul> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF
Data Type	Data Format	Allowable range														
Word	BCD	0 to 9999														
	Signed BCD	-999 to +9999														
	Signed Decimal	-32768 to +32767														
	Unsigned Decimal	0 to 65535														
	Hex	0 to 0xFFFF														
(6)	Line Weight	<p>The line width setting ranges from 1 to 8.</p>														

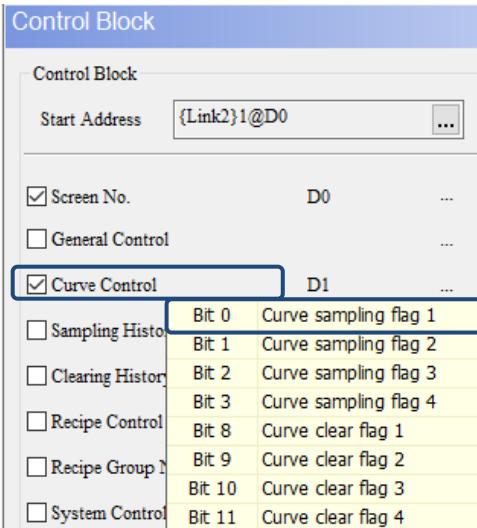
No.	Property	Function description
(7)	Line Color	<p>You can set the line color for the curve.</p> 
(8)	Projection Axis	<ul style="list-style-type: none"> <li>There are three types of Projection axis: No projection, X-axis projection, and Y-axis projection.</li>  <li>When the Projection Axis is set to No projection, the setting is the same as the default setting, so only the curve is displayed.</li>  <li>The following describes the details of X-axis projection and Y-axis projection.</li> </ul> <p><b>X-axis projection</b></p> 

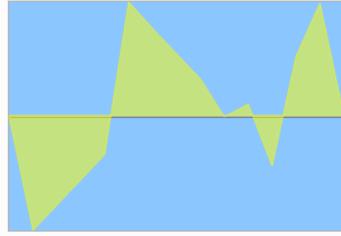
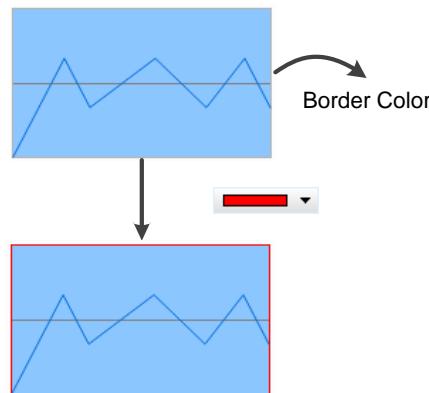
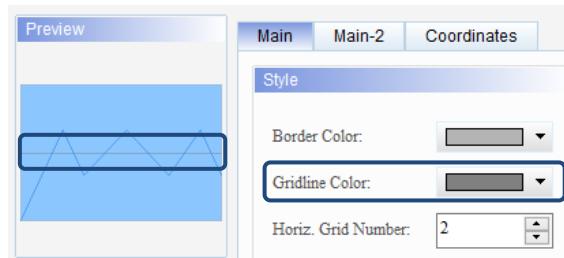
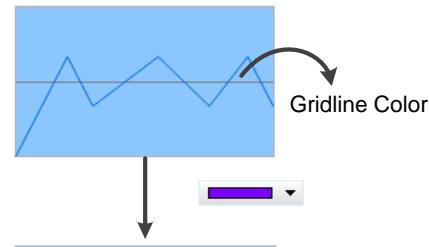
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No.	Property	Function description
		(1) Set the Address to \$100. (2) Set the Sample Number to \$600 and the Max Sample Number to 100. (3) Set the Data Format to Unsigned Decimal and the Sample Flag to 1. (4) Set the Minimum as 100 and the Maximum as 1000. Set the Projection Axis to X-axis projection.
		■ Create the Numeric Entry elements of \$100 - \$114 and set their Data Format as Unsigned Decimal.
		<b>\$100~\$114 Unsigned Decimal</b>
		
		■ Create a Numeric Entry element of \$600 for inputting the Sample Number.
		Sample Number 
		■ Go to [Options] > [Configuration] > [Control Status Block] and select the <b>Curve Control</b> check box with the address as D1.
(8)	Projection Axis	
		■ Create a Numeric Entry element with the Write Address set as D1.
		Sampling flag 1: draw 256: clear 
		■ After completing the preceding steps, compile and download the elements to the HMI.

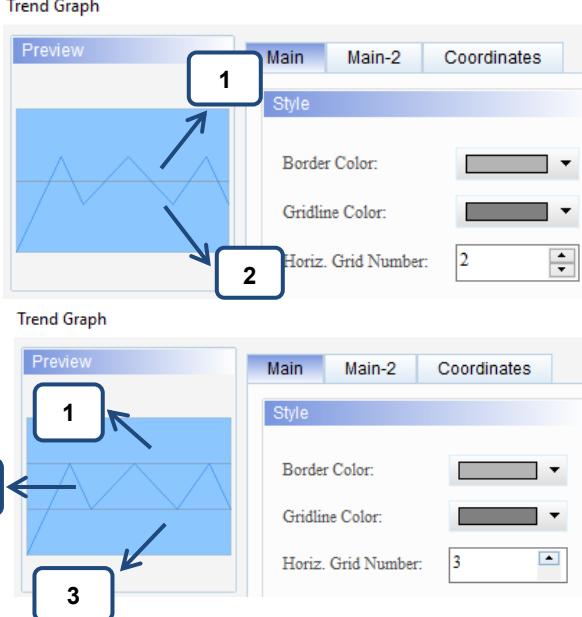
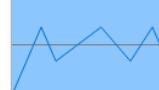
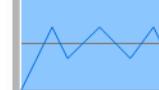
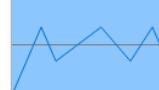
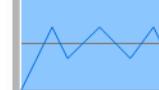
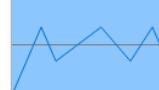
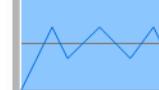
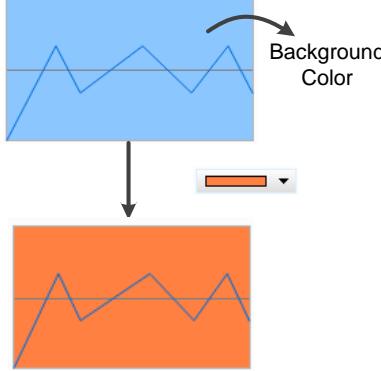
No.	Property	Function description																							
(8)	Projection Axis	<p>■ Enter any values to the Numeric Entry elements of \$100 - \$114, and input 15 to the Sample Number and 1 to the Sampling flag.</p>  <p style="text-align: center;">Sampling flag 1: draw 256: clear</p> <p style="text-align: center;">15      1</p> <p>\$100~\$114 Unsigned Decimal</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>550</td><td>100</td><td>200</td><td>300</td><td>400</td></tr> <tr><td>1000</td><td>900</td><td>800</td><td>700</td><td>550</td></tr> <tr><td>600</td><td>355</td><td>789</td><td>999</td><td>555</td></tr> </table> <p>■ When you complete inputting the values, the Trend Graph is as follows:</p>  <p><b>Y-axis projection</b></p> <p><b>Trend Graph</b></p> <p>The screenshot shows the 'Trend Graph' dialog box with several tabs: Preview, Main, Main-2, and Coordinates. The Main tab is active. It includes sections for Preview, Style (Border Color, Gridline Color, Horiz. Grid Number, Style, Background Color, Number of Curves), Data (Address, Sample Number, Max Sample Number, Data Format, Sample Flag), and Curve1 (Minimum, Maximum, Line Weight, Line Color, Projection Axis). Callouts numbered 1 through 4 point to specific fields in the Data and Curve1 sections.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">(1)</td> <td>Set the Address to \$100.</td> </tr> <tr> <td>(2)</td> <td>Set the Sample Number to \$600 and the Max Sample Number to 100.</td> </tr> <tr> <td>(3)</td> <td>Set the Data Format to Unsigned Decimal and the Sample Flag to 1.</td> </tr> <tr> <td>(4)</td> <td>Set the Minimum as 100 and the Maximum as 1000. Set the Projection Axis to Y-axis projection.</td> </tr> </table>	550	100	200	300	400	1000	900	800	700	550	600	355	789	999	555	(1)	Set the Address to \$100.	(2)	Set the Sample Number to \$600 and the Max Sample Number to 100.	(3)	Set the Data Format to Unsigned Decimal and the Sample Flag to 1.	(4)	Set the Minimum as 100 and the Maximum as 1000. Set the Projection Axis to Y-axis projection.
550	100	200	300	400																					
1000	900	800	700	550																					
600	355	789	999	555																					
(1)	Set the Address to \$100.																								
(2)	Set the Sample Number to \$600 and the Max Sample Number to 100.																								
(3)	Set the Data Format to Unsigned Decimal and the Sample Flag to 1.																								
(4)	Set the Minimum as 100 and the Maximum as 1000. Set the Projection Axis to Y-axis projection.																								

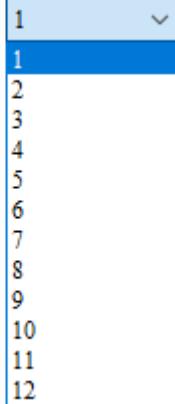
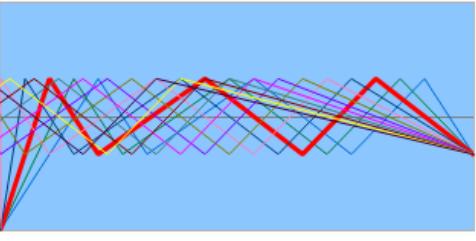
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No.	Property	Function description
(8)	Projection Axis	<p>■ Create the Numeric Entry elements of \$100 - \$114 and set their Data Format as Unsigned Decimal.</p> <p><b>\$100~\$114 Unsigned Decimal</b></p>  <p>■ Create a Numeric Entry element of \$600 for inputting the Sample Number.</p> <p>Sample Number</p>  <p>■ Go to [Options] &gt; [Configuration] &gt; [Control Status Block] and select the <b>Curve Control</b> check box with the address as D1.</p> <p><b>Control Block</b></p>  <p>■ Create a Numeric Entry element with the Write Address set as D1.</p> <p>Sampling flag 1: draw 256: clear</p>  <p>■ After completing the preceding steps, compile and download the elements to the HMI.</p> <p>■ Enter any values to the Numeric Entry elements of \$100 - \$114, and input 15 to the Sample Number and 1 to the Sampling flag.</p> <p>Sampling flag 1: draw 256: clear</p>  <p><b>\$100~\$114 Unsigned Decimal</b></p> 

No.	Property	Function description
(8)	Projection Axis	<ul style="list-style-type: none"> <li>When you complete inputting the values, the Trend Graph is as follows:</li> </ul>  <p>Note: when using the Projection Axis, if there is more than one curve displayed on the Trend Graph at the same time, the curve of the greater number covers the curve of the smaller number.</p>
(9)	Border Color	<p>Set the Border Color of the Trend Graph element.</p> 
(10)	Gridline Color	<ul style="list-style-type: none"> <li>The Gridline Color is the color of the grid line in the Trend Graph. The default is .</li> </ul> <p>Trend Graph</p>  <ul style="list-style-type: none"> <li>You can change the color of the grid line.</li> </ul> 

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No.	Property	Function description								
(11)	Horiz. Grid Number	<ul style="list-style-type: none"> <li>The maximum horizontal grid count is 50.</li> <li>Horiz. Grid Number sets the number of zones the Trend Graph element is divided into. The default is 2, meaning there is one grid line dividing the Trend Graph element into two zones. If the Horiz. Grid Number is set to 3, there are two grid lines dividing the Trend Graph element into 3 zones, and so on.</li> </ul> 								
(12)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
										
(13)	Background Color	<p>Set the background color of the element.</p> 								

No.	Property	Function description
(14)	Number of Curves	<ul style="list-style-type: none"> <li>■ The Trend Graph element supports up to 12 curves.</li> </ul> <p style="text-align: center;">Number of Curves:</p>  <ul style="list-style-type: none"> <li>■ You can also change the width and color of the curves.</li> </ul>  <ul style="list-style-type: none"> <li>■ If you want to use 12 curves, you only need to set the Address as a Continuous Address for sampling. Assuming the Address is \$1000 and the Sample Number is 5, then 60 sampling points are required for 12 curves. Thus, the Addresses are \$1000 - \$1059.</li> </ul>

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## ■ Main-2

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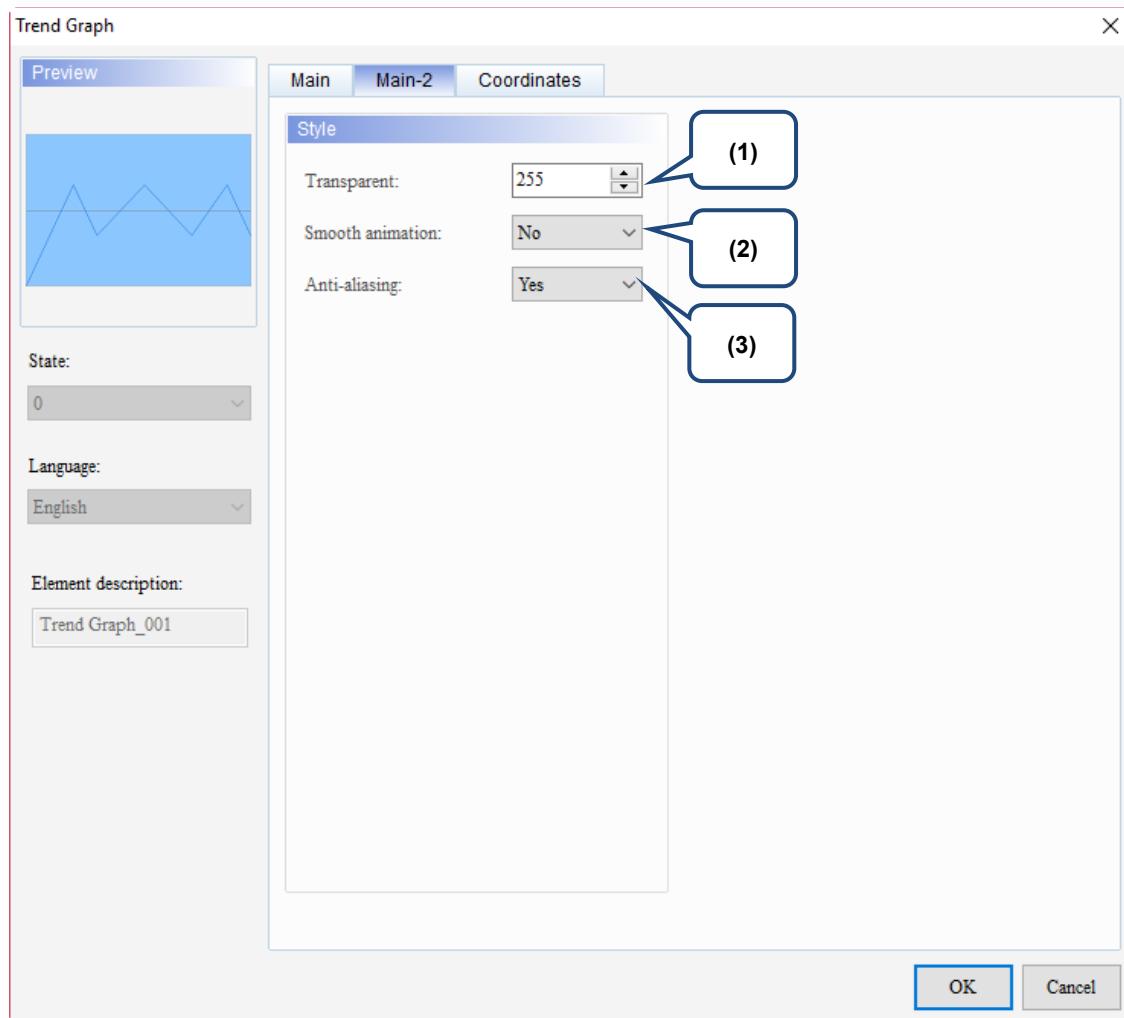


Figure 14.1.3 Main-2 property page for the Trend Graph element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When this function is enabled, the curve motion is smoother.
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When this function is enabled, the element display becomes more delicate without jagged edges.

## ■ Coordinates

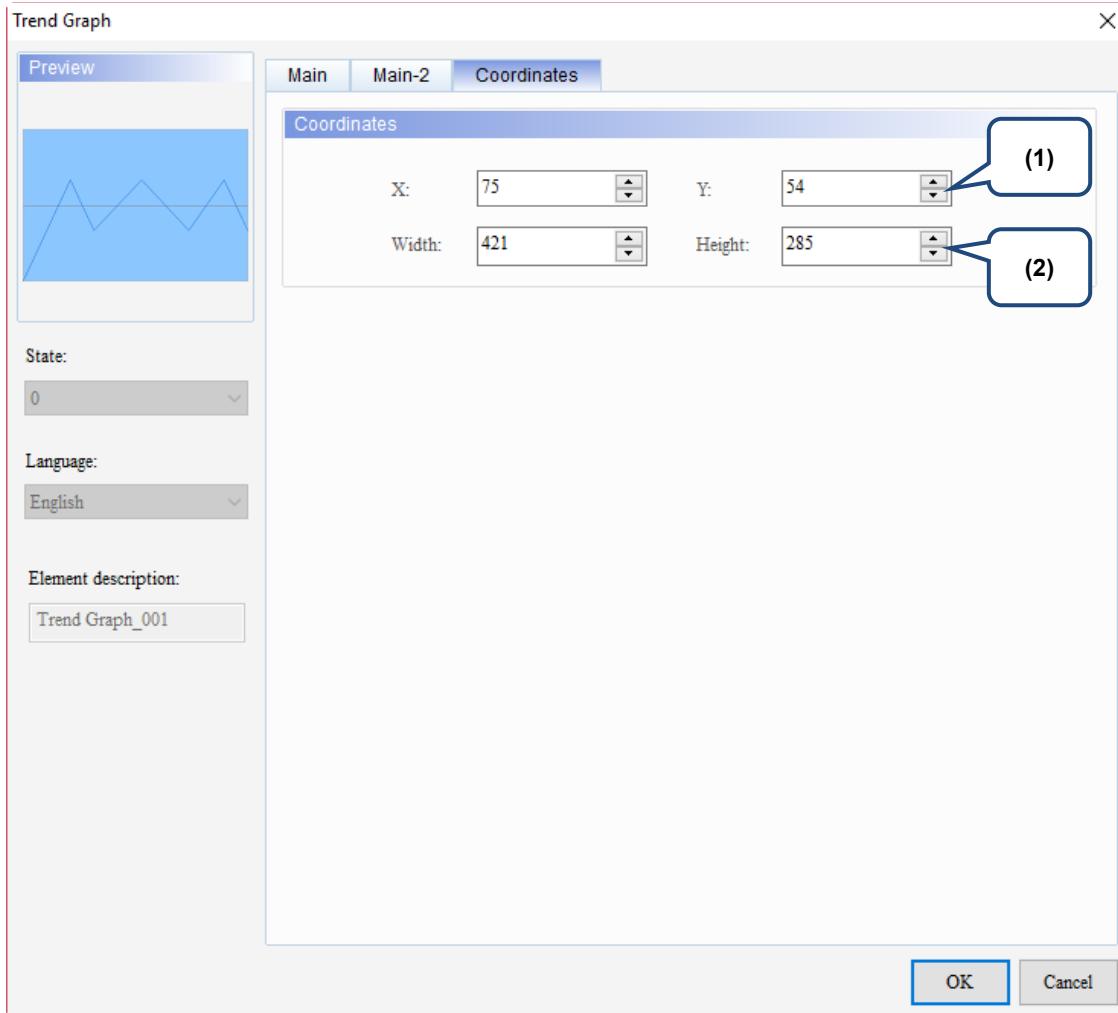


Figure 14.1.4 Coordinates property page for the Trend Graph element

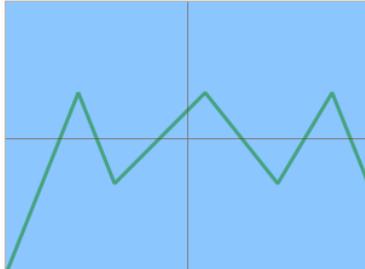
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 14.2 X-Y Chart

X-Y Chart is drawn according to the set Horiz. Read Address and Vert. Read Address. You can also define the curve count to be displayed, and if X and Y points are connected. An X-Y Chart element supports up to 4 curves. This element requires using the Curve sampling flag from [Options] > [Configuration] > [Control Status Block] > [Control Block] > [Curve Control] to draw curves. The Curve sampling flags 1 - 4 correspond to the Sampling flags 1 - 4 of the X-Y Chart element respectively.

Refer to Table 14.2.1 for the X-Y Chart example.

Table 14.2.1 X-Y Chart example

X-Y Chart																															
X-Y Chart element	<p>Create an X-Y Chart element and set its parameters.</p> <table border="1"> <thead> <tr> <th colspan="2">X-Y Chart element</th> </tr> </thead> <tbody> <tr> <td>Horiz. Read Address</td><td>\$3000</td></tr> <tr> <td>Vert. Read Address</td><td>\$4000</td></tr> <tr> <td>Sample Number</td><td>5</td></tr> <tr> <td>Sample Flag</td><td>1</td></tr> <tr> <td>Number of Curves</td><td>1</td></tr> <tr> <td>Connect Adjacent Points</td><td>Yes</td></tr> </tbody> </table> <p>Horiz. Minimum / Horiz. Maximum Vert. Minimum / Vert. Maximum / Line Weight / Line Color / Projection Axis</p> <table border="1"> <thead> <tr> <th colspan="2">Curve1</th> </tr> </thead> <tbody> <tr> <td>Horiz. Minimum</td><td>0</td></tr> <tr> <td>Horiz. Maximum</td><td>1000</td></tr> <tr> <td>Vert. Minimum</td><td>0</td></tr> <tr> <td>Vert. Maximum</td><td>1000</td></tr> <tr> <td>Line Weight</td><td>3</td></tr> <tr> <td>Line Color</td><td></td></tr> <tr> <td>Projection Axis</td><td>No projection</td></tr> </tbody> </table> 	X-Y Chart element		Horiz. Read Address	\$3000	Vert. Read Address	\$4000	Sample Number	5	Sample Flag	1	Number of Curves	1	Connect Adjacent Points	Yes	Curve1		Horiz. Minimum	0	Horiz. Maximum	1000	Vert. Minimum	0	Vert. Maximum	1000	Line Weight	3	Line Color		Projection Axis	No projection
X-Y Chart element																															
Horiz. Read Address	\$3000																														
Vert. Read Address	\$4000																														
Sample Number	5																														
Sample Flag	1																														
Number of Curves	1																														
Connect Adjacent Points	Yes																														
Curve1																															
Horiz. Minimum	0																														
Horiz. Maximum	1000																														
Vert. Minimum	0																														
Vert. Maximum	1000																														
Line Weight	3																														
Line Color																															
Projection Axis	No projection																														
Numeric Entry element	<p>Create 5 Numeric Entry elements for the Horiz. Read Address and Vert. Read Address respectively. As the Sample Number of the X-Y Chart is set to 5, the X-axis and Y-axis each samples 5 points to draw the curve. Therefore, the set Horiz. Read Address \$3000 of the X-Y Chart starts reading 5 addresses in sequence, which are \$3000, \$3001, \$3002, \$3003, and \$3004; the Vert. Read Address \$4000 starts reading 5 addresses in sequence, which are \$4000, \$4001, \$4002, \$4003, and \$4004.</p> <table border="1"> <thead> <tr> <th colspan="5">Numeric Entry element</th> </tr> </thead> <tbody> <tr> <td>Write Address</td><td>\$3000</td><td>\$3001</td><td>\$3002</td><td>\$3003</td><td>\$3004</td></tr> <tr> <td>Write Address</td><td>\$4000</td><td>\$4001</td><td>\$4002</td><td>\$4003</td><td>\$4004</td></tr> </tbody> </table>	Numeric Entry element					Write Address	\$3000	\$3001	\$3002	\$3003	\$3004	Write Address	\$4000	\$4001	\$4002	\$4003	\$4004													
Numeric Entry element																															
Write Address	\$3000	\$3001	\$3002	\$3003	\$3004																										
Write Address	\$4000	\$4001	\$4002	\$4003	\$4004																										

**X-Y Chart**

- Create a Set Constant element and set its Write Address as D2. This D2 address is for the Curve Control flag in the Control Block.



- Set the Detail.. of the Set Constant element to 1. 1 corresponds to **Bit 0 Curve sampling flag 1**; 2 corresponds to **Bit 1 Curve sampling flag 2**; 4 corresponds to **Bit 2 Curve sampling flag 3**, and so on. You can also find that the Sample Flag setting of the X-Y Chart element is 1 as well.

Set Constant



Set Constant element

**Control Block****Control Block**

Start Address: {Link2}1@D0

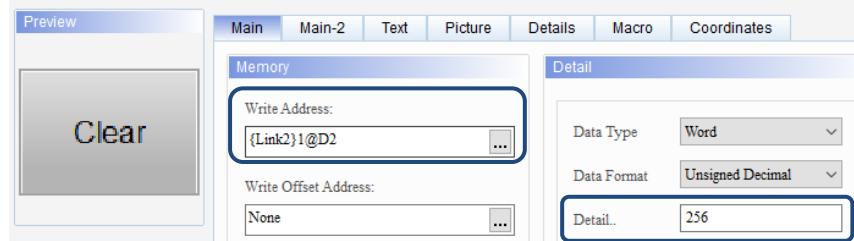
 Screen No. D0 ... General Control D1 ... Curve Control D2 ...

<input type="checkbox"/> Sampling History	Bit 0	Curve sampling flag 1
<input type="checkbox"/> Clearing History	Bit 1	Curve sampling flag 2
<input type="checkbox"/> Recipe Control	Bit 2	Curve sampling flag 3
<input type="checkbox"/> Recipe Group N	Bit 3	Curve sampling flag 4
<input type="checkbox"/> System Control	Bit 8	Curve clear flag 1
	Bit 9	Curve clear flag 2
	Bit 10	Curve clear flag 3
	Bit 11	Curve clear flag 4

- Create another Set Constant element and set its Write Address as D2 as well, and set the Detail.. as 256. 256 corresponds to **Bit 8 Curve clear flag 1**.

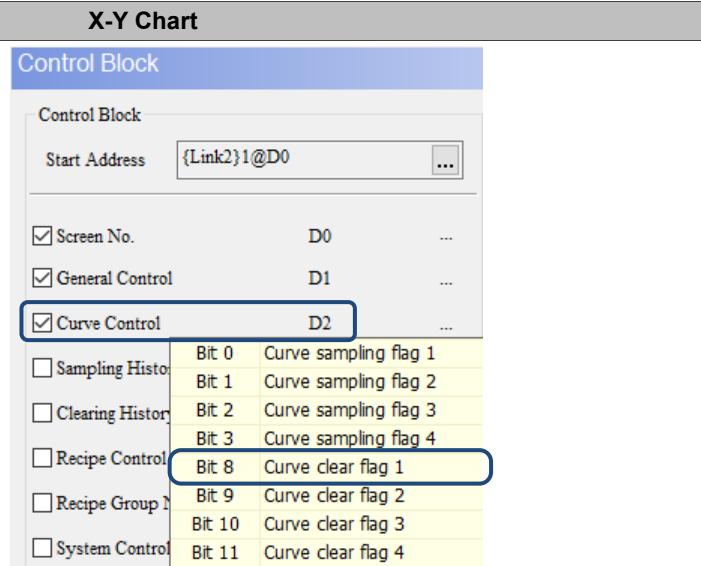


Set Constant

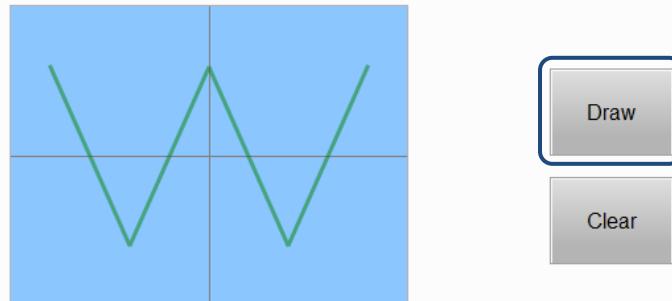


# 14

## Set Constant element



- After creating the elements, compile and download the elements to the HMI. Next, enter any values for the X-axis and Y-axis to the Numeric Entry elements, then press **Draw**, and the X-Y Chart draws the curve according to the input values.

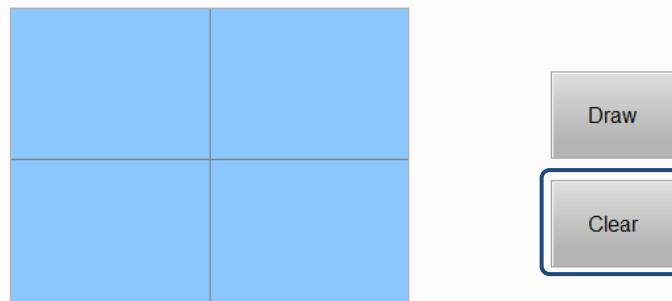


100	300	500	700	900
-----	-----	-----	-----	-----

800	200	800	200	800
-----	-----	-----	-----	-----

## Execution results

- If you press **Clear**, the HMI clears the drawn X-Y curve.



100	300	500	700	900
-----	-----	-----	-----	-----

800	200	800	200	800
-----	-----	-----	-----	-----

When you double-click the X-Y Chart, the property page is shown as follows.

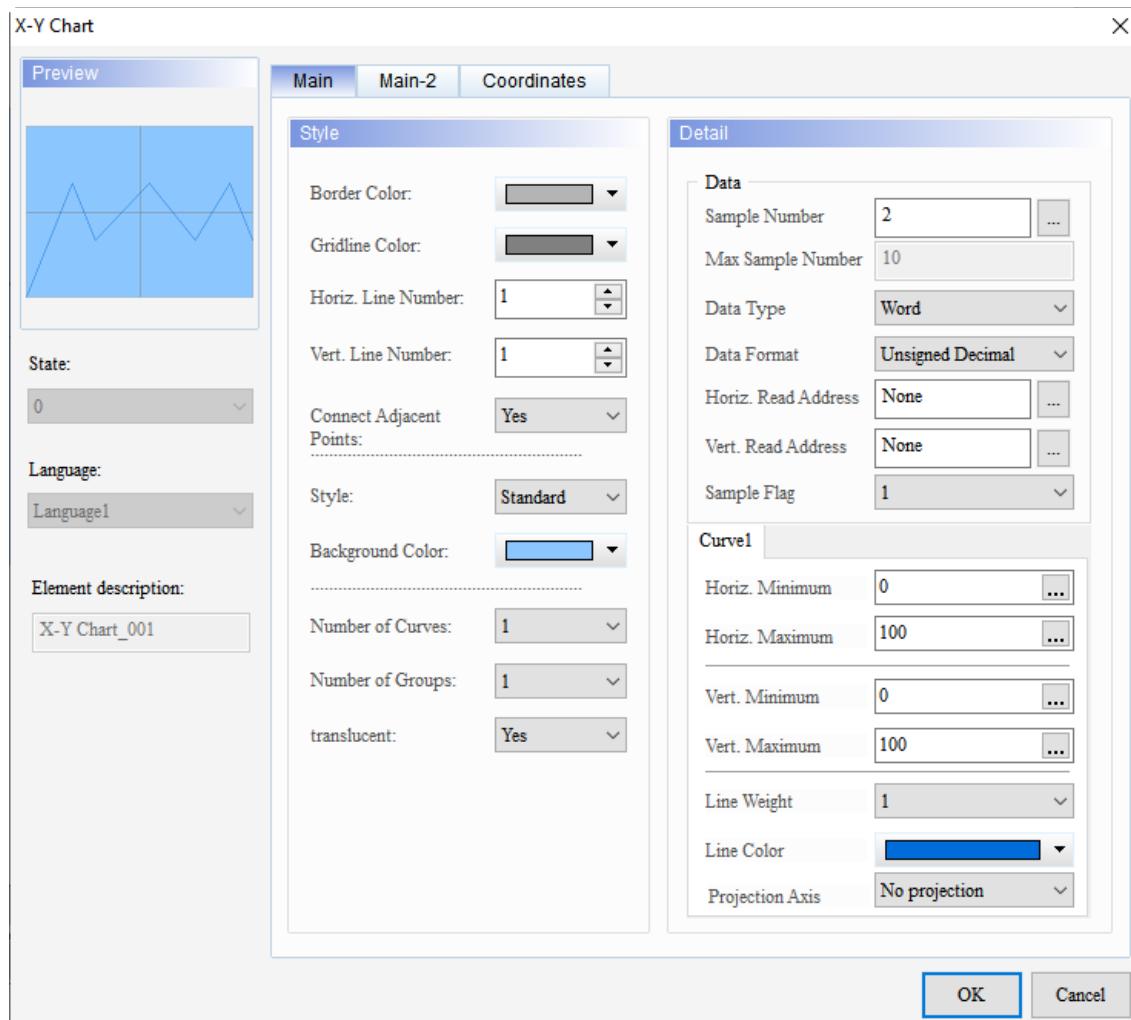


Figure 14.2.1 Properties of X-Y Chart

Table 14.2.2 Function page of X-Y Chart

X-Y Chart	
Function page	Description
Preview	The X-Y Chart elements do not support multiple state values and multi-language data display.
Main	Set the Sample Number, Max Sample Number, Data Type, Data Format, Horiz. Read Address, Vert. Read Address, Sample Flag, Horiz. Minimum, Horiz. Maximum, Vert. Minimum, Vert. Maximum, Line Weight, Line Color, and Projection Axis. Set the Border Color, Gridline Color, Horiz. Line Number, Vert. Line Number, Connect Adjacent Points, Style, Background Color, Number of Curves, Number of Groups, and translucent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

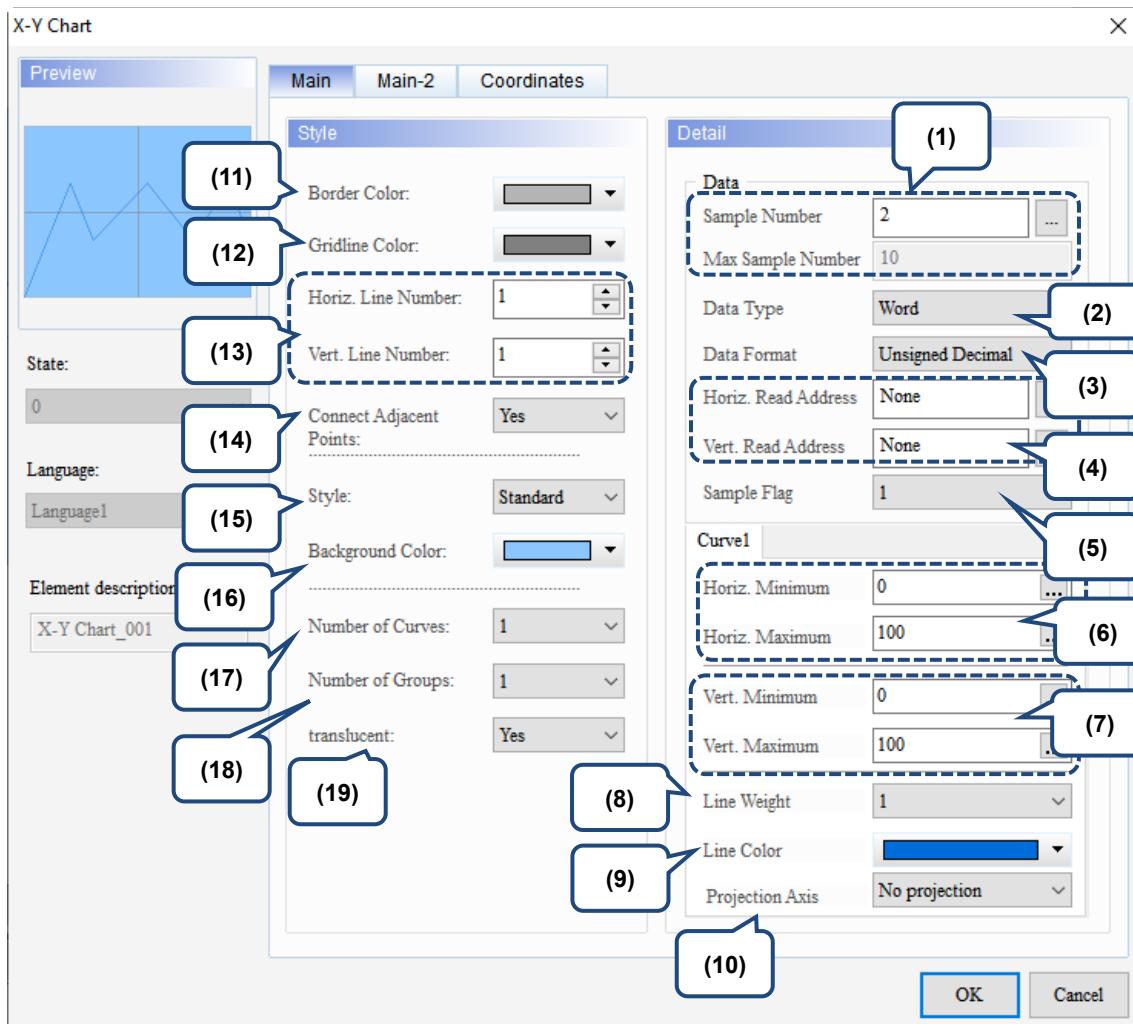
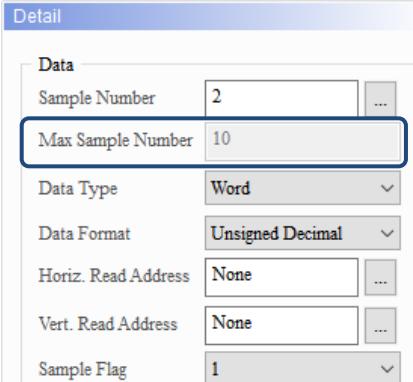
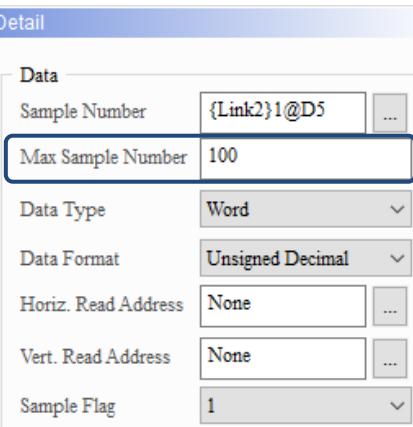
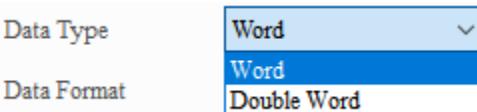
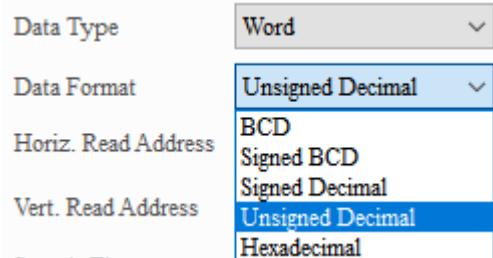
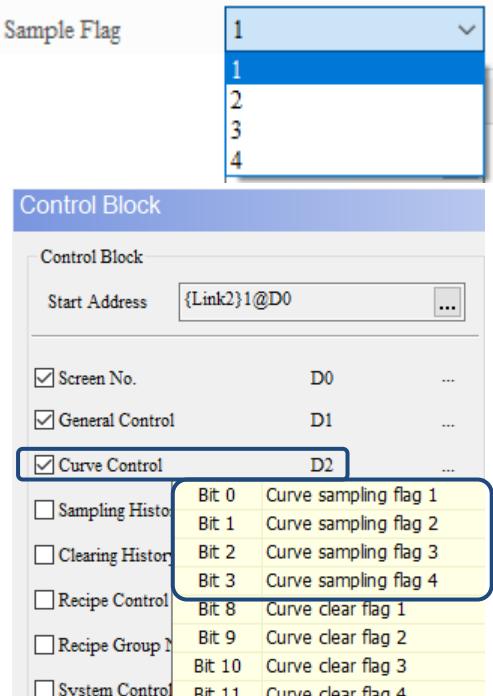
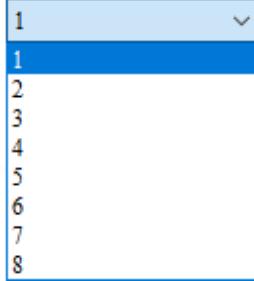
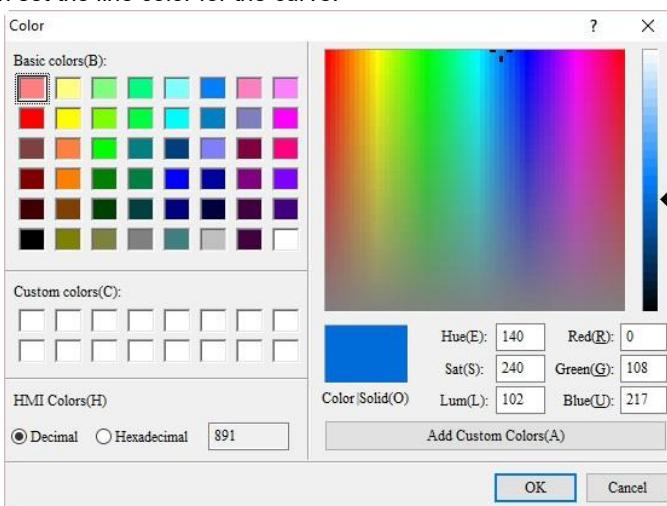


Figure 14.2.2 Main property page for the X-Y Chart element

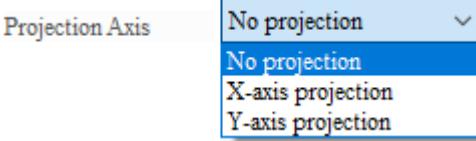
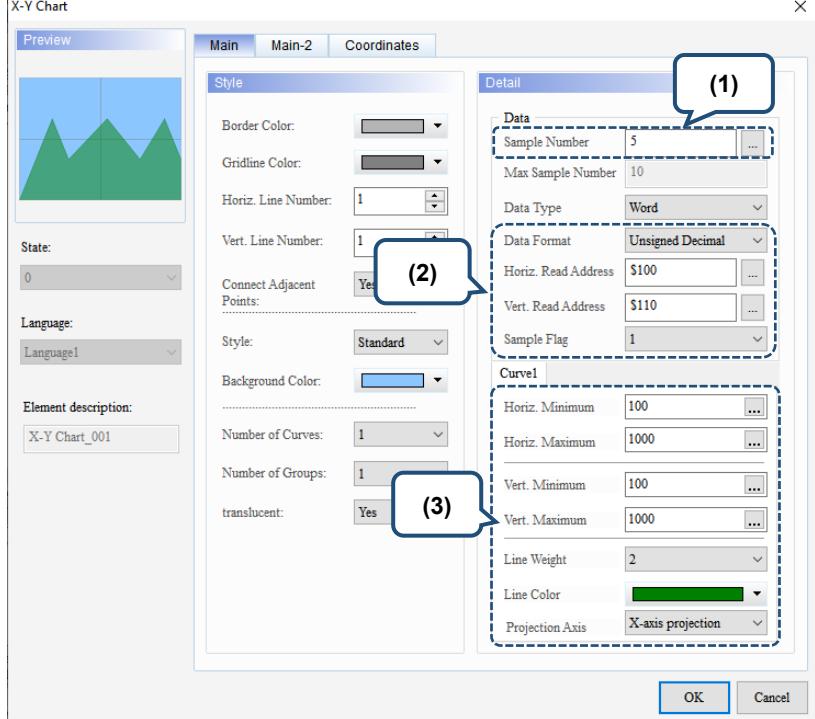
No.	Property	Function description																																										
(1)	Sample Number / Max Sample Number	<ul style="list-style-type: none"> <li>The number of sampling points is determined by the element width / height and style. When you set the Style of the X-Y Chart element as Standard and set its width as 363 and height as 231, then the maximum number of points that can be displayed is 231 (based on the minimum value of element width and height). But if you set the Style of the X-Y Chart element as Raised or Sunken (border width is 7 points) and its width and height as 231, then the maximum number of points that can be displayed is 217 (<math>231 - (7*2) = 217</math>).</li> <li>When you set the Sample Number as a constant, the Max Sample Number is grayed out and cannot be set.</li> </ul>  <p><b>Detail</b></p> <p>Data</p> <table border="1"> <tr> <td>Sample Number</td> <td>2</td> <td>...</td> </tr> <tr> <td>Max Sample Number</td> <td>10</td> <td></td> </tr> <tr> <td>Data Type</td> <td>Word</td> <td>▼</td> </tr> <tr> <td>Data Format</td> <td>Unsigned Decimal</td> <td>▼</td> </tr> <tr> <td>Horiz. Read Address</td> <td>None</td> <td>...</td> </tr> <tr> <td>Vert. Read Address</td> <td>None</td> <td>...</td> </tr> <tr> <td>Sample Flag</td> <td>1</td> <td>▼</td> </tr> </table> <ul style="list-style-type: none"> <li>When you set the Sample Number as a variable, you can define its read address. Also, you need to set the Max Sample Number, which is determined by the element width. If the set Sample Number is greater than the Max Sample Number, the software refers to the setting of the Max Sample Number.</li> </ul>  <p><b>Detail</b></p> <p>Data</p> <table border="1"> <tr> <td>Sample Number</td> <td>{Link2}1@D5</td> <td>...</td> </tr> <tr> <td>Max Sample Number</td> <td>100</td> <td></td> </tr> <tr> <td>Data Type</td> <td>Word</td> <td>▼</td> </tr> <tr> <td>Data Format</td> <td>Unsigned Decimal</td> <td>▼</td> </tr> <tr> <td>Horiz. Read Address</td> <td>None</td> <td>...</td> </tr> <tr> <td>Vert. Read Address</td> <td>None</td> <td>...</td> </tr> <tr> <td>Sample Flag</td> <td>1</td> <td>▼</td> </tr> </table>	Sample Number	2	...	Max Sample Number	10		Data Type	Word	▼	Data Format	Unsigned Decimal	▼	Horiz. Read Address	None	...	Vert. Read Address	None	...	Sample Flag	1	▼	Sample Number	{Link2}1@D5	...	Max Sample Number	100		Data Type	Word	▼	Data Format	Unsigned Decimal	▼	Horiz. Read Address	None	...	Vert. Read Address	None	...	Sample Flag	1	▼
Sample Number	2	...																																										
Max Sample Number	10																																											
Data Type	Word	▼																																										
Data Format	Unsigned Decimal	▼																																										
Horiz. Read Address	None	...																																										
Vert. Read Address	None	...																																										
Sample Flag	1	▼																																										
Sample Number	{Link2}1@D5	...																																										
Max Sample Number	100																																											
Data Type	Word	▼																																										
Data Format	Unsigned Decimal	▼																																										
Horiz. Read Address	None	...																																										
Vert. Read Address	None	...																																										
Sample Flag	1	▼																																										
(2)	Data Type	<p>Data Type includes Word and Double Word.</p>  <p>Data Type</p> <p>Word</p> <p>Word</p> <p>Double Word</p>																																										

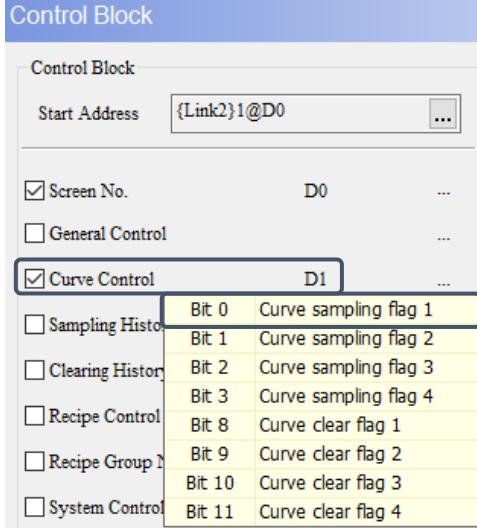
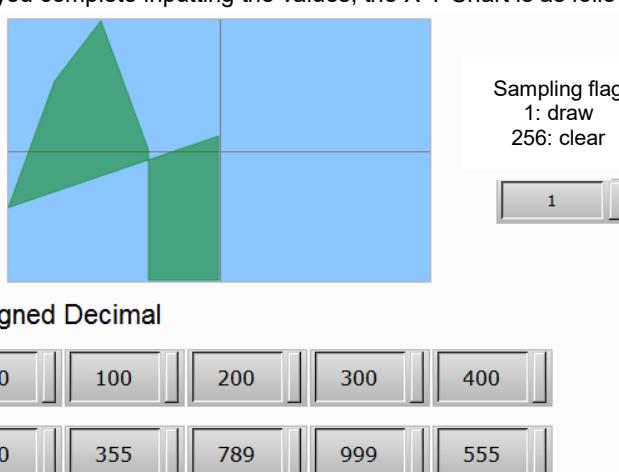
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No.	Property	Function description																		
(3)	Data Format	<ul style="list-style-type: none"> <li>When the Data Type is Word, the supported data formats are as follows.</li> </ul> 																		
(4)	Horiz. Read Address Vert. Read Address	<ul style="list-style-type: none"> <li>Horiz. Read Address represents the X-axis and Vert. Read Address represents the Y-axis.</li> <li>You can select the internal memory or the controller register address for both Horiz. Read Address and Vert. Read Address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>																		
(5)	Sample Flag	<p>There are 4 sampling flags corresponding to the Curve sampling flags 1 - 4 in the Control Block respectively.</p>  <table border="1"> <thead> <tr> <th>Bit</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Bit 0</td> <td>Curve sampling flag 1</td> </tr> <tr> <td>Bit 1</td> <td>Curve sampling flag 2</td> </tr> <tr> <td>Bit 2</td> <td>Curve sampling flag 3</td> </tr> <tr> <td>Bit 3</td> <td>Curve sampling flag 4</td> </tr> <tr> <td>Bit 8</td> <td>Curve clear flag 1</td> </tr> <tr> <td>Bit 9</td> <td>Curve clear flag 2</td> </tr> <tr> <td>Bit 10</td> <td>Curve clear flag 3</td> </tr> <tr> <td>Bit 11</td> <td>Curve clear flag 4</td> </tr> </tbody> </table>	Bit	Description	Bit 0	Curve sampling flag 1	Bit 1	Curve sampling flag 2	Bit 2	Curve sampling flag 3	Bit 3	Curve sampling flag 4	Bit 8	Curve clear flag 1	Bit 9	Curve clear flag 2	Bit 10	Curve clear flag 3	Bit 11	Curve clear flag 4
Bit	Description																			
Bit 0	Curve sampling flag 1																			
Bit 1	Curve sampling flag 2																			
Bit 2	Curve sampling flag 3																			
Bit 3	Curve sampling flag 4																			
Bit 8	Curve clear flag 1																			
Bit 9	Curve clear flag 2																			
Bit 10	Curve clear flag 3																			
Bit 11	Curve clear flag 4																			

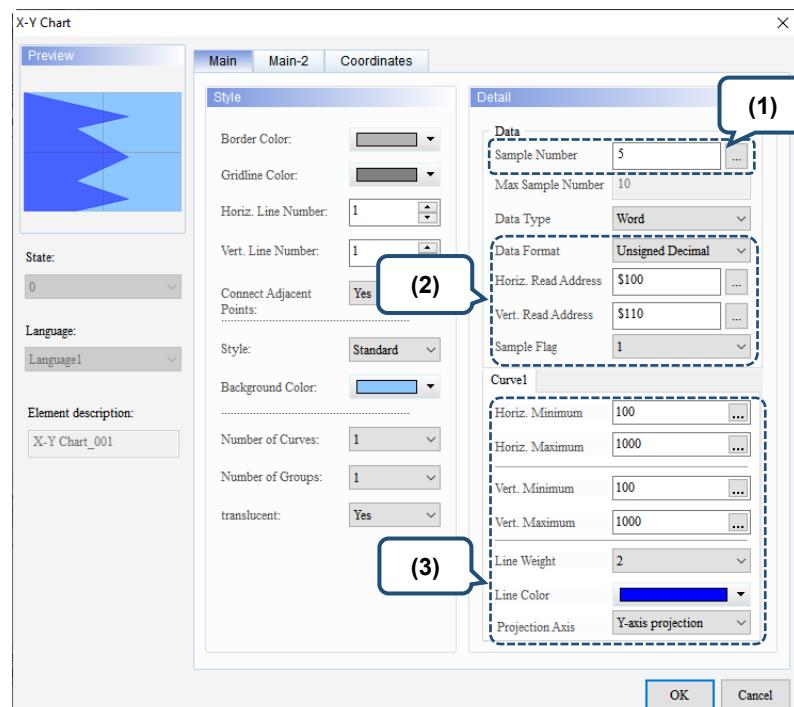
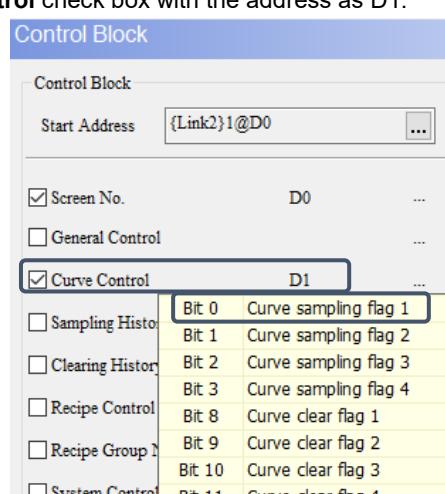
No.	Property	Function description														
(6)	Horiz. Minimum / Horiz. Maximum	<ul style="list-style-type: none"> <li>You can set the Horiz. Minimum and Horiz. Maximum as constants or variables.</li> <li>When the Horiz. Minimum and Horiz. Maximum are variables, the controller address (Word) and the internal register address (Word) are supported.</li> <li>When the Horiz. Minimum and Horiz. Maximum are constants, the allowable ranges for the Horiz. Minimum and Horiz. Maximum are subject to change based on the selected Data Type and Data Format.</li> </ul> <table border="1"> <thead> <tr> <th>Data Type</th><th>Data Format</th><th>Allowable range</th></tr> </thead> <tbody> <tr> <td rowspan="5">Word</td><td>BCD</td><td>0 to 9999</td></tr> <tr><td>Signed BCD</td><td>-999 to +9999</td></tr> <tr><td>Signed Decimal</td><td>-32768 to +32767</td></tr> <tr><td>Unsigned Decimal</td><td>0 to 65535</td></tr> <tr><td>Hex</td><td>0 to 0xFFFF</td></tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF
Data Type	Data Format	Allowable range														
Word	BCD	0 to 9999														
	Signed BCD	-999 to +9999														
	Signed Decimal	-32768 to +32767														
	Unsigned Decimal	0 to 65535														
	Hex	0 to 0xFFFF														
(7)	Vert. Minimum / Vert. Maximum	<ul style="list-style-type: none"> <li>You can set the Vert. Minimum and Vert. Maximum as constants or variables.</li> <li>When the Vert. Minimum and Vert. Maximum are variables, the controller address (Word) and the internal register address (Word) are supported.</li> <li>When the Vert. Minimum and Vert. Maximum are constants, the allowable ranges for the Vert. Minimum and Vert. Maximum are subject to change based on the selected Data Type and Data Format.</li> </ul> <table border="1"> <thead> <tr> <th>Data Type</th><th>Data Format</th><th>Allowable range</th></tr> </thead> <tbody> <tr> <td rowspan="5">Word</td><td>BCD</td><td>0 to 9999</td></tr> <tr><td>Signed BCD</td><td>-999 to +9999</td></tr> <tr><td>Signed Decimal</td><td>-32768 to +32767</td></tr> <tr><td>Unsigned Decimal</td><td>0 to 65535</td></tr> <tr><td>Hex</td><td>0 to 0xFFFF</td></tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF
Data Type	Data Format	Allowable range														
Word	BCD	0 to 9999														
	Signed BCD	-999 to +9999														
	Signed Decimal	-32768 to +32767														
	Unsigned Decimal	0 to 65535														
	Hex	0 to 0xFFFF														
(8)	Line Weight	The line width setting ranges from 1 to 8. 														
(9)	Line Color	You can set the line color for the curve. 														

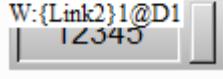
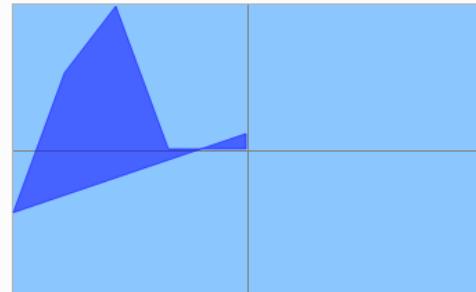
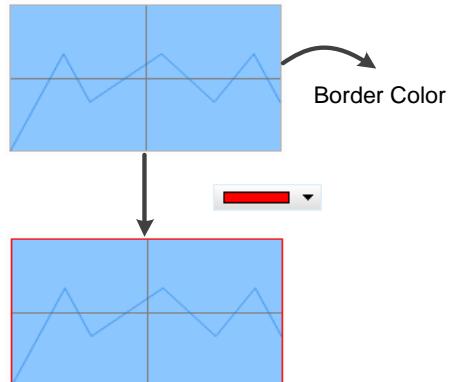
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No.	Property	Function description						
(10)	Projection Axis	<p>■ There are three types of Projection Axis: No projection, X-axis projection, and Y-axis projection.</p>  <p>■ When the Projection Axis is set to No projection, the setting is the same as the default setting, so only the curve is displayed.</p> <p>■ The following describes the details of X-axis projection and Y-axis projection.</p> <p><b>X-axis projection</b></p>  <table border="1"> <tr> <td>(1)</td><td>Set the Sample Number to 5.</td></tr> <tr> <td>(2)</td><td>Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.</td></tr> <tr> <td>(3)</td><td>Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Vert. Minimum to 100 and Vert. Maximum to 1000. Set the Projection Axis to X-axis projection.</td></tr> </table> <p>■ Create the Numeric Entry elements of \$100 - \$104 and \$110 - \$114, and set their Data Format as Unsigned Decimal.</p>  	(1)	Set the Sample Number to 5.	(2)	Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.	(3)	Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Vert. Minimum to 100 and Vert. Maximum to 1000. Set the Projection Axis to X-axis projection.
(1)	Set the Sample Number to 5.							
(2)	Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.							
(3)	Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Vert. Minimum to 100 and Vert. Maximum to 1000. Set the Projection Axis to X-axis projection.							

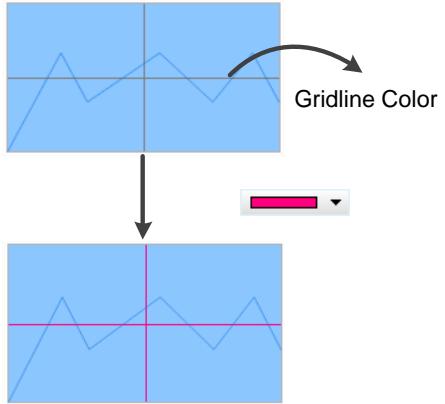
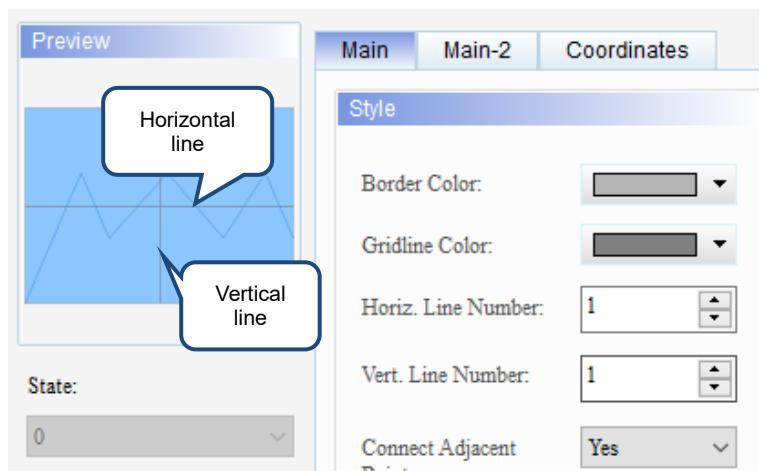
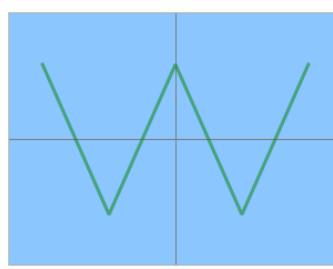
No.	Property	Function description
(10)	Projection Axis	<p>■ Go to [Options] &gt; [Configuration] &gt; [Control Status Block] and select the <b>Curve Control</b> check box with the address as D1.</p>  <p>■ Create a Numeric Entry element with the Write Address set as D1.</p> <p style="text-align: center;">Sampling flag 1: draw 256: clear</p> <p style="text-align: center;">W:{Link2}1@D1 12345</p> <p>■ After completing the preceding steps, compile and download the elements to the HMI.</p> <p>■ Enter any values to the Numeric Entry elements of \$100 - \$104 and \$110 - \$114, and input 1 to the Sampling flag.</p> <p>■ When you complete inputting the values, the X-Y Chart is as follows:</p> 

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No.	Property	Function description						
		<p><b>Y-axis projection</b></p>  <p>The dialog box shows the following settings:</p> <ul style="list-style-type: none"> <li><b>Style:</b> Standard</li> <li><b>Background Color:</b> Blue</li> <li><b>Number of Curves:</b> 1</li> <li><b>Number of Groups:</b> 1</li> <li><b>translucent:</b> Yes</li> <li><b>Data:</b> Sample Number: 5, Max Sample Number: 10, Data Type: Word, Data Format: Unsigned Decimal, Horiz. Read Address: \$100, Vert. Read Address: \$110, Sample Flag: 1</li> <li><b>Curve1:</b> Horiz. Minimum: 100, Horiz. Maximum: 1000, Vert. Minimum: 100, Vert. Maximum: 1000, Line Weight: 2, Line Color: Blue, Projection Axis: Y-axis projection</li> </ul>						
(10)	Projection Axis	<table border="1"> <tr> <td>(1)</td> <td>Set the Sample Number to 5.</td> </tr> <tr> <td>(2)</td> <td>Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.</td> </tr> <tr> <td>(3)</td> <td>Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Vert. Minimum to 100 and Vert. Maximum to 1000. Set the Projection Axis to Y-axis projection.</td> </tr> </table> <p>■ Create the Numeric Entry elements of \$100 - \$104 and \$110 - \$114, and set their Data Format as Unsigned Decimal.</p>  <p>■ Go to [Options] &gt; [Configuration] &gt; [Control Status Block] and select the <b>Curve Control</b> check box with the address as D1.</p> 	(1)	Set the Sample Number to 5.	(2)	Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.	(3)	Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Vert. Minimum to 100 and Vert. Maximum to 1000. Set the Projection Axis to Y-axis projection.
(1)	Set the Sample Number to 5.							
(2)	Set the Horiz. Read Address to \$100. Set the Vert. Read Address to \$110. Set the Data Format to Unsigned Decimal and the Sample Flag to 1.							
(3)	Set the Horiz. Minimum to 100 and Horiz. Maximum to 1000. Set the Vert. Minimum to 100 and Vert. Maximum to 1000. Set the Projection Axis to Y-axis projection.							

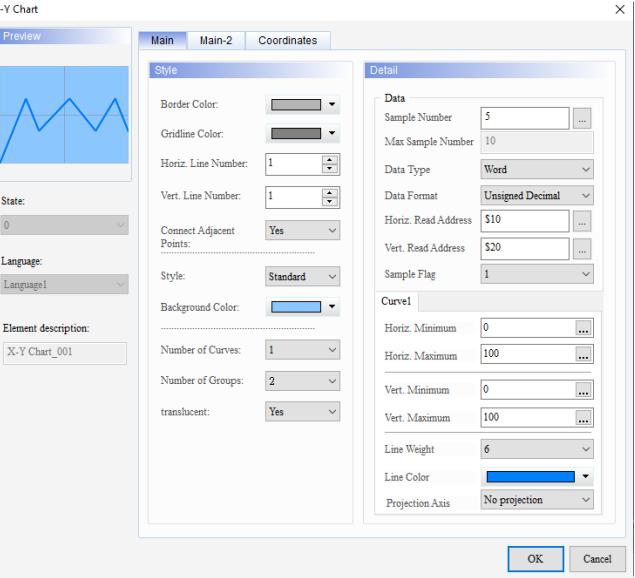
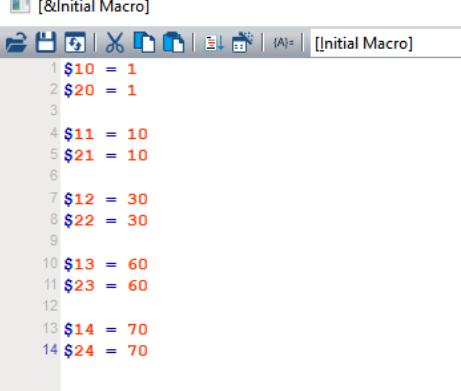
No.	Property	Function description										
(10)	Projection Axis	<ul style="list-style-type: none"> <li>Create a Numeric Entry element with the Write Address set as D1.</li> </ul> <p style="text-align: center;">Sampling flag 1: draw 256: clear</p>  <ul style="list-style-type: none"> <li>After completing the preceding steps, compile and download the elements to the HMI.</li> <li>Enter any values to the Numeric Entry elements of \$100 - \$104 and \$110 - \$114, and input 1 to the Sampling flag.</li> <li>When you complete inputting the values, the X-Y Chart is as follows:</li> </ul> <div style="display: flex; align-items: center;"> <div style="flex: 1;">  <p style="margin-top: 10px;">Unsigned Decimal</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px 10px;">550</td> <td style="padding: 2px 10px;">100</td> <td style="padding: 2px 10px;">200</td> <td style="padding: 2px 10px;">300</td> <td style="padding: 2px 10px;">400</td> </tr> <tr> <td style="padding: 2px 10px;">600</td> <td style="padding: 2px 10px;">355</td> <td style="padding: 2px 10px;">789</td> <td style="padding: 2px 10px;">999</td> <td style="padding: 2px 10px;">555</td> </tr> </table> </div> <div style="margin-left: 20px;"> <p style="text-align: center;">Sampling flag 1: draw 256: clear</p>  </div> </div>	550	100	200	300	400	600	355	789	999	555
550	100	200	300	400								
600	355	789	999	555								
(11)	Border Color	<p>Set the Border Color of the X-Y Chart element.</p> 										

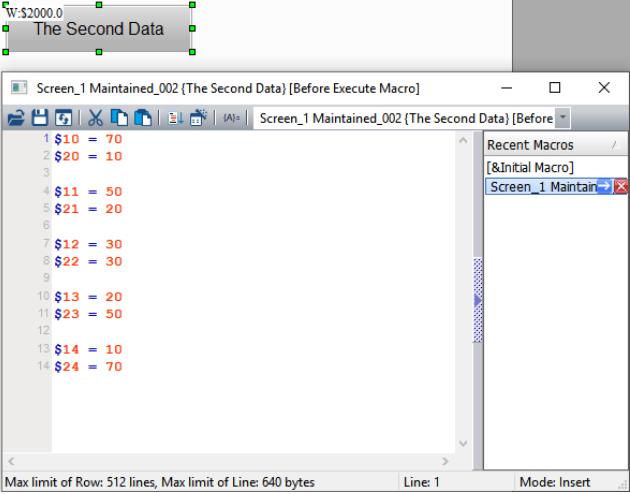
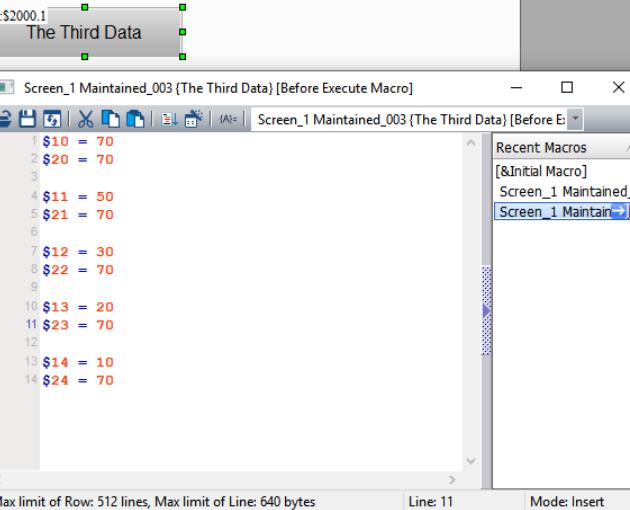
14

No.	Property	Function description
(12)	Gridline Color	<ul style="list-style-type: none"> <li>The Gridline Color is the color of the grid line in the X-Y Chart. The default is .</li> <li>You can change the color of the grid line.</li> </ul> 
(13)	Horiz. Line Number / Vert. Line Number	<ul style="list-style-type: none"> <li>Both Horiz. Line Number and Vert. Line Number support a maximum of 99 lines.</li> <li>Horiz. Line Number refers to the number of lines which are parallel to the X-axis and Vert. Line Number refers to the number of lines which are parallel to the Y-axis. The default is 1 for both settings.</li> </ul> <p>X-Y Chart</p> 
(14)	Connect Adjacent Points	<ul style="list-style-type: none"> <li>You can select Yes or No for Connect Adjacent Points.</li> <li>If you select Yes, the coordinate points are connected with lines to form a curve.</li> </ul>  <ul style="list-style-type: none"> <li>If you select No, the chart displays the coordinate points.</li> </ul> 

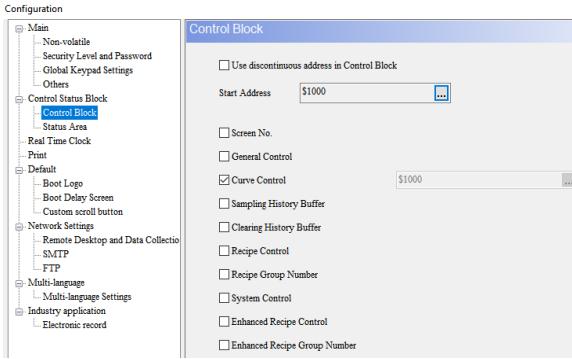
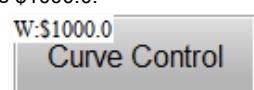
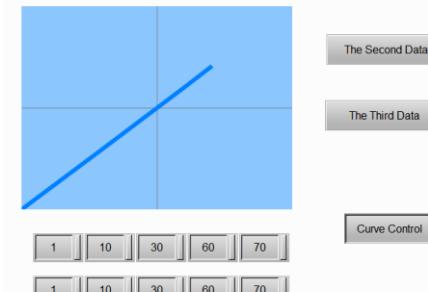
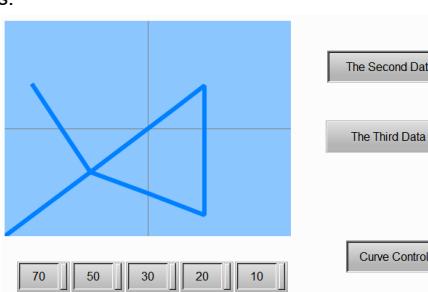
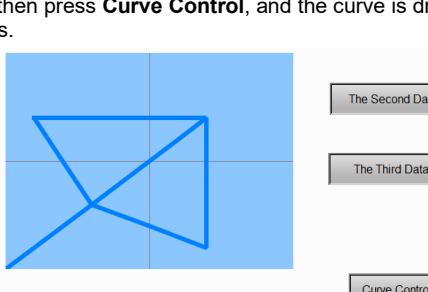
No.	Property	Function description								
(15)	Style	<p>You can change the appearance of the element with this setting. There are four types of element styles:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken	Transparent				
Standard	Raised	Sunken	Transparent							
(16)	Background Color	<p>Set the background color of the element.</p>								
(17)	Number of Curves	<ul style="list-style-type: none"> <li>The X-Y Chart element supports up to 4 curves.</li> </ul> <p>Number of Curves:</p> <ul style="list-style-type: none"> <li>You can also change the width and color of the curves.</li> </ul> <ul style="list-style-type: none"> <li>If you want to use 4 curves, you only need to set the Horiz. Read Address and Vert. Read Address as Continuous Address for sampling. Assuming the Horiz. Read Address is \$3000, Vert. Read Address is \$4000, and the Sample Number is 5, then 40 sampling points are required for 4 curves (20 points each for horizontal and vertical). Thus, the Read Addresses are \$3000 - \$3019 and \$4000 - \$4019.</li> </ul>								

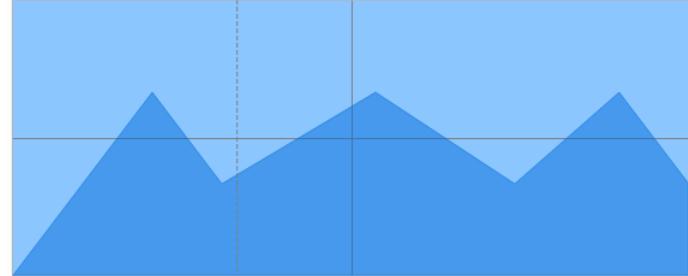
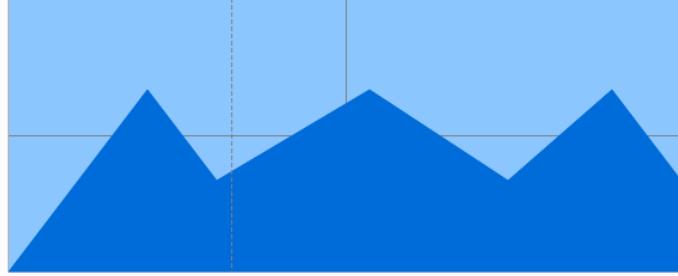
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No.	Property	Function description
(18)	Create an X-Y Chart	<p>■ The X-Y Chart reads one set of point data at a time. To read the next set of point data, you need to enter the values again. The function of Number of Groups allows you to record and write multiple sets of parameters, and supports displaying up to ten sets of point data. Refer to the following example.</p> <p>After creating the X-Y Chart element, set the parameters as follows.</p> 
	Create Numeric Entry elements	<p>Create the Numeric Entry elements of \$10 - \$14 and \$20 - \$24.</p> 
	Multiple sets of data	<p>■ The Number of Groups of the X-Y Chart is set to 2, meaning that apart from the currently displayed \$10 - \$14 and \$20 - \$24, two more sets of data can be displayed.</p> <p>■ The first set of data is written in the Initial Macro.</p> 

No.	Property	Function description
(18)	Number of Groups  Multiple sets of data	<p>The second set of data is written in the Before Execute Macro of the Maintained button element.</p>  <pre>W:\$2000.0 The Second Data</pre> <pre>Screen_1 Maintained_002 (The Second Data) [Before Execute Macro] 1 \$10 = 70 2 \$20 = 10 3 4 \$11 = 50 5 \$21 = 20 6 7 \$12 = 30 8 \$22 = 30 9 10 \$13 = 20 11 \$23 = 50 12 13 \$14 = 10 14 \$24 = 70</pre> <p>The third set of data is written in the Before Execute Macro of the Maintained button element.</p>  <pre>W:\$2000.1 The Third Data</pre> <pre>Screen_1 Maintained_003 (The Third Data) [Before Execute Macro] 1 \$10 = 70 2 \$20 = 70 3 4 \$11 = 50 5 \$21 = 70 6 7 \$12 = 30 8 \$22 = 70 9 10 \$13 = 20 11 \$23 = 70 12 13 \$14 = 10 14 \$24 = 70</pre>

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No.	Property	Function description
	Control Block - Curve Control	<ul style="list-style-type: none"> <li>■ Enable the Curve Control flag.</li> </ul>  <ul style="list-style-type: none"> <li>■ Create a Maintained button for the Curve Control flag with the Write Address as \$1000.0.</li> </ul> 
(18)	Number of Groups	<ul style="list-style-type: none"> <li>■ After you download the created elements, the first set of data is loaded at first. Press <b>Curve Control</b>, and the curve is drawn as follows.</li> </ul>  <ul style="list-style-type: none"> <li>■ Press <b>The Second Data</b> maintained button to load the second set of data, then press <b>Curve Control</b>, and the curve is drawn as follows.</li> </ul>  <ul style="list-style-type: none"> <li>■ Press <b>The Third Data</b> maintained button to load the third set of data, then press <b>Curve Control</b>, and the curve is drawn as follows.</li> </ul> 

No.	Property	Function description	
(19)	translucent	The translucent setting is valid only when the Projection Axis is set to X-axis projection or Y-axis projection.	
		translucent is set to Yes	

14

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## ■ Main-2

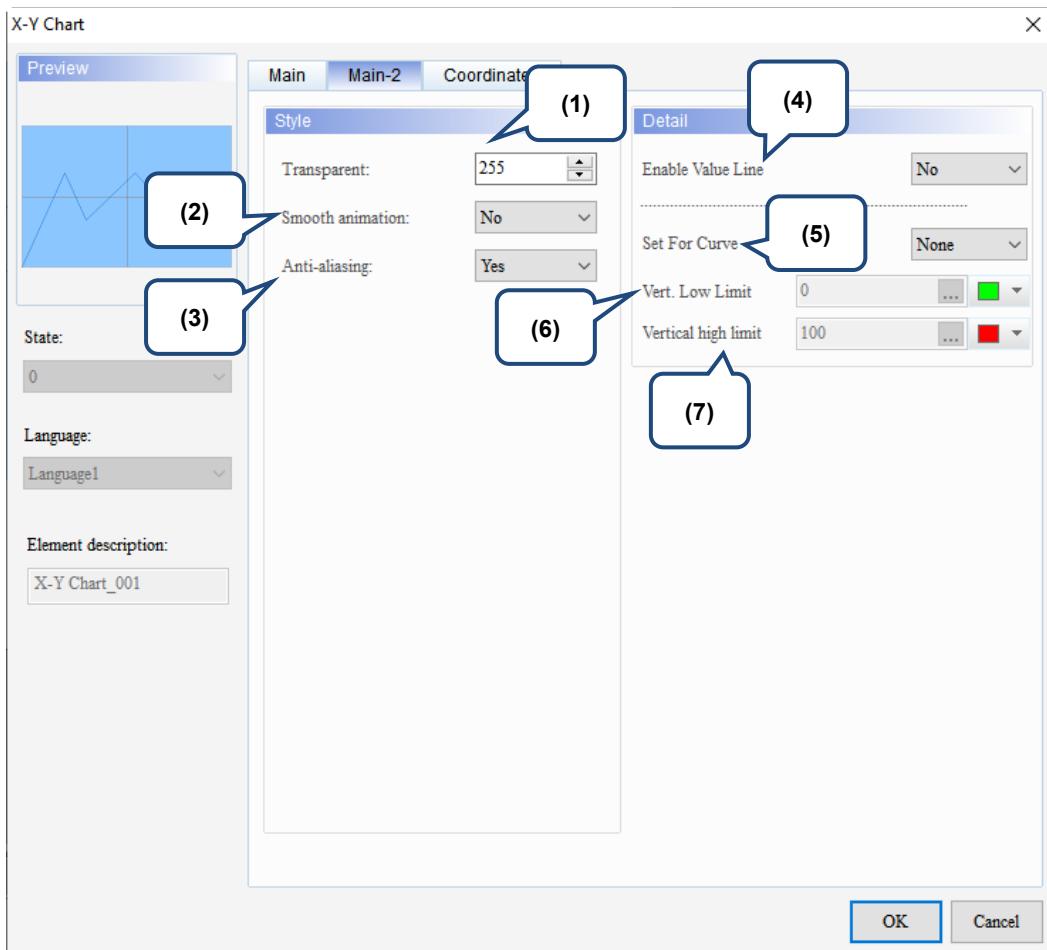
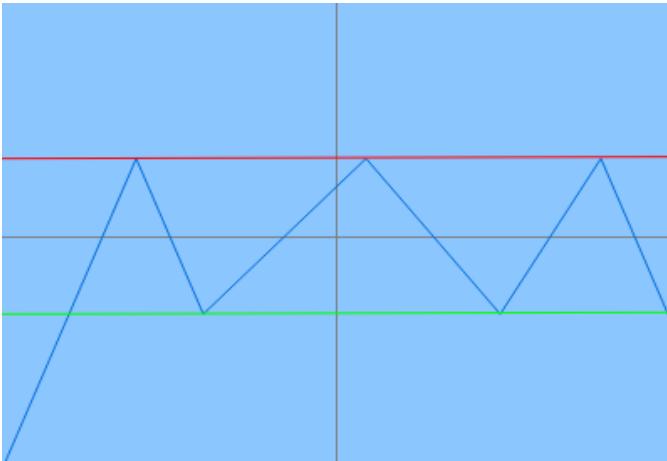


Figure 14.2.3 Main-2 property page for the X-Y Chart element

No.	Property	Function description												
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.												
(2)	Smooth animation	The Smooth animation function is available for this element. When this function is enabled, the curve motion is smoother.												
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When this function is enabled, the element display becomes more delicate without jagged edges.												
(4)	Enable Value Line	<ul style="list-style-type: none"> <li>■ When the Enable Value Line is set to Yes, you can click on the curve and the currently sampled value is displayed.</li> <li>■ If there are multiple sets of data, this function is available only for the set of data which is currently sampled.</li> </ul>												
(5)	Set For Curve	Select the curve for which you will set the low and high limits of the vertical axis (Y-axis).  <table border="1"> <tr><td>Set For Curve</td><td>1</td></tr> <tr><td></td><td>None</td></tr> <tr><td></td><td>1</td></tr> <tr><td></td><td>2</td></tr> <tr><td></td><td>3</td></tr> <tr><td></td><td>4</td></tr> </table>	Set For Curve	1		None		1		2		3		4
Set For Curve	1													
	None													
	1													
	2													
	3													
	4													

No.	Property	Function description
(6)	Vert. Low Limit	<ul style="list-style-type: none"><li>■ Set the values for the low and high limits of the vertical axis (Y-axis), which can be constants or variables.</li><li>■ The default color for the low limit is green; the default color for the high limit is red.</li></ul>
(7)	Vertical high limit	

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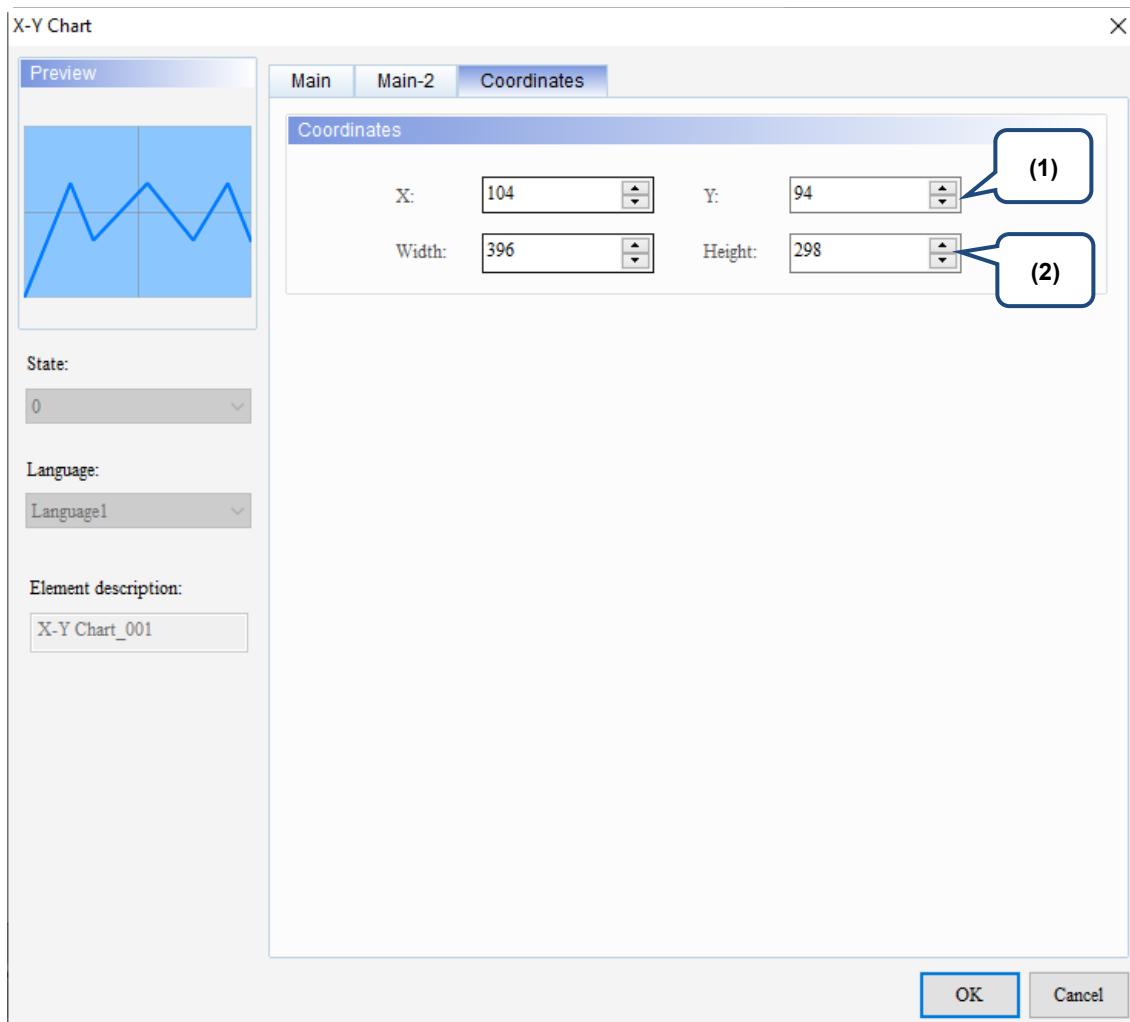
**■ Coordinates**

Figure 14.2.4 Coordinates property page for the X-Y Chart element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 14.3 X-Y Distribution

X-Y Distribution allows you to set the Address to read as a Continuous Address which can continuously sample points on the X-axis and Y-axis with no maximum on the number of sampling points. Although X-Y Chart also uses Continuous Addresses, its number of sampling points is determined by the style, width, and height of the element. When the **Continuous Address** check box is not selected, you can set the Read Addresses for both X and Y, and you can also define the Color and Connection as Read Addresses or constants. On the contrary, if the **Continuous Address** check box is selected, both X and Y can only be set as continuous addresses, and the Color and Connection are automatically set as the subsequent addresses of X and Y. In this case, you are unable to change the addresses; you can only reset them to constants.

An X-Y Distribution element supports up to 4 sets of samples. The main difference between the X-Y Distribution element and the Trend Graph and X-Y Chart elements is that the X-Y Distribution element does not require the Curve sampling flag from [Options] > [Configuration] > [Control Status Block] > [Control Block] > [Curve Control] to draw curves, instead it has its own Control flags. Bit 0 is for sampling and Bit 1 is for clearing.

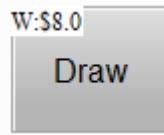
Refer to Table 14.3.1 for the X-Y Distribution example.

Table 14.3.1 X-Y Distribution example

X-Y Distribution																																																														
Create an X-Y Distribution element and set its parameters.																																																														
Control	<p><b>X-Y Distribution element</b></p> <table border="1"> <tr> <td>Control</td><td>\$8</td><td>...</td></tr> <tr> <td colspan="3"><input checked="" type="checkbox"/> Auto clear</td></tr> </table>	Control	\$8	...	<input checked="" type="checkbox"/> Auto clear																																																									
Control	\$8	...																																																												
<input checked="" type="checkbox"/> Auto clear																																																														
Continuous Address	<input checked="" type="checkbox"/> Continuous Address																																																													
Sample Number	2																																																													
X-Y Distribution element	<table border="1"> <tr> <td>Sampling settings</td> <td> <table border="1"> <tr> <td>Sample 0</td><td>Sample 1</td></tr> <tr> <td>Name</td><td>Address</td></tr> <tr> <td>X</td><td>\$20</td></tr> <tr> <td>Y</td><td>\$21</td></tr> <tr> <td>Color</td><td>\$22</td></tr> <tr> <td>Connection</td><td>\$23</td></tr> <tr> <td>X Min.</td><td>0</td></tr> <tr> <td>X Max.</td><td>1000</td></tr> <tr> <td>Y Min.</td><td>0</td></tr> <tr> <td>Y Max.</td><td>1000</td></tr> </table>   <table border="1"> <tr> <td>Sampling settings</td> <td> <table border="1"> <tr> <td>Sample 0</td><td>Sample 1</td></tr> <tr> <td>Name</td><td>Address</td></tr> <tr> <td>X</td><td>\$30</td></tr> <tr> <td>Y</td><td>\$31</td></tr> <tr> <td>Color</td><td>\$32</td></tr> <tr> <td>Connection</td><td>\$33</td></tr> <tr> <td>X Min.</td><td>0</td></tr> <tr> <td>X Max.</td><td>1000</td></tr> <tr> <td>Y Min.</td><td>0</td></tr> <tr> <td>Y Max.</td><td>1000</td></tr> </table> </td></tr> </table></td></tr> <tr> <td>Numeric Entry element</td><td> <ul style="list-style-type: none"> <li>■ As the Sample Number is set as 2, there will be two sets of settings (Sample 0 and Sample 1).</li> <li>■ Create Numeric Entry elements of \$20 - \$23 as the X, Y, Color, and Connection of Sample 0.</li> <li>■ Create Numeric Entry elements of \$30 - \$33 as the X, Y, Color, and Connection of Sample 1.</li> </ul> <table border="1"> <thead> <tr> <th>Sample Number</th><th>X</th><th>Y</th><th>Color</th><th>Connection</th></tr> </thead> <tbody> <tr> <td>Sample 0</td><td>\$20</td><td>\$21</td><td>\$22</td><td>\$23</td></tr> <tr> <td>Sample 1</td><td>\$30</td><td>\$31</td><td>\$32</td><td>\$33</td></tr> </tbody> </table> </td></tr> </table>	Sampling settings	<table border="1"> <tr> <td>Sample 0</td><td>Sample 1</td></tr> <tr> <td>Name</td><td>Address</td></tr> <tr> <td>X</td><td>\$20</td></tr> <tr> <td>Y</td><td>\$21</td></tr> <tr> <td>Color</td><td>\$22</td></tr> <tr> <td>Connection</td><td>\$23</td></tr> <tr> <td>X Min.</td><td>0</td></tr> <tr> <td>X Max.</td><td>1000</td></tr> <tr> <td>Y Min.</td><td>0</td></tr> <tr> <td>Y Max.</td><td>1000</td></tr> </table> <table border="1"> <tr> <td>Sampling settings</td> <td> <table border="1"> <tr> <td>Sample 0</td><td>Sample 1</td></tr> <tr> <td>Name</td><td>Address</td></tr> <tr> <td>X</td><td>\$30</td></tr> <tr> <td>Y</td><td>\$31</td></tr> <tr> <td>Color</td><td>\$32</td></tr> <tr> <td>Connection</td><td>\$33</td></tr> <tr> <td>X Min.</td><td>0</td></tr> <tr> <td>X Max.</td><td>1000</td></tr> <tr> <td>Y Min.</td><td>0</td></tr> <tr> <td>Y Max.</td><td>1000</td></tr> </table> </td></tr> </table>	Sample 0	Sample 1	Name	Address	X	\$20	Y	\$21	Color	\$22	Connection	\$23	X Min.	0	X Max.	1000	Y Min.	0	Y Max.	1000	Sampling settings	<table border="1"> <tr> <td>Sample 0</td><td>Sample 1</td></tr> <tr> <td>Name</td><td>Address</td></tr> <tr> <td>X</td><td>\$30</td></tr> <tr> <td>Y</td><td>\$31</td></tr> <tr> <td>Color</td><td>\$32</td></tr> <tr> <td>Connection</td><td>\$33</td></tr> <tr> <td>X Min.</td><td>0</td></tr> <tr> <td>X Max.</td><td>1000</td></tr> <tr> <td>Y Min.</td><td>0</td></tr> <tr> <td>Y Max.</td><td>1000</td></tr> </table>	Sample 0	Sample 1	Name	Address	X	\$30	Y	\$31	Color	\$32	Connection	\$33	X Min.	0	X Max.	1000	Y Min.	0	Y Max.	1000	Numeric Entry element	<ul style="list-style-type: none"> <li>■ As the Sample Number is set as 2, there will be two sets of settings (Sample 0 and Sample 1).</li> <li>■ Create Numeric Entry elements of \$20 - \$23 as the X, Y, Color, and Connection of Sample 0.</li> <li>■ Create Numeric Entry elements of \$30 - \$33 as the X, Y, Color, and Connection of Sample 1.</li> </ul> <table border="1"> <thead> <tr> <th>Sample Number</th><th>X</th><th>Y</th><th>Color</th><th>Connection</th></tr> </thead> <tbody> <tr> <td>Sample 0</td><td>\$20</td><td>\$21</td><td>\$22</td><td>\$23</td></tr> <tr> <td>Sample 1</td><td>\$30</td><td>\$31</td><td>\$32</td><td>\$33</td></tr> </tbody> </table>	Sample Number	X	Y	Color	Connection	Sample 0	\$20	\$21	\$22	\$23	Sample 1	\$30	\$31	\$32	\$33
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X	\$30																																																													
Y	\$31																																																													
Color	\$32																																																													
Connection	\$33																																																													
X Min.	0																																																													
X Max.	1000																																																													
Y Min.	0																																																													
Y Max.	1000																																																													
Numeric Entry element	<ul style="list-style-type: none"> <li>■ As the Sample Number is set as 2, there will be two sets of settings (Sample 0 and Sample 1).</li> <li>■ Create Numeric Entry elements of \$20 - \$23 as the X, Y, Color, and Connection of Sample 0.</li> <li>■ Create Numeric Entry elements of \$30 - \$33 as the X, Y, Color, and Connection of Sample 1.</li> </ul> <table border="1"> <thead> <tr> <th>Sample Number</th><th>X</th><th>Y</th><th>Color</th><th>Connection</th></tr> </thead> <tbody> <tr> <td>Sample 0</td><td>\$20</td><td>\$21</td><td>\$22</td><td>\$23</td></tr> <tr> <td>Sample 1</td><td>\$30</td><td>\$31</td><td>\$32</td><td>\$33</td></tr> </tbody> </table>	Sample Number	X	Y	Color	Connection	Sample 0	\$20	\$21	\$22	\$23	Sample 1	\$30	\$31	\$32	\$33																																														
Sample Number	X	Y	Color	Connection																																																										
Sample 0	\$20	\$21	\$22	\$23																																																										
Sample 1	\$30	\$31	\$32	\$33																																																										

**X-Y Distribution**

- Create a Maintained button element and set its Write Address as \$8.0, meaning the sampling starts when Bit 0 is on.

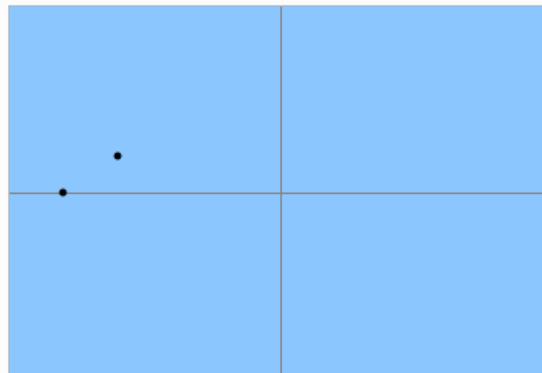


Maintained  
button element

- Next, create another Maintained button element and set its Write Address as \$8.1, meaning the clearing starts when Bit 1 is on.

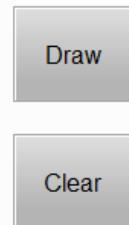
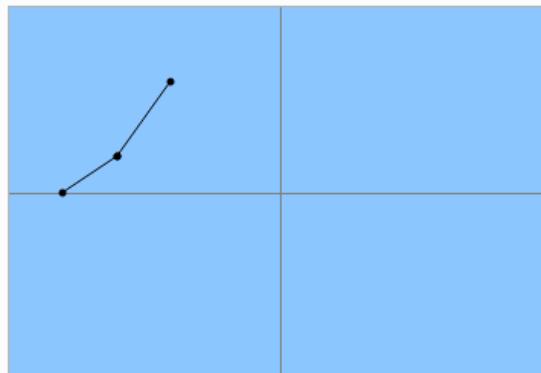


- After creating the elements, compile and download the elements to the HMI. Next, enter any values for the X-axis and Y-axis to the Numeric Entry elements, and then the X-Y Distribution draws the curve according to the input values.
- For the first input, two points are drawn.



Execution  
results

- For the second input, \$23 and \$33 are both set to 1, so the dots are connected by the lines.






200	600	0	1
300	800	0	1

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When you double-click the X-Y Distribution, the property page is shown as follows.

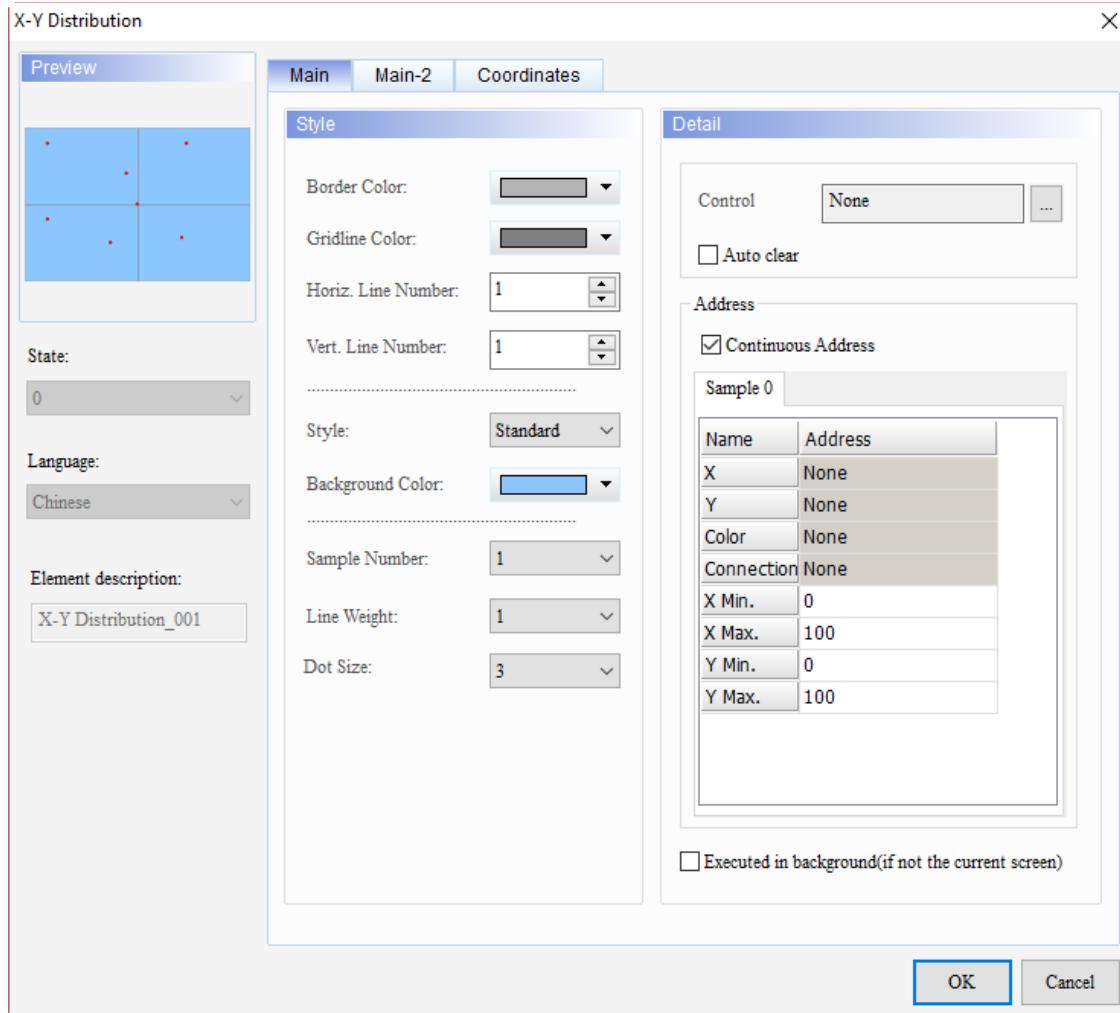


Figure 14.3.1 Properties of X-Y Distribution

Table 14.3.2 Function page of X-Y Distribution

X-Y Distribution	
Function page	Description
Preview	The X-Y Distribution elements do not support multiple state values and multi-language data display.
Main	Set the Control, Addresses of X, Y, Color, and Connection, X Min., X Max., Y Min., Y Max., and select the <b>Auto clear</b> , <b>Continuous Address</b> , and <b>Executed in background(if not the current screen)</b> check boxes. Set the Border Color, Gridline Color, Horiz. Line Number, Vert. Line Number, Style, Background Color, Sample Number, Line Weight, and Dot Size.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

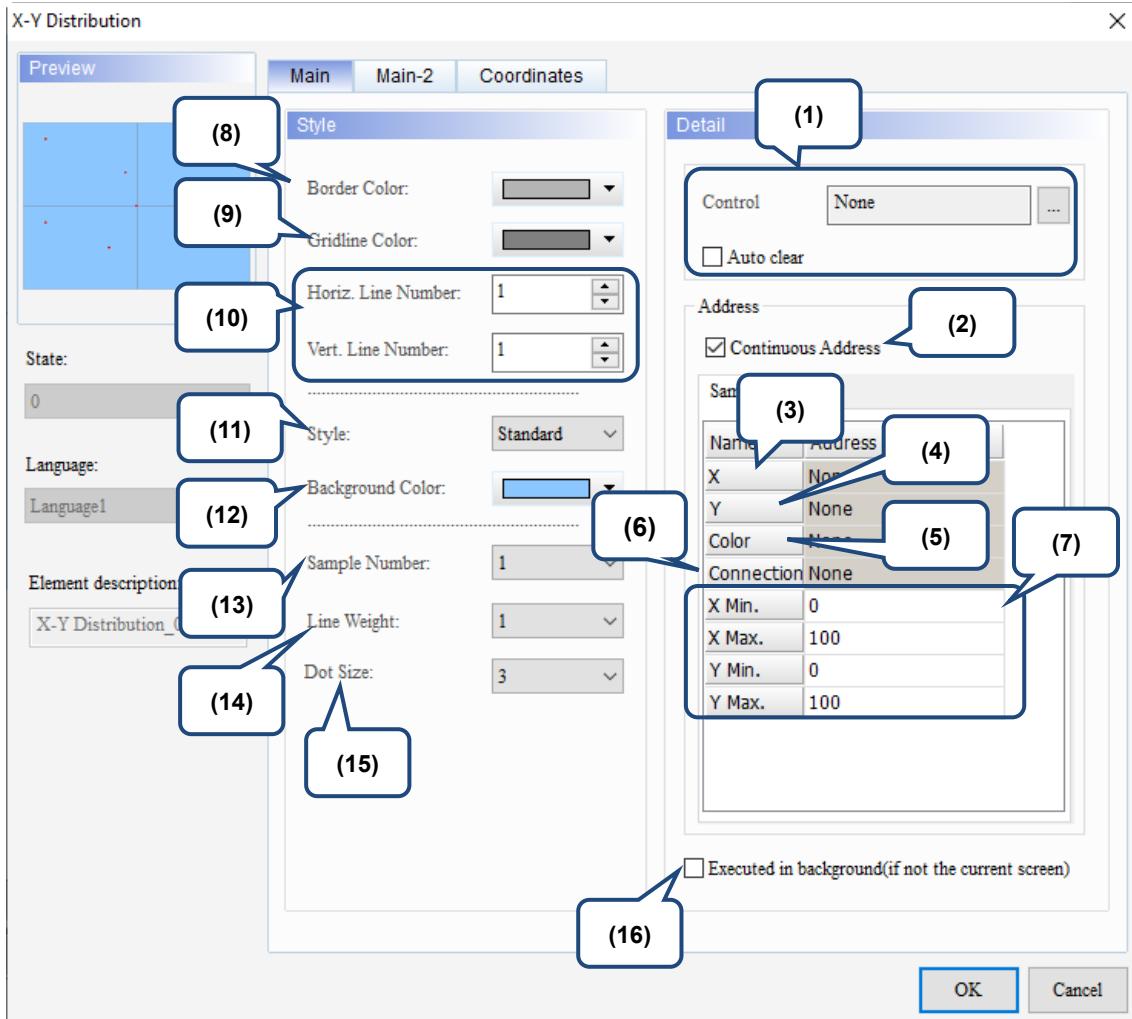
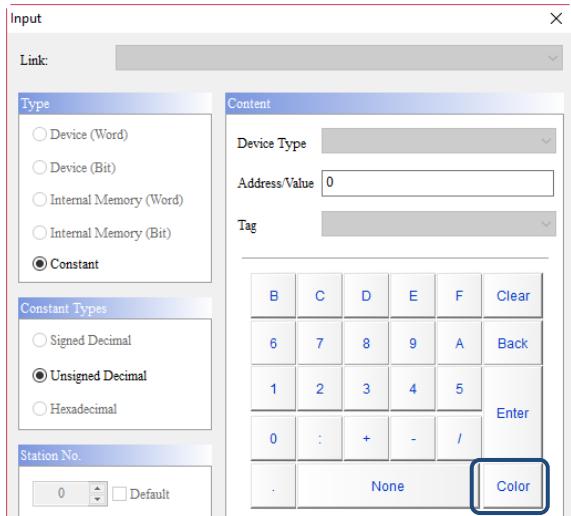
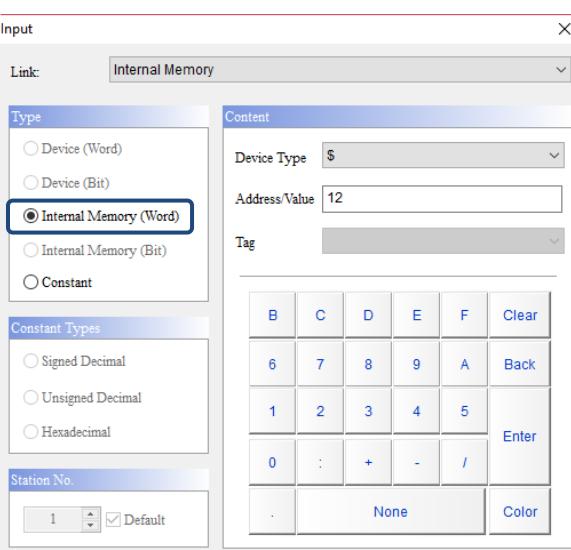
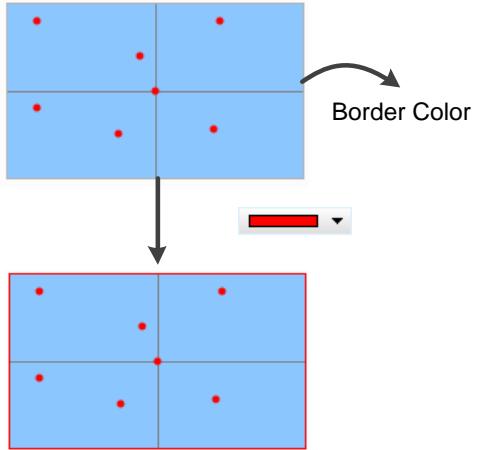
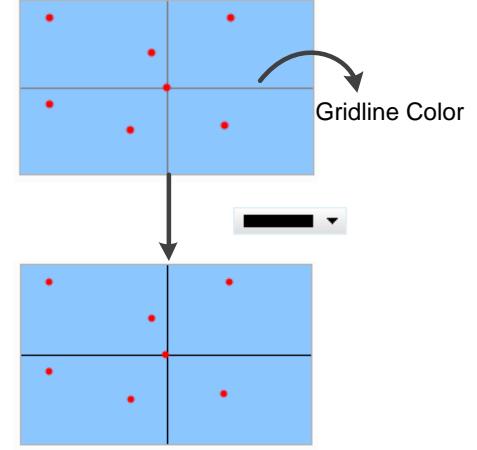


Figure 14.3.2 Main property page for the X-Y Distribution element

No.	Property	Function description
(1)	Control	<ul style="list-style-type: none"> <li>■ Control address is the independent Curve Control flag of the X-Y Distribution. You do not need to sample data with the Curve Control flags in the Control Block. You can select the internal memory or the controller address for this Control address.</li> <li>■ Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> <li>■ Trigger Bit 0 to draw the sampling points and trigger Bit 1 to clear the sampling points.</li> <li>■ The X-Y Distribution element draws only one point each time you trigger the Curve Control flag. To draw the second point, you need to set this flag to off and then trigger it again. You can select the <b>Auto clear</b> check box to have the HMI automatically clear the flag.</li> </ul> <p style="text-align: center;"><b>Detail</b></p> <div style="border: 1px solid #ccc; padding: 10px; width: fit-content;"> <p>Control <input type="text" value="None"/> <input style="margin-left: 10px;" type="button" value="..."/></p> <p><input type="checkbox"/> Auto clear</p> </div>

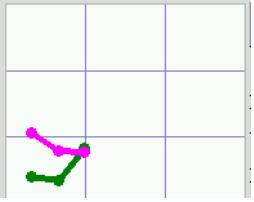
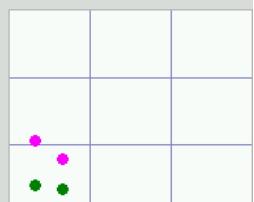
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No.	Property	Function description
(2)	Continuous Address	<ul style="list-style-type: none"> <li>If the <b>Continuous Address</b> check box is selected, when you set the address of X, the addresses of Y, Color, and Connection are set as the subsequent addresses of X. For example, if the X address is \$1000, then the addresses of Y, Color, and Connection are \$1001 - \$1003. If you need to change the Read Addresses of X and Y, you can only change the setting of the X address. Also, you are unable to change the Read Addresses of the Color and Connection; you can only set them as constants.</li> <li>If the <b>Continuous Address</b> check box is not selected, the addresses of X, Y, Color, and Connection can be discontinuous, and you can define each Read Address as needed. Also, you can set the Color and Connection as Read Addresses or constants.</li> </ul>
(3)	X	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address for the X coordinate.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
(4)	Y	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address for the Y coordinate.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
(5)	Color	<ul style="list-style-type: none"> <li>You can select the internal memory, controller register address, or constant for the Color coordinate.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> <li>To set the color with constants, you can press <b>Color</b> and directly select the color for the sampling point.</li> </ul>  <p>■ You can also enter the value ranging from 0 to 65535 to the Address/Value field.</p> 

No.	Property	Function description														
(6)	Connection	<ul style="list-style-type: none"> <li>You can select the internal memory, controller register address, or constant for the Connection.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> <li>The setting of Connection is to determine if the sampling point connects with the previous sampling point to form a line. Set the Connection as the constant 1 to connect and set as 0 for no connection.</li> </ul>														
(7)	X Min. / X Max. / Y Min. / Y Max.	<p>The allowable ranges for the X / Y Min. and X / Y Max. values are subject to change based on the selected Data Type and Data Format.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF
Data Type	Data Format	Allowable range														
Word	BCD	0 to 9999														
	Signed BCD	-999 to +9999														
	Signed Decimal	-32768 to +32767														
	Unsigned Decimal	0 to 65535														
	Hex	0 to 0xFFFF														
(8)	Border Color	<p>Set the Border Color of the X-Y Distribution element.</p> 														
(9)	Gridline Color	<ul style="list-style-type: none"> <li>The Gridline Color is the color of the grid line in the X-Y Distribution. The default is .</li> <li>You can change the color of the grid line.</li> </ul> 														

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No.	Property	Function description																
(10)	Horiz. Line Number / Vert. Line Number	<ul style="list-style-type: none"> <li>Both Horiz. Line Number and Vert. Line Number support a maximum of 99 lines.</li> <li>Horiz. Line Number refers to the number of lines which are parallel to the X-axis and Vert. Line Number refers to the number of lines which are parallel to the Y-axis. The default is 1 for both settings.</li> </ul> <p>X-Y Distribution</p>																
(11)	Style	You can change the appearance of the element with this setting. There are three types of element styles: 																
(12)	Background Color	Set the background color of the element. 																
(13)	Sample Number	<ul style="list-style-type: none"> <li>The X-Y Distribution element supports up to 4 sets of samples.</li> </ul> <table border="1"> <tr> <td>Sample Number:</td> <td>1</td> </tr> <tr> <td>Line Weight:</td> <td>1 2 3 4</td> </tr> </table> <ul style="list-style-type: none"> <li>To use 4 sets of samples, you only need to set the X and Y Read Addresses of Sample 0, Sample 1, Sample 2, and Sample 3 for sampling.</li> </ul> <table border="1"> <tr> <td>Address</td> </tr> <tr> <td><input checked="" type="checkbox"/> Continuous Address</td> </tr> <tr> <td>Sample 0    Sample 1    Sample 2    Sample 3</td> </tr> <tr> <td>Name    Address</td> </tr> <tr> <td>X    None</td> </tr> <tr> <td>Y    None</td> </tr> <tr> <td>Color    None</td> </tr> <tr> <td>Connection    None</td> </tr> <tr> <td>X Min.    0</td> </tr> <tr> <td>X Max.    100</td> </tr> <tr> <td>Y Min.    0</td> </tr> <tr> <td>Y Max.    100</td> </tr> </table>	Sample Number:	1	Line Weight:	1 2 3 4	Address	<input checked="" type="checkbox"/> Continuous Address	Sample 0    Sample 1    Sample 2    Sample 3	Name    Address	X    None	Y    None	Color    None	Connection    None	X Min.    0	X Max.    100	Y Min.    0	Y Max.    100
Sample Number:	1																	
Line Weight:	1 2 3 4																	
Address																		
<input checked="" type="checkbox"/> Continuous Address																		
Sample 0    Sample 1    Sample 2    Sample 3																		
Name    Address																		
X    None																		
Y    None																		
Color    None																		
Connection    None																		
X Min.    0																		
X Max.    100																		
Y Min.    0																		
Y Max.    100																		

No.	Property	Function description		
(14)	Line Weight	Connection = 1		
		Connection = 0		
(15)	Dot Size	The Dot Size setting ranges from 1 to 8. When it is set to 5, the dot size is as follows.		
(16)	Executed in background (if not the current screen)	<p>If you select the check box of this function, it means that X-Y Distribution can also execute sampling when you are on other screens. For example, assuming that Screen 1 has a set X-Y Distribution and Screen 2 does not, if the sampling is executing on Screen 2, but you switch the screen back to Screen 1, X-Y Distribution continues to finish the sampling.</p> <p>Note: if you did not select the <b>Auto clear</b> check box, be sure to set the sampling flag to off after the sampling on other screens is complete.</p>		

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## ■ Main-2

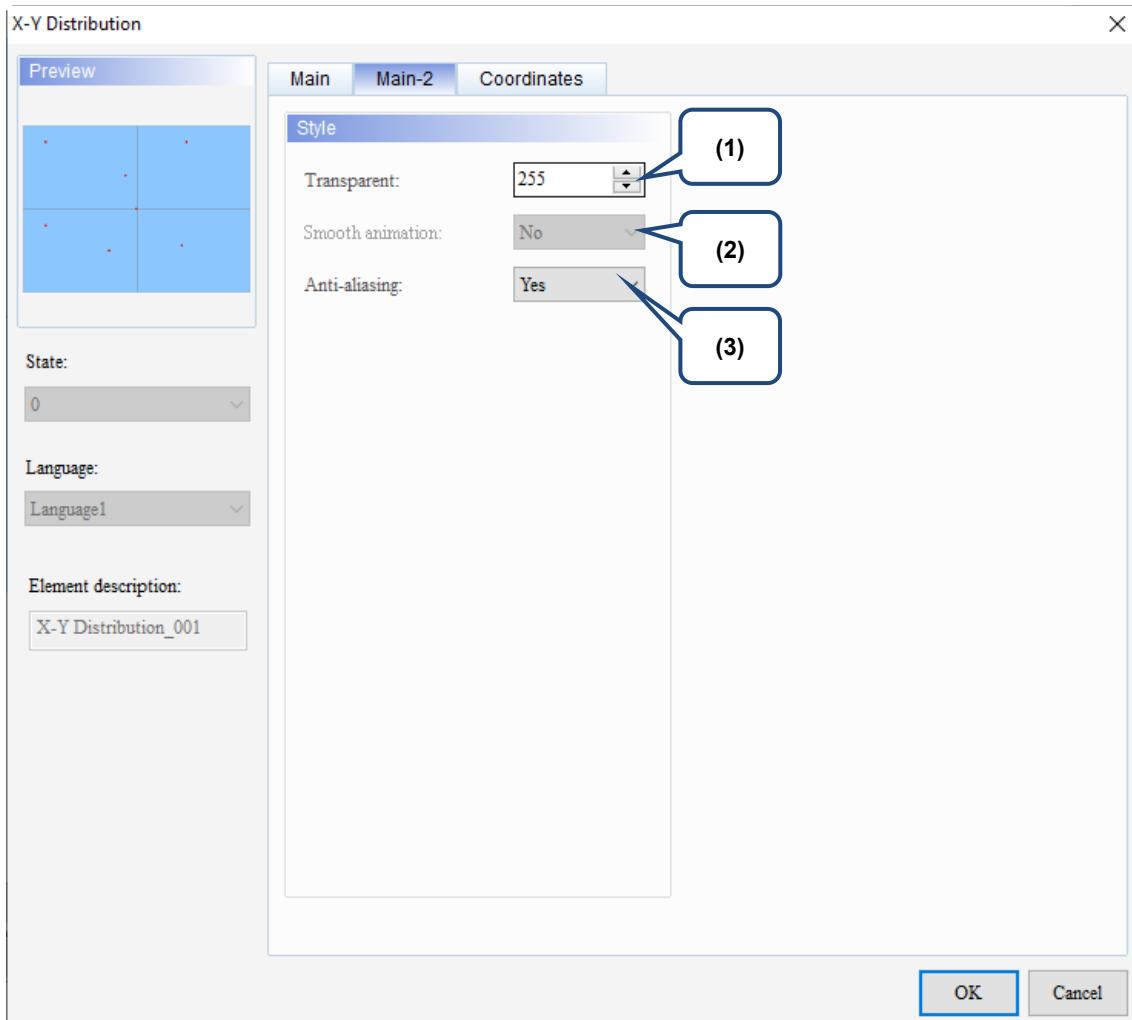


Figure 14.3.3 Main-2 property page for the X-Y Distribution element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When this function is enabled, the element display becomes more delicate without jagged edges.

## ■ Coordinates

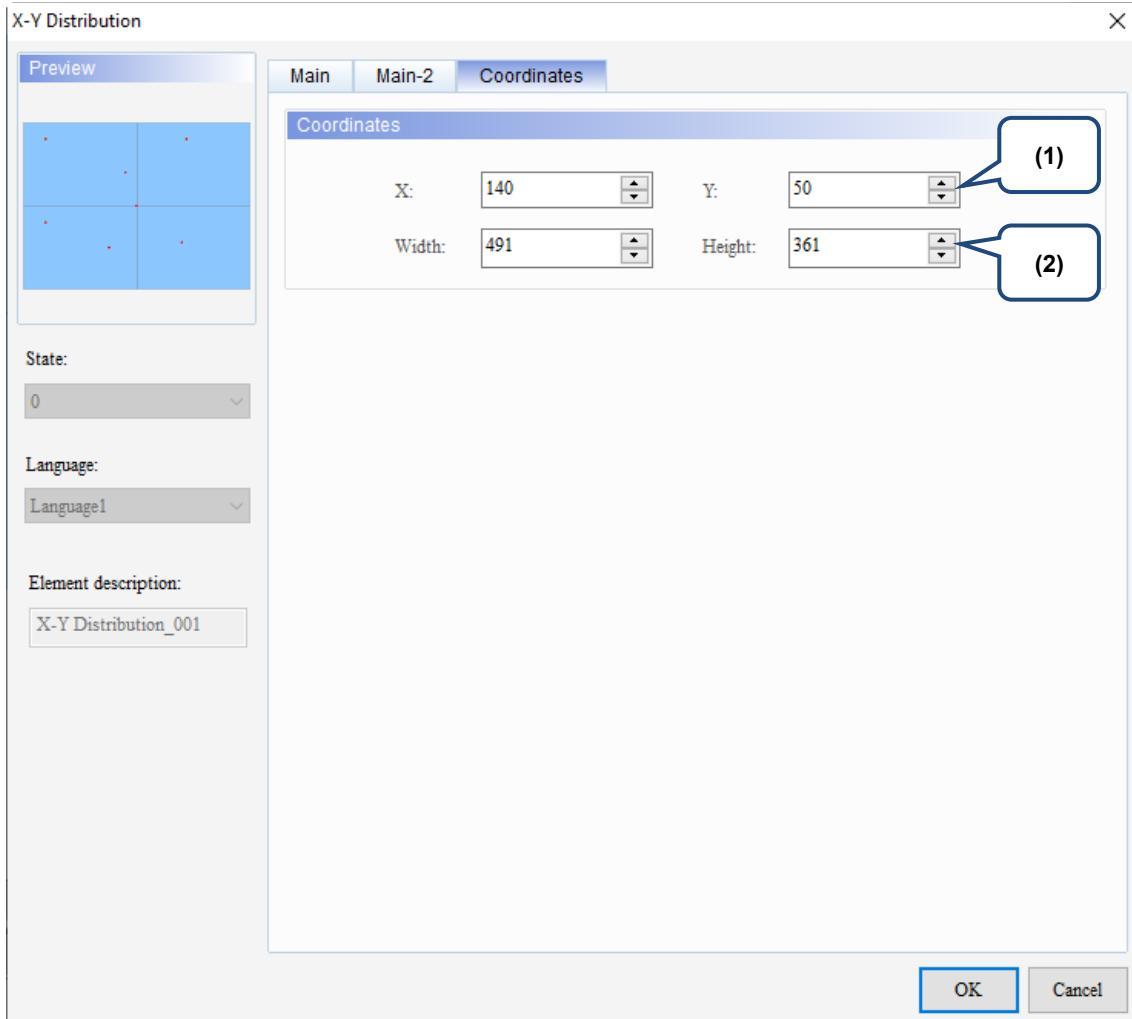


Figure 14.3.4 Coordinates property page for the X-Y Distribution element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

# 14

## 14.4 Curve Input

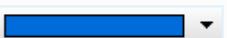
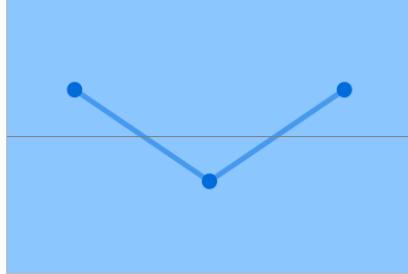
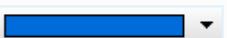
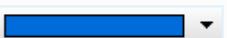
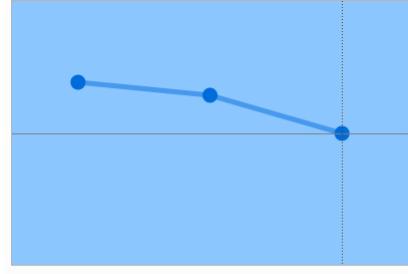
Curve Input draws curves according to the continuous sampling by the set Address.

You can also press the Curve Input element to move the curve to the required position.

Curve Input provides two Curve Style options with different effects: Broken line and Block graphs.

Refer to Table 14.4.1 for the Curve Input example.

Table 14.4.1 Curve Input example

Curve Input													
Create a Curve Input element and set its parameters.													
Curve Input element	<table border="1"> <thead> <tr> <th colspan="2">Curve Input element</th> </tr> </thead> <tbody> <tr> <td>Address</td><td>\$1058</td></tr> <tr> <td>Sample Number</td><td>3</td></tr> <tr> <td>Curve Style</td><td>Broken line</td></tr> <tr> <td>Minimum / Maximum Line Weight / Line Color</td><td> <div style="border: 1px solid #ccc; padding: 5px;"> <b>Curve</b>            Minimum: <input type="text" value="0"/>            Maximum: <input type="text" value="1000"/>            Line Weight: <input type="text" value="5"/>            Line Color:  </div> </td></tr> </tbody> </table> 	Curve Input element		Address	\$1058	Sample Number	3	Curve Style	Broken line	Minimum / Maximum Line Weight / Line Color	<div style="border: 1px solid #ccc; padding: 5px;"> <b>Curve</b>            Minimum: <input type="text" value="0"/>            Maximum: <input type="text" value="1000"/>            Line Weight: <input type="text" value="5"/>            Line Color:  </div>		
Curve Input element													
Address	\$1058												
Sample Number	3												
Curve Style	Broken line												
Minimum / Maximum Line Weight / Line Color	<div style="border: 1px solid #ccc; padding: 5px;"> <b>Curve</b>            Minimum: <input type="text" value="0"/>            Maximum: <input type="text" value="1000"/>            Line Weight: <input type="text" value="5"/>            Line Color:  </div>												
Numeric Entry element	Create 3 Numeric Entry elements. As the Sample Number of the Curve Input is set to 3, 3 sampling points are used to draw a curve. Then, the set Address \$1058 of the Curve Input starts reading 3 addresses in sequence, which are \$1058, \$1059, and \$1060.												
Execution results	<table border="1"> <thead> <tr> <th colspan="4">Numeric Entry element</th> </tr> <tr> <th>Write Address</th><th>\$1058</th><th>\$1059</th><th>\$1060</th></tr> </thead> <tbody> <tr> <td>After creating the elements, compile and download the elements to the HMI. Next, enter any values to the Numeric Entry elements, and then the Curve Input draws the curve according to the input values. You can also press the Curve Input element to move the curve to the required position.</td><td>695</td><td>646</td><td>501</td></tr> </tbody> </table> 	Numeric Entry element				Write Address	\$1058	\$1059	\$1060	After creating the elements, compile and download the elements to the HMI. Next, enter any values to the Numeric Entry elements, and then the Curve Input draws the curve according to the input values. You can also press the Curve Input element to move the curve to the required position.	695	646	501
Numeric Entry element													
Write Address	\$1058	\$1059	\$1060										
After creating the elements, compile and download the elements to the HMI. Next, enter any values to the Numeric Entry elements, and then the Curve Input draws the curve according to the input values. You can also press the Curve Input element to move the curve to the required position.	695	646	501										

When you double-click the Curve Input, the property page is shown as follows.

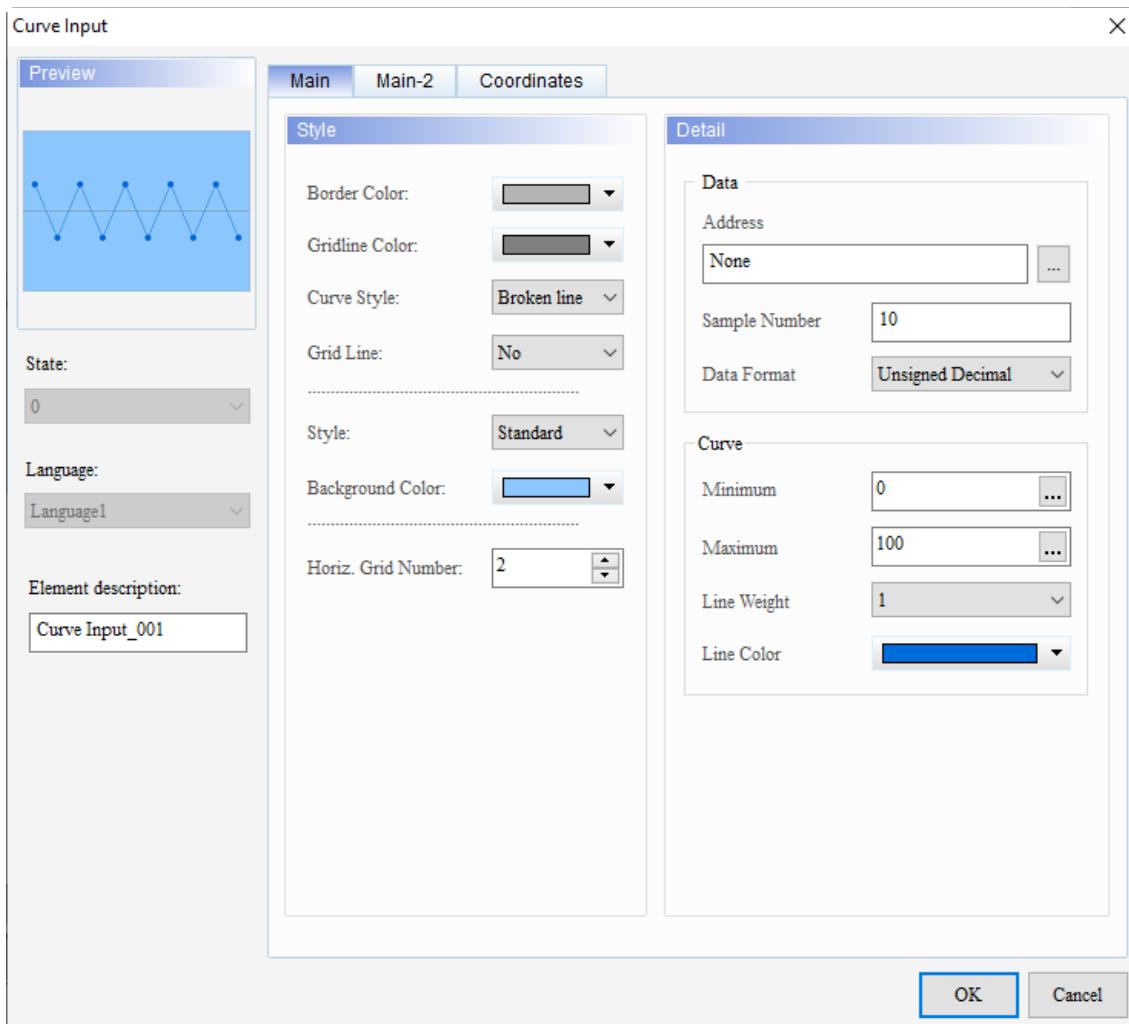


Figure 14.4.1 Properties of Curve Input

Table 14.4.2 Function page of Curve Input

Curve Input	
Function page	Description
Preview	Curve Input elements do not support multiple state values and multi-language data display.
Main	Set the Address, Sample Number, Data Format, Minimum, Maximum, Line Weight, and Line Color. Set the Border Color, Gridline Color, Curve Style, Grid Line, Style, Background Color, and Horiz. Grid Number.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

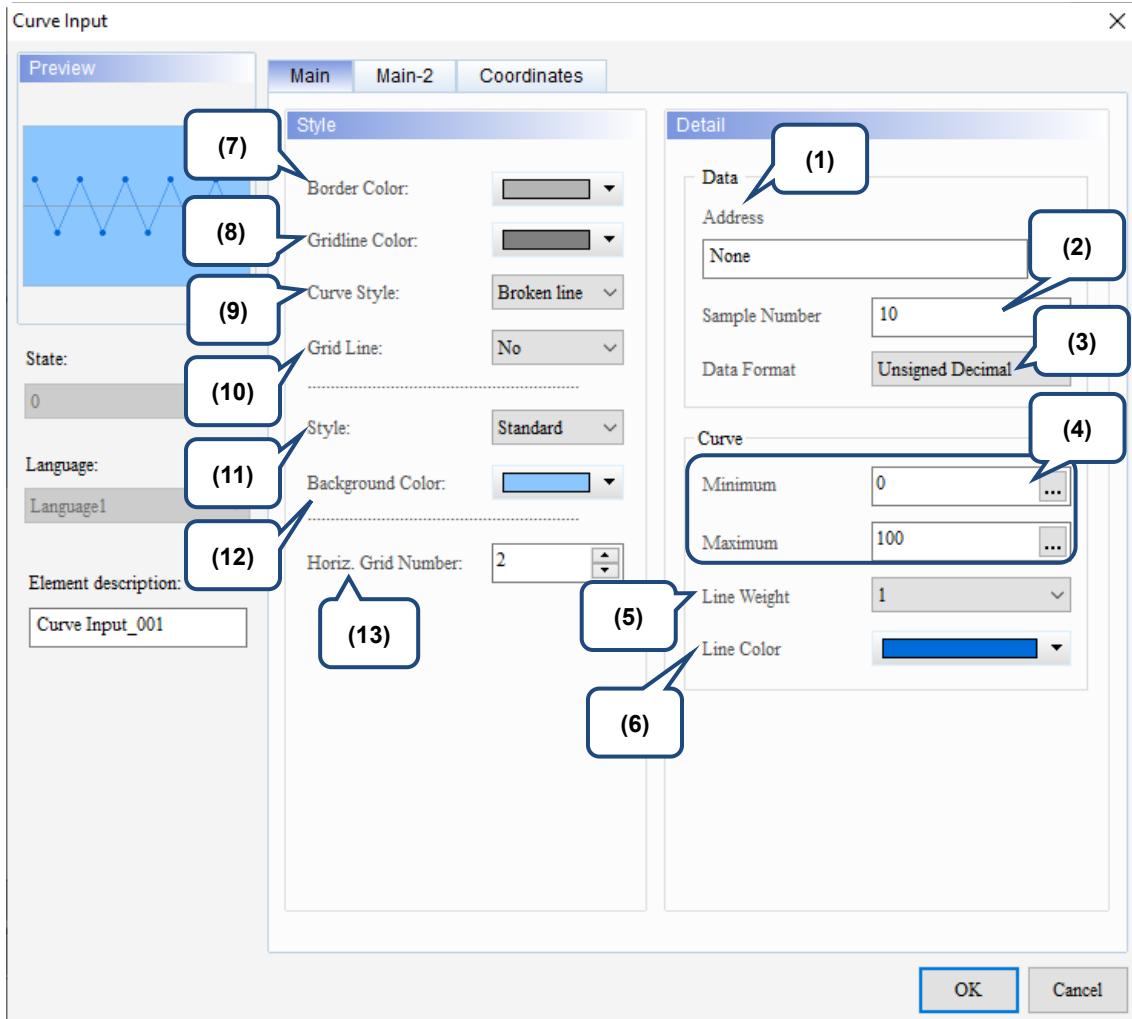
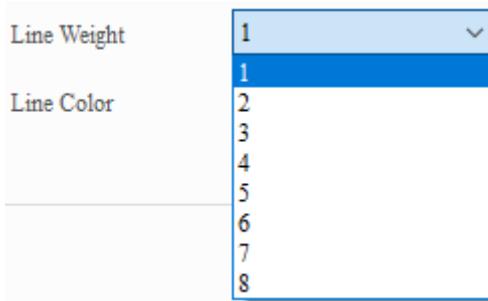
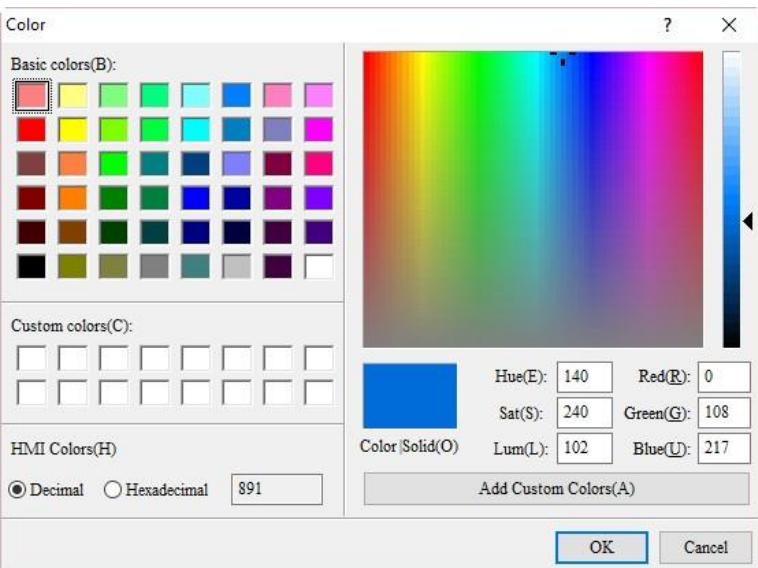
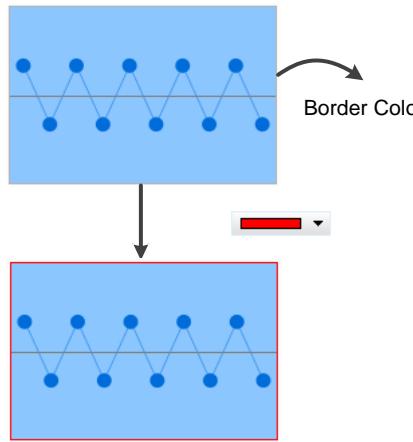
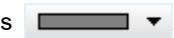
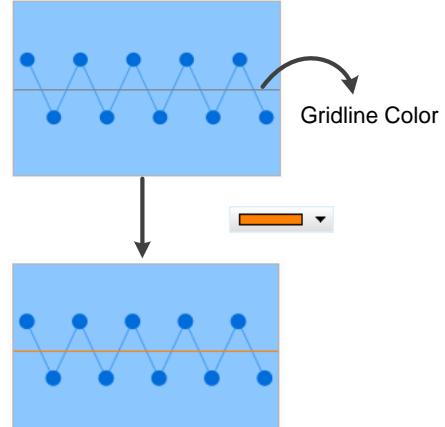
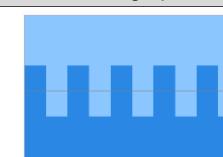
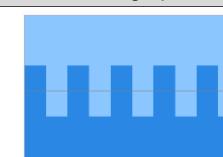
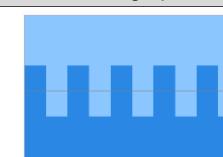
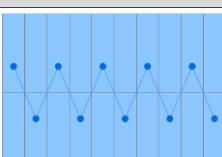
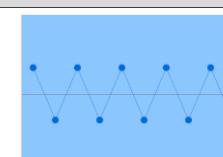
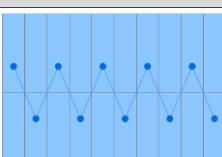
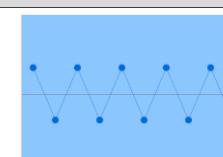
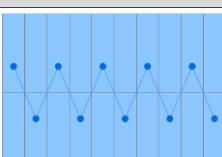
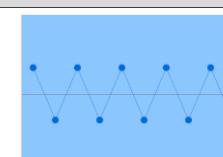
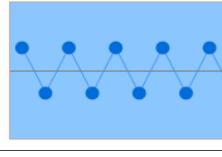
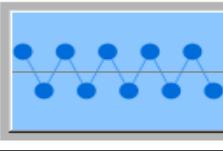
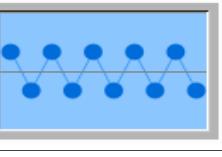
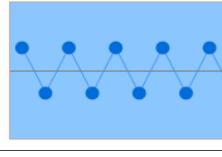
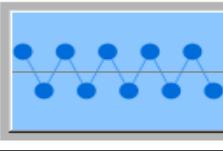
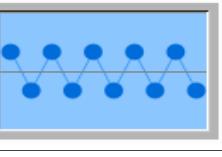
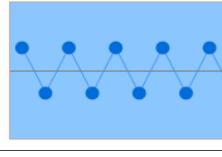
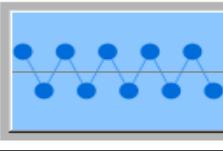
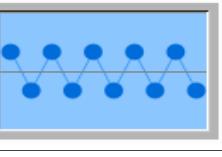
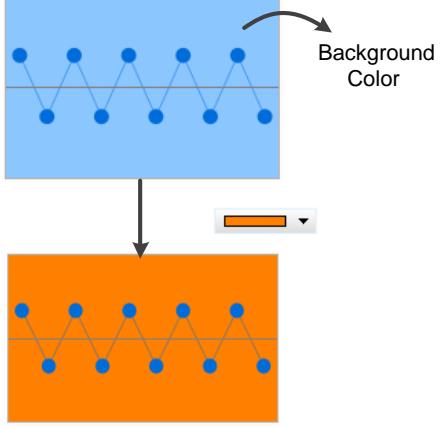


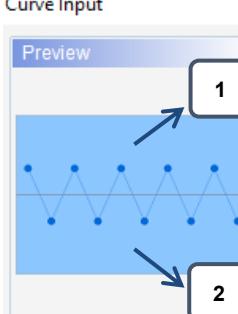
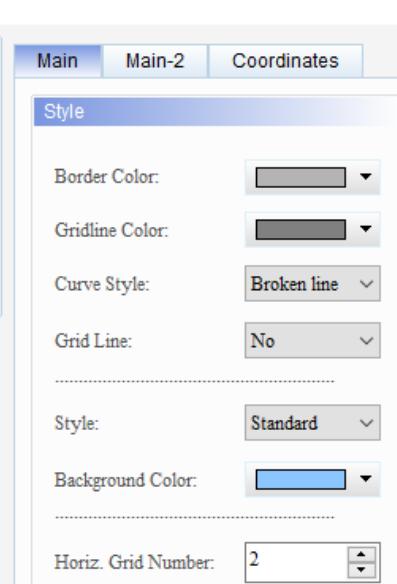
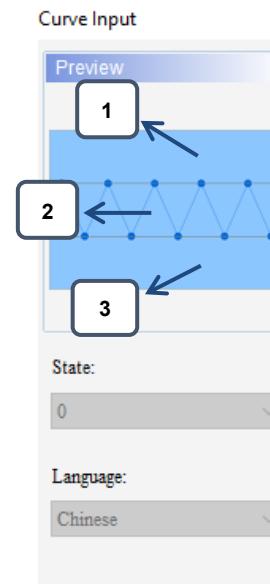
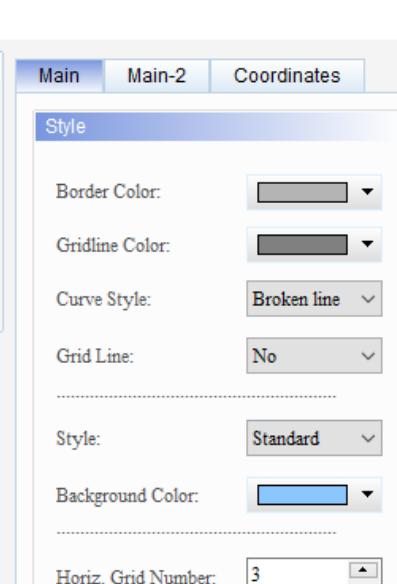
Figure 14.4.2 Main property page for the Curve Input element

No.	Property	Function description												
(1)	Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>												
(2)	Sample Number	<ul style="list-style-type: none"> <li>The set value of sampling points must be a constant.</li> <li>The number of sampling points is determined by the element width and style. When you set the Style of the Curve Input element as Standard and its width as 167, then the maximum number of points that can be displayed is 167. But if you set the Style of the Curve Input element as Raised or Sunken (border width is 7 points) and its width as 167, then the maximum number of points that can be displayed is 153 (<math>167 - (7 \times 2) = 153</math>).</li> </ul>												
(3)	Data Format	<p>Curve Input supports the following data formats:</p> <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-right: 20px;">Data Format</td> <td style="border-bottom: 1px solid #ccc;">Unsigned Decimal</td> </tr> <tr> <td>Curve</td> <td>BCD</td> </tr> <tr> <td></td> <td>Signed BCD</td> </tr> <tr> <td></td> <td>Signed Decimal</td> </tr> <tr> <td></td> <td>Unsigned Decimal</td> </tr> <tr> <td></td> <td>Hexadecimal</td> </tr> </table> </div>	Data Format	Unsigned Decimal	Curve	BCD		Signed BCD		Signed Decimal		Unsigned Decimal		Hexadecimal
Data Format	Unsigned Decimal													
Curve	BCD													
	Signed BCD													
	Signed Decimal													
	Unsigned Decimal													
	Hexadecimal													

No.	Property	Function description														
(4)	Minimum / Maximum	<ul style="list-style-type: none"> <li>You can set the minimum and maximum values as constants or variables.</li> <li>When the minimum and maximum values are variables, the controller address (Word) and the internal register address (Word) are supported.</li> <li>When the minimum and maximum values are constants, the allowable ranges for the minimum and maximum values are subject to change based on the selected Data Type and Data Format.</li> </ul> <table border="1"> <thead> <tr> <th>Data Type</th><th>Data Format</th><th>Allowable range</th></tr> </thead> <tbody> <tr> <td rowspan="5">Word</td><td>BCD</td><td>0 to 9999</td></tr> <tr> <td>Signed BCD</td><td>-999 to +9999</td></tr> <tr> <td>Signed Decimal</td><td>-32768 to +32767</td></tr> <tr> <td>Unsigned Decimal</td><td>0 to 65535</td></tr> <tr> <td>Hex</td><td>0 to 0xFFFF</td></tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF
Data Type	Data Format	Allowable range														
Word	BCD	0 to 9999														
	Signed BCD	-999 to +9999														
	Signed Decimal	-32768 to +32767														
	Unsigned Decimal	0 to 65535														
	Hex	0 to 0xFFFF														
(5)	Line Weight	The line width setting ranges from 1 to 8. 														
(6)	Line Color	You can set the line color for the curve. 														
(7)	Border Color	Set the Border Color of the Curve Input element. 														

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No.	Property	Function description						
(8)	Gridline Color	<ul style="list-style-type: none"> <li>The Gridline Color is the color of the grid line in the Curve Input. The default is .</li> <li>You can change the color of the grid line.</li> </ul> 						
(9)	Curve Style	<p>There are two Curve Style options: Broken line and Block graphs.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Broken line</td> <td style="text-align: center;">Block graphs</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Broken line	Block graphs				
Broken line	Block graphs							
								
(10)	Grid Line	<p>You can select Yes or No for Grid Line.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Yes	No				
Yes	No							
								
(11)	Style	<p>You can change the appearance of the element with this setting. There are three types of element styles:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Standard</td> <td style="text-align: center;">Raised</td> <td style="text-align: center;">Sunken</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	Standard	Raised	Sunken			
Standard	Raised	Sunken						
								
(12)	Background Color	<p>Set the background color of the element.</p> 						

No.	Property	Function description
(13)	Horiz. Grid Number	<p>■ The maximum horizontal grid count is 50.</p> <p>■ Horiz. Grid Number sets the number of zones the Curve Input element is divided into. The default is 2, meaning there is one grid line dividing the Curve Input element into two zones. If the Horiz. Grid Number is set to 3, there are two grid lines dividing the Curve Input element into 3 zones, and so on.</p>    

## ■ Main-2

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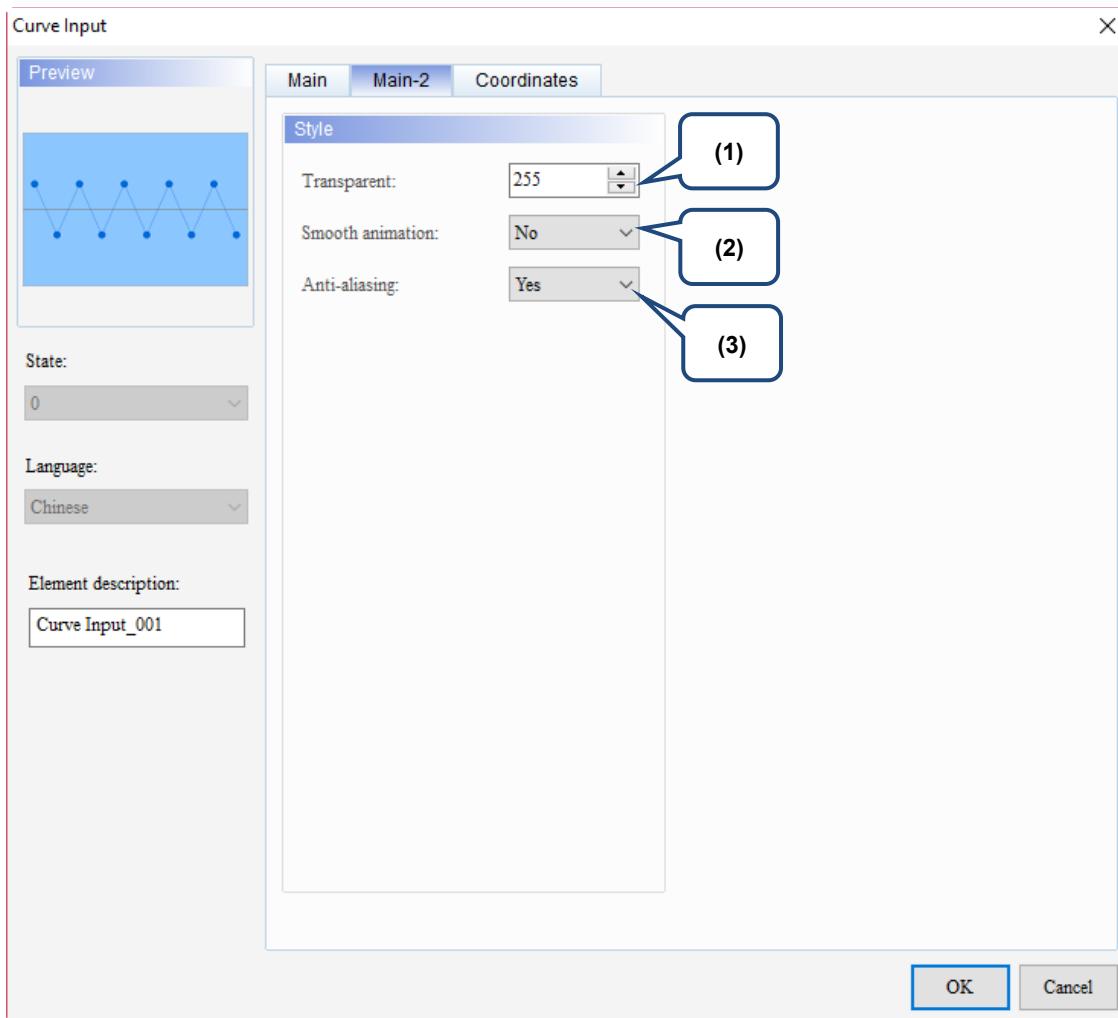


Figure 14.4.3 Main-2 property page for the Curve Input element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When this function is enabled, the curve motion is smoother.
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When this function is enabled, the element display becomes more delicate without jagged edges.

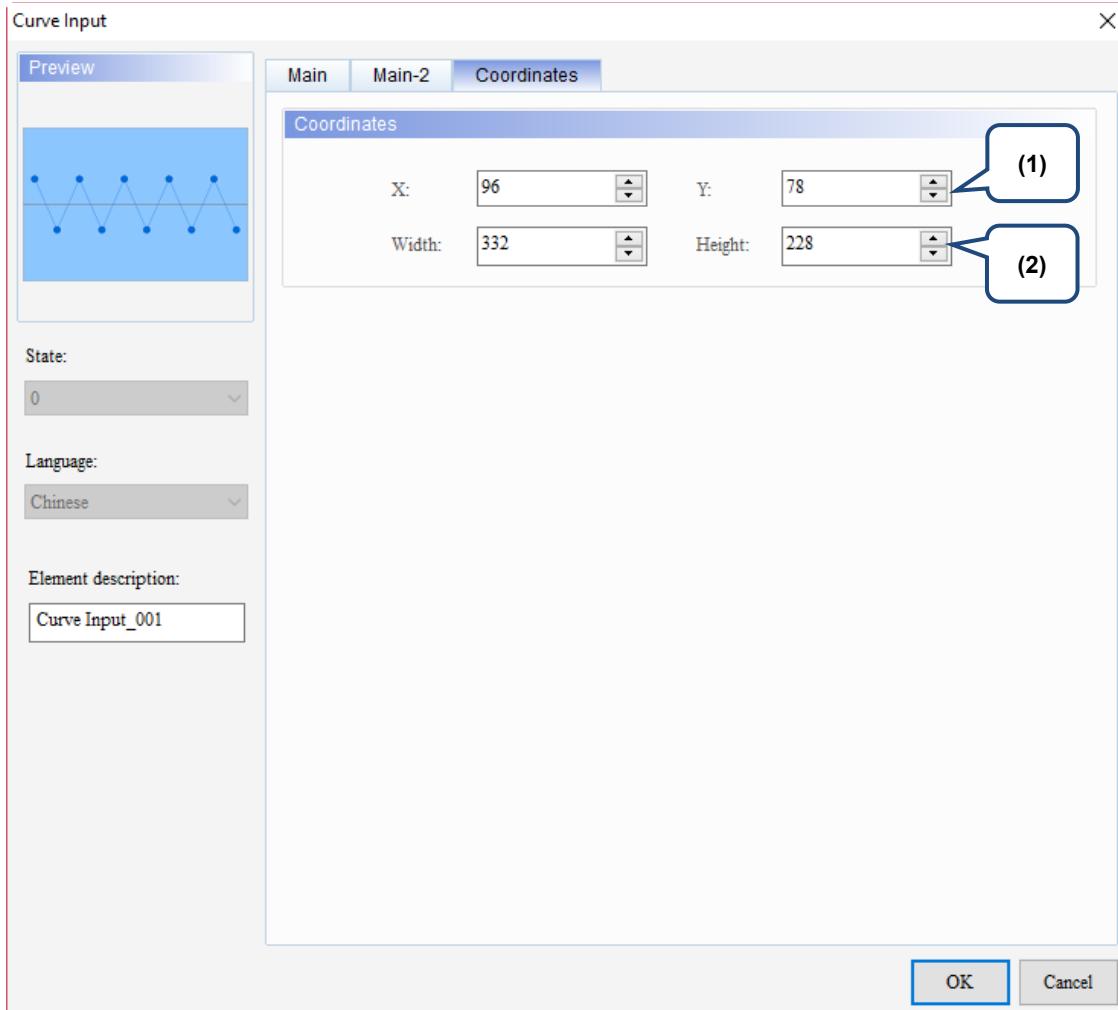
**■ Coordinates**

Figure 14.4.4 Coordinates property page for the Curve Input element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

(This page is intentionally left blank.)

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# 15

## Sampling

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This chapter introduces the sampling function of the history data and provides the usage and setting details.

15.1	History Buffer .....	15-2
15.2	Historical Trend Graph .....	15-37
15.3	Historical Data Table .....	15-60
15.4	Historical Event Table.....	15-79
15.5	Historical Overview Table.....	15-94
15.6	Operation Log Table .....	15-118

## 15.1 History Buffer

Before introducing the elements relevant to the sampling function, this section first explains how to use the functions in the History Buffer Setup. The History Buffer Setup is mainly used to define the relevant properties required for setting the sampling function elements, such as read address, data length, sampling points, trigger source, whether to record the time and date, and whether to store the data in an external device or export as a CSV file.

The formula provided by the software computes all the History Buffer relevant data you have edited. Then, the set non-volatile memory saves these computation results. If the data is saved in the HMI, the History Buffer size is subject to change based on the HMI model. Refer to the hardware specifications for non-volatile memory in the HMI Instruction Sheet. For the data saved in the USB Disk or SD Card, the History Buffer size is determined by the external storage devices.

When you download the history data to the HMI, two log files are generated: one DAT file and one CSV file.

### 1. Formulas to calculate the DAT file size

Each history data is stored as an Hxxxx.dat file. xxxx indicates the sequence number of the history data record. Each .dat file size is calculated by the following formula.

$$\frac{\{[6 \text{ Bytes}(a) + 2 \text{ Bytes}(b)] \times N(c)\}}{1024 \times 1024} = \text{Actual file size in MBytes}$$

a: time / date data

b: data type

c: sample number

The size of file header is calculated additionally.

$$\{[8 \text{ Bytes}(a)] \times N(b)\} = \text{Actual file size in Bytes}$$

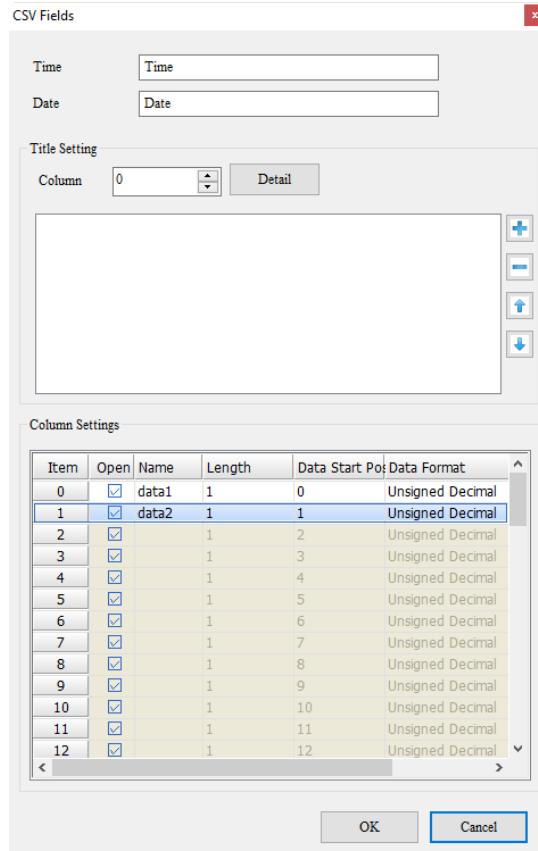
a: file header of each history data

b: sample number

### 2. Formulas to calculate the CSV file size

The CSV file calculation method is by dynamic configuration, which is calculated based on each character counted as 2 bytes. Each item must be separated by a comma (,) and the comma is also 2 bytes. At the end of each row, a total of 4 bytes for the newline command, 0x0D and 0x0A, is also included. The following describes how the CSV file size is calculated.

■ Title



Here are two examples on how to calculate the data size of the title:

1. Each character is counted as 2 bytes (characters\*2 bytes)

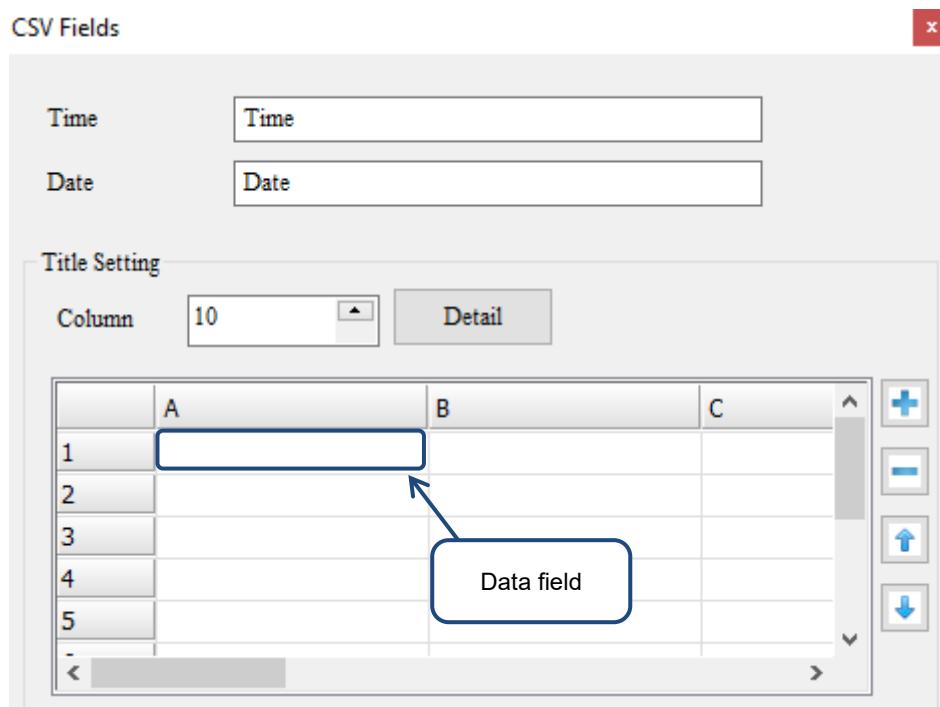
File header	Time column setting	Separator	Date column setting	Separator	Data column setting	Newline command
	Time	,	Date	,	Data1	
2 bytes	8 bytes	2 bytes	8 bytes	2 bytes	10 bytes	4 bytes
36 bytes in total						

2. Each character is counted as 2 bytes (characters\*2 bytes)

File header	Time column setting	Separator	Date column setting	Separator	Data column setting	Data column setting	Newline command
	Time	,	Date	,	Data1	Data2	
2 bytes	8 bytes	2 bytes	8 bytes	2 bytes	10 bytes	10 bytes	4 bytes
46 bytes in total							

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- Field column



CSV field supports up to 10 columns and 10 rows.

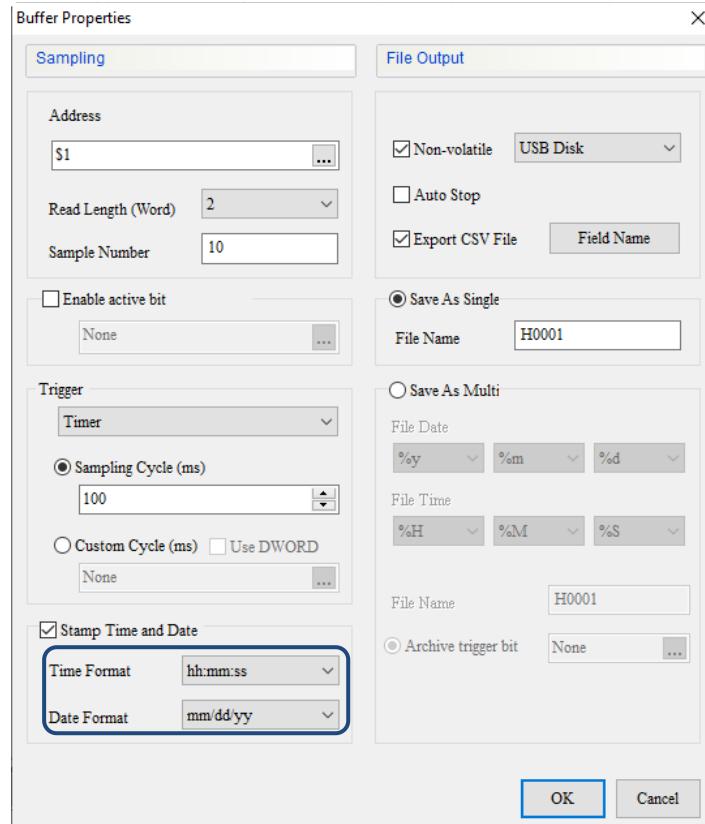
Each data field supports up to 128 bytes and each character counts as 2 bytes.

Each character is counted as 2 bytes (characters\*2 bytes). Column\*row = 2\*2.

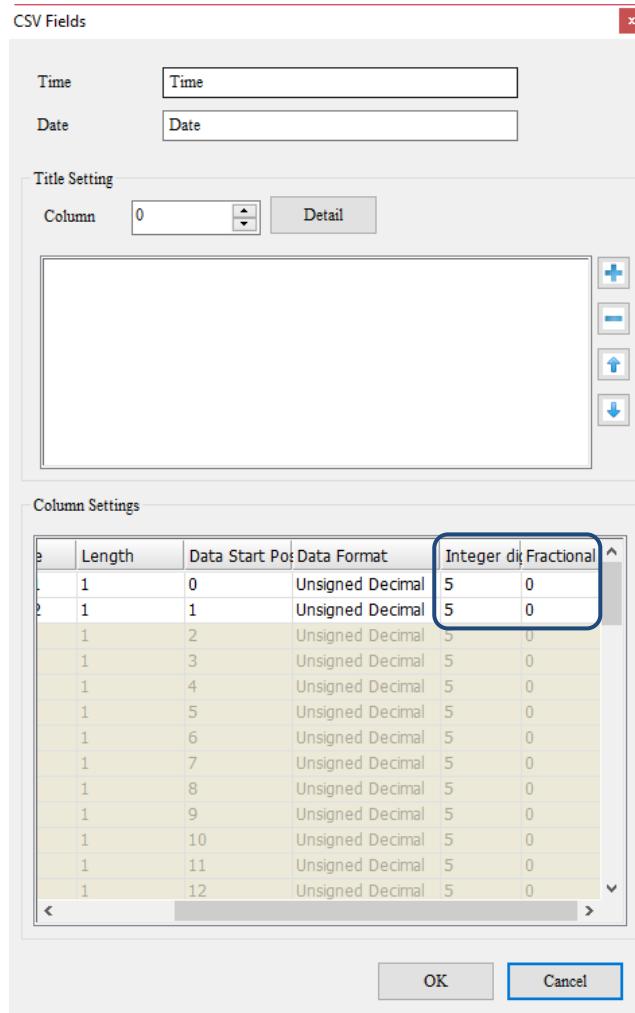
A1 setting	Separator	B1 setting	Separator	A2 setting	Separator	B2 setting	Newline command
<b>123</b>	.	<b>Delta</b>	.	<b>abc</b>	.	<b>QWE</b>	
6 bytes	2 bytes	10 bytes	2 bytes	6 bytes	2 bytes	6 bytes	4 bytes

38 bytes in total

## ■ Data row



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Here are three examples of how to calculate the data size of the data row:

1. Each character is counted as 2 bytes (characters\*2 bytes)

Time Format setting	Separator	Date Format setting	Separator	Integer digits setting	Fractional digits setting	Newline command
hh:mm:ss	.	mm/dd/yy	.	5	0	
16 bytes	2 bytes	16 bytes	2 bytes	10 bytes	0 bytes	4 bytes
50 bytes in total						

2. Each character is counted as 2 bytes (characters\*2 bytes)

Time Format setting	Separator	Date Format setting	Separator	Integer digits setting	Fractional digits setting	Newline command
hh:mm	.	mm.dd	.	4	1	
10 bytes	2 bytes	10 bytes	2 bytes	8 bytes	2 bytes	4 bytes
38 bytes in total						

3. Each character is counted as 2 bytes (characters\*2 bytes)

Time Format setting	Separator	Date Format setting	Separator	Data 1		Data 2		Newline command
				Integer digits setting	Fractional digits setting	Integer digits setting	Fractional digits setting	
N/A	.	N/A	.	4	1	3	2	
28 bytes in total								

The data size of each of the preceding data row must multiply by the Sample Number N(a).

Therefore, Title + Field column + Data row\*Sample Number N(a) is the CSV file size exported from the History Buffer.

The formula is as follows:

$$\frac{\text{Title data size Bytes} + \text{Field column size Bytes} + \text{Data row size Bytes} \times N(a)}{1024 \times 1024} = \text{Actual file size in MBytes}$$

a: Sample Number

This chapter introduces all element examples used by the sampling function, including History Buffer Setup, Historical Trend Graph, Historical Data Table, Historical Event Table, and Historical Overview Table.

Refer to Table 15.1.1 for the History Buffer Setup example.

Table 15.1.1 History Buffer Setup example

History Buffer Setup steps

Step 1: go to [Options] > [History Buffer Setup] to set up the properties of the history data.

The screenshot shows the DOPSoft software interface. The menu bar at the top has 'File', 'Edit', 'View', 'Element', 'Screen', 'Tools', 'Options', 'Window', and 'Help'. The 'Options' menu is currently selected and highlighted in blue. A sub-menu dropdown is open under 'Options' with the following items: 'Configuration', 'Communication Settings', 'Change Model', 'Alarm Settings', 'History Buffer Setup' (which is also highlighted in yellow), 'Tag Table ...', 'Print Setup ...', 'Audio Output Setting', 'HMI Identifier Settings', 'Modbus TCP mapping table', 'Data Exchange', 'FileSlot File Management', 'Device Table', 'Operation Log Settings', 'Recipe', 'Picture Bank', and 'Text Bank'. On the left side of the interface, there is a 'Project' tree view showing a project named 'NewHMI' with various sub-items like 'Screen', 'Communication', 'Data Exchange', 'Tag', etc. On the right side, there is a 'History Buffer' setup window with tabs for 'Screen\_1' and 'History Buffer'. The 'History Buffer' tab is active. At the bottom of this window, there is a toolbar with icons for file operations and a button labeled 'New Buffer' which is highlighted with a yellow box.

Step 2: press to add data to the History Buffer.

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### History Buffer Setup steps

**History Buffer Setup**

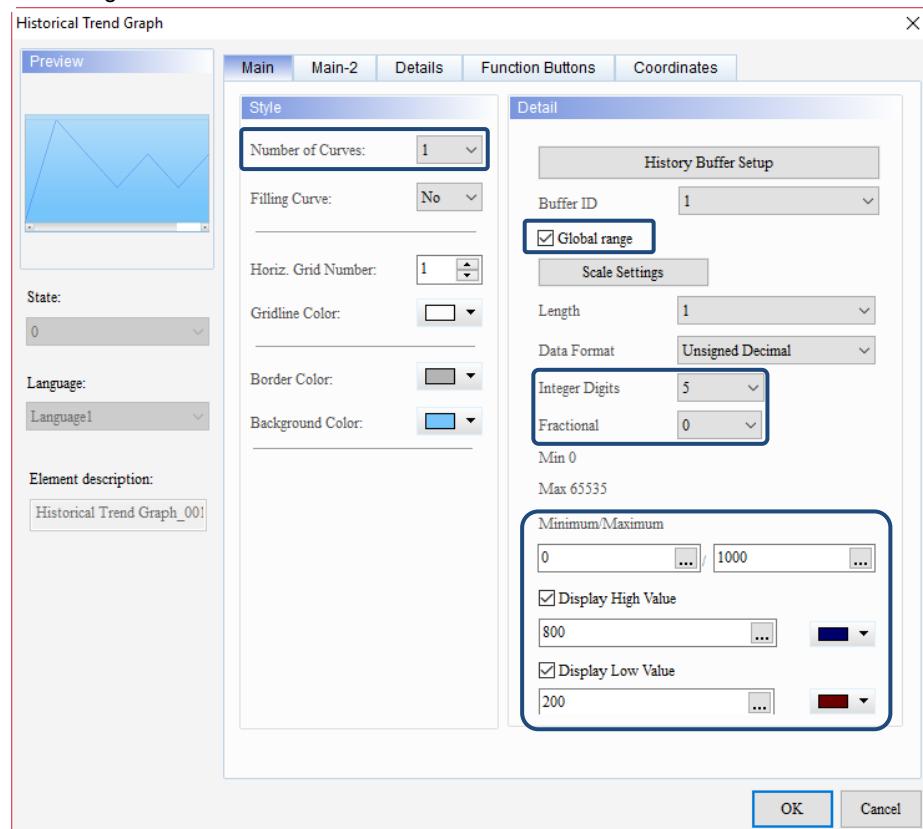
Step 3: set the buffer properties as follows.

Step 4: after completing the preceding settings, you can see a new row of data is created in the History Buffer.

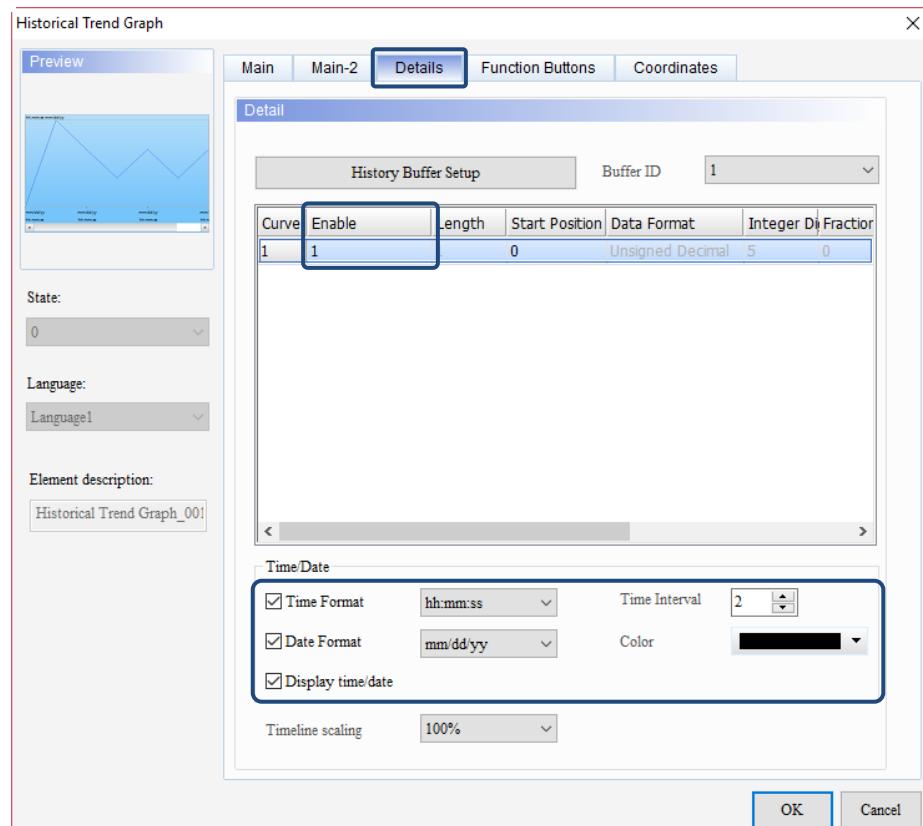
No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source	Stamp Time and Date
1	\$0	1	100	100	Timer	Yes

### History Buffer Setup

Step 5: create a Historical Trend Graph element and set the properties, such as the display for the time and date, displaying integer and fractional digits, and whether to select the **Global range** check box. Then, go to the Details page to set Curve 1 to 1 to enable the reading of this data.



History Buffer  
Setup steps



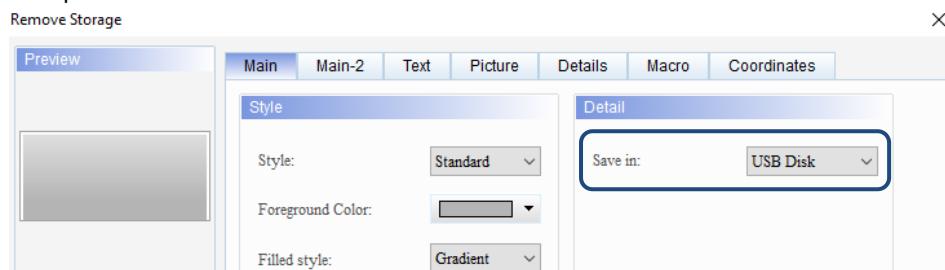
# 15

## History Buffer Setup steps

Step 6: go to [Options] > [Clock Macro] and edit the macro command to allow auto increment of \$0.

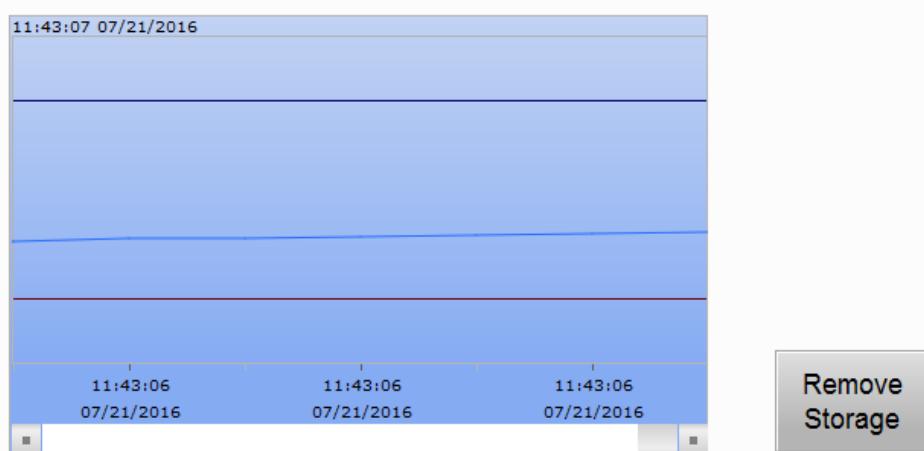
```
*[&Clock Macro]
1 $0 = $0 + 3
2 If $0 > 1000
3 $0 = 0
4 ENDIF
```

Step 7: create a Remove Storage button and select USB Disk for the Save in setting. This ensures that the data is correctly written to the USB Disk. If you do not safely eject the USB Disk before removing it, data read and write errors may occur, leading to the corruption of the saved file.

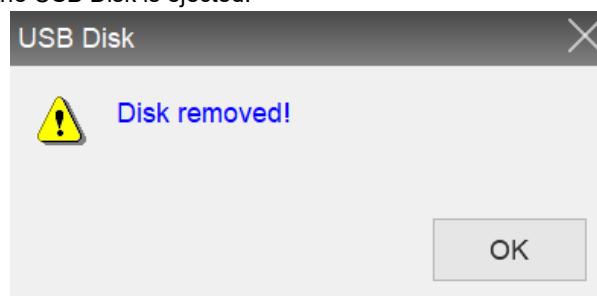


- After setting the History Buffer Setup and creating the Historical Trend Graph and Remove Storage elements, compile and download the elements to the HMI. The non-volatile memory setting in this example is the USB Disk, so when the HMI reads the screen, the data of H.had and Delta.dat are generated and stored in the USB Disk. Then, the History Buffer executes the command in the Clock Macro to change the data, and continues to store the data in the CSV file to the USB Disk. To stop saving the data, press the **Remove Storage** button to eject the external device for ensuring the data is saved correctly.

## Execution results



- Press the **Remove Storage** button and the following message appears to inform you that the USB Disk is ejected.



**History Buffer Setup**

You can insert the USB Disk to the PC to read the CSV file and make sure that the data and file name are correct. The file name in this example is Delta, and the path to save all CSV files is HMI\HMI-000\CSV\History\xxxx.CSV.

Execution results

	A	B	C
1	TIME	DATE	Data0
2	11:40:57	07/21/2016	867
3	11:40:57	07/21/2016	870
4	11:40:58	07/21/2016	873
5	11:40:58	07/21/2016	876
6	11:40:58	07/21/2016	879
7	11:40:58	07/21/2016	882
8	11:40:58	07/21/2016	885
9	11:40:58	07/21/2016	888
10	11:40:58	07/21/2016	891
11	11:40:58	07/21/2016	894
12	11:40:58	07/21/2016	897
13	11:40:58	07/21/2016	900
14	11:40:59	07/21/2016	903
15	11:40:59	07/21/2016	906
16	11:40:59	07/21/2016	909
17	11:40:59	07/21/2016	915
18	11:40:59	07/21/2016	918
19	11:40:59	07/21/2016	921
20	11:40:59	07/21/2016	924
21	11:40:59	07/21/2016	927
22	11:40:59	07/21/2016	930
23	11:40:59	07/21/2016	933
24	11:41:00	07/21/2016	936
25	11:41:00	07/21/2016	939
26	11:41:00	07/21/2016	942
27	11:41:00	07/21/2016	945
28	11:41:00	07/21/2016	948
29	11:41:00	07/21/2016	951
30	11:41:00	07/21/2016	954
31	11:41:00	07/21/2016	957
32	11:41:00	07/21/2016	960

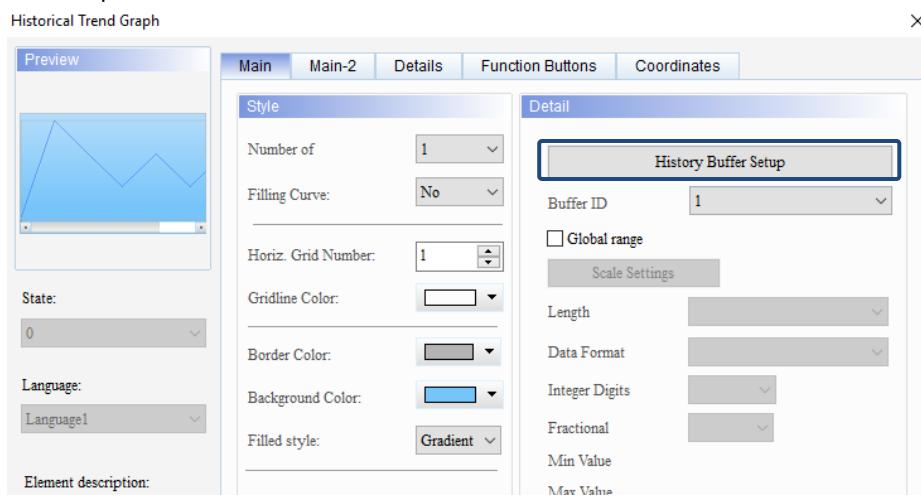
Refer to Table 15.1.2 for the Historical Trend Graph example.

Table 15.1.2 Historical Trend Graph example

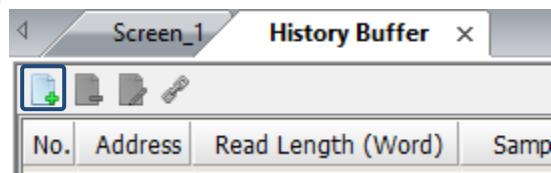
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Create  
Historical  
Trend Graph  
element

Step 1: double-click the Historical Trend Graph element and press **History Buffer Setup** to set the parameters.



Step 2: press to add new history data.



**Historical Trend Graph**

Step 3: set the Address to \$3675, Read Length (Word) to 2, Sample Number to 100, and select the **Stamp Time and Date** check box. Use the default File Name H0001, select USB Disk for the Non-volatile memory, select the **Export CSV File** check box, set the Name fields, and select Timer for Trigger.

Create Historical Trend Graph element

The screenshot shows the 'Buffer Properties' dialog with the 'Sampling' tab selected. Key settings include:

- Address:** \$3675
- Read Length (Word):** 2
- Sample Number:** 100
- Trigger:** Timer
- Stamp Time and Date:** Checked
- File Output:** Non-volatile (USB Disk), Export CSV File checked, File Name H0001

A callout points to the 'Field Name' button in the 'File Output' section, which opens a 'CSV Fields' dialog. This dialog shows 'Time' mapped to 'TIME' and 'Date' mapped to 'DATE'. A message box in this dialog states: "You can set the name for the CSV column header."

Below the 'File Output' section is a 'Title Setting' section with 'Column' set to 0. At the bottom is a 'Column Settings' table:

Item	Open	Name	Length	Data Start Po	Data Format
0	<input checked="" type="checkbox"/>	data0	1	0	Unsigned Decimal
1	<input checked="" type="checkbox"/>	data1	1	1	Unsigned Decimal
2	<input checked="" type="checkbox"/>		1	2	Unsigned Decimal
3	<input checked="" type="checkbox"/>		1	3	Unsigned Decimal

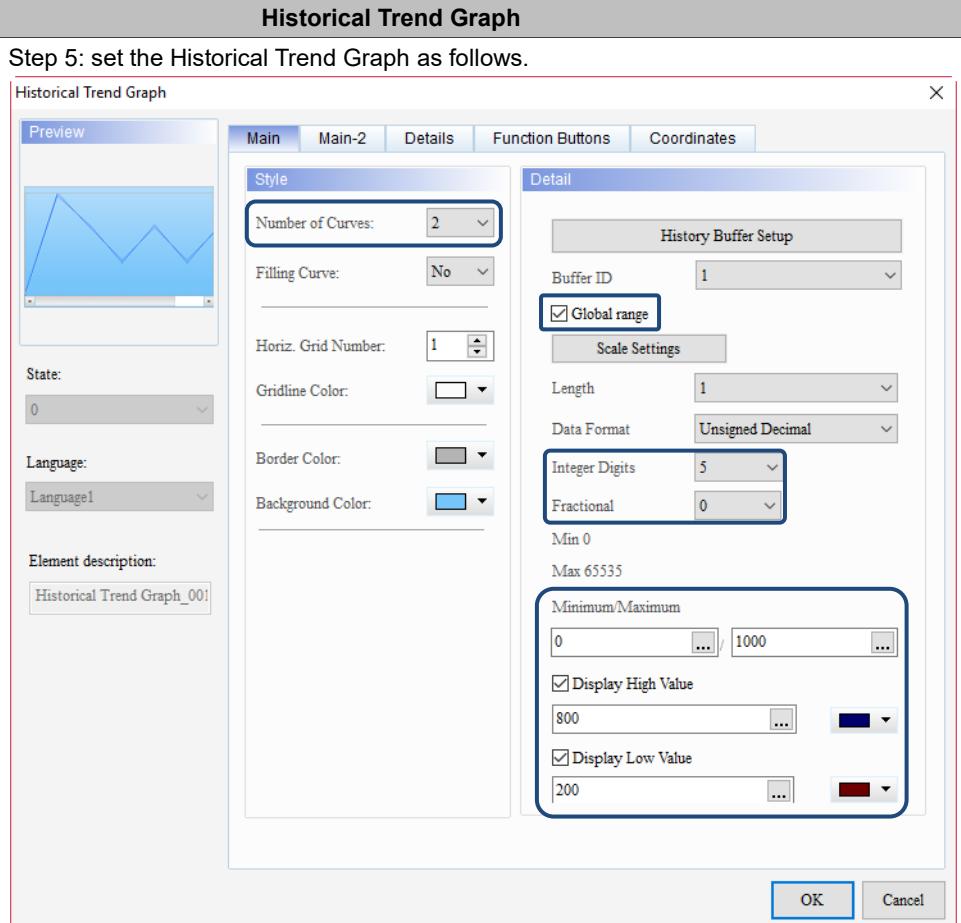
Step 4: after completing the preceding settings, you can see a new row of data is created in the History Buffer.

The 'History Buffer' table has the following data:

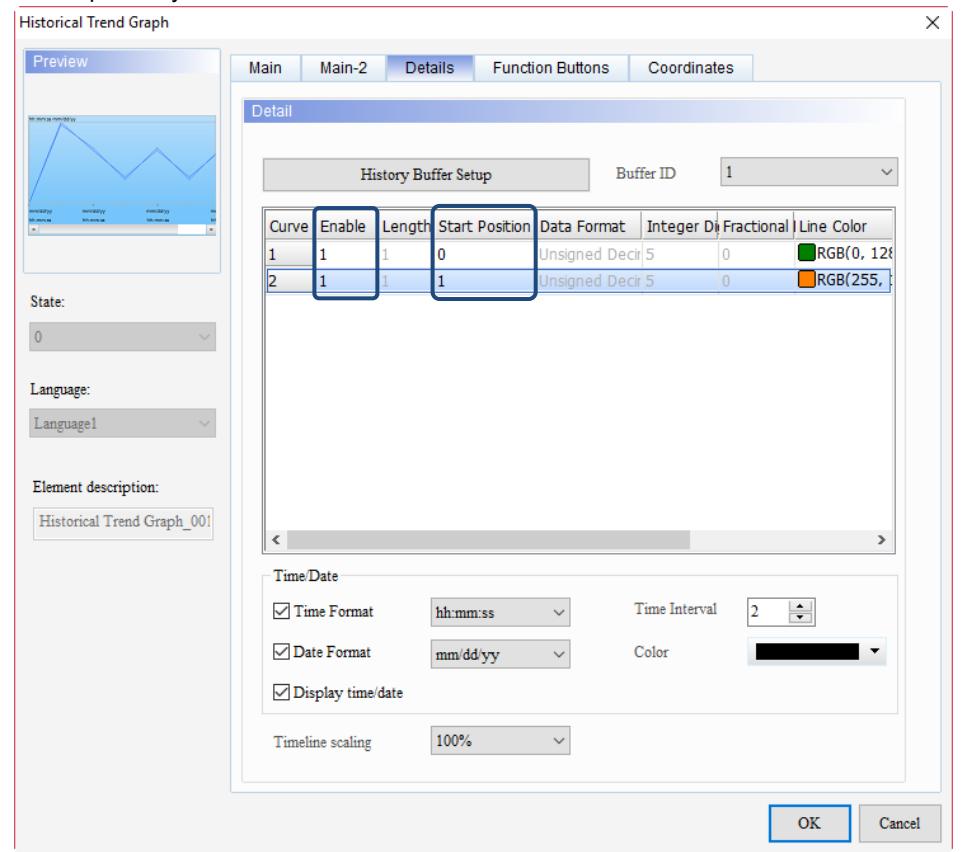
No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source	Stamp Time and Date
1	\$3675	2	100	100	Timer	Yes

15

### Create Historical Trend Graph element

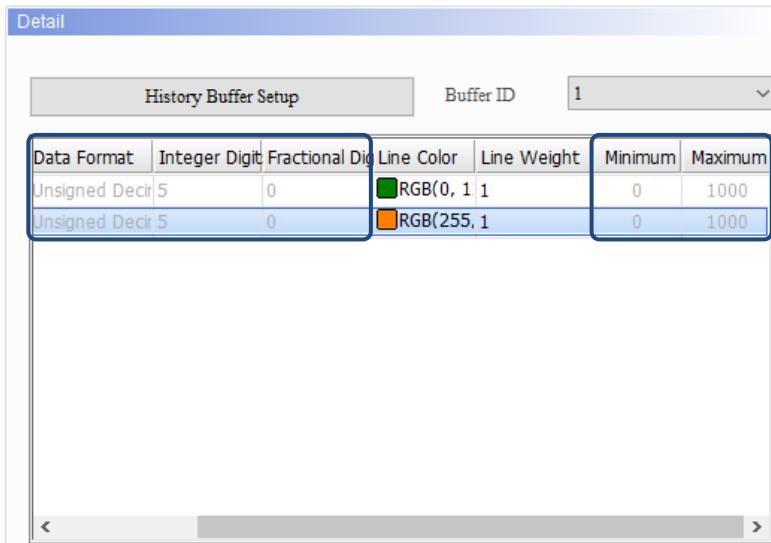


- Go to the Details page to set the Enable field as 1 to enable the data reading of the curves, and set the Start Positions of the data for Curve 1 and Curve 2 to 0 and 1 respectively.



### Historical Trend Graph

- Since the **Global range** check box is selected, you cannot set the Data Format, Integer Digits, Fractional Digits, and Minimum / Maximum values for each curve.



Step 6: go to [Options] > [Clock Macro] to edit the macro program to change the data in the History Buffer, and save the data in the USB Disk. Since the Read Length is set to read two words, there are two data locations available for access. Thus, in addition to the originally set Address \$3675, there is a data address \$3676 in the macro as well.

Create  
Historical  
Trend Graph  
element

\*[&Clock Macro]

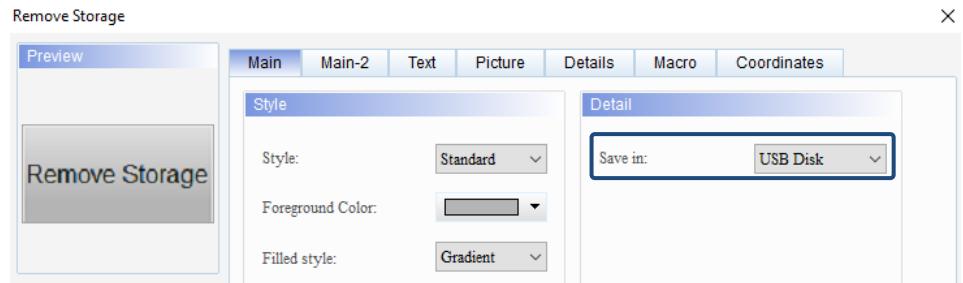
**[ ]** **[ ]** **[ ]** **[ ]** **[ ]** **[ ]** **[ ]** **[ ]** **[ ]** **[ ]** **[ ]** **{A}=** \*[Clock Macro]

```

1 $3675 = $3675 + 3
2 IF $3675 > 1000
3 $3675 = 0
4 ENDIF
5
6 $3676 = $3676 + 6
7 IF $3676 > 1000
8 $3676 = 0
9 ENDIF

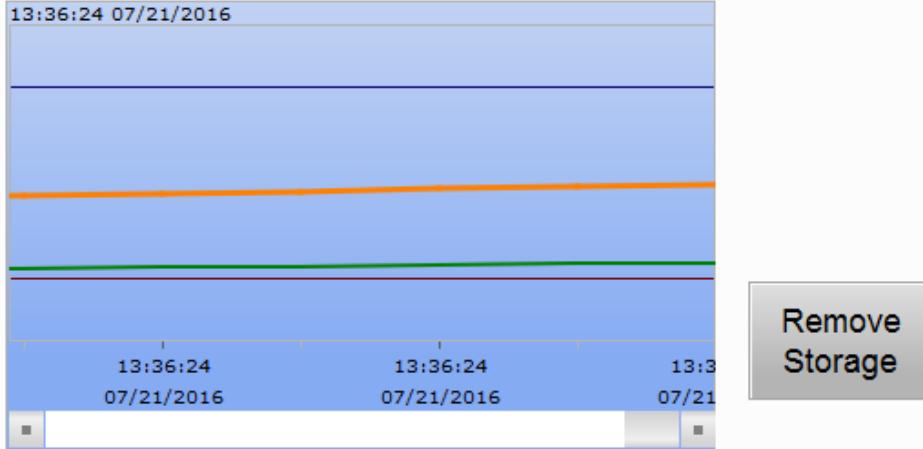
```

Step 7: create a Remove Storage button and select USB Disk for the Save in setting. This ensures that the data is correctly written to the USB Disk. If you do not safely eject the USB Disk before removing it, data read and write errors may occur, leading to the corruption of the saved file.

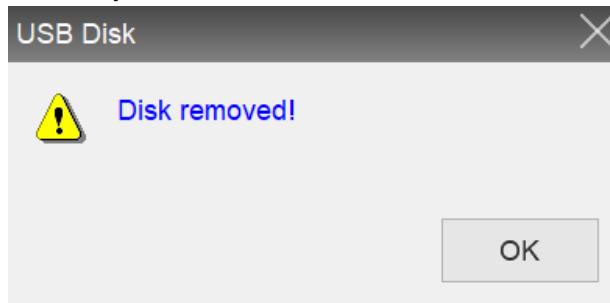


Execution results

- After setting the History Buffer and creating the Historical Trend Graph and Remove Storage elements, compile and download the elements to the HMI. The non-volatile memory setting in this example is the USB Disk, so when the HMI reads the screen, the data of H.had and H0001.dat are generated and stored in the USB Disk. Then, the History Buffer executes the command in the Clock Macro to change the data, and continues to store the data in the CSV file to the USB Disk. To stop saving the data, press the **Remove Storage** button to eject the external device for ensuring the data is saved correctly.



- Press the **Remove Storage** button and the following message appears to inform you that the USB Disk is ejected.



Historical Trend Graph				
You can insert the USB Disk to the PC to read the CSV file and make sure that the data and file name are correct. The file name in this example is H0001 and the path to save all CSV files is HMI\HMI-000\CSV\xxxx.CSV.				
Execution results				
A	B	C	D	
1	TIME	DATE	data0	data1
2	13:37:29 07/21/2016		723	444
3	13:37:29 07/21/2016		726	450
4	13:37:29 07/21/2016		729	456
5	13:37:29 07/21/2016		732	462
6	13:37:29 07/21/2016		735	468
7	13:37:30 07/21/2016		738	474
8	13:37:30 07/21/2016		741	480
9	13:37:30 07/21/2016		744	486
10	13:37:30 07/21/2016		747	492
11	13:37:30 07/21/2016		750	498
12	13:37:30 07/21/2016		753	504
13	13:37:30 07/21/2016		756	510
14	13:37:30 07/21/2016		759	516
15	13:37:30 07/21/2016		762	522
16	13:37:30 07/21/2016		765	528
17	13:37:31 07/21/2016		768	534
18	13:37:31 07/21/2016		771	540
19	13:37:31 07/21/2016		774	546
20	13:37:31 07/21/2016		777	552
21	13:37:31 07/21/2016		780	558
22	13:37:31 07/21/2016		783	564
23	13:37:31 07/21/2016		786	570
24	13:37:31 07/21/2016		789	576
25	13:37:31 07/21/2016		792	582
26	13:37:31 07/21/2016		795	588
27	13:37:32 07/21/2016		798	594
28	13:37:32 07/21/2016		801	600
29	13:37:32 07/21/2016		804	606
30	13:37:32 07/21/2016		807	612
31	13:37:32 07/21/2016		810	618
32	13:37:32 07/21/2016		813	624
33	13:37:32 07/21/2016		816	630
34	13:37:32 07/21/2016		819	636
35	13:37:32 07/21/2016		822	642

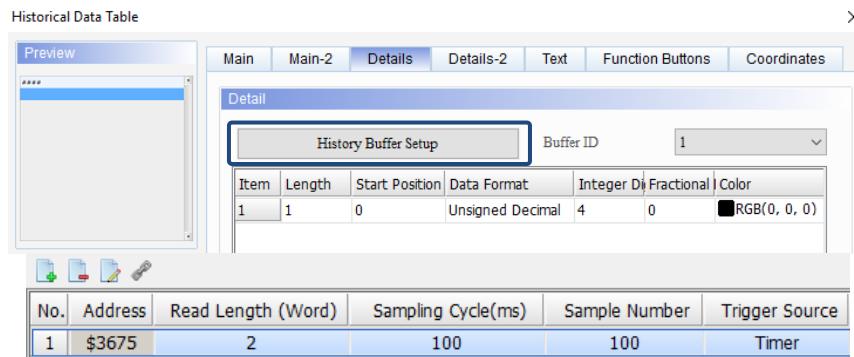
Refer to Table 15.1.3 for the Historical Data Table example.

Table 15.1.3 Historical Data Table example

# 15

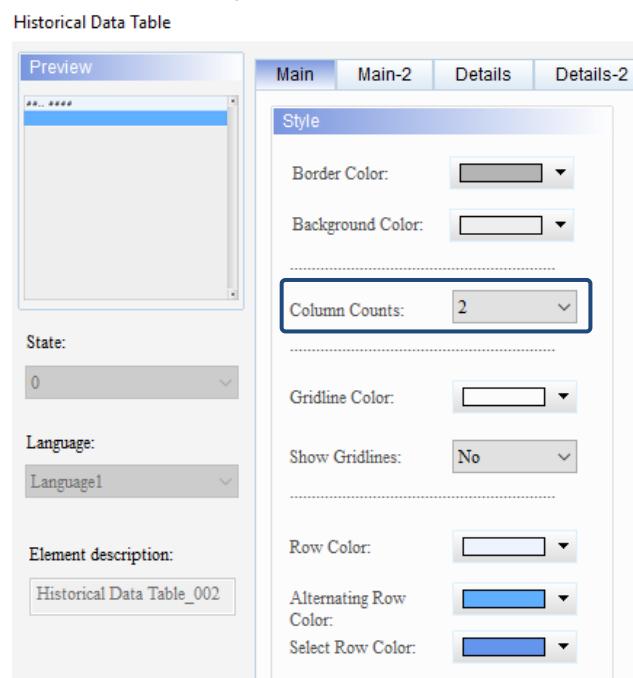
Historical Data Table should be used with Historical Trend Graph, so you may also refer to Table 15.1.2 Historical Trend Graph example. Use the previously created Historical Trend Graph and then execute the following setup procedures.

Step 1: double-click the Historical Data Table element and press **History Buffer Setup**, and then you can see the data created in the Historical Trend Graph example in Table 15.1.2.

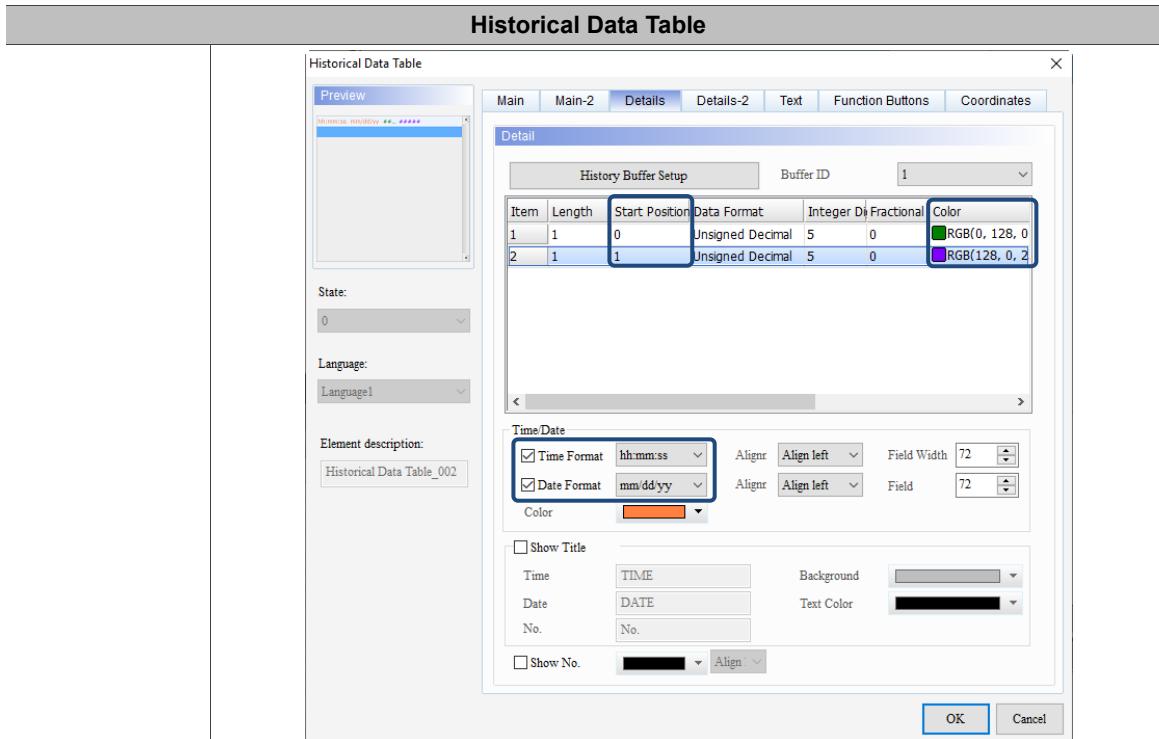


Step 2: set the Column Counts to 2 (corresponding to the set Read Length of 2 in the History Buffer). When the Column Counts is 2, you need to set the relevant parameters for Data 1 and Data 2. Set the Start Positions for Data 1 and Data 2 to 0 and 1 respectively, set the displaying color for the values, and select the **Time Format** and **Date Format** check boxes to display the time and date.

Create  
Historical Data  
Table element

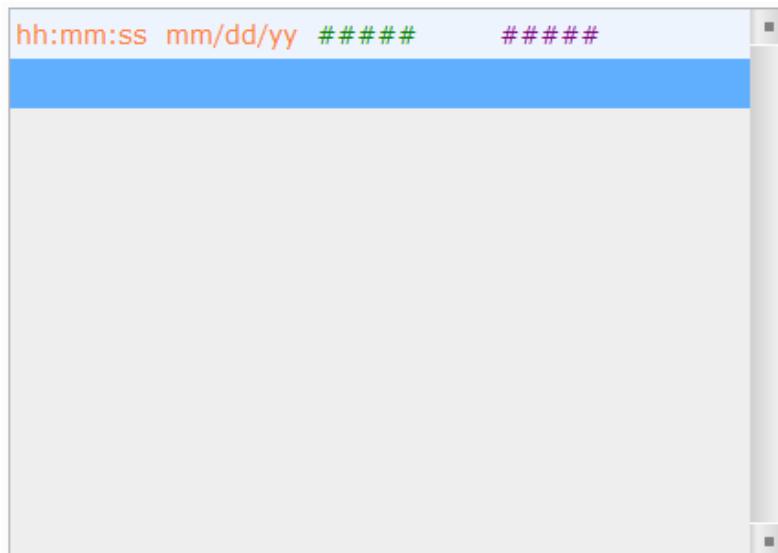


15



Step 3: the created Historical Data Table is as shown as follows.

Create  
Historical Data  
Table element



Step 4: go to [Options] > [Clock Macro] to edit the macro program to change the data in the History Buffer, and save the data in the USB Disk. Since the Read Length is set to read two words and the Column Counts is also 2, the Historical Data Table displays two columns to read two data locations respectively.

\*[&Clock Macro]

[File] [Save] [New] [Delete] [Copy] [Paste] [Find] [Replace] {A}=[ \*[Clock Macro]

```

1 $3675 = $3675 + 3
2 IF $3675 > 1000
3 $3675 = 0
4 ENDIF
5
6 $3676 = $3676 + 6
7 IF $3676 > 1000
8 $3676 = 0
9 ENDIF

```

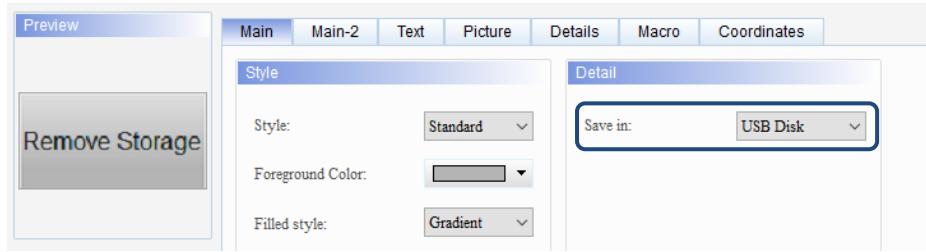
# 15

Create Historical Data Table element

**Historical Data Table**

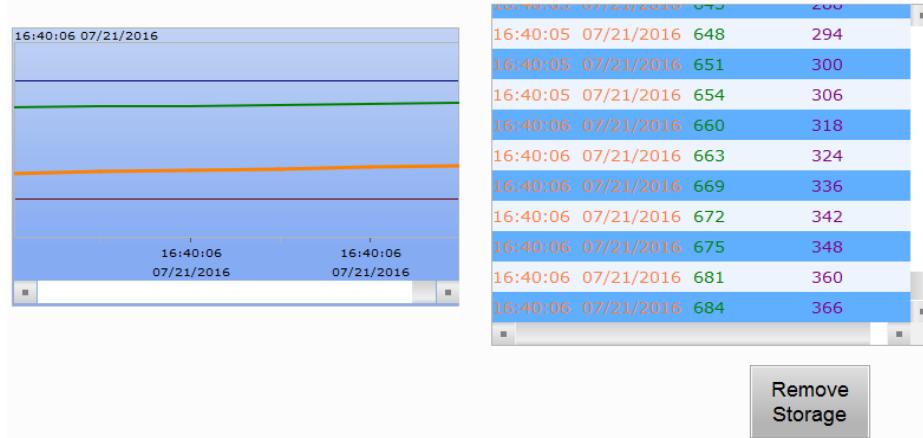
Step 5: create a Remove Storage button and select USB Disk for the Save in setting. This ensures that the data is correctly written to the USB Disk. If you do not safely eject the USB Disk before removing it, data read and write errors may occur, leading to the corruption of the saved file.

Remove Storage

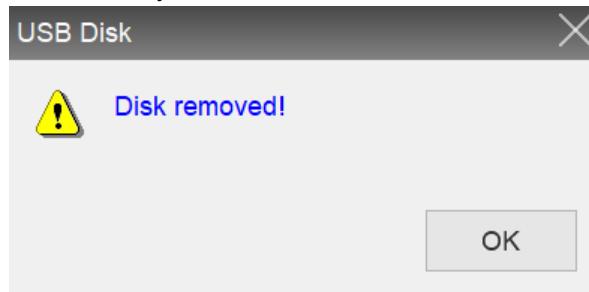


- After setting the History Buffer Setup and creating the Historical Data Table and Remove Storage elements, compile and download the elements to the HMI. The non-volatile memory setting in this example is the USB Disk, so when the HMI reads the screen, the data of H.had and H0001.dat are generated and stored in the USB Disk. Then, the History Buffer executes the command in the Clock Macro to change the data, and continues to store the data in the CSV file to the USB Disk. To stop saving the data, press the **Remove Storage** button to eject the external device for ensuring the data is saved correctly.

Execution results



- Press the **Remove Storage** button and the following message appears to inform you that the USB Disk is ejected.



Refer to Table 15.1.4 for the Historical Event Table example.

Table 15.1.4 Historical Event Table example

**Create Historical Event Table element**

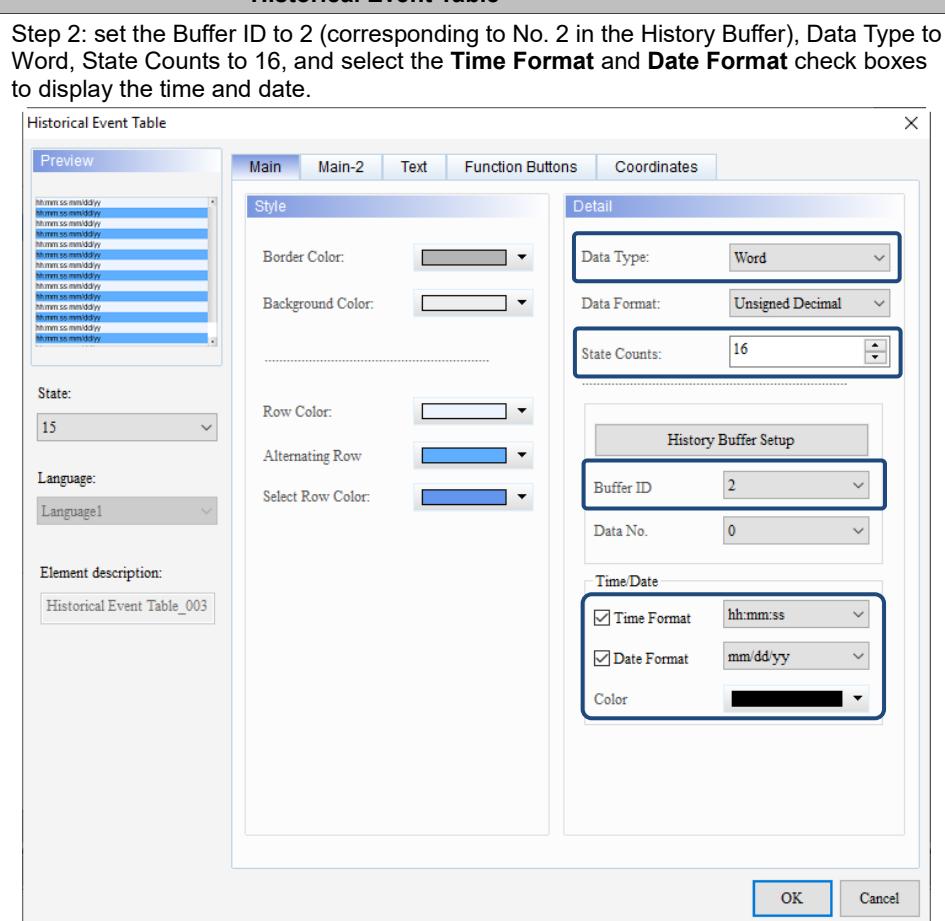
Step 1: double-click the Historical Event Table element and press **History Buffer Setup** to create a new buffer. Set the Address to \$1, Read Length (Word) to 1, and select HMI for the Non-volatile memory.

The screenshot shows the 'Historical Event Table' configuration dialog. In the 'Main' tab, the 'Address' is set to '\$1', 'Read Length (Word)' is '1', and 'Data Type' is 'Word'. The 'Non-volatile' checkbox is checked, and 'HMI' is selected. In the 'Sampling' tab of the 'Buffer Properties' dialog, the 'Address' is '\$1', 'Read Length (Word)' is '1', and 'Sample Number' is '10'. The 'Trigger' tab shows 'Timer' as the trigger source with a sampling cycle of '100'. The 'Stamp Time and Date' checkbox is checked, with 'Time Format' as 'hh:mm:ss' and 'Date Format' as 'mm/dd/yy'. The 'OK' button is highlighted.

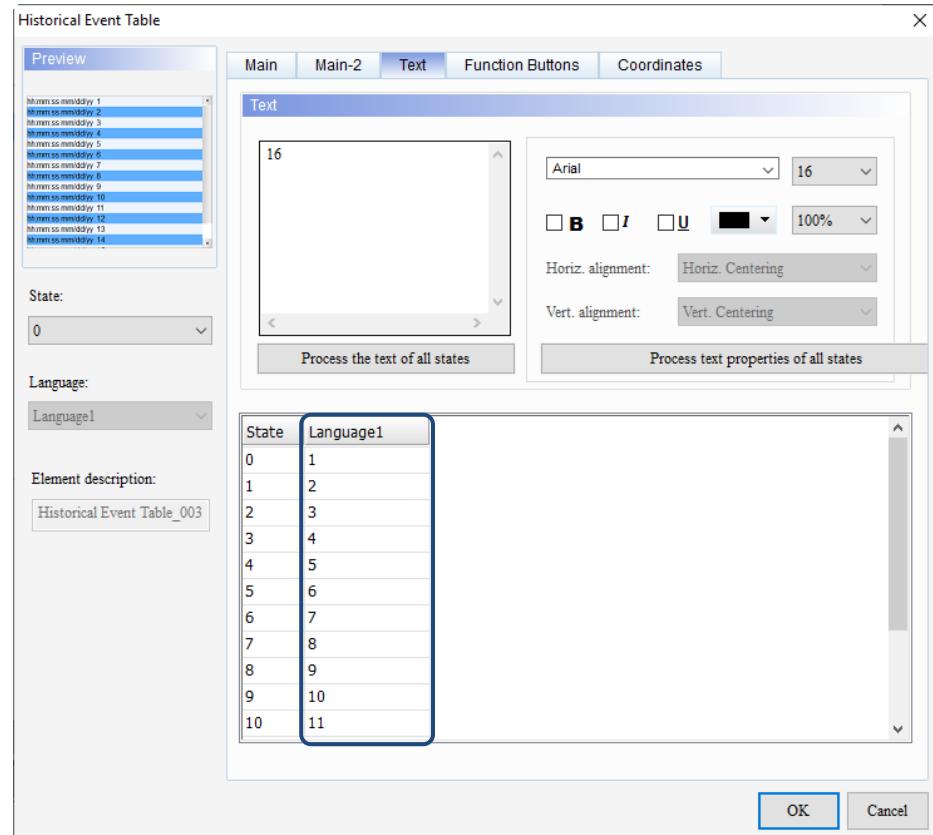
No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source
1	\$3675	2	100	100	Timer
2	\$1	1	100	10	Timer

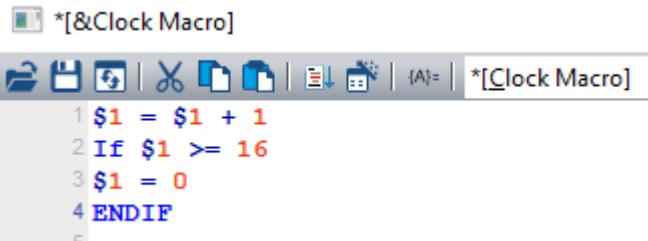
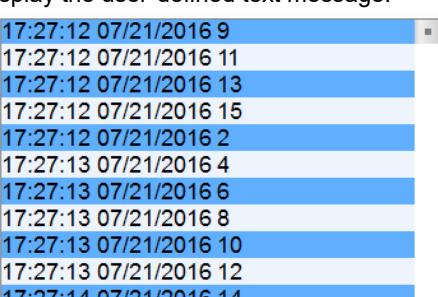
15

Create  
Historical Event  
Table element



Step 3: go to the Text page to edit the text message to display.



Historical Event Table															
Create Historical Event Table element	<p>Step 4: go to [Options] &gt;[Clock Macro] to edit the macro program to change the data in the History Buffer, and display the user-defined text message in the Historical Event Table.</p>  <pre> *&amp;Clock Macro  1 \$1 = \$1 + 1 2 If \$1 &gt;= 16 3 \$1 = 0 4 ENDIF 5 </pre>														
Execution results	<p>After creating the Historical Event Table element, compile and download the element to the HMI. Then, the Historical Event Table executes the command in the Clock Macro to change the data and display the user-defined text message.</p>  <table border="1"> <tbody> <tr><td>17:27:12 07/21/2016 9</td></tr> <tr><td>17:27:12 07/21/2016 11</td></tr> <tr><td>17:27:12 07/21/2016 13</td></tr> <tr><td>17:27:12 07/21/2016 15</td></tr> <tr><td>17:27:12 07/21/2016 2</td></tr> <tr><td>17:27:13 07/21/2016 4</td></tr> <tr><td>17:27:13 07/21/2016 6</td></tr> <tr><td>17:27:13 07/21/2016 8</td></tr> <tr><td>17:27:13 07/21/2016 10</td></tr> <tr><td>17:27:13 07/21/2016 12</td></tr> <tr><td>17:27:14 07/21/2016 14</td></tr> <tr><td>17:27:14 07/21/2016 16</td></tr> <tr><td>17:27:14 07/21/2016 2</td></tr> <tr><td>17:27:14 07/21/2016 4</td></tr> </tbody> </table>	17:27:12 07/21/2016 9	17:27:12 07/21/2016 11	17:27:12 07/21/2016 13	17:27:12 07/21/2016 15	17:27:12 07/21/2016 2	17:27:13 07/21/2016 4	17:27:13 07/21/2016 6	17:27:13 07/21/2016 8	17:27:13 07/21/2016 10	17:27:13 07/21/2016 12	17:27:14 07/21/2016 14	17:27:14 07/21/2016 16	17:27:14 07/21/2016 2	17:27:14 07/21/2016 4
17:27:12 07/21/2016 9															
17:27:12 07/21/2016 11															
17:27:12 07/21/2016 13															
17:27:12 07/21/2016 15															
17:27:12 07/21/2016 2															
17:27:13 07/21/2016 4															
17:27:13 07/21/2016 6															
17:27:13 07/21/2016 8															
17:27:13 07/21/2016 10															
17:27:13 07/21/2016 12															
17:27:14 07/21/2016 14															
17:27:14 07/21/2016 16															
17:27:14 07/21/2016 2															
17:27:14 07/21/2016 4															

15

Refer to Table 15.1.5 for the Historical Overview Table example.

Table 15.1.5 Historical Overview Table example

Historical Overview Table													
<p>Historical Overview Table should be used with Historical Trend Graph, so you may also refer to Table 15.1.2 Historical Trend Graph example. Use the previously created Historical Trend Graph and then execute the following setup procedures.</p> <p>Step 1: double-click the Historical Overview Table element and press <b>History Buffer Setup</b>, and then you can see the data created in the Historical Trend Graph example in Table 15.1.2.</p> <p>Create Historical Overview Table element</p>	<p><b>Step 1:</b> double-click the Historical Overview Table element and press <b>History Buffer Setup</b>, and then you can see the data created in the Historical Trend Graph example in Table 15.1.2.</p> <table border="1" style="margin-top: 10px; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> <th>Sample Number</th> <th>Trigger Source</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$3675</td> <td>2</td> <td>100</td> <td>100</td> <td>Timer</td> </tr> </tbody> </table> <p><b>Step 2:</b> press  to modify the History Buffer setting. Click <b>Save As Multi</b>, and set the Archive trigger bit to \$100.0.</p>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source	1	\$3675	2	100	100	Timer
No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source								
1	\$3675	2	100	100	Timer								

**Historical Overview Table**

Step 3: complete other settings for the Historical Overview Table element, such as the display for the time and date, displaying integer and fractional digits, and select the **Global range** check box.

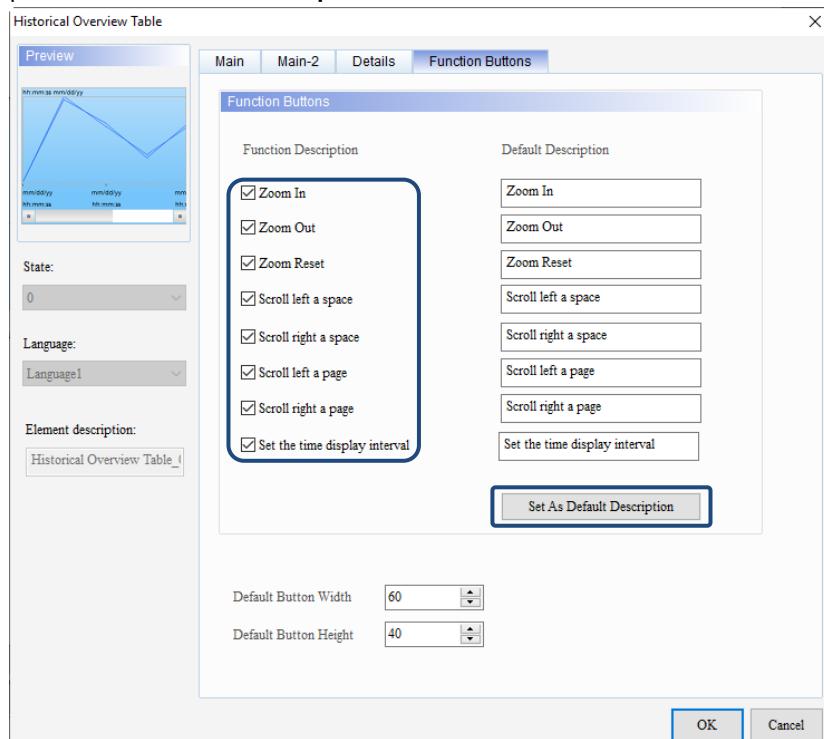
Create Historical Overview Table element

Go to the Details page to set the Enable field as 1 to enable the data reading of the curves, and set the Start Positions of the data for Curve 1 and Curve 2 to 0 and 1 respectively. Since the **Global range** check box is selected, you cannot set the Minimum and Maximum values for each curve.

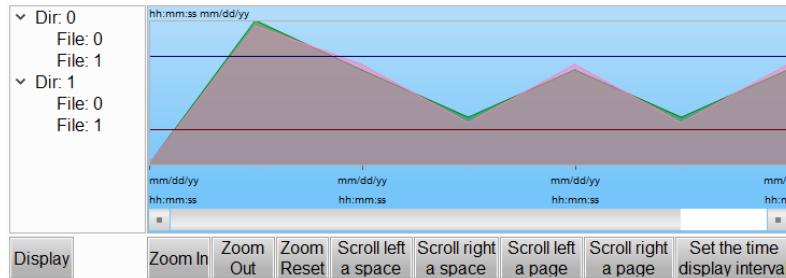
15

Create  
Historical  
Overview Table  
element

Step 4: go to the Function Buttons page and select the function buttons to display, and then press **Set As Default Description**.



When the setting is complete, the Historical Overview Table is as follows.



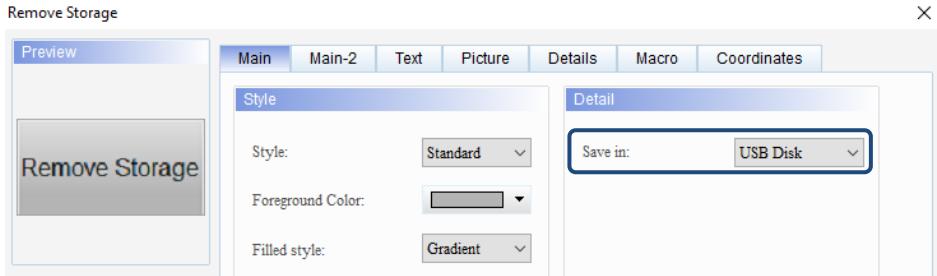
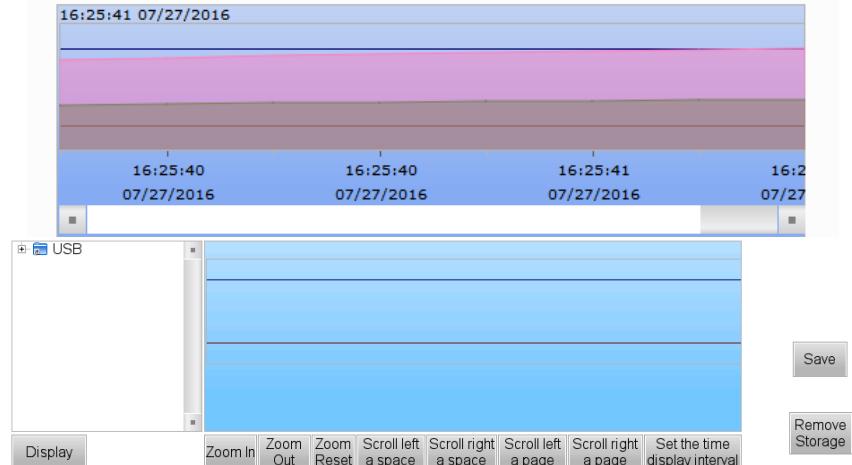
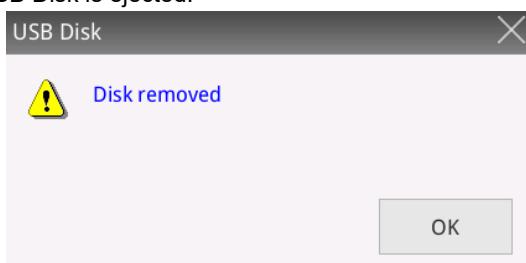
Step 5: go to [Options] > [Clock Macro] to edit the macro program to change the data in the History Buffer, and save the data in the USB Disk. Since the Read Length is set to two words, there are two data locations available for access. Thus, in addition to the originally set Address \$3675, there is a data address \$3676 in the macro as well.

\*[&Clock Macro]

```


1 $3675 = $3675 + 3
2 IF $3675 > 1000
3 $3675 = 0
4 ENDIF
5
6 $3676 = $3676 + 6
7 IF $3676 > 1000
8 $3676 = 0
9 ENDIF


```

Historical Overview Table	
<p>Create Historical Overview Table element</p> 	<p>Step 6: create a Maintained button and set its address as \$100.0. Execute this button to immediately save the data of the History Buffer without having to wait for the set Sample Number to be reached.</p> <p>Step 7: create a Remove Storage button and select USB Disk for the Save in setting. This ensures that the data is correctly written to the USB Disk. If you do not safely eject the USB Disk before removing it, data read and write errors may occur, leading to the corruption of the saved file.</p> <p>Remove Storage</p>
<p>Execution results</p> 	<ul style="list-style-type: none"> <li>■ After setting the History Buffer and creating the Historical Overview Table and Remove Storage elements, compile and download the elements to the HMI. The non-volatile memory setting in this example is the USB Disk, so when the HMI reads the screen, the data of H.had and H0001.dat are generated and stored in the USB Disk. Then, the History Buffer executes the command in the Clock Macro to change the data, and continues to store the data in the CSV file to the USB Disk. To stop saving the data, press the <b>Remove Storage</b> button to eject the external device for ensuring the data is saved correctly.</li> </ul> <p>■ Press the <b>Remove Storage</b> button and the following message appears to inform you that the USB Disk is ejected.</p> 

# 15

## Execution results

**Historical Overview Table**

- When the set Sample Number is reached or the Archive trigger bit is triggered, the file is stored in the HMI\HMI-000\History folder under the USB directory according to the Save As Multi setting, and a new file is created to continue sampling. You can view the saved files with the Historical Overview Table.

The screenshot shows the 'History' section of the DOPSoft interface. On the left, a tree view shows 'History' and 'CSV' branches, with several 'H0001.dat' files listed under 'History'. A blue box highlights the list of files. On the right, a trend graph displays three data series from 03/08/2021 at 15:30:50. Below the graph are various zoom and scroll buttons. At the bottom right are 'Save' and 'Remove Storage' buttons. A file browser window is also visible in the background.

- Press **Save** to immediately save the current History Buffer data.

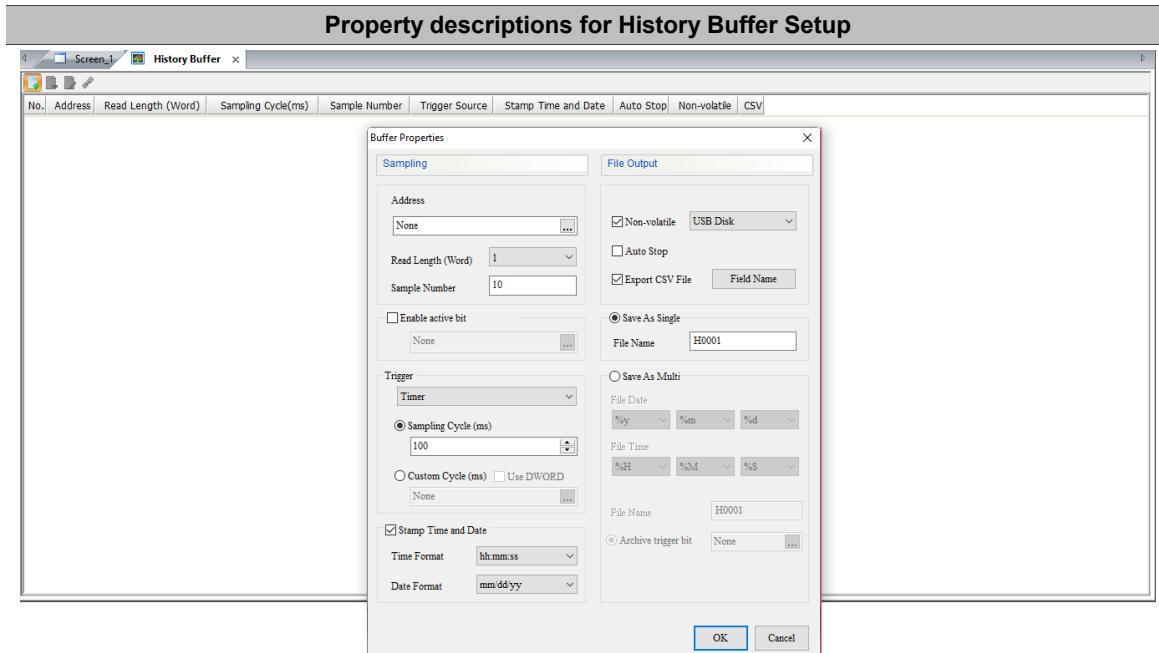
The screenshot shows the same interface as above, but the 'Save' button is highlighted with a blue box. A blue speech bubble labeled 'Step 1' points to the 'History' tree view where files are listed. Another blue speech bubble labeled 'Step 2' points to the 'Display' button at the bottom left of the main panel.

- In the file browser on the left side of the Historical Overview Table, click [USB] and select the previously saved file, and then press **Display** to see the stored Historical Trend Graph on the right side.

The screenshot shows the same interface as above, but the 'Display' button is highlighted with a blue box. A blue speech bubble labeled 'Step 1' points to the 'History' tree view where files are listed. Another blue speech bubble labeled 'Step 2' points to the 'Display' button at the bottom left of the main panel.

After the examples for all the sampling functions are introduced, the following table illustrates the detailed function descriptions of the History Buffer Setup properties.

Table 15.1.6 Property descriptions for History Buffer Setup

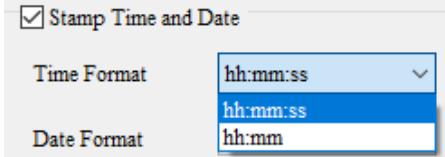
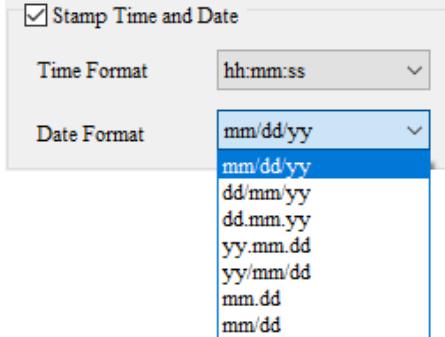
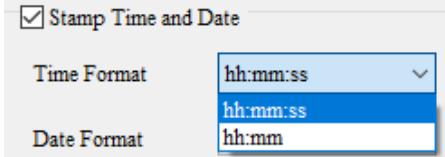
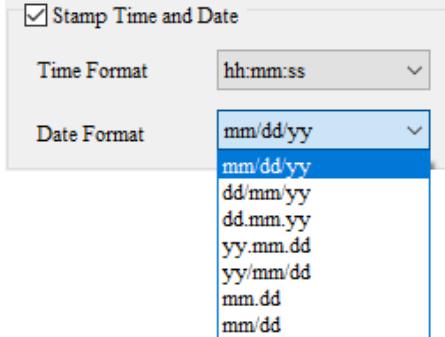
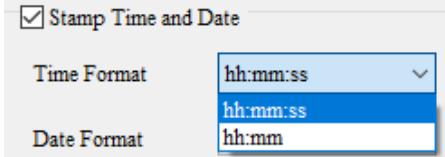
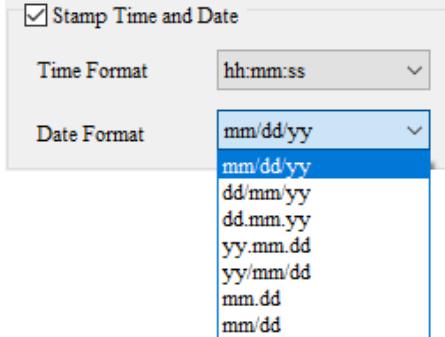
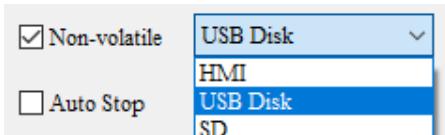
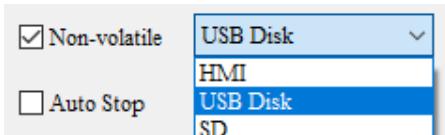
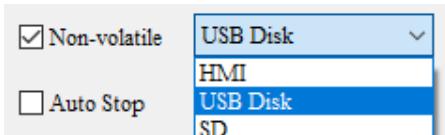


- is for creating additional data buffers and up to 12 sets of buffers are supported. These 12 sets of data buffers also correspond to the sampling flags 1 - 12 and clear flags 1 - 12 of the history buffer respectively in the Control Block.

No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trigger Source	Stamp Time and Date	Auto Stop	Non-volatile	CSV
1	\$0	1	100	10	Timer	No	No	Yes	H0001
2	\$1	1	100	10	Timer	No	No	Yes	H0002
3	\$2	1	100	10	Timer	No	No	Yes	H0003
4	\$3	1	100	10	Timer	No	No	Yes	H0004
5	\$4	1	100	10	Timer	No	No	Yes	H0005
6	\$5	1	100	10	Timer	No	No	Yes	H0006
7	\$6	1	100	10	Timer	No	No	Yes	H0007
8	\$7	1	100	10	Timer	No	No	Yes	H0008
9	\$8	1	100	10	Timer	No	No	Yes	H0009
10	\$9	1	100	10	Timer	No	No	Yes	H0010
11	\$10	1	100	10	Timer	No	No	Yes	H0011
12	\$11	1	100	10	Timer	No	No	Yes	H0012

- Press to delete a data buffer.
- Press to go to the Buffer Properties window to change the relevant settings.

### Property descriptions for History Buffer Setup

	<ul style="list-style-type: none"> <li>■ It is recommended to enable this function when the buffer addresses set in the History Buffer are switched from continuous to non-continuous.</li> <li>■ When multiple buffer addresses are set as continuous, enabling this function may slow down the reading speed instead.</li> </ul>				
Address	<ul style="list-style-type: none"> <li>■ You can select the internal memory or the controller register address.</li> <li>■ Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>				
Read Length (Word)	<p>Read Length defines the number of words to be sampled, which indicates the data length and supports up to 30 consecutive words.</p>				
Sample Number	<ul style="list-style-type: none"> <li>■ Sample Number is the number of data to be recorded and is usually used with the Auto Stop function. If the <b>Auto Stop</b> check box is selected, the recording stops automatically when it reaches the set Sample Number. If the <b>Auto Stop</b> check box is not selected, the recording does not stop when it reaches the set Sample Number; instead, the recording restarts from the first record and overwrites the previous data.</li> <li>■ Sample Number supports up to 9,999,999 sampling points.</li> </ul>				
Enable active bit	<ul style="list-style-type: none"> <li>■ When the Trigger is set to Timer for history data sampling, the HMI immediately records the sampling data as soon as it starts up.</li> <li>■ The Enable active bit function allows you to determine when to start sampling. This function is available when the Trigger is set to Timer or PLC.</li> </ul>				
Stamp Time and Date	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Time Format</td> <td>There are two time formats for selection.    </td> </tr> <tr> <td>Date Format</td> <td>There are seven date formats for selection.    </td> </tr> </table>	Time Format	There are two time formats for selection.  	Date Format	There are seven date formats for selection.  
Time Format	There are two time formats for selection.  				
Date Format	There are seven date formats for selection.  				
Non-volatile	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Saving location</td> <td> <ul style="list-style-type: none"> <li>■ The saving location includes HMI, USB Disk, and SD Card.</li> </ul>    </td> </tr> <tr> <td></td> <td> <ul style="list-style-type: none"> <li>■ When you choose to store the data in the HMI, it means when the power is cut off, the data is saved in the HMI SRAM.</li> <li>■ If the <b>Export CSV File</b> check box is selected, set the Non-volatile memory to USB Disk.</li> </ul> </td> </tr> </table>	Saving location	<ul style="list-style-type: none"> <li>■ The saving location includes HMI, USB Disk, and SD Card.</li> </ul> 		<ul style="list-style-type: none"> <li>■ When you choose to store the data in the HMI, it means when the power is cut off, the data is saved in the HMI SRAM.</li> <li>■ If the <b>Export CSV File</b> check box is selected, set the Non-volatile memory to USB Disk.</li> </ul>
Saving location	<ul style="list-style-type: none"> <li>■ The saving location includes HMI, USB Disk, and SD Card.</li> </ul> 				
	<ul style="list-style-type: none"> <li>■ When you choose to store the data in the HMI, it means when the power is cut off, the data is saved in the HMI SRAM.</li> <li>■ If the <b>Export CSV File</b> check box is selected, set the Non-volatile memory to USB Disk.</li> </ul>				
Auto Stop	<ul style="list-style-type: none"> <li>■ The Auto Stop function determines whether the recording stops automatically when the set Sample Number is reached.</li> <li>■ If the <b>Auto Stop</b> check box is selected, the recording stops automatically when the setting in the Sample Number field is reached. If the <b>Auto Stop</b> check box is not selected, the recording does not stop when the setting in the Sample Number field is reached; instead, the recording restarts from the first record and overwrites the previous data.</li> </ul>				

Property descriptions for History Buffer Setup																																																																																																						
		<ul style="list-style-type: none"> <li>When the Read Length is 1 (Word) or 2 (Words), the supported data formats are different. The supported data formats are as follows.</li> <li>For the Char format, if the Read Length is 1, it represents 2 Chars; if the Read Length is 2, it represents 4 Chars, and so on. When the Read Length is 3 or above, Char is the only supported format.</li> </ul>																																																																																																				
		<table border="1"> <thead> <tr> <th colspan="3">Read Length is 1</th></tr> <tr> <th>Data Type</th><th>Data Format</th><th>Allowable range</th></tr> </thead> <tbody> <tr> <td rowspan="6">Word</td><td>BCD</td><td>0 to 9999</td></tr> <tr> <td>Signed BCD</td><td>-999 to +9999</td></tr> <tr> <td>Signed Decimal</td><td>-32768 to +32767</td></tr> <tr> <td>Unsigned Decimal</td><td>0 to 65535</td></tr> <tr> <td>Hex</td><td>0 to 0xFFFF</td></tr> <tr> <td>Char</td><td>2 characters</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Read Length is 2</th></tr> <tr> <th>Data Type</th><th>Data Format</th><th>Allowable range</th></tr> </thead> <tbody> <tr> <td rowspan="7">DWord</td><td>BCD</td><td>0 to 99999999</td></tr> <tr> <td>Signed BCD</td><td>-9999999 to +9999999</td></tr> <tr> <td>Signed Decimal</td><td>-2147483648 to +2147483647</td></tr> <tr> <td>Unsigned Decimal</td><td>0 to 4294697295</td></tr> <tr> <td>Hex</td><td>0 to 0xFFFFFFFF</td></tr> <tr> <td>Char</td><td>4 characters</td></tr> <tr> <td>Floating</td><td>0 to 9999999</td></tr> </tbody> </table>	Read Length is 1			Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	Char	2 characters	Read Length is 2			Data Type	Data Format	Allowable range	DWord	BCD	0 to 99999999	Signed BCD	-9999999 to +9999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294697295	Hex	0 to 0xFFFFFFFF	Char	4 characters	Floating	0 to 9999999																																																												
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Field Name		<div style="border: 1px solid #ccc; padding: 10px;"> <p>CSV Fields</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Time</td> <td style="border: none; width: 150px;"></td> </tr> <tr> <td style="padding: 2px;">Date</td> <td style="border: none; width: 150px;"></td> </tr> </table> <p>Title Setting</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Column</td> <td style="border: none; width: 10px; text-align: center;">0</td> <td style="border: none; width: 10px; text-align: center;">▲</td> <td style="border: none; width: 10px; text-align: center;">▼</td> <td style="border: none; width: 10px; text-align: center;">↑</td> <td style="border: none; width: 10px; text-align: center;">↓</td> </tr> <tr> <td colspan="6" style="height: 100px; border: none;"></td> </tr> </table> <p>Column Settings</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Item</th> <th style="width: 10%;">Open</th> <th style="width: 10%;">Name</th> <th style="width: 10%;">Length</th> <th style="width: 10%;">Data Start Pos</th> <th style="width: 10%;">Data Format</th> </tr> </thead> <tbody> <tr><td>0</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>0</td><td>Unsigned Decimal</td></tr> <tr><td>1</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>1</td><td>Unsigned Decimal</td></tr> <tr><td>2</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>2</td><td>Unsigned Decimal</td></tr> <tr><td>3</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>3</td><td>Unsigned Decimal</td></tr> <tr><td>4</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>4</td><td>Unsigned Decimal</td></tr> <tr><td>5</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>5</td><td>Unsigned Decimal</td></tr> <tr><td>6</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>6</td><td>Unsigned Decimal</td></tr> <tr><td>7</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>7</td><td>Unsigned Decimal</td></tr> <tr><td>8</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>8</td><td>Unsigned Decimal</td></tr> <tr><td>9</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>9</td><td>Unsigned Decimal</td></tr> <tr><td>10</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>10</td><td>Unsigned Decimal</td></tr> <tr><td>11</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>11</td><td>Unsigned Decimal</td></tr> <tr><td>12</td><td><input checked="" type="checkbox"/></td><td></td><td>1</td><td>12</td><td>Unsigned Decimal</td></tr> </tbody> </table> <p style="text-align: right; margin-top: 10px;"><span style="border: 1px solid #0072BD; padding: 2px 10px; color: #0072BD; font-weight: bold;">OK</span> <span style="margin-left: 20px;">Cancel</span></p> </div>	Time		Date		Column	0	▲	▼	↑	↓							Item	Open	Name	Length	Data Start Pos	Data Format	0	<input checked="" type="checkbox"/>		1	0	Unsigned Decimal	1	<input checked="" type="checkbox"/>		1	1	Unsigned Decimal	2	<input checked="" type="checkbox"/>		1	2	Unsigned Decimal	3	<input checked="" type="checkbox"/>		1	3	Unsigned Decimal	4	<input checked="" type="checkbox"/>		1	4	Unsigned Decimal	5	<input checked="" type="checkbox"/>		1	5	Unsigned Decimal	6	<input checked="" type="checkbox"/>		1	6	Unsigned Decimal	7	<input checked="" type="checkbox"/>		1	7	Unsigned Decimal	8	<input checked="" type="checkbox"/>		1	8	Unsigned Decimal	9	<input checked="" type="checkbox"/>		1	9	Unsigned Decimal	10	<input checked="" type="checkbox"/>		1	10	Unsigned Decimal	11	<input checked="" type="checkbox"/>		1	11	Unsigned Decimal	12	<input checked="" type="checkbox"/>		1	12	Unsigned Decimal
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15

**Property descriptions for History Buffer Setup**

Export CSV File	CSV Fields	Time	<ul style="list-style-type: none"> <li>You can define the Time and Date fields (1), the number of columns (2), and the Name fields of data (3), and the naming format supports multi-languages.</li> <li>The maximum number of columns and rows is 10 x 10. You can set the displaying name for the title column.</li> </ul>
		Date	
		Column	
		Name	

■ The actual exported CSV file is the same as the setting in the software, as the (1), (2), and (3) shown in the following figure.

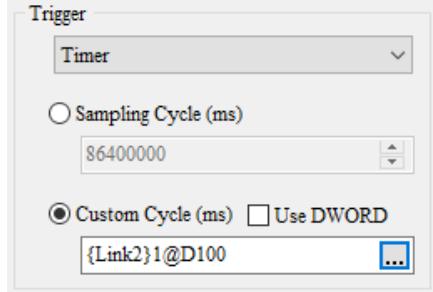
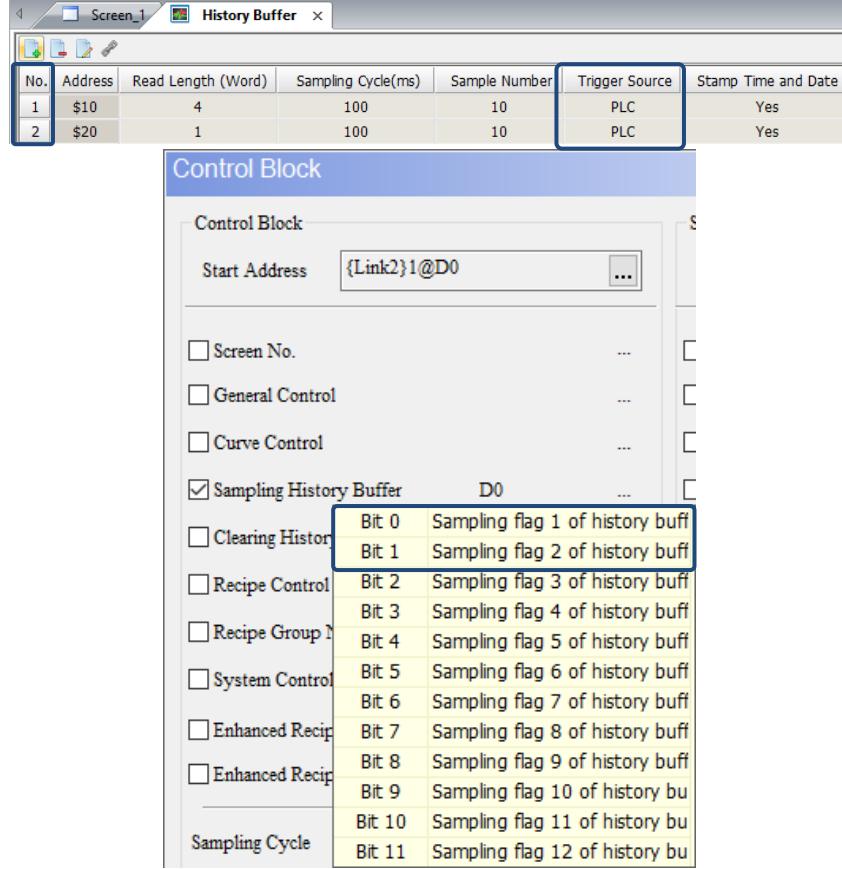
	A	B	C	TIME	DATE	data0	data1	data2
1	11	12	13					
2	14	15	16					
3	17	18	19					
4				13:39:26 07/28/2016	615	20	30	
5				13:39:26 07/28/2016	618	25	40	
6				13:39:26 07/28/2016	621	30	50	
7				13:39:26 07/28/2016	624	35	60	
8				13:39:26 07/28/2016	627	40	70	
9				13:39:26 07/28/2016	630	45	80	
10				13:39:26 07/28/2016	633	50	90	
11				13:39:26 07/28/2016	636	55	100	
12				13:39:27 07/28/2016	639	60	110	
13				13:39:27 07/28/2016	642	65	120	
14				13:39:27 07/28/2016	645	70	130	
15				13:39:27 07/28/2016	648	75	140	
16				13:39:27 07/28/2016	651	80	150	
17				13:39:27 07/28/2016	654	85	160	
18				13:39:27 07/28/2016	657	90	170	
19				13:39:27 07/28/2016	660	95	180	
20				13:39:27 07/28/2016	663	100	190	
21				13:39:27 07/28/2016	666	105	200	
22				13:39:27 07/28/2016	669	110	210	
23				13:39:28 07/28/2016	672	115	220	
24				13:39:28 07/28/2016	675	120	230	
25				13:39:28 07/28/2016				

**Property descriptions for History Buffer Setup**

Export CSV File	Field Name	Length
<p>The Length corresponds to the Read Length (Word) setting. If the Read Length (Word) is 4, the Length ranges from 1 to 4.</p>		

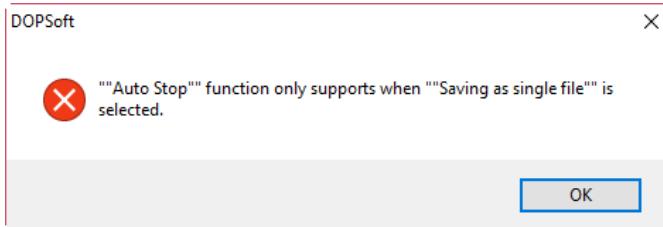
15

Property descriptions for History Buffer Setup																													
		<ul style="list-style-type: none"> <li>The Data Start Position corresponds to the Read Length (Word) setting as well.</li> <li>If the Read Length (Word) is 4, the Data Start Position ranges from 0 to 3.</li> </ul>																											
Export CSV File	Field Name	<p><b>Data Start Position</b></p> <table border="1"> <thead> <tr> <th>Item</th><th>Open</th><th>Name</th><th>Length</th><th>Data Start Pos</th></tr> </thead> <tbody> <tr> <td>0</td><td><input checked="" type="checkbox"/></td><td>data0</td><td>1</td><td>0</td></tr> <tr> <td>1</td><td><input checked="" type="checkbox"/></td><td>data1</td><td>1</td><td>1</td></tr> <tr> <td>2</td><td><input checked="" type="checkbox"/></td><td>data2</td><td>1</td><td>2</td></tr> <tr> <td>3</td><td><input checked="" type="checkbox"/></td><td>data3</td><td>1</td><td>3</td></tr> </tbody> </table>			Item	Open	Name	Length	Data Start Pos	0	<input checked="" type="checkbox"/>	data0	1	0	1	<input checked="" type="checkbox"/>	data1	1	1	2	<input checked="" type="checkbox"/>	data2	1	2	3	<input checked="" type="checkbox"/>	data3	1	3
Item	Open	Name	Length	Data Start Pos																									
0	<input checked="" type="checkbox"/>	data0	1	0																									
1	<input checked="" type="checkbox"/>	data1	1	1																									
2	<input checked="" type="checkbox"/>	data2	1	2																									
3	<input checked="" type="checkbox"/>	data3	1	3																									
		<p><b>Integer Digits</b></p> <ul style="list-style-type: none"> <li>Set the integer and fractional digits according to the required format.</li> <li>When the Length is 1, the total number of digits of the integer and fractional digits is 5. When the Length is 2, the total number of digits of the integer and fractional digits is 10.</li> </ul>																											
Trigger	Timer	<p>When Timer is the Trigger source, there are two setting options for the Sampling Cycle (ms).</p> <ul style="list-style-type: none"> <li>Fixed sampling cycle: minimum 100 ms; maximum 86400000 ms.</li> </ul>																											

Property descriptions for History Buffer Setup	
	<ul style="list-style-type: none"> <li>■ Dynamic sampling cycle: you can dynamically change the sampling cycle time by using the specified memory address to trigger the sampling action. The data type of DWORD is supported.</li> </ul> 
Trigger	<ul style="list-style-type: none"> <li>■ When the PLC is the Trigger Source, the sampling action is triggered by using the history buffer flags in the Control Block. The sampling action is performed when the corresponding Bit is on, and thus it is irrelevant to the sampling cycle time.</li> <li>■ The Enable active bit function is added to allow flexible sampling time.</li> <li>■ Assuming that there are two sets of History Buffer, the Trigger source PLC of the first set corresponds to sampling flag 1 of history buffer and the Trigger source PLC of the second set corresponds to sampling flag 2 of history buffer, and so on.</li> </ul> 
Save As Single	The default for File Name is H0001, but you can change it according to your preference. The File Name supports alphabetical and numeric characters with the length up to 8 characters.

### Property descriptions for History Buffer Setup

- If you click **Save As Multi**, when the set History Buffer Sample Number is reached or the Archive trigger bit is triggered, the current data is saved and the sampling continues.
- The file name of the data file that is currently sampling is the set File Name, such as H0001.dat. And when you click **Save as Multi** to save the file, the date and time when it was saved is added to the file name, for example, H0001\_Date-2015-06-26\_Time-12-02-30.dat.
- If you click **Save As Multi**, the Auto Stop function is unavailable. And when you press **OK** on the Buffer Properties window, the HMI displays the following warning message.



	<ul style="list-style-type: none"> <li>■ You can arrange the display order of the year, month, and day in the file name with the File Date setting, or you can also choose not to display the date.</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <input checked="" type="radio"/> Save As Multi  <b>File Date</b>  <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>%y</td><td>%m</td><td>%d</td></tr> <tr><td>%y</td><td>%y</td><td>%y</td></tr> <tr><td>%m</td><td>%m</td><td>%m</td></tr> <tr><td>%d</td><td>%d</td><td>%d</td></tr> <tr><td>None</td><td>None</td><td>None</td></tr> <tr><td>%H</td><td>%M</td><td>%S</td></tr> </table> </div>	%y	%m	%d	%y	%y	%y	%m	%m	%m	%d	%d	%d	None	None	None	%H	%M	%S
%y	%m	%d																	
%y	%y	%y																	
%m	%m	%m																	
%d	%d	%d																	
None	None	None																	
%H	%M	%S																	
Save As Multi	<ul style="list-style-type: none"> <li>■ You can arrange the display order of the hour, minute, and second in the file name with the File Time setting, or you can also choose not to display the time.</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <b>File Time</b>  <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>%H</td><td>%M</td><td>%S</td></tr> <tr><td>%H</td><td>%M</td><td>%S</td></tr> <tr><td>%M</td><td>%S</td><td>None</td></tr> <tr><td>%S</td><td>None</td><td>None</td></tr> </table> </div>	%H	%M	%S	%H	%M	%S	%M	%S	None	%S	None	None						
%H	%M	%S																	
%H	%M	%S																	
%M	%S	None																	
%S	None	None																	
File Name	<ul style="list-style-type: none"> <li>■ If the File Time, File Date, and File Name are set as follows, and the set Sample Number is reached at the time of 2015/6/26 12:02:30, then the file name for this file is: H0001_Date-2015-06-26_Time-12-02-30.</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <input checked="" type="radio"/> Save As Multi  <b>File Date</b>  <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>%y</td><td>%m</td><td>%d</td></tr> </table>   <b>File Time</b>  <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>%H</td><td>%M</td><td>%S</td></tr> </table>   <b>File Name</b> <input type="text" value="H0001"/> </div>	%y	%m	%d	%H	%M	%S												
%y	%m	%d																	
%H	%M	%S																	
Archive trigger bit	<ul style="list-style-type: none"> <li>■ In addition to waiting for the set Sample Number to be reached, you can also trigger the Archive trigger bit to execute the Save As Multi function.</li> <li>■ The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>																		

## 15.2 Historical Trend Graph

The Historical Trend Graph is for storing and displaying address values read during a specific time period. This element can display up to 60 curves and read up to 60 Words. You can save the data displayed on the Historical Trend Graph to the external storage devices that the HMI supports, including USB Disk and SD Card.

When you double-click the Historical Trend Graph, the property page is shown as follows.

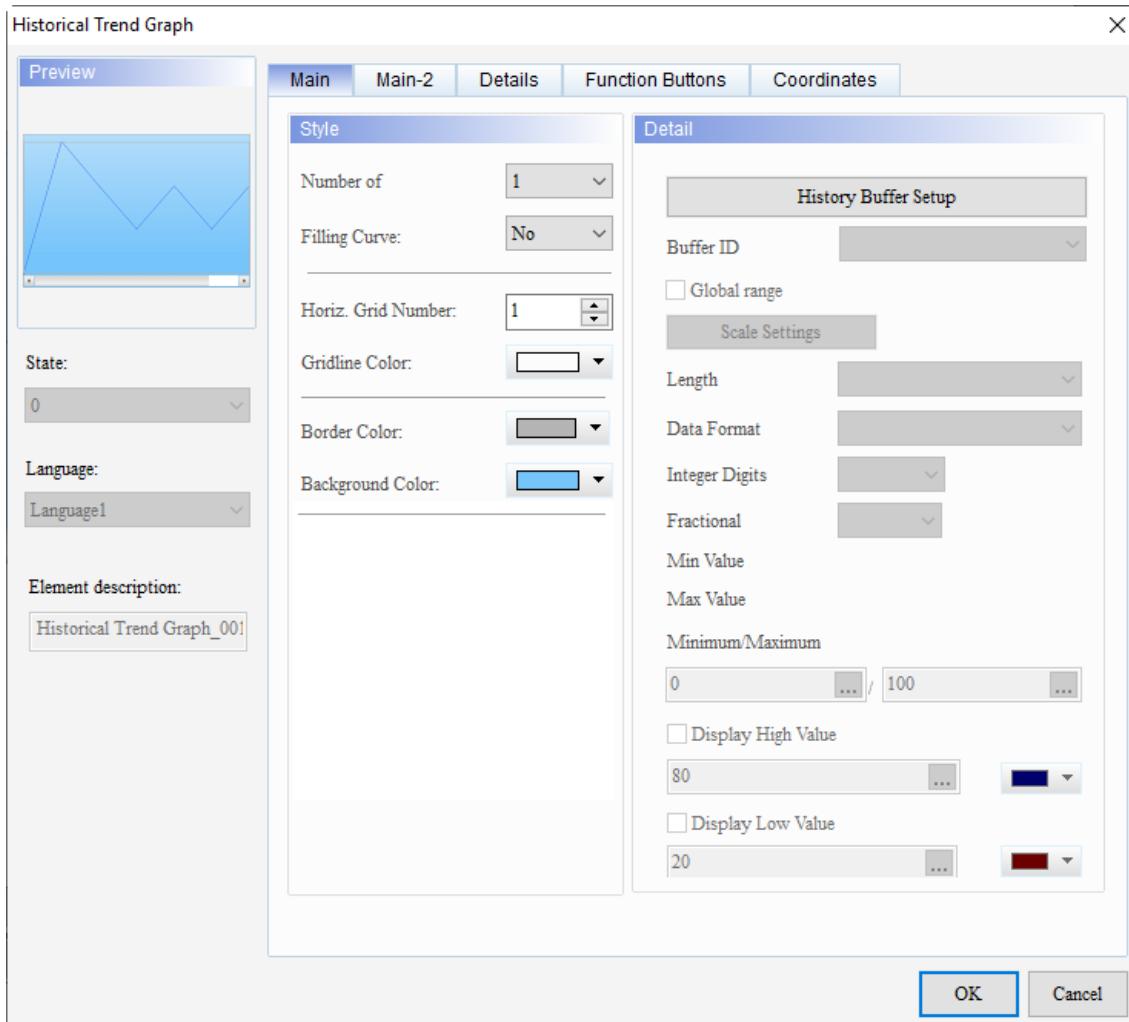


Figure 15.2.1 Properties of Historical Trend Graph

Table 15.2.1 Function page of Historical Trend Graph

Historical Trend Graph		
Function page	Description	
Preview	The Historical Trend Graph elements do not support multiple state values and multi-language data display.	
Main	Data	Set the Buffer ID.
	Global range	Set the Scale Settings, Length, Data Format, Integer Digits, Fractional, Minimum / Maximum, Display High Value, Display Low Value, High Value color, and Low Value color.
	Scale Settings	Set the Display scale, Display mark, Font size, Text Color, Mark Color, Scale Mark No., Subscale Mark No., and Scale Width.
	Style	Set the Number of Curves, Filling Curve, Horiz. Grid Number, Gridline Color, Border Color, and Background Color.
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Margin functions.	
Details	Scope setting	Set whether to enable the curve and set the Length, Start Position, Data Format, Integer Digits, Fractional Digits, Line Weight and Color, Minimum, and Maximum.
	Time/Date	Set the Display time/date, Time Interval, Time format, Date Format, and Color.
Function Buttons	Select the function buttons to enable and set the width and height of the buttons.	
Coordinates	Set the X and Y coordinates, width, and height of the elements.	

## ■ Main

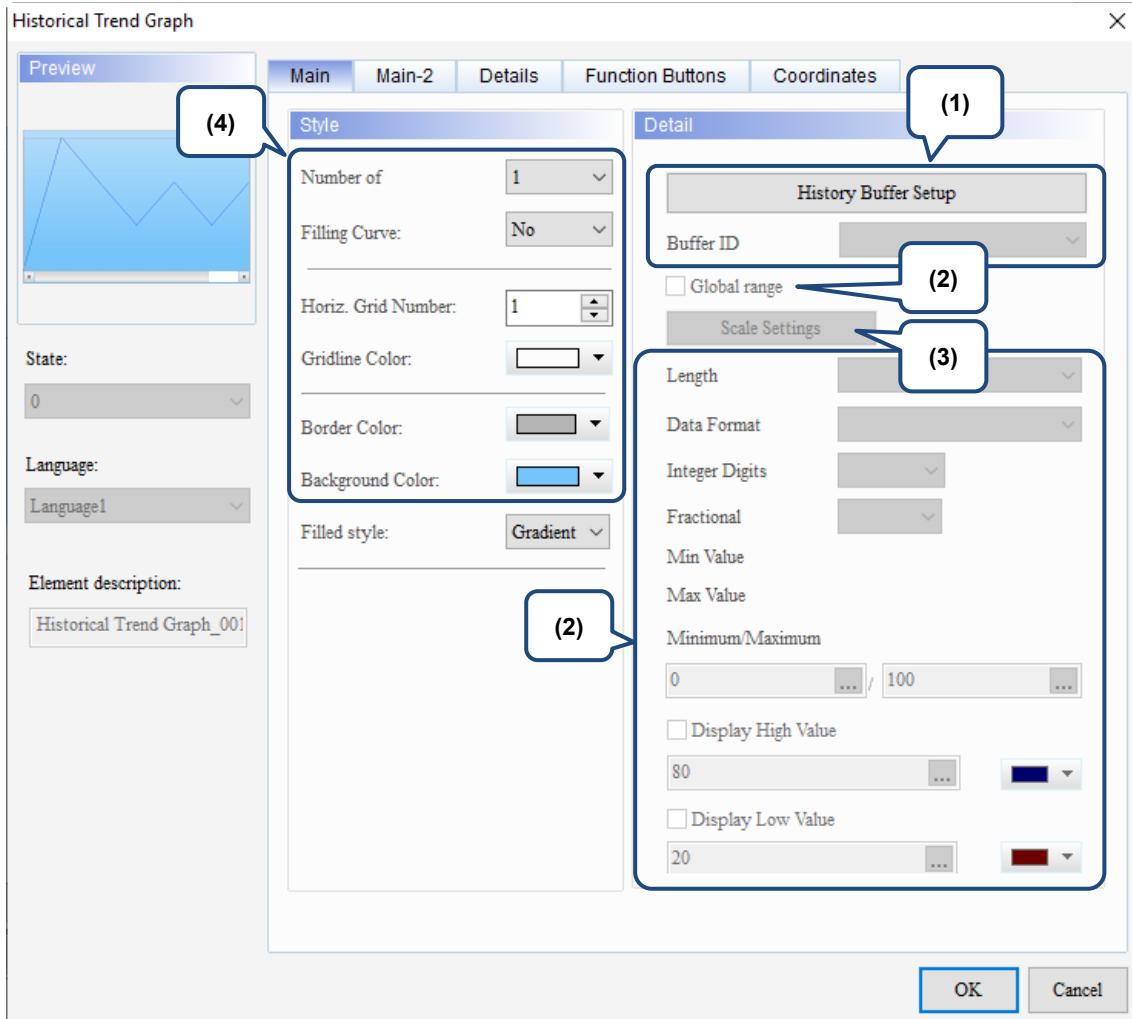
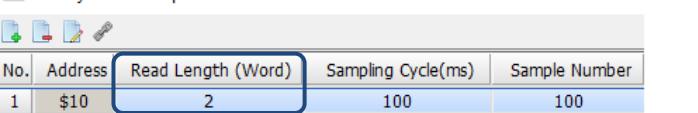
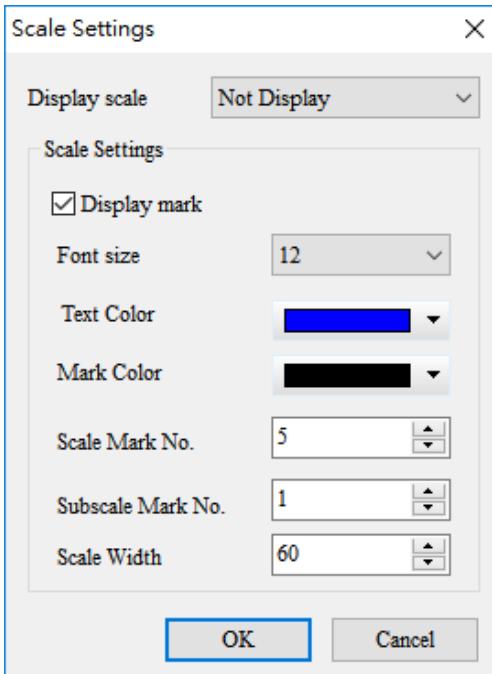


Figure 15.2.2 Main property page for the Historical Trend Graph element

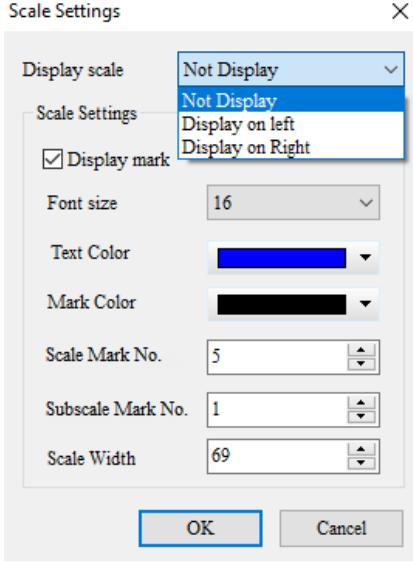
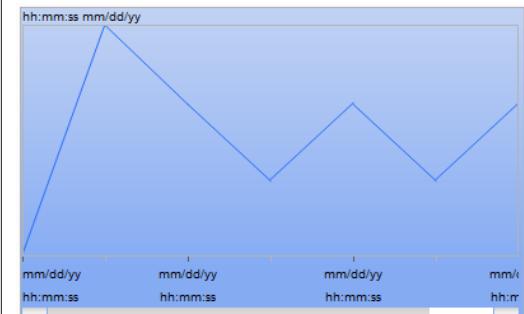
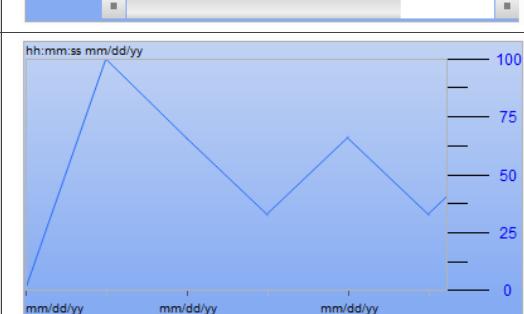
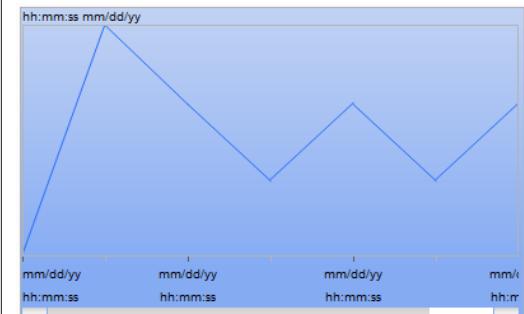
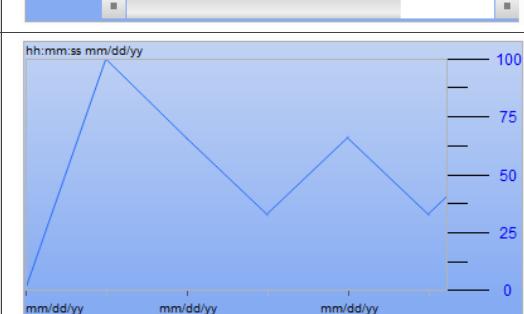
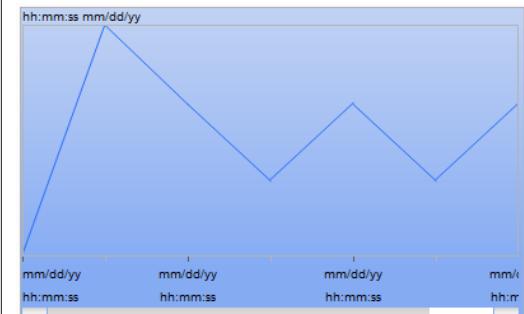
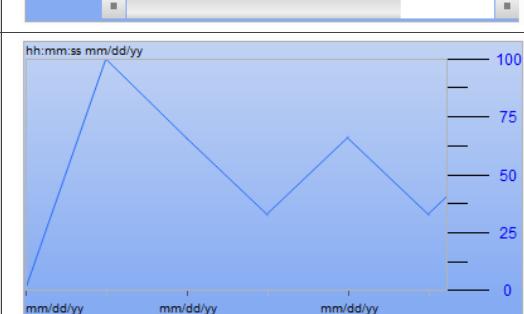
No.	Property	Function description
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer Setup. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can be up to 12 sets.</p>

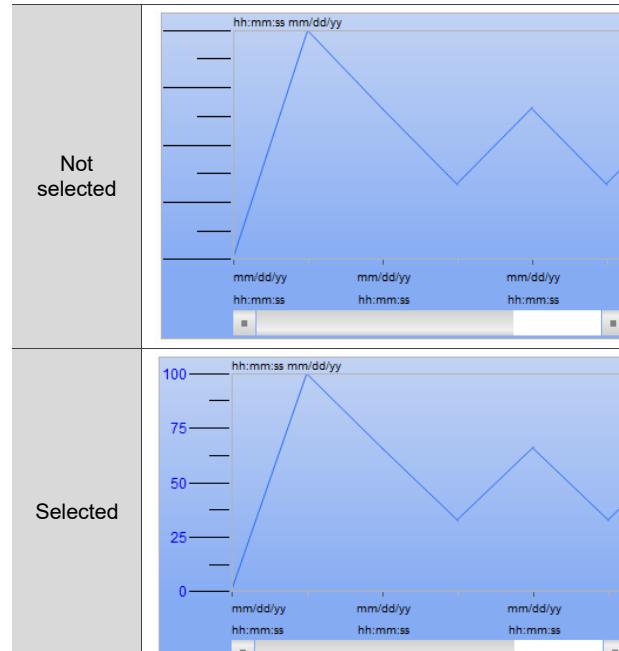
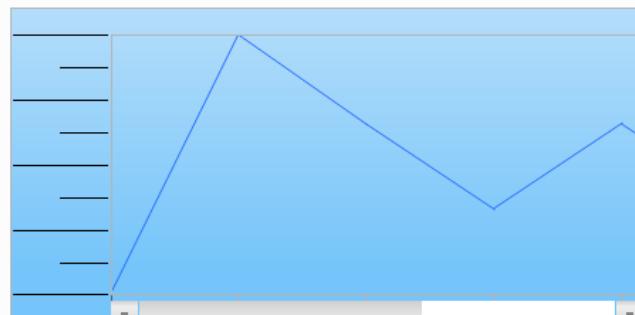
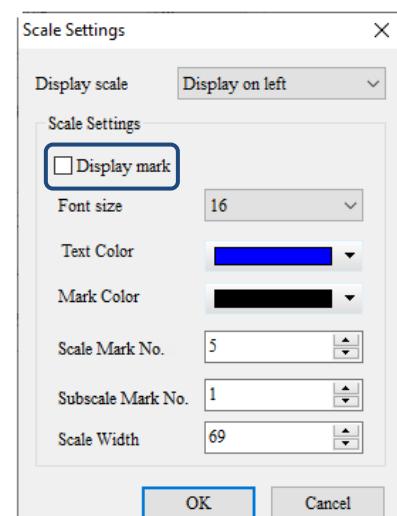
15

No.	Property	Function description																											
	Length	<ul style="list-style-type: none"> <li>The Length can be set as 1 or 2.</li> <li>If the Length is 1, it means the length of the read data is 1 word; if the Length is 2, it means the length of the read data is 2 words.</li> </ul> <p>Note: when you select 2 as the Length, the Read Length must be 2 or above.</p>  																											
(2)	Data Format	<ul style="list-style-type: none"> <li>Historical Trend Graph supports the following data formats:</li> </ul> <table border="1"> <tr><td>Data Format</td><td>Unsigned Decimal</td></tr> <tr><td></td><td>BCD</td></tr> <tr><td></td><td>Signed BCD</td></tr> <tr><td></td><td>Signed Decimal</td></tr> <tr><td></td><td>Unsigned Decimal</td></tr> <tr><td></td><td>Hexadecimal</td></tr> <tr><td></td><td>Floating</td></tr> </table> <ul style="list-style-type: none"> <li>Floating is available only when the Length is 2.</li> </ul>	Data Format	Unsigned Decimal		BCD		Signed BCD		Signed Decimal		Unsigned Decimal		Hexadecimal		Floating													
Data Format	Unsigned Decimal																												
	BCD																												
	Signed BCD																												
	Signed Decimal																												
	Unsigned Decimal																												
	Hexadecimal																												
	Floating																												
	Integer / Fractional Digits	You can set the displaying number of integer digits and the number of decimal places.																											
	Minimum / Maximum	<ul style="list-style-type: none"> <li>If the <b>Global range</b> check box is selected, you cannot set the Minimum and Maximum values for the curves on the Details page; instead, the range is determined by the minimum and maximum of the Global range.</li> <li>If the <b>Global range</b> check box is not selected, you can set the Minimum and Maximum values on the Details page.</li> <li>You can set the Minimum and maximum values as constants or variables.</li> <li>When the Minimum and Maximum values are variables, the controller address (Word) and the internal register address (Word) are supported.</li> <li>When the Minimum and Maximum values are constants, the allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.</li> </ul> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="6">DWord</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to +99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294697295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td>Floating</td> <td>0 to 99999999</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	DWord	BCD	0 to 99999999	Signed BCD	-9999999 to +99999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294697295	Hex	0 to 0xFFFFFFFF	Floating	0 to 99999999
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	Hex	0 to 0xFFFFFFFF																											
	Floating	0 to 99999999																											
	Display High Value / Display Low Value	Display High / Low Values are available on the Historical Trend Graph. You can set the Display High / Low Values with constants or using the internal memory or controller register address (Word). Also, you can set the displaying colors for Display High / Low Values.																											

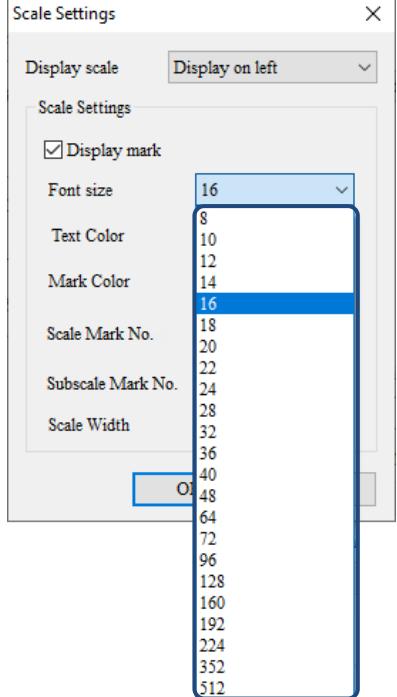
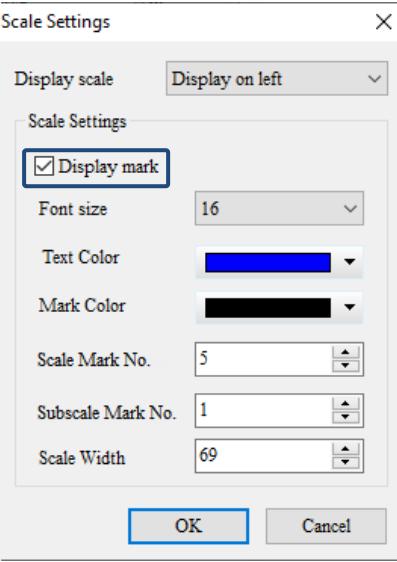
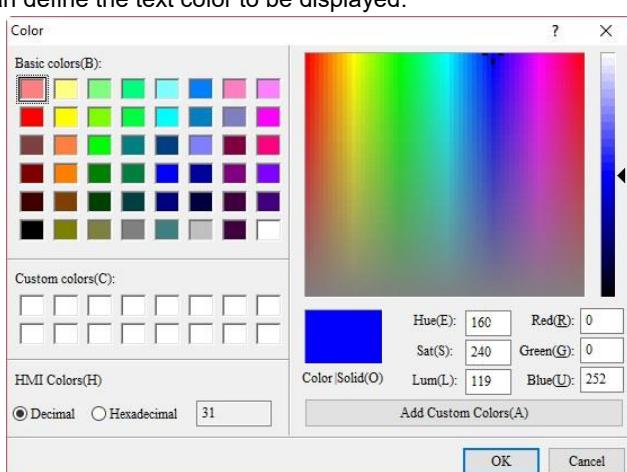
No.	Property	Function description				
		 <p>Scale Settings is available only when the <b>Global range</b> check box is selected.</p>				
(3)	Scale Settings	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px; vertical-align: top;">           Not selected         </td> <td style="width: 70%; padding: 5px;"> <input type="checkbox"/> Global range  <b>Scale Settings</b>            Length: 1            Data Format: Unsigned Decimal            Integer Digits: 4            Fractional: 0            Min 0            Max 9999         </td> </tr> <tr> <td style="padding: 5px; vertical-align: top;">           Selected         </td> <td style="padding: 5px;"> <input checked="" type="checkbox"/> Global range  <b>Scale Settings</b>            Length: 1            Data Format: Unsigned Decimal            Integer Digits: 4            Fractional: 0            Min 0            Max 9999         </td> </tr> </table>	Not selected	<input type="checkbox"/> Global range <b>Scale Settings</b> Length: 1 Data Format: Unsigned Decimal Integer Digits: 4 Fractional: 0 Min 0 Max 9999	Selected	<input checked="" type="checkbox"/> Global range <b>Scale Settings</b> Length: 1 Data Format: Unsigned Decimal Integer Digits: 4 Fractional: 0 Min 0 Max 9999
Not selected	<input type="checkbox"/> Global range <b>Scale Settings</b> Length: 1 Data Format: Unsigned Decimal Integer Digits: 4 Fractional: 0 Min 0 Max 9999					
Selected	<input checked="" type="checkbox"/> Global range <b>Scale Settings</b> Length: 1 Data Format: Unsigned Decimal Integer Digits: 4 Fractional: 0 Min 0 Max 9999					

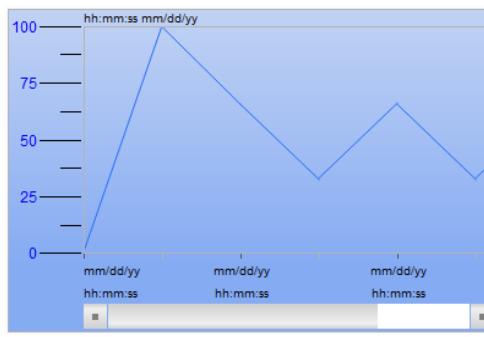
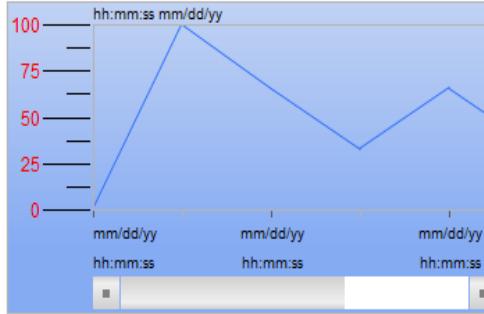
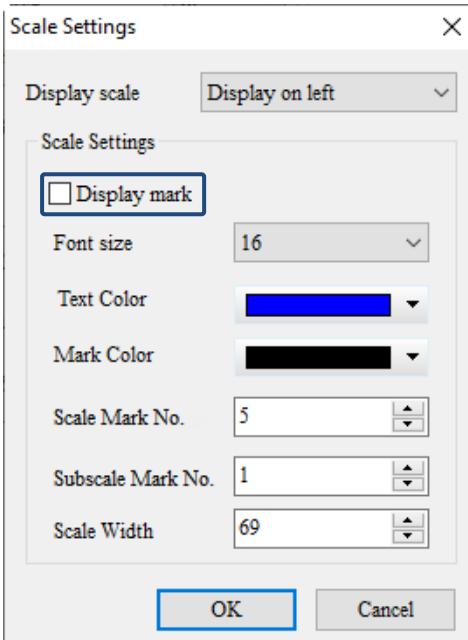
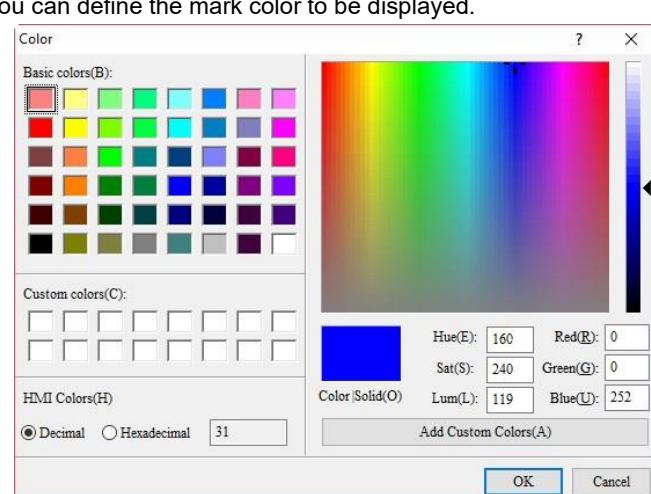
15

No.	Property	Function description									
		 <p>The Display scale options include Not Display, Display on left, and Display on Right.</p>									
(3)	Scale Settings	<table border="1"> <tr> <td>Display scale</td> <td>Not Display</td> <td></td> </tr> <tr> <td></td> <td>Display on left</td> <td></td> </tr> <tr> <td></td> <td>Display on Right</td> <td></td> </tr> </table>	Display scale	Not Display			Display on left			Display on Right	
Display scale	Not Display										
	Display on left										
	Display on Right										

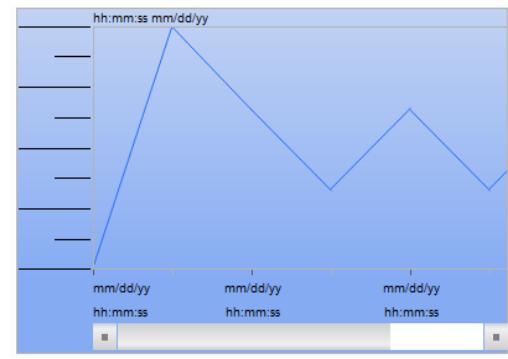
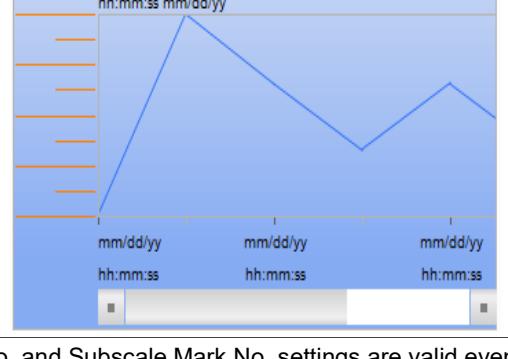
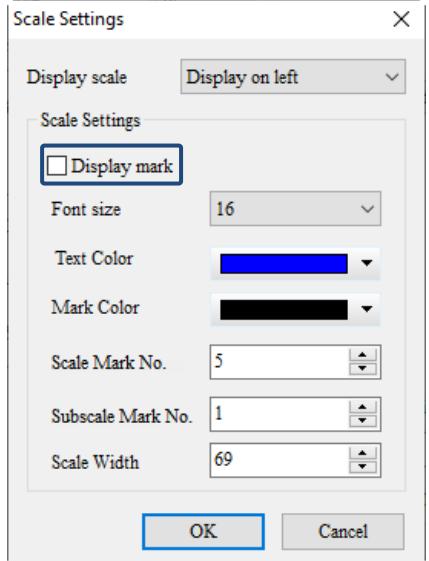
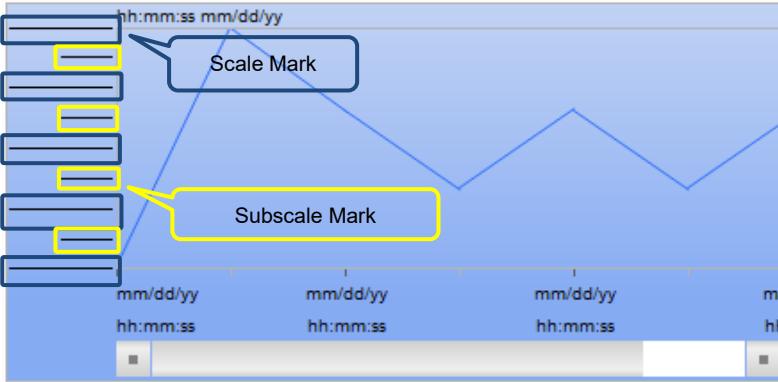
No.	Property	Function description
	Display mark	<p>Select to display the scale numbers or not.</p> 
(3)	Scale Settings Font size	<p>The Font size setting is valid only when <b>Display mark</b> is selected.</p>  

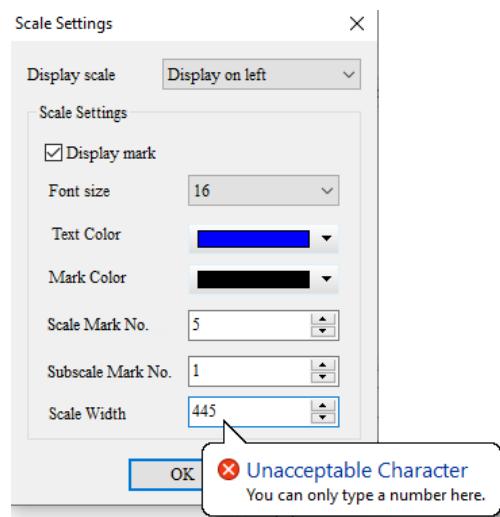
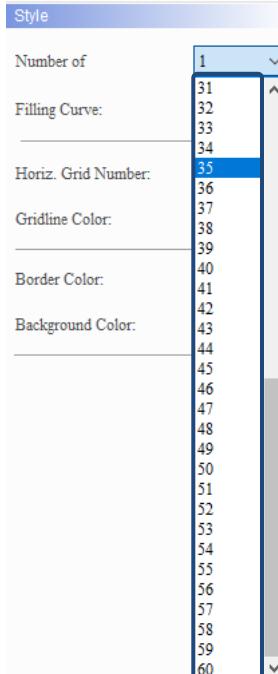
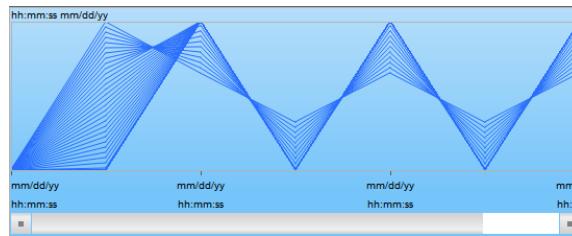
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No.	Property	Function description
(3)	Font size	Font size is for setting the size of the numbers displayed on the scale with the sizes 8 - 512 available. 
	Text Color	The Text Color setting is valid only when <b>Display mark</b> is selected. 
	Scale Settings	You can define the text color to be displayed. 

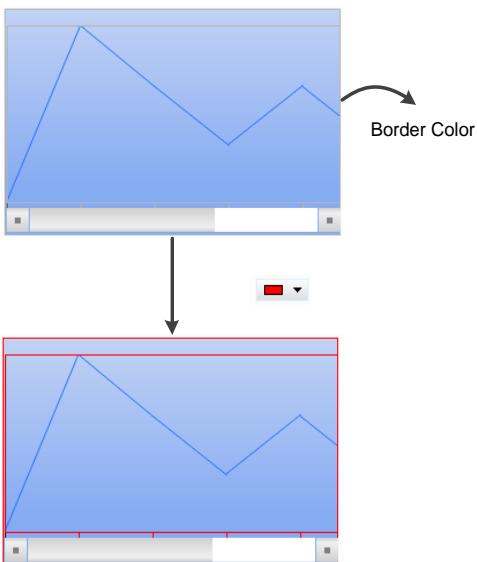
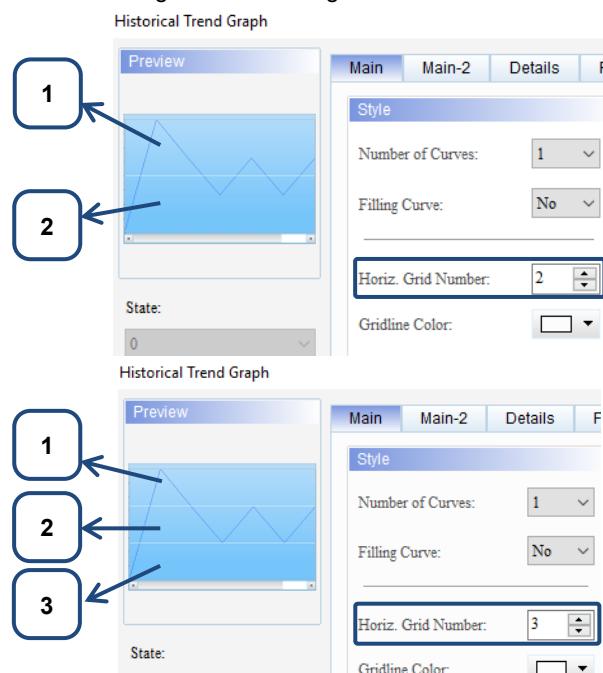
No.	Property	Function description	
	Text Color	<p>Before change</p> 	
(3)	Scale Settings	<ul style="list-style-type: none"> <li>The Mark Color setting is valid even if <b>Display mark</b> is not selected.</li> </ul> 	
	Mark Color	<ul style="list-style-type: none"> <li>You can define the mark color to be displayed.</li> </ul>	

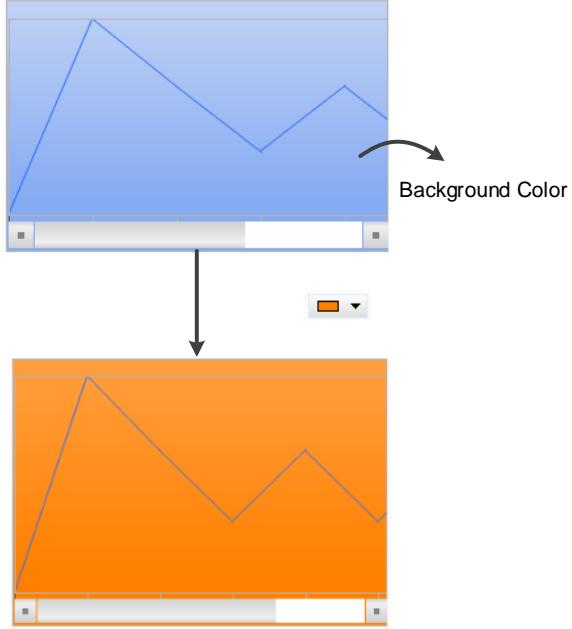
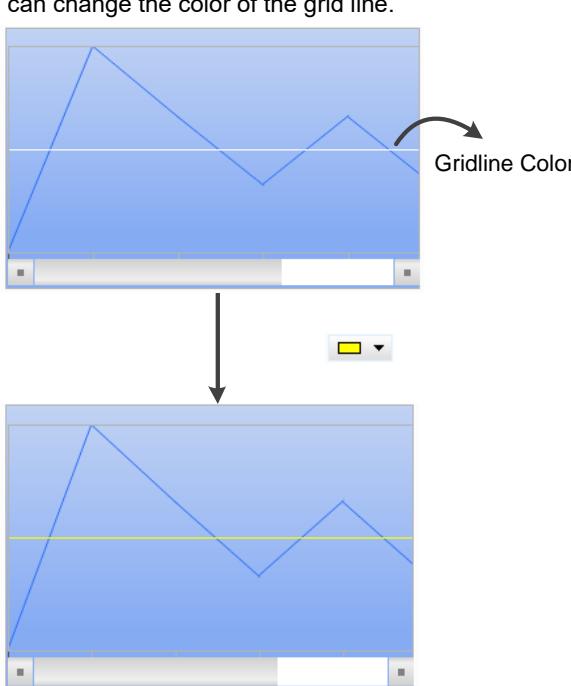
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No.	Property	Function description	
	Mark Color	<p>Before change</p> 	
(3)	Scale Settings	<p>After change</p> 	
	Scale Mark No.	<ul style="list-style-type: none"> <li>The Scale Mark No. and Subscale Mark No. settings are valid even if <b>Display mark</b> is not selected.</li> </ul>	
	Subscale Mark No.	<ul style="list-style-type: none"> <li>The minimum is 1 and the maximum is 99 for both the Scale Mark No. and Subscale Mark No.</li> <li>When the Scale Mark No. is 5 and the Subscale Mark No. is 1, the graph is as follows.</li> </ul>	

No.	Property	Function description
(3)	Scale Settings Scale Width	<p>When the font size is set too big, you can adjust the Scale Width to show the text.</p> <p>Note:</p> <ol style="list-style-type: none"> <li>1. The Scale Width must be smaller than the element width.</li> <li>2. When you set the value to be larger than the element width, the Scale Width is immediately adjusted to the element width minus 1.</li> <li>3. If you enter a non-numeric character, the software displays the following error message.</li> </ol> 
(4)	Style Number of Curves	<ul style="list-style-type: none"> <li>■ A Historical Trend Graph element supports up to 60 curves.</li> </ul>  <ul style="list-style-type: none"> <li>■ If you select 60 curves, you can still change the width and color of each curve.</li> </ul> 

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No.	Property	Function description
(4)	Filling Curve	<ul style="list-style-type: none"> <li>Set to fill the area under the curve.</li> <li>The default is No. If set to Yes, the curve is as follows.</li> </ul> 
	Border Color	<p>Set the Historical Trend Graph element border color.</p> 
	Horiz. Grid Number	<ul style="list-style-type: none"> <li>The maximum horizontal grid count is 50.</li> <li>Horiz. Grid Number sets the number of zones the Historical Trend Graph element is divided into. The default is 1, meaning there is no grid line. If the Horiz. Grid Number is set to 2, there is one grid line dividing the Historical Trend Graph element into 2 zones; if set to 3, there are two grid lines dividing the element into 3 zones, and so on.</li> </ul> 

No.	Property	Function description
	Background Color	<p>Set the background color of the element.</p> 
(4)	Style	<ul style="list-style-type: none"> <li>■ The Gridline Color is the color of the grid line in the Historical Trend Graph. The default is .</li>  <li>■ You can change the color of the grid line.</li>  </ul>

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## ■ Main-2

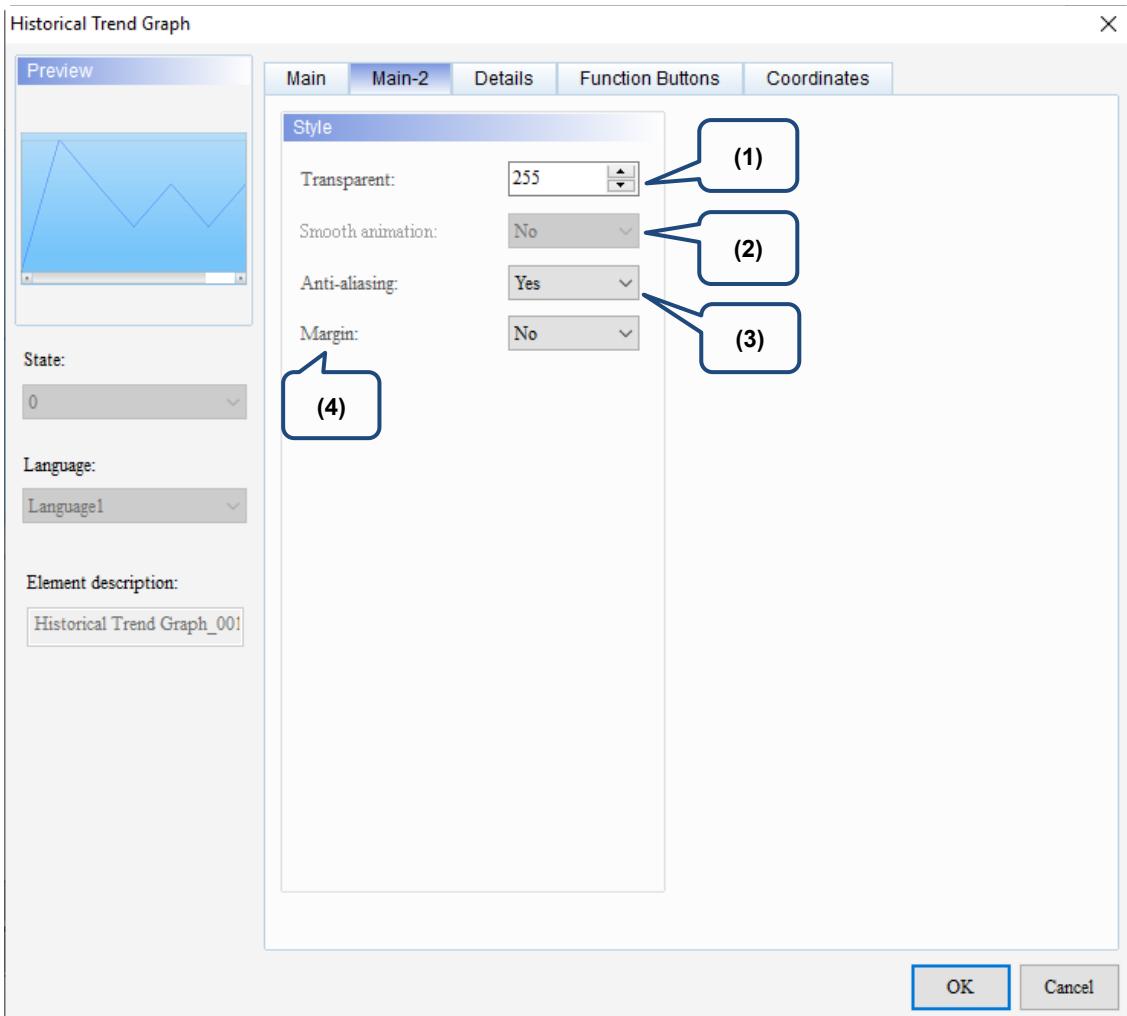


Figure 15.2.3 Main-2 property page for the Historical Trend Graph element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When this function is enabled, the element display becomes more delicate without jagged edges.				
(4)	Margin	<p>The Margin function is available for this element. When you select Yes for Margin, the element indents as shown in the following figure.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 10px;">Margin is set to Yes</td> <td style="text-align: center; padding: 10px;"> </td> </tr> <tr> <td style="text-align: center; padding: 10px;">Margin is set to No</td> <td style="text-align: center; padding: 10px;"> </td> </tr> </table>	Margin is set to Yes		Margin is set to No	
Margin is set to Yes						
Margin is set to No						

## ■ Details

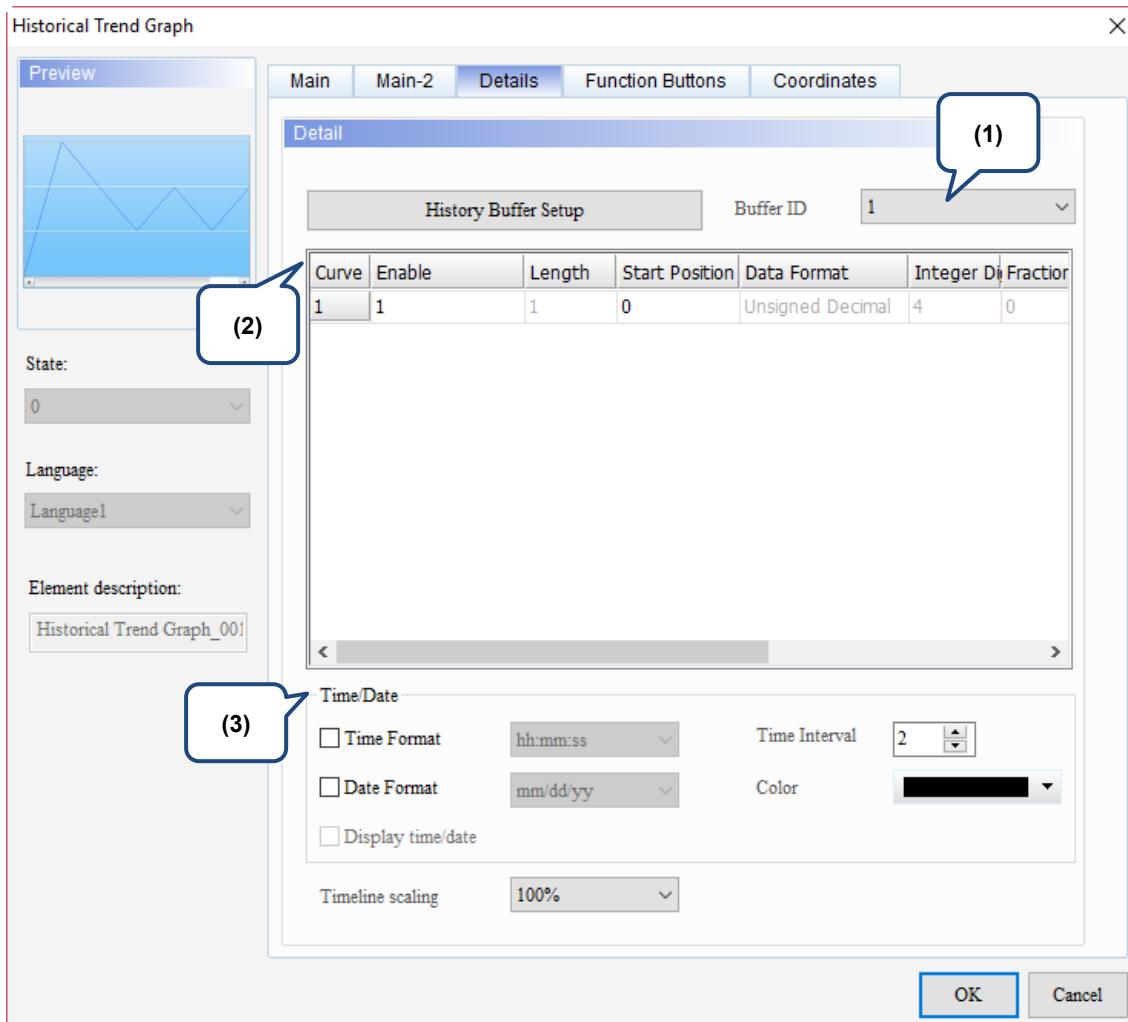
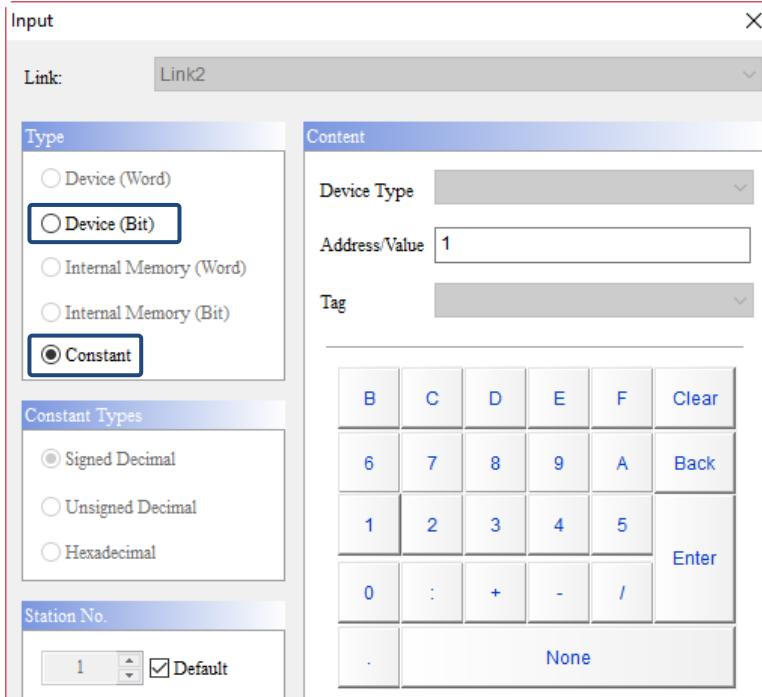
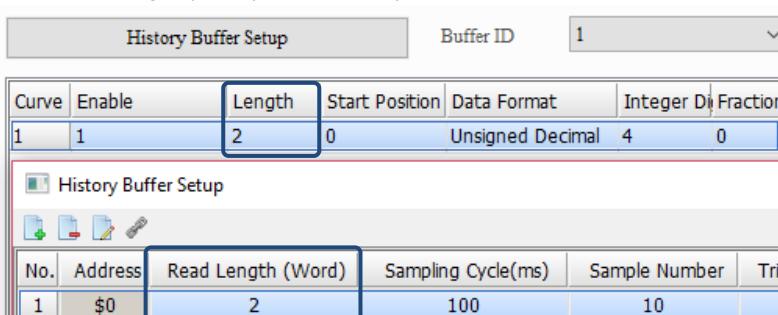
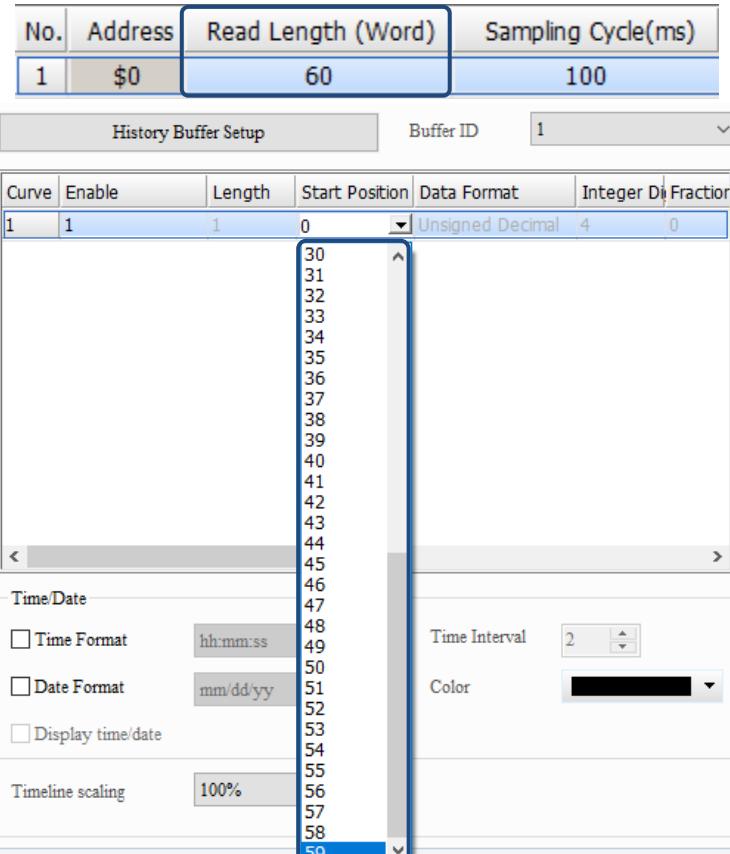
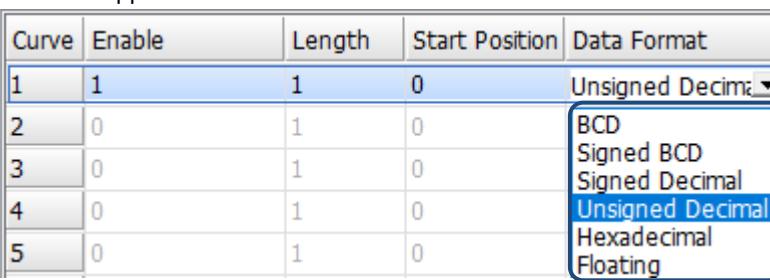


Figure 15.2.4 Details property page for the Historical Trend Graph element

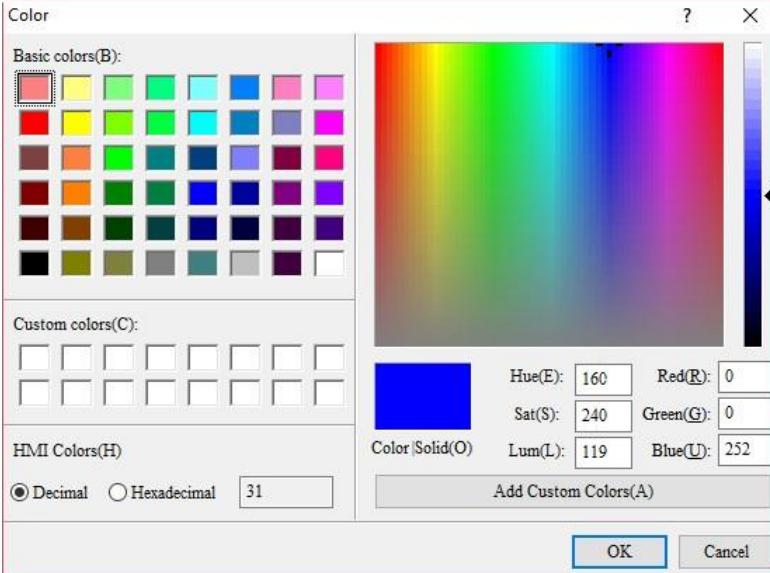
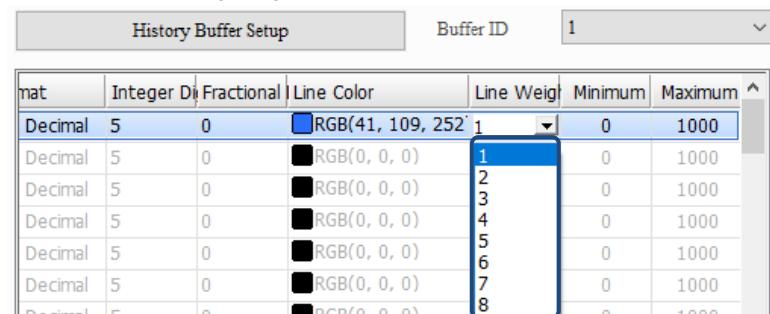
No.	Property	Function description																																																				
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer Setup. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can be up to 12 sets.</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> </tr> </thead> <tbody> <tr><td>1</td><td>\$0</td><td>1</td><td>100</td></tr> <tr><td>2</td><td>\$1</td><td>1</td><td>100</td></tr> <tr><td>3</td><td>\$2</td><td>1</td><td>100</td></tr> <tr><td>4</td><td>\$3</td><td>1</td><td>100</td></tr> <tr><td>5</td><td>\$5</td><td>1</td><td>100</td></tr> <tr><td>6</td><td>\$6</td><td>1</td><td>100</td></tr> <tr><td>7</td><td>\$7</td><td>1</td><td>100</td></tr> <tr><td>8</td><td>\$8</td><td>1</td><td>100</td></tr> <tr><td>9</td><td>\$9</td><td>1</td><td>100</td></tr> <tr><td>10</td><td>\$10</td><td>1</td><td>100</td></tr> <tr><td>11</td><td>\$11</td><td>1</td><td>100</td></tr> <tr><td>12</td><td></td><td></td><td></td></tr> </tbody> </table> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>History Buffer Setup</p> <p>Buffer ID: 1</p> <p><input type="checkbox"/> Global range</p> <p>Scale Settings: 1</p> <p>Length: 100</p> <p>Data Format: Unsigned Decimal</p> <p>Integer Digits: 4</p> <p>Fractional Digits: 0</p> </div>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	1	\$0	1	100	2	\$1	1	100	3	\$2	1	100	4	\$3	1	100	5	\$5	1	100	6	\$6	1	100	7	\$7	1	100	8	\$8	1	100	9	\$9	1	100	10	\$10	1	100	11	\$11	1	100	12			
No.	Address	Read Length (Word)	Sampling Cycle(ms)																																																			
1	\$0	1	100																																																			
2	\$1	1	100																																																			
3	\$2	1	100																																																			
4	\$3	1	100																																																			
5	\$5	1	100																																																			
6	\$6	1	100																																																			
7	\$7	1	100																																																			
8	\$8	1	100																																																			
9	\$9	1	100																																																			
10	\$10	1	100																																																			
11	\$11	1	100																																																			
12																																																						

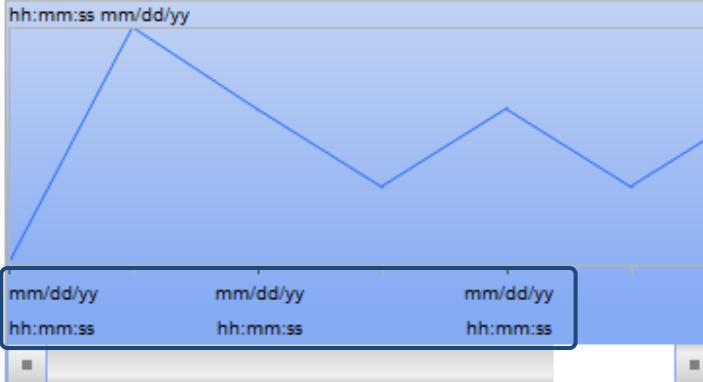
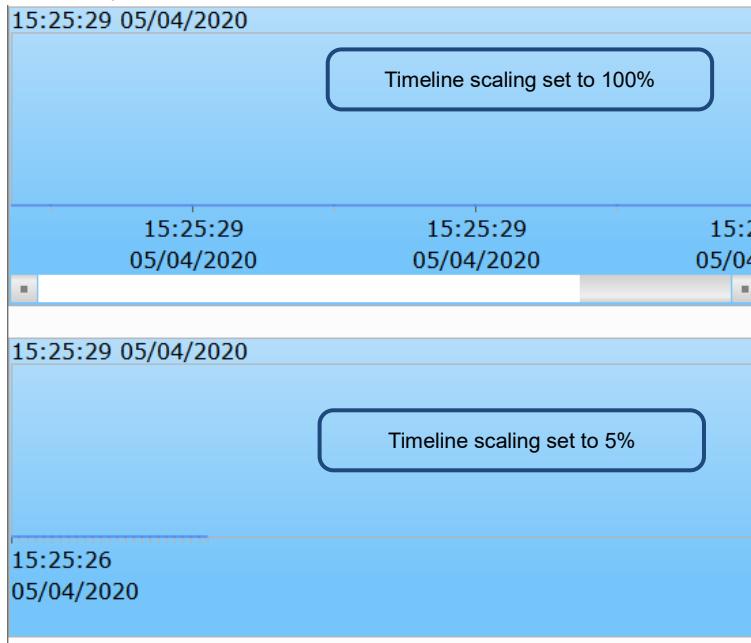
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No.	Property	Function description																									
(2)	Curve setting	<ul style="list-style-type: none"> <li>Set whether to enable the curve for data reading.</li> <li>If Constant is selected for Type, then setting the value to 1 indicates to enable and setting to 0 indicates to disable.</li> <li>If Bit is selected for Type, then Bit On indicates to enable and Bit Off indicates to disable.</li> <li>The Value supports the data types of Device (Bit), Internal Memory (Bit), and Constant.</li> </ul> 																									
	Length	<ul style="list-style-type: none"> <li>You can set the Length to 1 or 2. You can set the Length to 2 only when Read Length (Word) in the History Buffer Setup is set to 2 or above.</li> </ul>  <p><b>History Buffer Setup</b></p> <table border="1"> <thead> <tr> <th>Curve</th> <th>Enable</th> <th>Length</th> <th>Start Position</th> <th>Data Format</th> <th>Integer D</th> <th>Fraction</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>2</td> <td>0</td> <td>Unsigned Decimal</td> <td>4</td> <td>0</td> </tr> </tbody> </table> <p><b>History Buffer Setup</b></p> <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> <th>Sample Number</th> <th>Trig</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$0</td> <td>2</td> <td>100</td> <td>10</td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>When the <b>Global range</b> check box is selected, you cannot set this function.</li> </ul>	Curve	Enable	Length	Start Position	Data Format	Integer D	Fraction	1	1	2	0	Unsigned Decimal	4	0	No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trig	1	\$0	2	100	10
Curve	Enable	Length	Start Position	Data Format	Integer D	Fraction																					
1	1	2	0	Unsigned Decimal	4	0																					
No.	Address	Read Length (Word)	Sampling Cycle(ms)	Sample Number	Trig																						
1	\$0	2	100	10																							

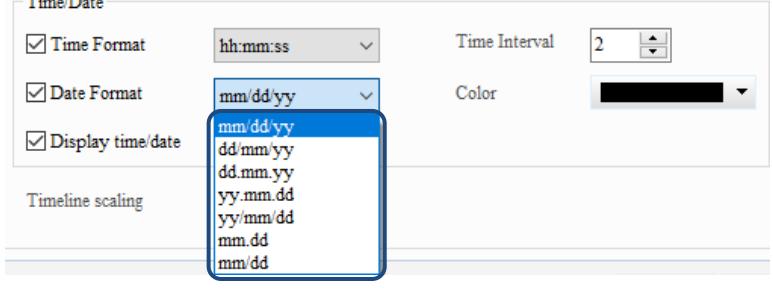
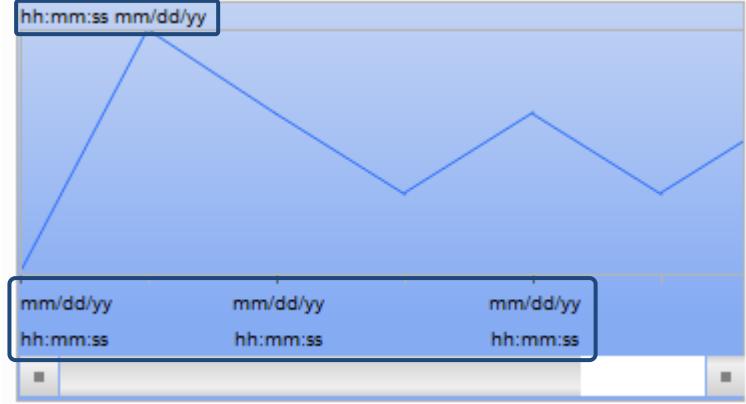
No.	Property	Function description
(2)	Start Position	<ul style="list-style-type: none"> <li>The Start Position setting is determined by the set Read Length (Word).</li> <li>If the Read Length (Word) is 60, the Start Position ranges from 0 to 59.</li> </ul>  <p>The screenshot shows the 'History Buffer Setup' dialog. At the top, there are tabs for 'No.', 'Address', 'Read Length (Word)', and 'Sampling Cycle(ms)'. Under 'Read Length (Word)', the value is set to 60. The 'Sampling Cycle(ms)' tab is selected, showing a value of 100. Below these, a 'Buffer ID' dropdown is set to 1. The main area contains a table for 'Curve' settings. The first row has 'Curve' set to 1, 'Enable' to 1, 'Length' to 1, and 'Start Position' set to 0. The 'Data Format' dropdown is set to 'Unsigned Decimal'. A dropdown menu is open over the 'Start Position' value '0', listing values from 30 to 59. To the right of the table, there are sections for 'Time/Date' (with checkboxes for Time Format, Date Format, and Display time/date), 'Time Interval' (set to 2), and 'Color' (set to black).</p>
	Curve setting	<ul style="list-style-type: none"> <li>The supported data formats are as follows:</li> </ul>  <p>The screenshot shows the 'History Buffer Setup' dialog. The 'Data Format' dropdown is currently set to 'Unsigned Decimal'. A context menu is open over this dropdown, listing options: BCD, Signed BCD, Signed Decimal, Unsigned Decimal (which is highlighted in blue), Hexadecimal, and Floating.</p> <ul style="list-style-type: none"> <li>When the <b>Global range</b> check box is selected, you cannot set this function.</li> </ul> <p>Note:</p> <ol style="list-style-type: none"> <li>If you select Floating as the Data Format, set the Length to 2.</li> <li>If you select Floating as the Data Format, but set the Length to 1 word, the software displays a message to remind you that you need to set the Length to 2 or above.</li> </ol> <p>DOPSoft <span style="float: right;">X</span></p> <div style="border: 1px solid red; padding: 10px; margin-top: 10px;"> <p><span style="color: red;">×</span> Select Floating Data Format (At least 2 words are required for the sampling data format in history buffer.)</p> <p style="text-align: right;"><span style="border: 1px solid blue; padding: 2px 10px; background-color: #e0f2e0;">OK</span></p> </div>

15

No.	Property	Function description																											
(2)	Integer / Fractional Digits	<ul style="list-style-type: none"> <li>You can set the displaying number of integer digits and the number of decimal places.</li> <li>When the <b>Global range</b> check box is selected, you cannot set this function.</li> </ul>																											
	Line Color	<p>You can set the line color for the curve.</p> 																											
	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 																											
	Minimum / Maximum	<ul style="list-style-type: none"> <li>If the <b>Global range</b> check box is selected, you cannot set the Minimum and Maximum values for the curves; instead, the range is determined by the minimum and maximum of the Global range.</li> <li>If the <b>Global range</b> check box is not selected, you can set the Minimum and Maximum values for the curves.</li> <li>The allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.</li> </ul> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="6">DWord</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to +99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294697295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td>Floating</td> <td>0 to 9999999</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	DWord	BCD	0 to 99999999	Signed BCD	-9999999 to +99999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294697295	Hex	0 to 0xFFFFFFFF	Floating	0 to 9999999
Data Type	Data Format	Allowable range																											
Word	BCD	0 to 9999																											
	Signed BCD	-999 to +9999																											
	Signed Decimal	-32768 to +32767																											
	Unsigned Decimal	0 to 65535																											
	Hex	0 to 0xFFFF																											
DWord	BCD	0 to 99999999																											
	Signed BCD	-9999999 to +99999999																											
	Signed Decimal	-2147483648 to +2147483647																											
	Unsigned Decimal	0 to 4294697295																											
	Hex	0 to 0xFFFFFFFF																											
	Floating	0 to 9999999																											

No.	Property	Function description
(3)	Display time/date	<ul style="list-style-type: none"> <li>When you select the <b>Display time/date</b> check box, the time scale displays at the bottom of the Historical Trend Graph element; if it is not selected, the time scale does not display.</li> </ul> 
	Time/Date	<ul style="list-style-type: none"> <li>You can set the number of the Time Interval (up to 9,999) when you select the <b>Display time/date</b> check box. The preceding figure displays two time intervals.</li> </ul>
	Timeline scaling	<ul style="list-style-type: none"> <li>The default is 100%.</li> <li>The smaller the setting value, the more sampling points can be displayed.</li> </ul> 

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No.	Property	Function description
(3)	Time Format / Date Format	<ul style="list-style-type: none"> <li>Two time formats are supported as follows:</li> </ul>  <ul style="list-style-type: none"> <li>Seven date formats are supported as follows:</li> </ul> 
	Color	<p>With this setting, you can change the displaying color of the time and date, including the recorded time and date shown on top of the Historical Trend Graph and the time scales. The default is .</p> 

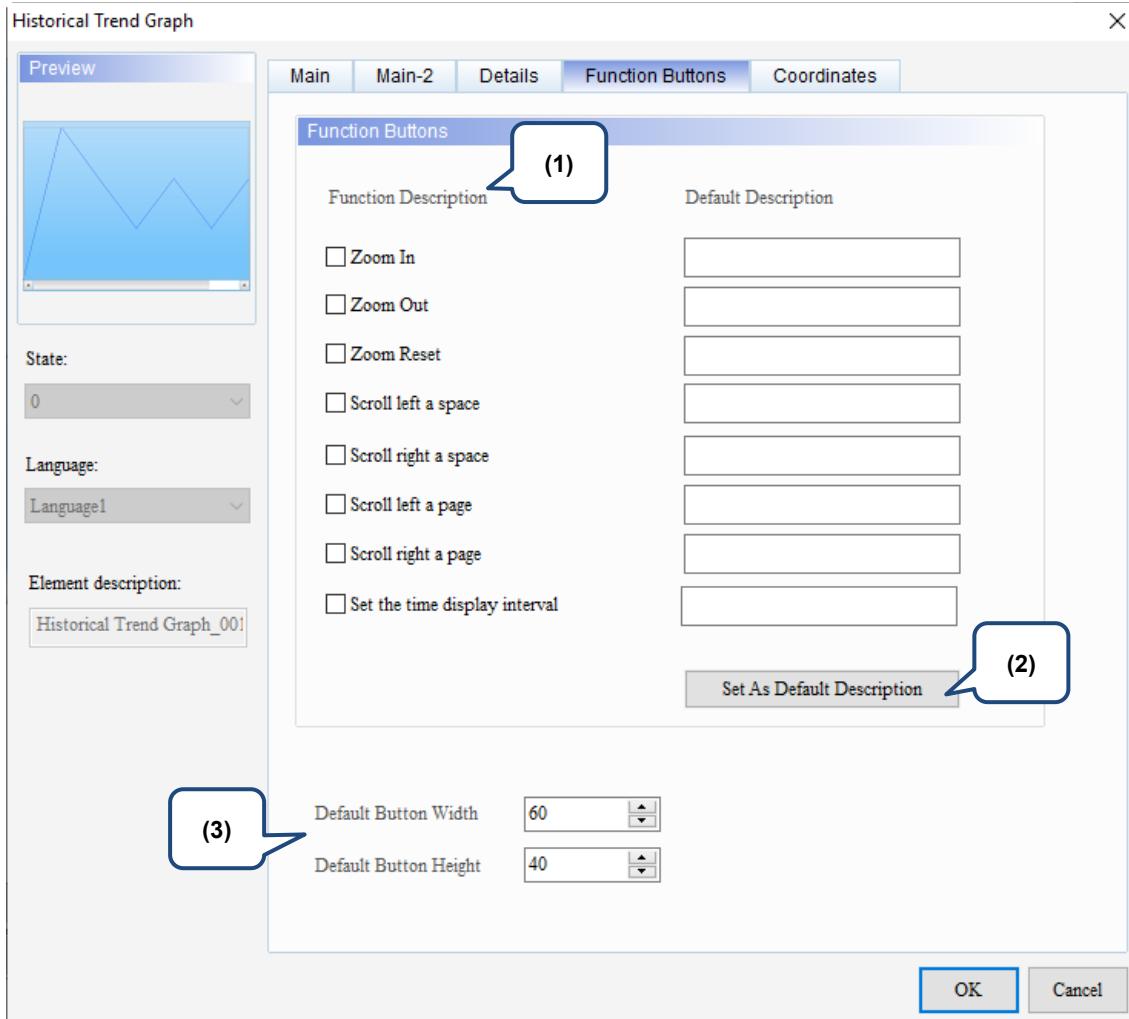
**■ Function Buttons**

Figure 15.2.5 Function Buttons property page for the Historical Trend Graph element

15

No.	Property	Function description																		
(1)	Function Description	<p>Select the function buttons to display on the Historical Trend Graph element.</p> <table border="1"> <tr><td>Zoom In</td><td>Zoom in on the history data of X-axis.</td></tr> <tr><td>Zoom Out</td><td>Zoom out on the history data of X-axis.</td></tr> <tr><td>Zoom Reset</td><td>Reset the history data of X-axis to the default size.</td></tr> <tr><td>Scroll left a space</td><td>Scroll to the left a bit.</td></tr> <tr><td>Scroll right a space</td><td>Scroll to the right a bit.</td></tr> <tr><td>Scroll left a page</td><td>Scroll to the left for a page.</td></tr> <tr><td>Scroll right a page</td><td>Scroll to the right for a page.</td></tr> <tr><td>Set the time display interval</td><td>Display the corresponding data according to the set time interval.</td></tr> </table>	Zoom In	Zoom in on the history data of X-axis.	Zoom Out	Zoom out on the history data of X-axis.	Zoom Reset	Reset the history data of X-axis to the default size.	Scroll left a space	Scroll to the left a bit.	Scroll right a space	Scroll to the right a bit.	Scroll left a page	Scroll to the left for a page.	Scroll right a page	Scroll to the right for a page.	Set the time display interval	Display the corresponding data according to the set time interval.		
Zoom In	Zoom in on the history data of X-axis.																			
Zoom Out	Zoom out on the history data of X-axis.																			
Zoom Reset	Reset the history data of X-axis to the default size.																			
Scroll left a space	Scroll to the left a bit.																			
Scroll right a space	Scroll to the right a bit.																			
Scroll left a page	Scroll to the left for a page.																			
Scroll right a page	Scroll to the right for a page.																			
Set the time display interval	Display the corresponding data according to the set time interval.																			
(2)	Set As Default Description	<p>When you press <b>Set As Default Description</b>, the default strings are automatically filled in the Default Description fields.</p> <div style="background-color: #e0e0ff; padding: 5px; margin-bottom: 10px;"> <b>Function Buttons</b> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Function Description</th> <th style="text-align: left;">Default Description</th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/> Zoom In</td><td>Zoom In</td></tr> <tr><td><input type="checkbox"/> Zoom Out</td><td>Zoom Out</td></tr> <tr><td><input type="checkbox"/> Zoom Reset</td><td>Zoom Reset</td></tr> <tr><td><input type="checkbox"/> Scroll left a space</td><td>Scroll left a space</td></tr> <tr><td><input type="checkbox"/> Scroll right a space</td><td>Scroll right a space</td></tr> <tr><td><input type="checkbox"/> Scroll left a page</td><td>Scroll left a page</td></tr> <tr><td><input type="checkbox"/> Scroll right a page</td><td>Scroll right a page</td></tr> <tr><td><input type="checkbox"/> Set the time display interval</td><td>Set the time display interval</td></tr> </tbody> </table> <p style="text-align: right;"><b>Set As Default Description</b></p>	Function Description	Default Description	<input type="checkbox"/> Zoom In	Zoom In	<input type="checkbox"/> Zoom Out	Zoom Out	<input type="checkbox"/> Zoom Reset	Zoom Reset	<input type="checkbox"/> Scroll left a space	Scroll left a space	<input type="checkbox"/> Scroll right a space	Scroll right a space	<input type="checkbox"/> Scroll left a page	Scroll left a page	<input type="checkbox"/> Scroll right a page	Scroll right a page	<input type="checkbox"/> Set the time display interval	Set the time display interval
Function Description	Default Description																			
<input type="checkbox"/> Zoom In	Zoom In																			
<input type="checkbox"/> Zoom Out	Zoom Out																			
<input type="checkbox"/> Zoom Reset	Zoom Reset																			
<input type="checkbox"/> Scroll left a space	Scroll left a space																			
<input type="checkbox"/> Scroll right a space	Scroll right a space																			
<input type="checkbox"/> Scroll left a page	Scroll left a page																			
<input type="checkbox"/> Scroll right a page	Scroll right a page																			
<input type="checkbox"/> Set the time display interval	Set the time display interval																			
(3)	Default Button Width / Height	You can adjust the button height and width.																		

## ■ Coordinates

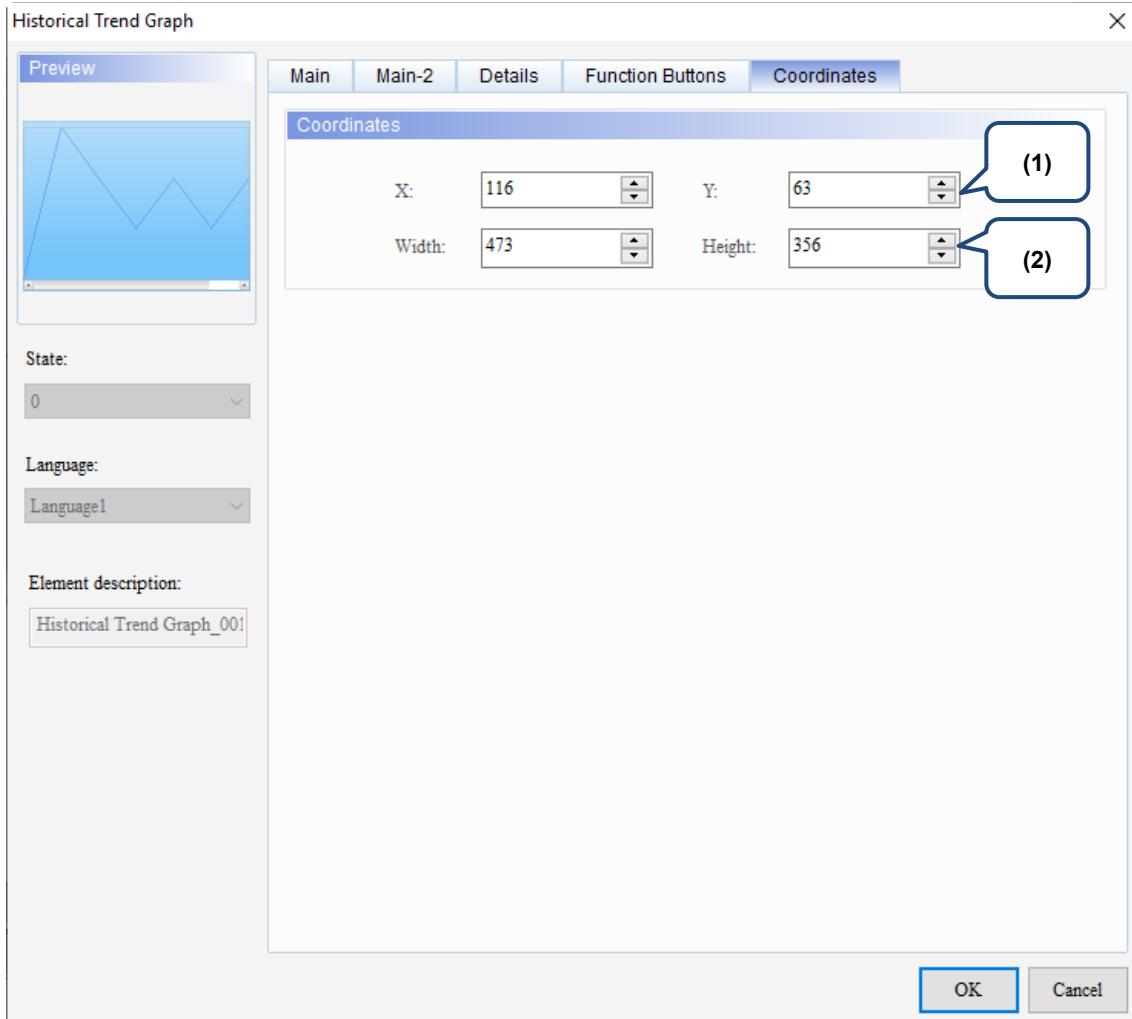


Figure 15.2.6 Coordinates property page for the Historical Trend Graph element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

# 15

## 15.3 Historical Data Table

The Historical Data Table displays the numerical values converted from the data read by the History Buffer. The 60 columns of the Historical Data Table correspond to the Read Length of 60 words in the Historical Trend Graph.

When you double-click the Historical Data Table, the property page is shown as follows.

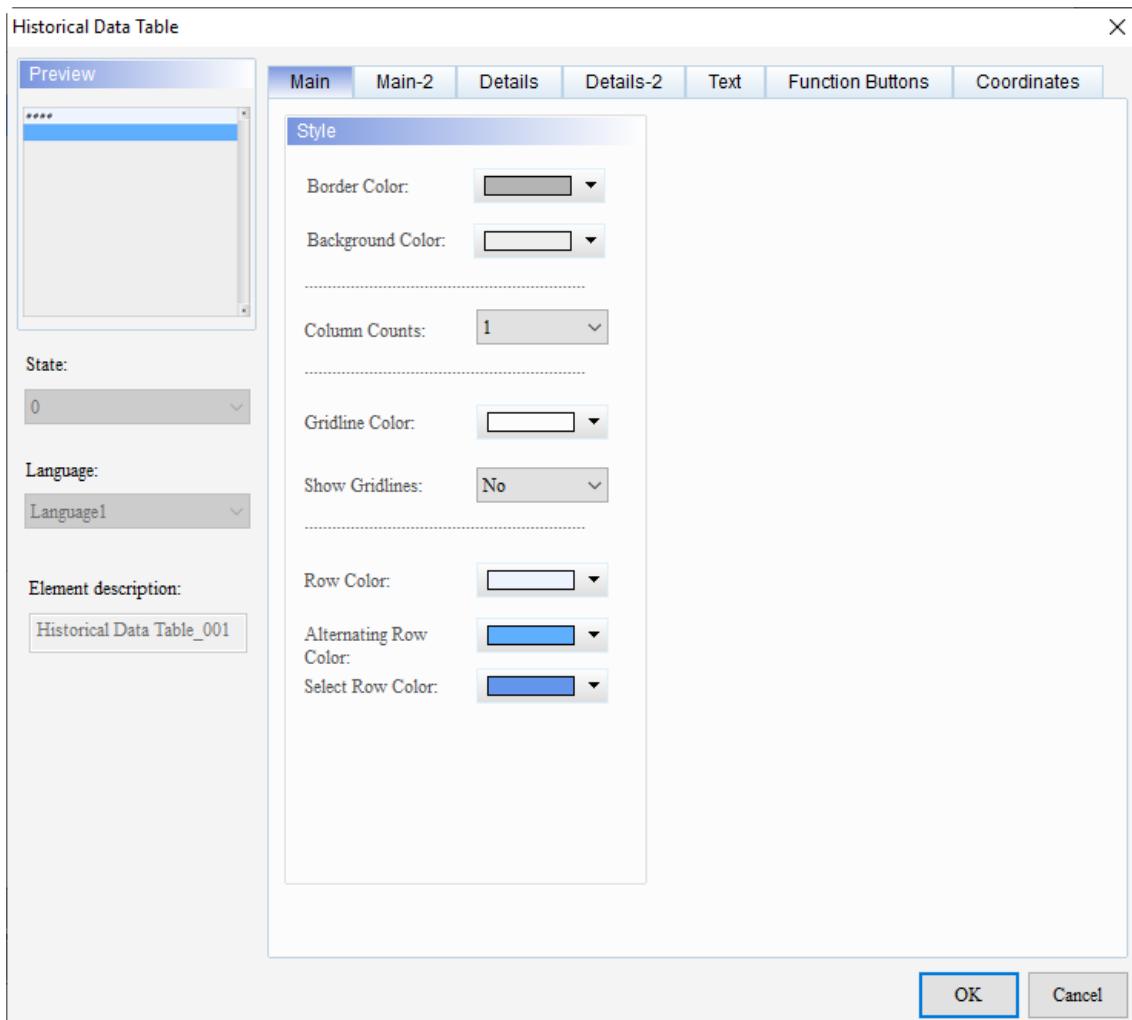


Figure 15.3.1 Properties of Historical Data Table

Table 15.3.1 Function page of Historical Data Table

Historical Data Table	
Function page	Description
Preview	The Historical Data Table elements do not support multiple state values and multi-language data display.
Main	Set the Border Color, Background Color, Column Counts, Gridline Color, Show Gridlines, Row Color, Alternating Row Color, and Select Row Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Details	<p>Set the Buffer ID.</p> <p>Set the Time/Date.</p> <p>Set the Length, Start Position, Data Format, Integer Digits, Fractional Digits, Color, Column Width, Prefix Zero, Title, and Field alignment.</p> <p>Select the <b>Show Title</b> check box and set the Background Color, Text Color, Time, Date, and No.</p> <p>Select the <b>Show No.</b> check box and set its displaying color and alignment.</p>
Details-2	Set the Sort Method.
Text	Set the text size of the displayed numeric data.
Function Buttons	Select the function buttons to enable and set the width and height of the buttons.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

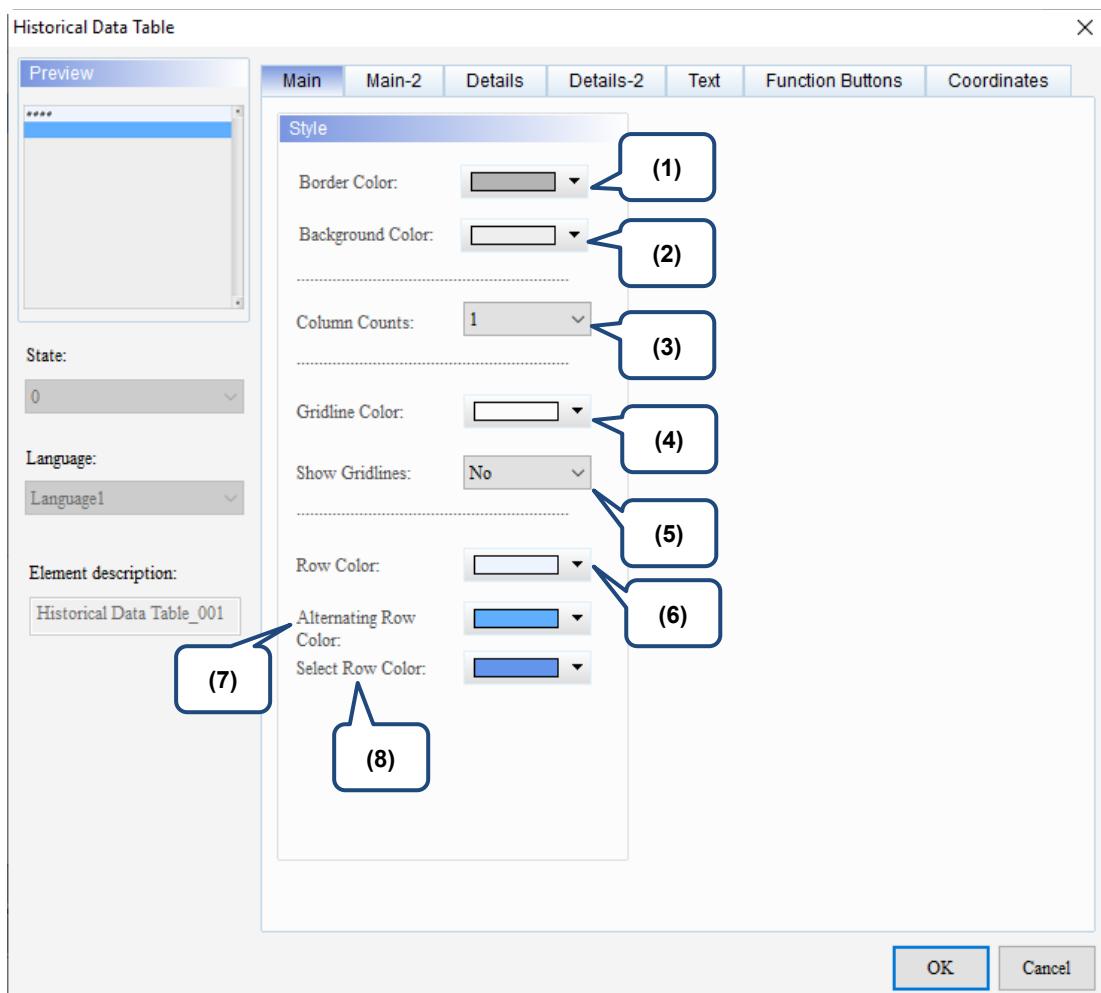
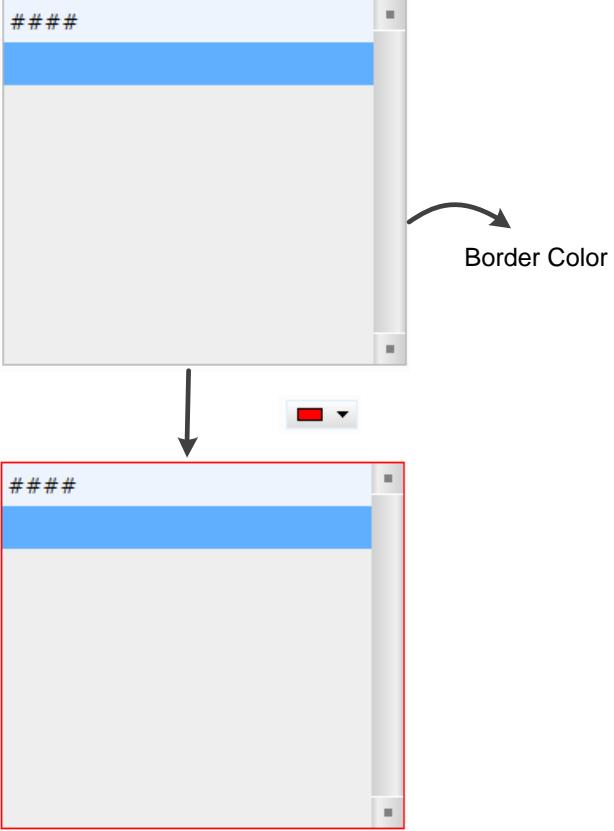
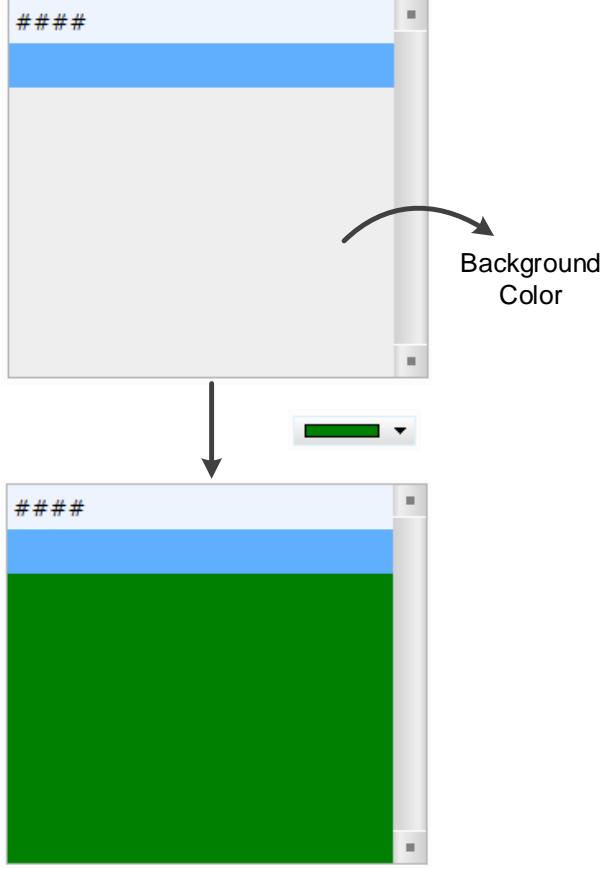
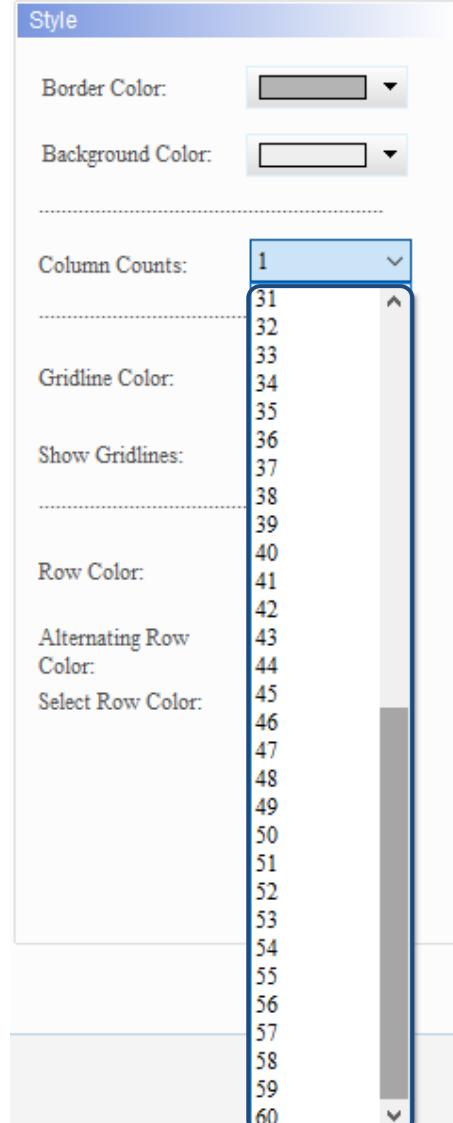
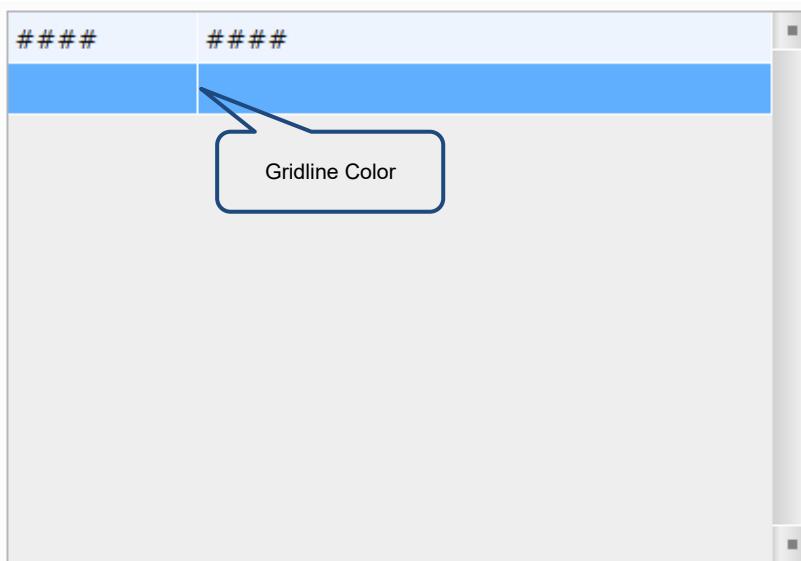
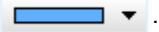


Figure 15.3.2 Main property page for the Historical Data Table element

No.	Property	Function description
(1)	Border Color	<p>Set the Historical Data Table element border color.</p>  <p>Border Color</p>
(2)	Background Color	<p>Set the background color of the element.</p>  <p>Background Color</p>

15

No.	Property	Function description
(3)	Column Counts	<p>The maximum of Column Counts is 60 which correspond to the Read Length of 60 words in the History Buffer Setup respectively.</p> 
(4)	Gridline Color	<ul style="list-style-type: none"> <li>■ Set the gridline color of the element. The default is white.</li> <li>■ The Gridline color setting is valid only when Show Gridlines is set to Yes and Column Counts is set to 2 or above.</li> </ul> 
(5)	Show Gridlines	

No.	Property	Function description																				
(6)	Row Color	<p>Color of the odd rows. The default is </p> <table border="1"> <tbody> <tr><td>370</td><td>740</td></tr> <tr><td>375</td><td>750</td></tr> <tr><td>385</td><td>770</td></tr> <tr><td>390</td><td>780</td></tr> <tr><td>395</td><td>790</td></tr> <tr><td>400</td><td>800</td></tr> <tr><td>410</td><td>820</td></tr> <tr><td>415</td><td>830</td></tr> <tr><td>425</td><td>850</td></tr> <tr><td>430</td><td>860</td></tr> </tbody> </table>	370	740	375	750	385	770	390	780	395	790	400	800	410	820	415	830	425	850	430	860
370	740																					
375	750																					
385	770																					
390	780																					
395	790																					
400	800																					
410	820																					
415	830																					
425	850																					
430	860																					
(7)	Alternating Row Color	<p>Color of the even rows. The default is </p> <table border="1"> <tbody> <tr><td>370</td><td>740</td></tr> <tr><td>375</td><td>750</td></tr> <tr><td>385</td><td>770</td></tr> <tr><td>390</td><td>780</td></tr> <tr><td>395</td><td>790</td></tr> <tr><td>400</td><td>800</td></tr> <tr><td>410</td><td>820</td></tr> <tr><td>415</td><td>830</td></tr> <tr><td>425</td><td>850</td></tr> <tr><td>430</td><td>860</td></tr> </tbody> </table>	370	740	375	750	385	770	390	780	395	790	400	800	410	820	415	830	425	850	430	860
370	740																					
375	750																					
385	770																					
390	780																					
395	790																					
400	800																					
410	820																					
415	830																					
425	850																					
430	860																					
(8)	Select Row Color	<p>When you select the data rows to view, the rows are in the color specified in this setting. The default is </p> <table border="1"> <tbody> <tr><td>165</td><td>330</td></tr> <tr><td>175</td><td>350</td></tr> <tr><td>180</td><td>360</td></tr> <tr><td>185</td><td>370</td></tr> <tr><td>190</td><td>380</td></tr> <tr><td>200</td><td>400</td></tr> <tr><td>205</td><td>410</td></tr> <tr><td>215</td><td>430</td></tr> <tr><td>220</td><td>440</td></tr> <tr><td>225</td><td>450</td></tr> </tbody> </table>	165	330	175	350	180	360	185	370	190	380	200	400	205	410	215	430	220	440	225	450
165	330																					
175	350																					
180	360																					
185	370																					
190	380																					
200	400																					
205	410																					
215	430																					
220	440																					
225	450																					

15

## ■ Main-2

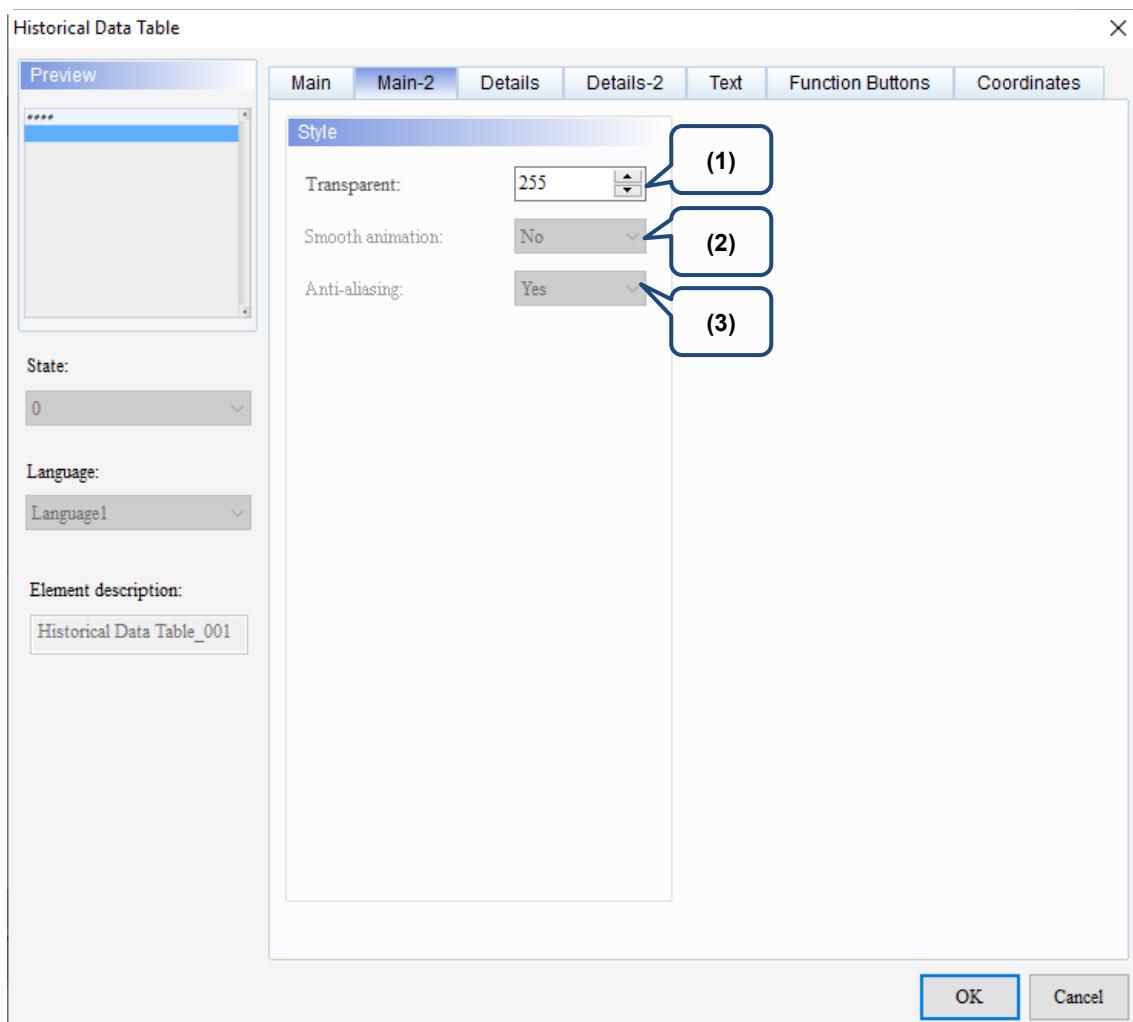


Figure 15.3.3 Main-2 property page for the Historical Data Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Details

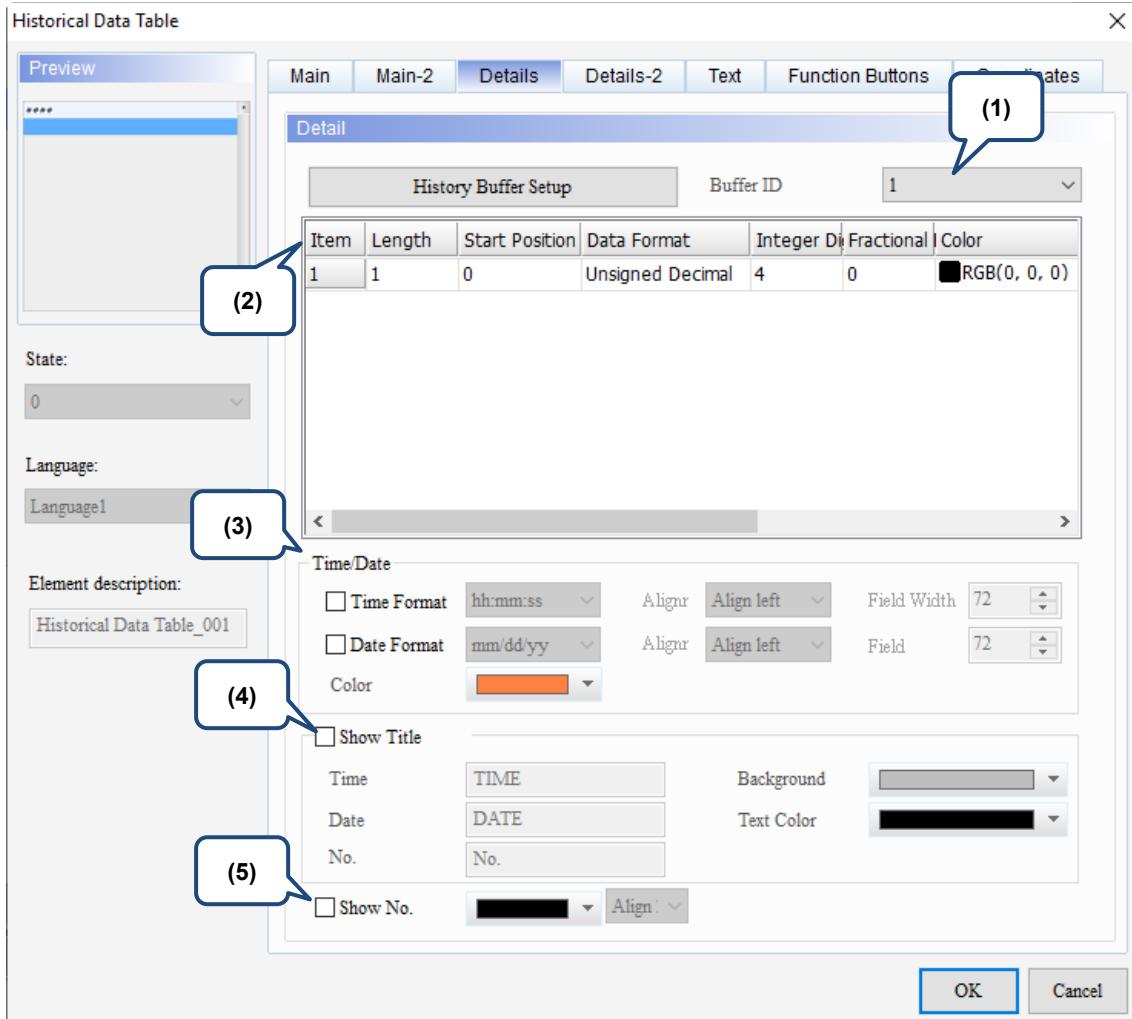
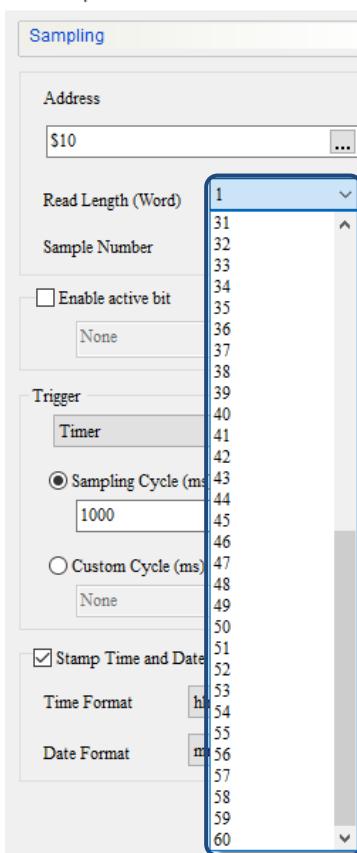
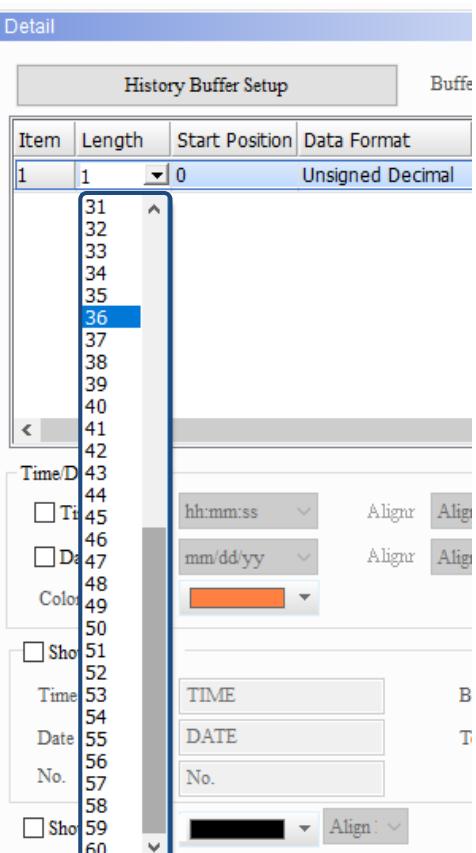
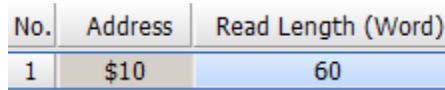


Figure 15.3.4 Details property page for the Historical Data Table element

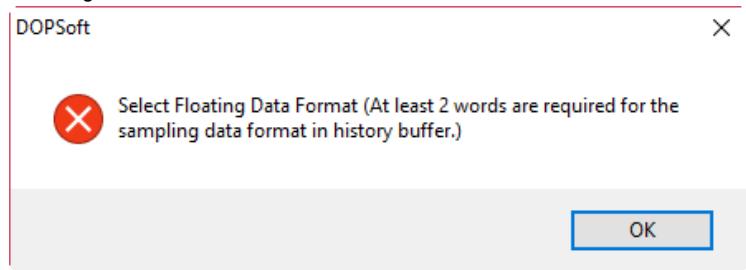
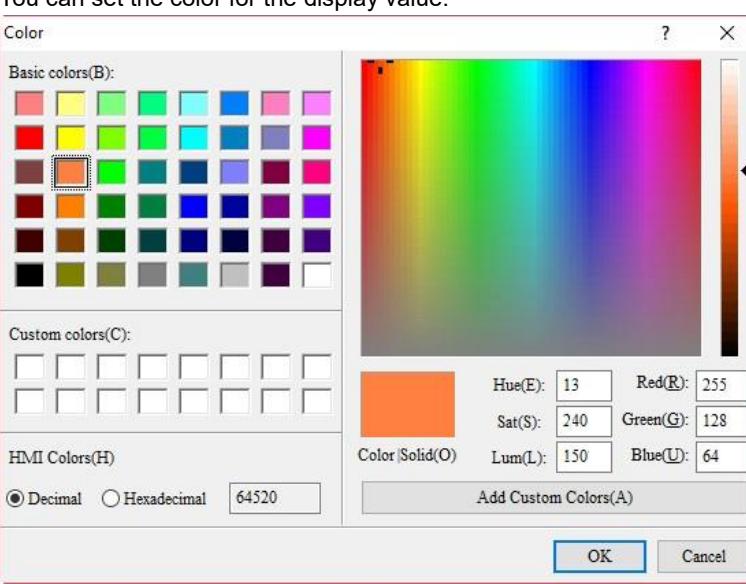
No.	Property	Function description																																																				
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer Setup. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can be up to 12 sets.</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> </tr> </thead> <tbody> <tr><td>1</td><td>\$0</td><td>1</td><td>100</td></tr> <tr><td>2</td><td>\$1</td><td>1</td><td>100</td></tr> <tr><td>3</td><td>\$2</td><td>1</td><td>100</td></tr> <tr><td>4</td><td>\$3</td><td>1</td><td>100</td></tr> <tr><td>5</td><td>\$4</td><td>1</td><td>100</td></tr> <tr><td>6</td><td>\$5</td><td>1</td><td>100</td></tr> <tr><td>7</td><td>\$6</td><td>1</td><td>100</td></tr> <tr><td>8</td><td>\$7</td><td>1</td><td>100</td></tr> <tr><td>9</td><td>\$8</td><td>1</td><td>100</td></tr> <tr><td>10</td><td>\$9</td><td>1</td><td>100</td></tr> <tr><td>11</td><td>\$10</td><td>1</td><td>100</td></tr> <tr><td>12</td><td>\$11</td><td>1</td><td>100</td></tr> </tbody> </table> <div style="margin-top: 20px;"> <p>History Buffer Setup</p> <p>Buffer ID: 1</p> <p>Global range: <input type="checkbox"/></p> <p>Scale Settings: <input type="button" value="..."/></p> <p>Length: <input type="button" value="..."/></p> <p>Data Format: <input type="button" value="..."/></p> <p>Integer Digits: <input type="button" value="..."/></p> <p>Fractional: <input type="button" value="..."/></p> </div>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	1	\$0	1	100	2	\$1	1	100	3	\$2	1	100	4	\$3	1	100	5	\$4	1	100	6	\$5	1	100	7	\$6	1	100	8	\$7	1	100	9	\$8	1	100	10	\$9	1	100	11	\$10	1	100	12	\$11	1	100
No.	Address	Read Length (Word)	Sampling Cycle(ms)																																																			
1	\$0	1	100																																																			
2	\$1	1	100																																																			
3	\$2	1	100																																																			
4	\$3	1	100																																																			
5	\$4	1	100																																																			
6	\$5	1	100																																																			
7	\$6	1	100																																																			
8	\$7	1	100																																																			
9	\$8	1	100																																																			
10	\$9	1	100																																																			
11	\$10	1	100																																																			
12	\$11	1	100																																																			

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No.	Property	Function description
(2)	Item setting Length	<p>The Length corresponds to the Read Length (Word) in the History Buffer. If the Read Length (Word) is 60, the Length ranges from 1 to 60.</p> <p><b>Buffer Properties</b></p>  <p><b>Detail</b></p> 

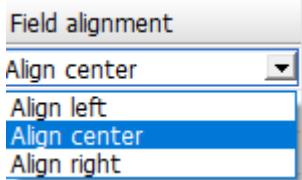
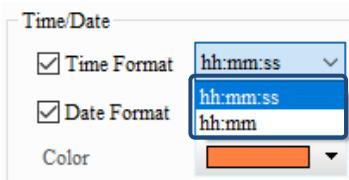
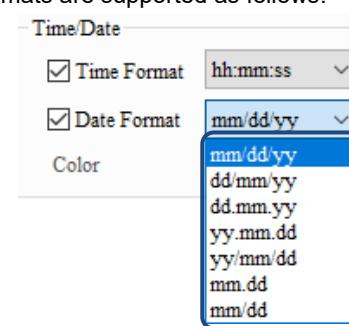
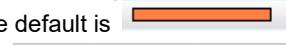
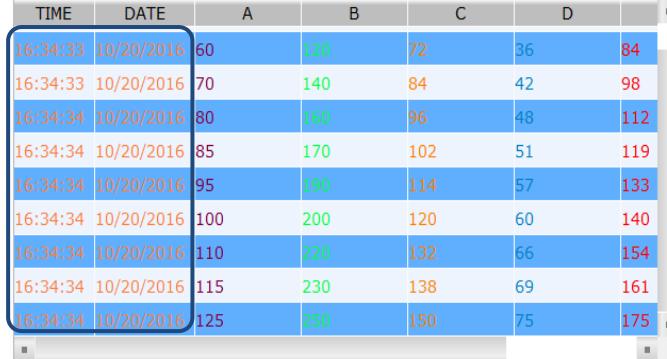
No.	Property	Function description																																																																																																																																																																																																																																
(2)	Item setting	<p>Start Position</p>  <p>The Start Position setting is determined by the set Read Length (Word). If the Read Length (Word) is 60, the Start Position ranges from 0 to 59.</p> <p>History Buffer Setup</p> <table border="1"> <thead> <tr> <th>Item</th> <th>Length</th> <th>Start Position</th> <th>Data Format</th> <th>Integer D</th> <th>Fractional</th> <th>Color</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>0</td> <td>Unsigned Decimal</td> <td>4</td> <td>0</td> <td>RGB(0, 0, 0)</td> </tr> <tr> <td>30</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>31</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>32</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>33</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>34</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>35</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>36</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>37</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>38</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>39</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>40</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>41</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>42</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>43</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>44</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>45</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>46</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>47</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>48</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>49</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>50</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>51</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>52</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>53</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>54</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>55</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>56</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>57</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>58</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>59</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Time/Date</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Time Format</li> <li><input type="checkbox"/> Date Format</li> <li>Color</li> <li><input type="checkbox"/> Show Title</li> <li>Time</li> <li>Date</li> <li>No.</li> <li><input type="checkbox"/> Show No.</li> </ul> <p>Align: Align left, Align right, Align center Field Width: 72, 144 Background: Gray Text Color: Black</p>	Item	Length	Start Position	Data Format	Integer D	Fractional	Color	1	1	0	Unsigned Decimal	4	0	RGB(0, 0, 0)	30							31							32							33							34							35							36							37							38							39							40							41							42							43							44							45							46							47							48							49							50							51							52							53							54							55							56							57							58							59						
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	Data Format	<ul style="list-style-type: none"> <li>When the Read Length is 1 (Word) or 2 (Words), the supported data formats are different. The supported data formats are as follows.</li> <li>For the Char format, if the Read Length is 1, it represents 2 Chars; if the Read Length is 2, it represents 4 Chars, and so on.</li> <li>When the Read Length is 3 or above, Char is the only supported format.</li> </ul> <table border="1"> <thead> <tr> <th colspan="3">Read Length is 1</th> </tr> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td>Char</td> <td>2 characters</td> </tr> </tbody> </table>	Read Length is 1			Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	Char	2 characters																																																																																																																																																																																																													
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No.	Property	Function description		
		Read Length is 2		
		Data Type	Data Format	Allowable range
			BCD	0 to 99999999
			Signed BCD	-9999999 to +99999999
		DWord	Signed Decimal	-2147483648 to +2147483647
			Unsigned Decimal	0 to 4294697295
			Hex	0 to 0xFFFFFFFF
			Char	4 characters
			Floating	0 to 9999999
	Data Format	<p>Note:</p> <ol style="list-style-type: none"> <li>If you select Floating as the Data Format, set the Length to 2.</li> <li>If you select Floating as the Data Format, but set the Length to 1 word, the software displays a message to remind you that you need to set the Length to 2 or above.</li> </ol>		
(2)	Item setting			
	Integer / Fractional Digits	<ul style="list-style-type: none"> <li>You can set the displaying number of integer digits and the number of decimal places.</li> <li>When the <b>Global range</b> check box is selected, you cannot set this function.</li> </ul>		
	Color	<p>You can set the color for the display value.</p> 		
	Column Width	<ul style="list-style-type: none"> <li>Column Width is for setting the distance between the numeric data records. For example, if the Column Counts is set to 2 and Column Width is set to 40, then the width between the first and second data records is 40.</li> <li>The Column Width is 40 by default and the setting range is 0 - 999.</li> </ul>		

No.	Property	Function description					
(2)	Item setting	Prefix Zero					
Title							

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No.	Property	Function description
(2)	Item setting	<p>Field alignment</p> <p>Set the alignment style for the text in the title field. The alignment styles include: Align left, Align center, and Align right.</p> 
	Time Format	<ul style="list-style-type: none"> <li>Two time formats are supported as follows:</li> </ul> 
	Date Format	<ul style="list-style-type: none"> <li>Seven date formats are supported as follows:</li> </ul> 
(3)	Time/Date	<p>Set the alignment style for the date and time. The alignment styles include: Align left, Align center, and Align right.</p> 
	Field Width	Set the width for the date and time fields.
	Color	<p>Set the displaying color of the date and time. The default is </p> 

No.	Property	Function description							
(4)	Show Title	Background	Set the background color of the title column.						
			The background color is changed to yellow						
		Text Color	Set the color of the title text.						
			The text color is changed to red						
		Time	<ul style="list-style-type: none"> <li>The default names are in English.</li> </ul>						
			<input checked="" type="checkbox"/> Show Title Time <input type="text" value="TIME"/> Date <input type="text" value="DATE"/> No. <input type="text" value="No."/>						
			<ul style="list-style-type: none"> <li>You can set the title names for the Time, Date, and No.</li> </ul>						
(5)	Show No.	Date							
		No.							
		Show No.	When selected, the No. column is displayed.						
		Color	Set the text color of the No. The default is black.						
		Alignment	Set the alignment style for the No. The default is Align left.						
			<input checked="" type="checkbox"/> Show No.  Align :						

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## ■ Details-2

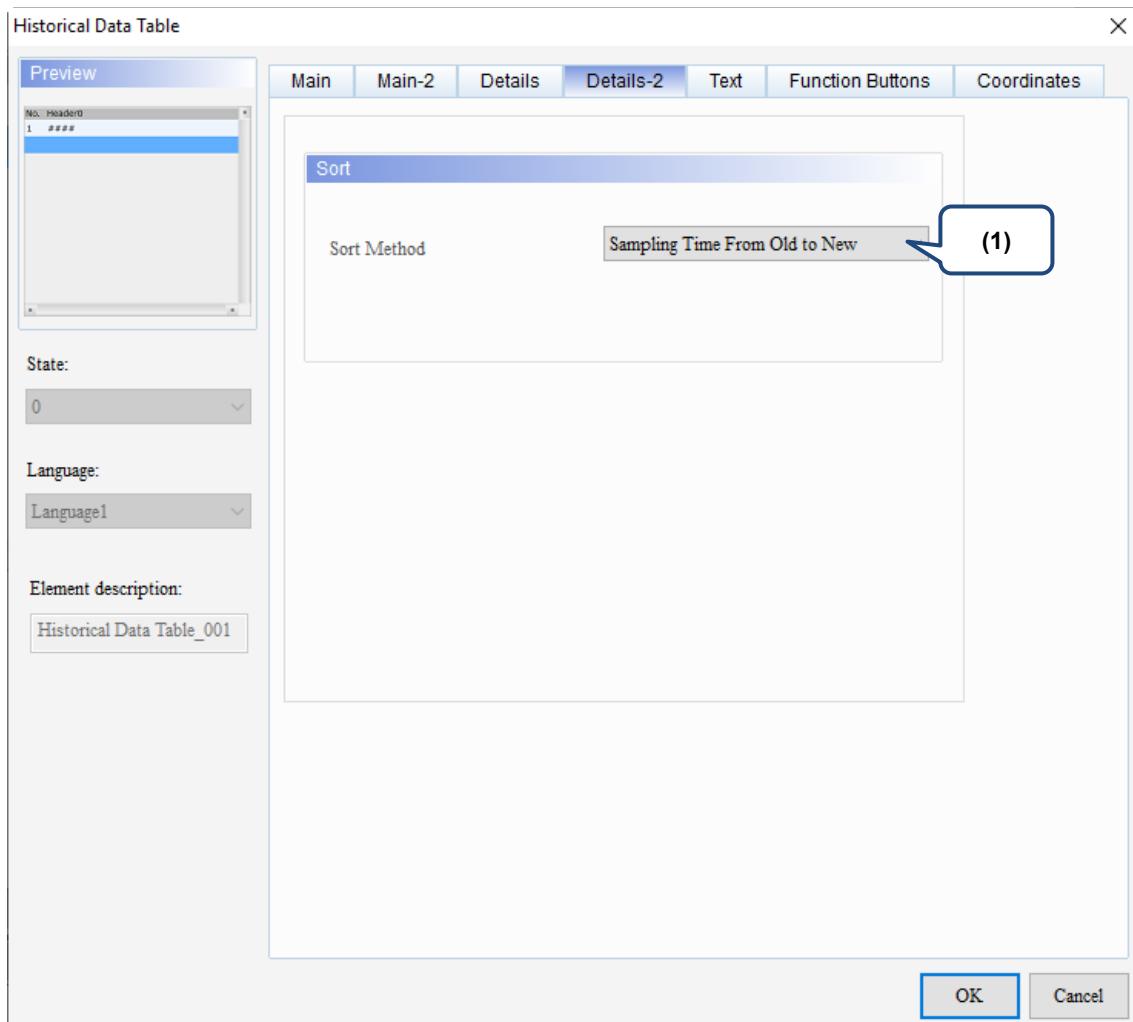


Figure 15.3.5 Details-2 property page for the Historical Data Table element

No.	Property	Function description
(1)	Sort Method	Select the data sorting method. Sort Method Sampling Time From Old to New Sampling Time From Old to New Sampling Time From New To Old

## ■ Text

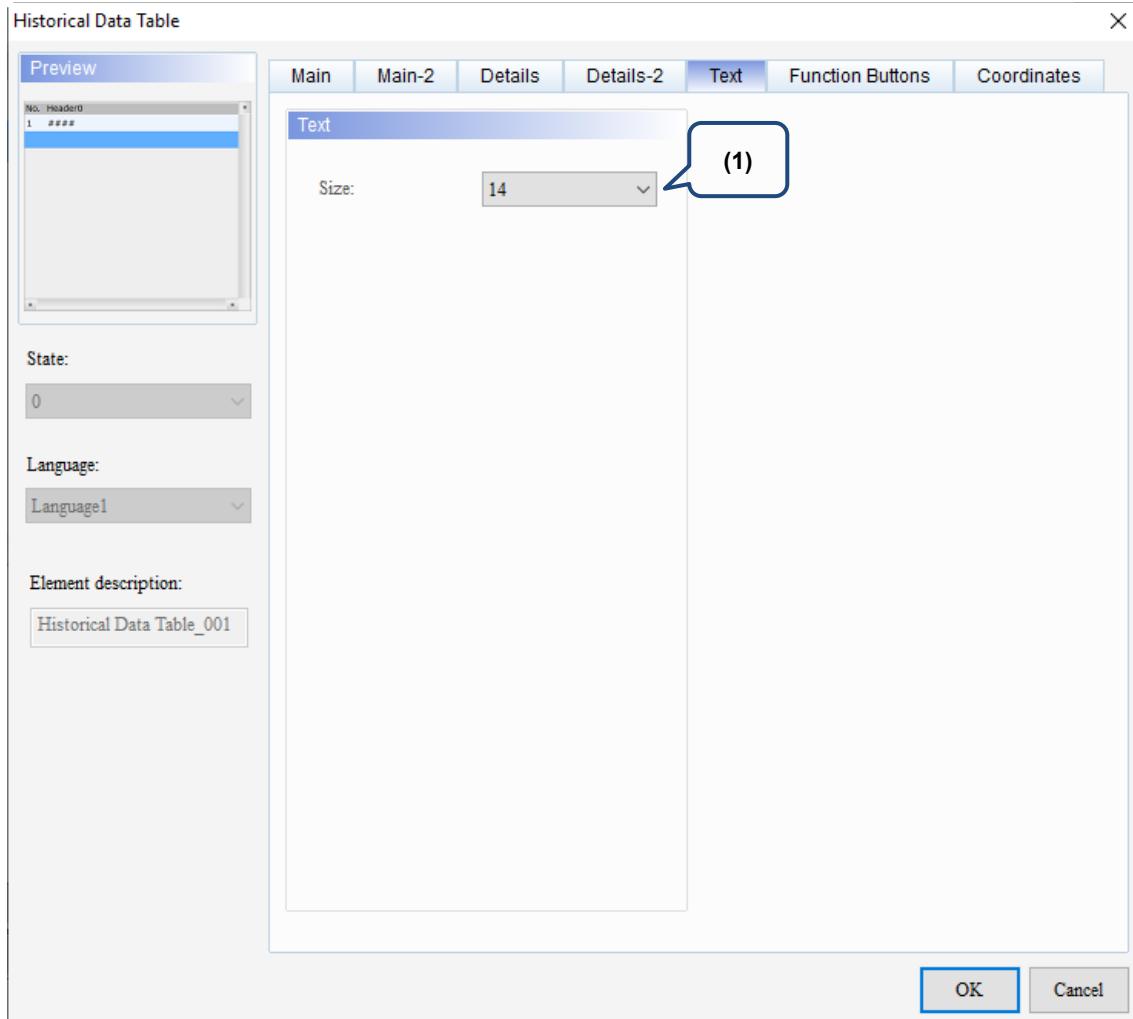
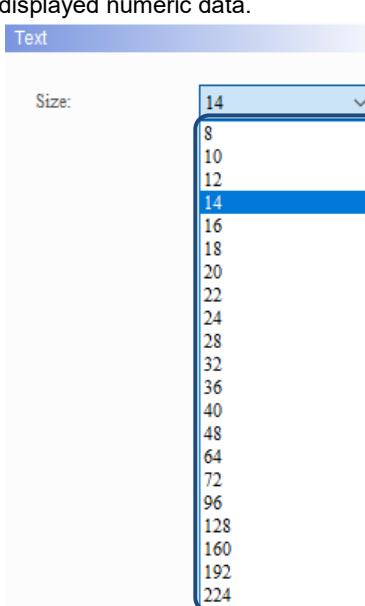


Figure 15.3.6 Text property page for the Historical Data Table element

No.	Property	Function description
(1)	Text	<p>Set the text size of the displayed numeric data.</p> 

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## ■ Function Buttons

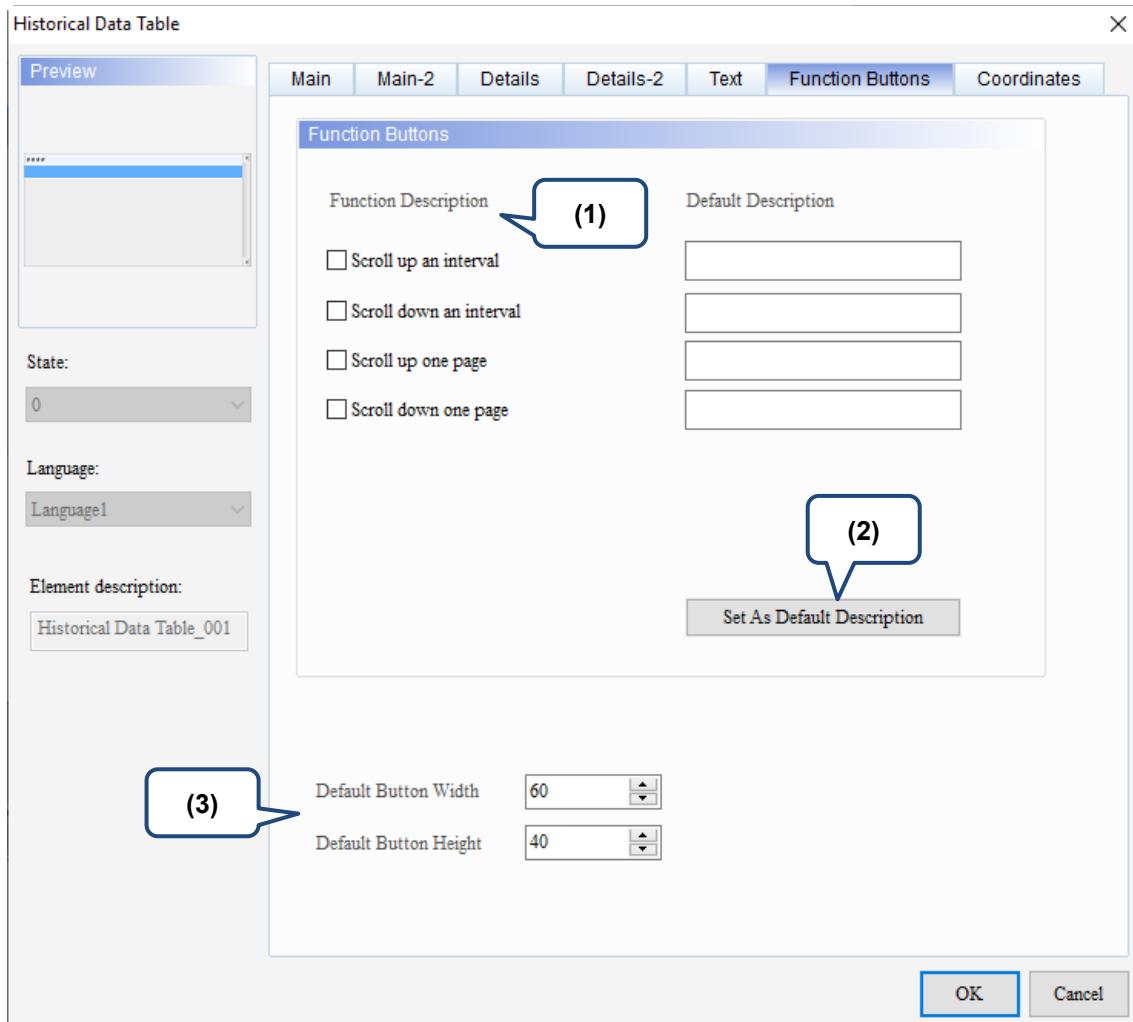
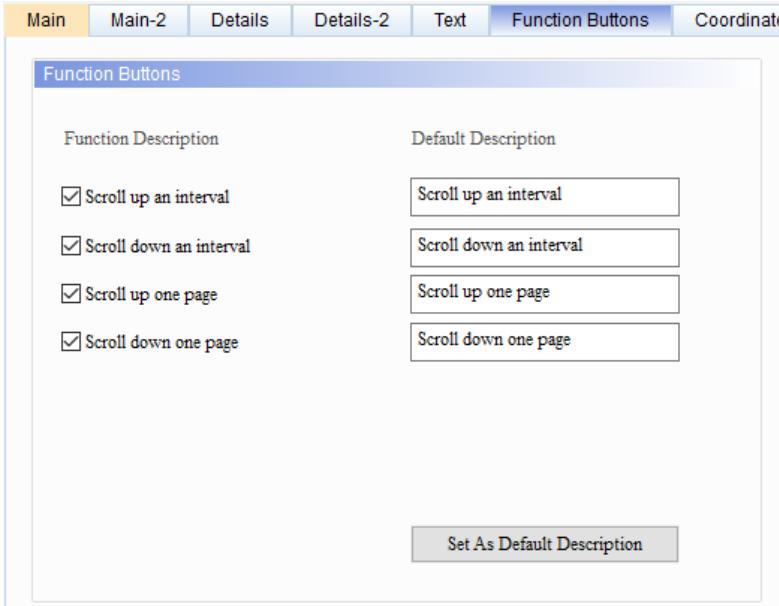


Figure 15.3.7 Function Buttons property page for the Historical Data Table element

No.	Property	Function description										
(1)	Function Description	Select the function buttons to display on the Historical Data Table element. <table border="1" style="margin-left: 20px;"> <tr> <td>Scroll up an interval</td> <td>Scroll up an interval.</td> </tr> <tr> <td>Scroll down an interval</td> <td>Scroll down an interval.</td> </tr> <tr> <td>Scroll up one page</td> <td>Scroll up one page.</td> </tr> <tr> <td>Scroll down one page</td> <td>Scroll down one page.</td> </tr> </table>	Scroll up an interval	Scroll up an interval.	Scroll down an interval	Scroll down an interval.	Scroll up one page	Scroll up one page.	Scroll down one page	Scroll down one page.		
Scroll up an interval	Scroll up an interval.											
Scroll down an interval	Scroll down an interval.											
Scroll up one page	Scroll up one page.											
Scroll down one page	Scroll down one page.											
(2)	Set As Default Description	When you press <b>Set as Default Description</b> , the default strings are automatically filled in the Default Description fields.  <table border="1" style="margin-left: 20px; width: 400px;"> <tr> <td>Function Description</td> <td>Default Description</td> </tr> <tr> <td><input checked="" type="checkbox"/> Scroll up an interval</td> <td>Scroll up an interval</td> </tr> <tr> <td><input checked="" type="checkbox"/> Scroll down an interval</td> <td>Scroll down an interval</td> </tr> <tr> <td><input checked="" type="checkbox"/> Scroll up one page</td> <td>Scroll up one page</td> </tr> <tr> <td><input checked="" type="checkbox"/> Scroll down one page</td> <td>Scroll down one page</td> </tr> </table>	Function Description	Default Description	<input checked="" type="checkbox"/> Scroll up an interval	Scroll up an interval	<input checked="" type="checkbox"/> Scroll down an interval	Scroll down an interval	<input checked="" type="checkbox"/> Scroll up one page	Scroll up one page	<input checked="" type="checkbox"/> Scroll down one page	Scroll down one page
Function Description	Default Description											
<input checked="" type="checkbox"/> Scroll up an interval	Scroll up an interval											
<input checked="" type="checkbox"/> Scroll down an interval	Scroll down an interval											
<input checked="" type="checkbox"/> Scroll up one page	Scroll up one page											
<input checked="" type="checkbox"/> Scroll down one page	Scroll down one page											
(3)	Default Button Width / Height	You can adjust the button height and width.										

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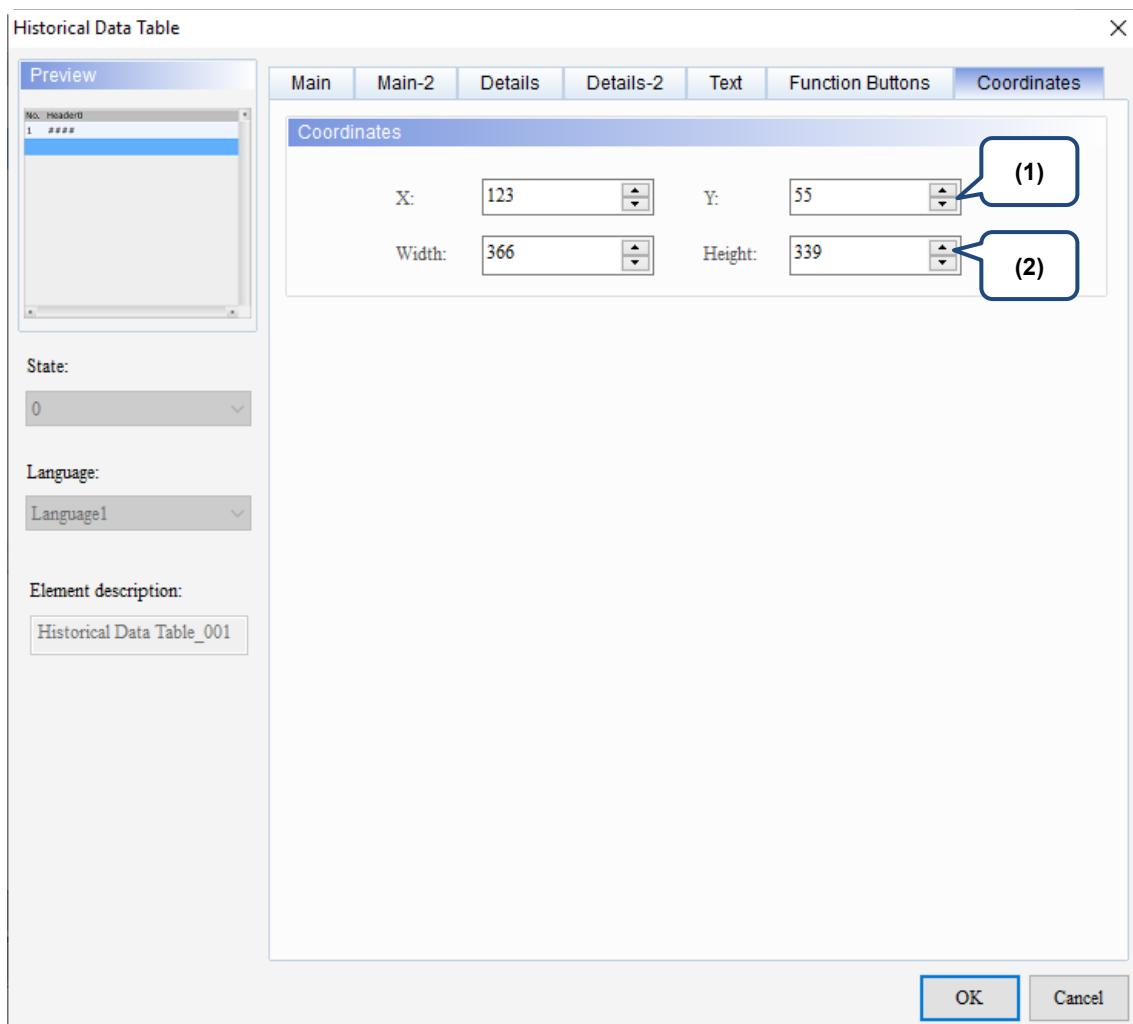
**■ Coordinates**

Figure 15.3.8 Coordinates property page for the Historical Data Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 15.4 Historical Event Table

Historical Event Table supports three data types as shown in Table 15.4.1. To add or reduce the total number of states, you can simply increase or decrease the number of State Counts in the Properties window.

Table 15.4.1 Data Type of the Historical Event Table

Historical Event Table	
Data Type	State Counts
Word	<ul style="list-style-type: none"> <li>■ If the Data Type is Word, you can set 1 to 256 states for the State Counts.           <div style="border: 1px solid #ccc; padding: 10px; margin-top: 5px;"> <b>Detail</b> <div style="margin-top: 20px;"> <div style="display: flex; justify-content: space-between;"> <span>Data Type:</span> <div style="border: 1px solid #ccc; padding: 2px;">Word</div> </div> <div style="margin-top: 10px;"> <div style="display: flex; justify-content: space-between;"> <span>Data Format:</span> <div style="border: 1px solid #ccc; padding: 2px;">Unsigned Decimal</div> </div> <div style="margin-top: 10px;"> <div style="display: flex; align-items: center;"> <span>State Counts:</span> <input style="border: 1px solid #ccc; width: 50px; height: 25px; margin-left: 10px;" type="text" value="256"/> <span style="border: 1px solid #ccc; padding: 0 5px; margin-left: 10px;">▲</span> <span style="border: 1px solid #ccc; padding: 0 5px; margin-left: 10px;">▼</span> </div> </div> </div> </div> </div></li> <li>■ If the Data Type is Word, the memory address is in units of Word.</li> </ul>
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>■ LSB is to first convert the data in the register to binary data, and then use the lowest non-zero bit to determine the current state of the object.</li> <li>■ If the Data Type is LSB, you can set 1 to 16 states except for State 0.           <div style="border: 1px solid #ccc; padding: 10px; margin-top: 5px;"> <b>Detail</b> <div style="margin-top: 20px;"> <div style="display: flex; justify-content: space-between;"> <span>Data Type:</span> <div style="border: 1px solid #ccc; padding: 2px;">LSB</div> </div> <div style="margin-top: 10px;"> <div style="display: flex; justify-content: space-between;"> <span>Data Format:</span> <div style="border: 1px solid #ccc; padding: 2px;">Unsigned Decimal</div> </div> <div style="margin-top: 10px;"> <div style="display: flex; align-items: center;"> <span>State Counts:</span> <input style="border: 1px solid #ccc; width: 50px; height: 25px; margin-left: 10px;" type="text" value="16"/> <span style="border: 1px solid #ccc; padding: 0 5px; margin-left: 10px;">▲</span> <span style="border: 1px solid #ccc; padding: 0 5px; margin-left: 10px;">▼</span> </div> </div> </div> </div> </div></li> <li>■ To display State 0, select LSB (Support State 0) for the Data Type.           <div style="border: 1px solid #ccc; padding: 10px; margin-top: 5px;"> <b>Detail</b> <div style="margin-top: 20px;"> <div style="display: flex; justify-content: space-between;"> <span>Data Type:</span> <div style="border: 1px solid #ccc; padding: 2px; background-color: #f0f0f0;">LSB (Support State 0)</div> </div> <div style="margin-top: 10px;"> <div style="display: flex; justify-content: space-between;"> <span>Data Format:</span> <div style="border: 1px solid #ccc; padding: 2px;">Word</div> <div style="border: 1px solid #ccc; padding: 2px;">LSB</div> <div style="border: 1px solid #ccc; padding: 2px; background-color: #f0f0f0;">LSB (Support State 0)</div> </div> <div style="margin-top: 10px;"> <div style="display: flex; align-items: center;"> <span>State Counts:</span> <input style="border: 1px solid #ccc; width: 50px; height: 25px; margin-left: 10px;" type="text" value="16"/> <span style="border: 1px solid #ccc; padding: 0 5px; margin-left: 10px;">▲</span> <span style="border: 1px solid #ccc; padding: 0 5px; margin-left: 10px;">▼</span> </div> </div> </div> </div> </div></li> <li>■ If you selected LSB, the element is black when the state is 0.           <div style="border: 1px solid #ccc; width: 100px; height: 25px; margin-top: 10px;"></div> </li> <li>■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in units of Word.</li> </ul>

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Historical Event Table			
Data Type	State Counts		
		The examples in the following table show how the state value is determined with the lowest non-zero bit of the binary value converted from a decimal value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.	
LSB / LSB (Support State 0)	Decimal	Binary	State value
Bit	0	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>
	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.
	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.
	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.
	<u>7</u>	<u>00000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>
	8	00000000000001000	The lowest non-zero bit is bit 3, State = 4.
	16	00000000000010000	The lowest non-zero bit is bit 4, State = 5.
	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.
	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.
	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.
	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.
	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.
	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.
	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.
	4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.
	8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.
	16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.
	32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.
<ul style="list-style-type: none"> <li>When the Data Type is Bit, you can set only 2 states.</li> </ul>			
<div style="background-color: #e0e0ff; padding: 5px; border-radius: 5px;"> <span style="color: #0070C0;">Detail</span> </div>			
<p style="margin: 0;">Data Type: <input style="border: 1px solid #ccc; padding: 2px 10px;" type="button" value="Bit"/></p> <p style="margin: 0;">Data Format: <input style="border: 1px solid #ccc; padding: 2px 10px;" type="button" value="Unsigned Decimal"/></p> <p style="margin: 0;"><span style="border: 1px dashed #ccc; padding: 2px 10px; display: inline-block;">State Counts:</span> <input style="width: 20px; border: 1px solid #ccc;" type="text" value="2"/> <span style="border: 1px solid #ccc; padding: 0 5px; font-size: small;">▲ ▼</span></p>			
<ul style="list-style-type: none"> <li>When the Data Type is Bit, the memory address is in units of Bit.</li> </ul>			

When you double-click the Historical Event Table, the property page is shown as follows.

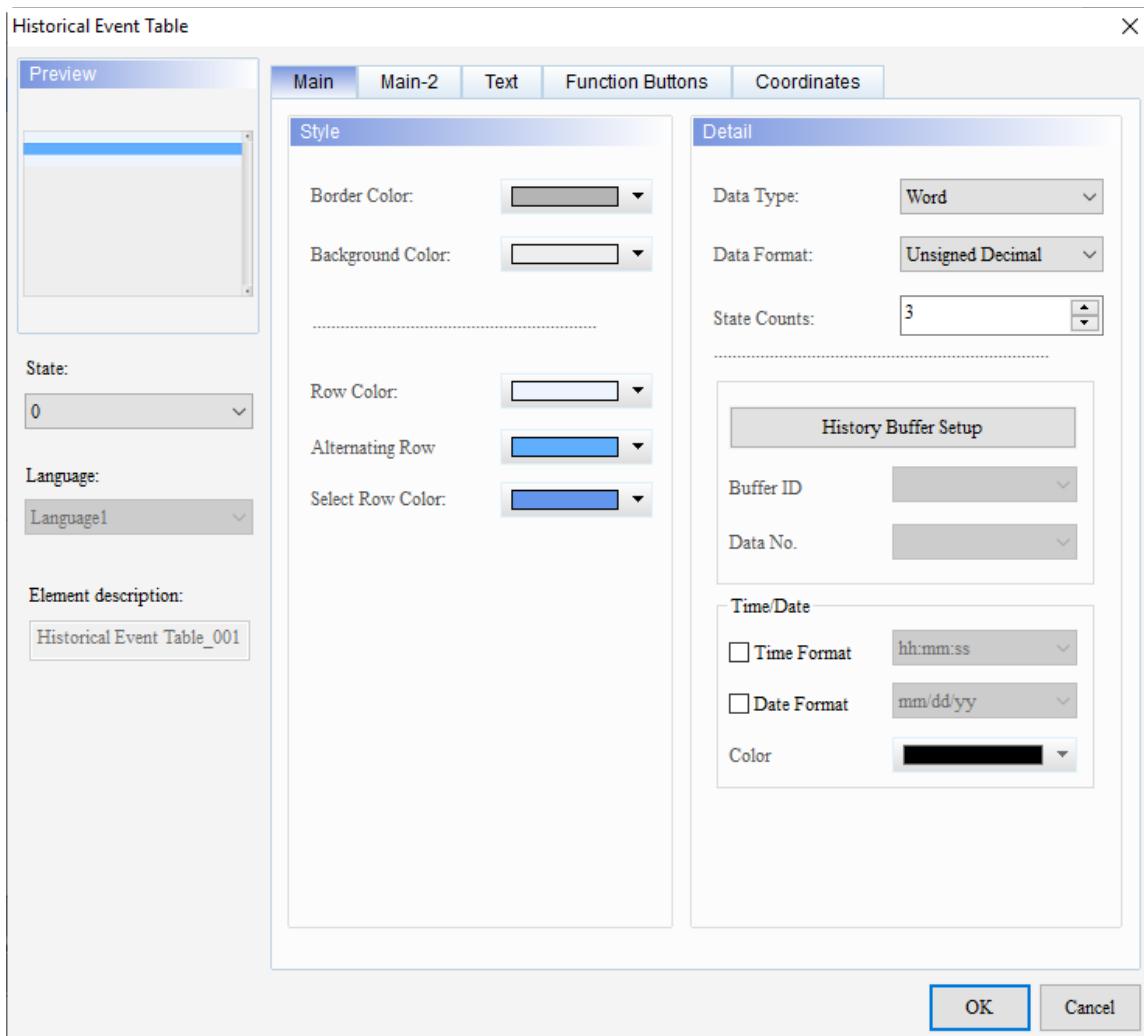


Figure 15.4.1 Properties of Historical Event Table

Table 15.4.2 Function page of Historical Event Table

<b>Historical Event Table</b>	
<b>Function page</b>	<b>Description</b>
Preview	The Historical Event Table elements support multiple state values and multi-language data display.
Main	Set the Border Color, Background Color, Row Color, Alternating Row, and Select Row Color. Set the Data Type, Data Format, State Counts, Buffer ID, and Data No. Set the Time/Date.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Function Buttons	Select the function buttons to enable and set the width and height of the buttons.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

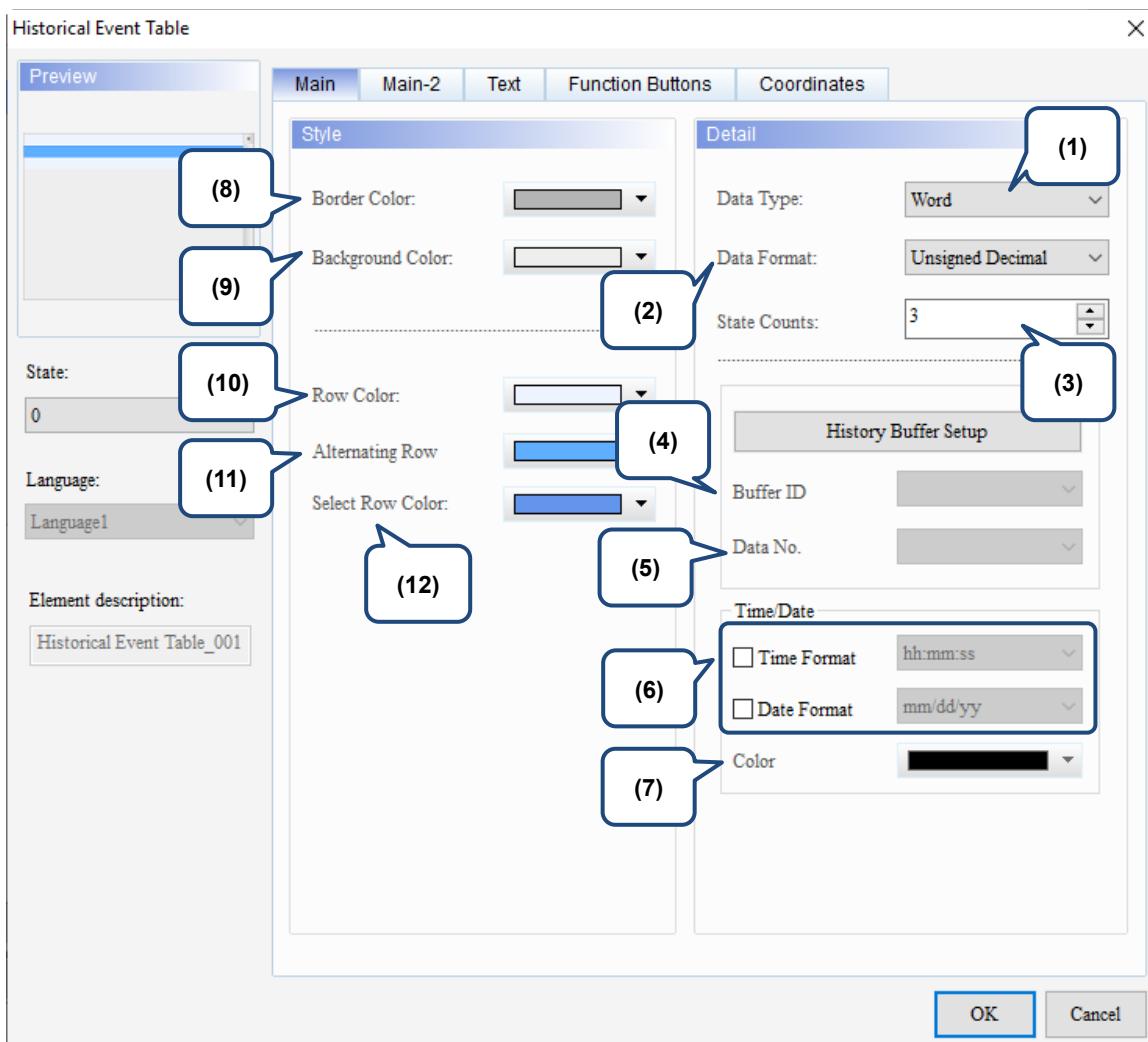
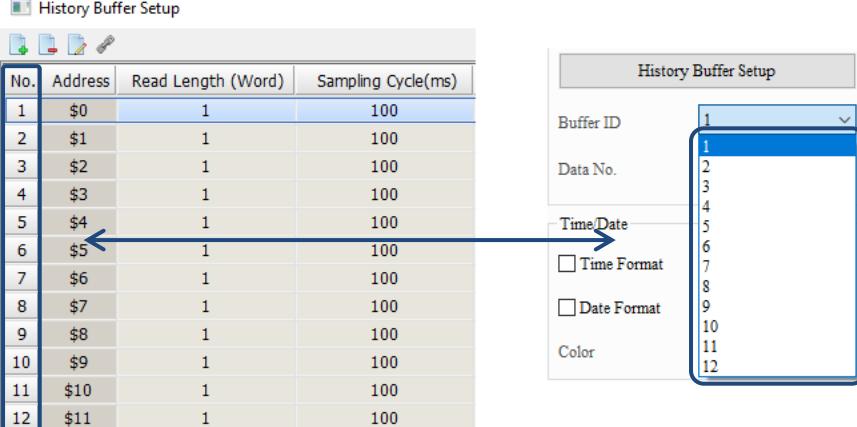
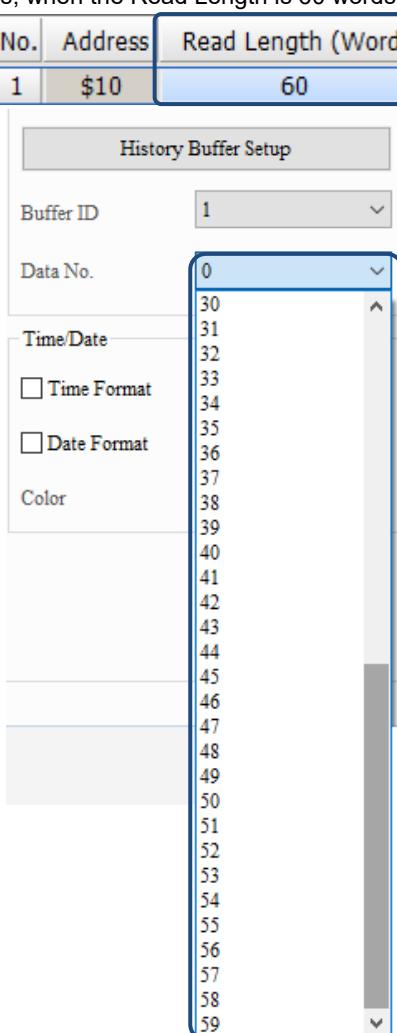
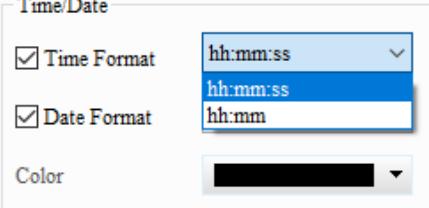
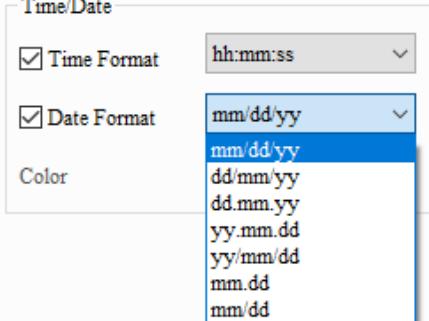
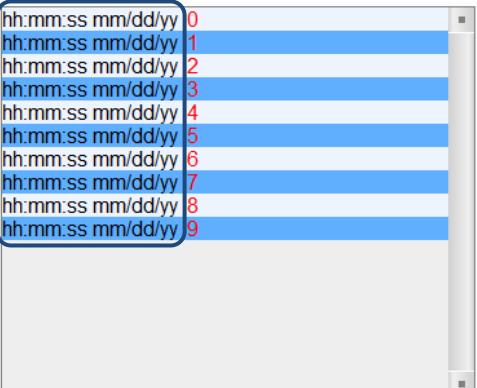
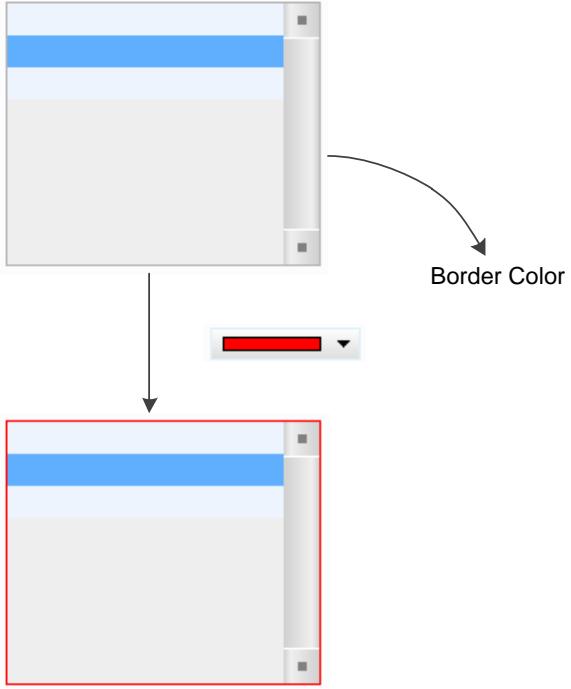


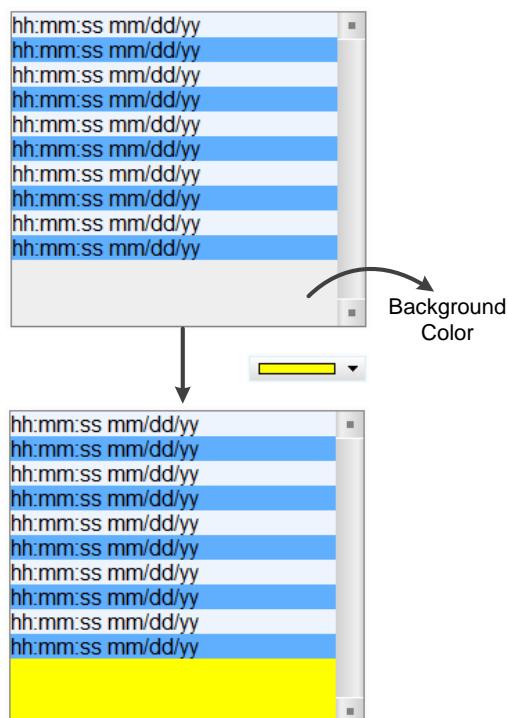
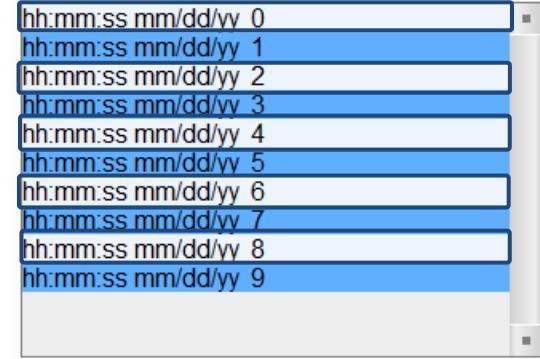
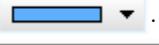
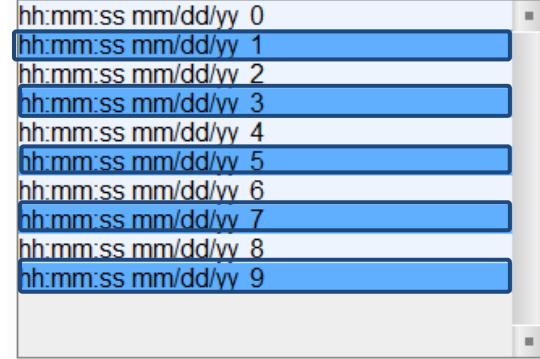
Figure 15.4.2 Main property page for the Historical Event Table element

No.	Property	Function description
(1)	Data Type	<p>There are three data types available: Word, LSB, and LSB (Support State 0).</p> <p><b>Detail</b></p> <p>Data Type: Word Word LSB LSB (Support State 0)</p> <p>Data Format: Unsigned Decimal BCD Signed Decimal Unsigned Decimal Hexadecimal</p> <p>State Counts: 3</p>
(2)	Data Format	<p>You can select the Data Format only when the Data Type is Word. There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p> <p><b>Detail</b></p> <p>Data Type: Word</p> <p>Data Format: Unsigned Decimal BCD Signed Decimal Unsigned Decimal Hexadecimal</p> <p>State Counts: 3</p>

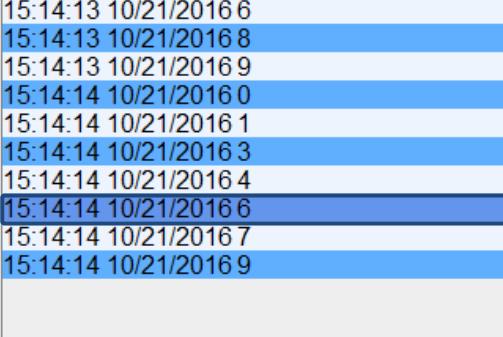
No.	Property	Function description																																																				
(3)	State Counts	Set the State Counts for the Historical Event Table. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; and if the Data Type is LSB (Support State 0), you can set 17 states. Refer to Table 15.4.1 for details.																																																				
(4)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer Setup. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can be up to 12 sets.</p>  <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> </tr> </thead> <tbody> <tr><td>1</td><td>\$0</td><td>1</td><td>100</td></tr> <tr><td>2</td><td>\$1</td><td>1</td><td>100</td></tr> <tr><td>3</td><td>\$2</td><td>1</td><td>100</td></tr> <tr><td>4</td><td>\$3</td><td>1</td><td>100</td></tr> <tr><td>5</td><td>\$4</td><td>1</td><td>100</td></tr> <tr><td>6</td><td>\$5</td><td>1</td><td>100</td></tr> <tr><td>7</td><td>\$6</td><td>1</td><td>100</td></tr> <tr><td>8</td><td>\$7</td><td>1</td><td>100</td></tr> <tr><td>9</td><td>\$8</td><td>1</td><td>100</td></tr> <tr><td>10</td><td>\$9</td><td>1</td><td>100</td></tr> <tr><td>11</td><td>\$10</td><td>1</td><td>100</td></tr> <tr><td>12</td><td>\$11</td><td>1</td><td>100</td></tr> </tbody> </table>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	1	\$0	1	100	2	\$1	1	100	3	\$2	1	100	4	\$3	1	100	5	\$4	1	100	6	\$5	1	100	7	\$6	1	100	8	\$7	1	100	9	\$8	1	100	10	\$9	1	100	11	\$10	1	100	12	\$11	1	100
No.	Address	Read Length (Word)	Sampling Cycle(ms)																																																			
1	\$0	1	100																																																			
2	\$1	1	100																																																			
3	\$2	1	100																																																			
4	\$3	1	100																																																			
5	\$4	1	100																																																			
6	\$5	1	100																																																			
7	\$6	1	100																																																			
8	\$7	1	100																																																			
9	\$8	1	100																																																			
10	\$9	1	100																																																			
11	\$10	1	100																																																			
12	\$11	1	100																																																			
(5)	Data No.	<p>Data No. corresponds to the Read Length (Word) set in the History Buffer Setup. When the Read Length is 1, the Data No. is 0; when the Read Length is 2, the Data No. can be 0 or 1. Thus, when the Read Length is 60 words, the Data No. is 0 - 59.</p>  <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> </tr> </thead> <tbody> <tr><td>1</td><td>\$10</td><td>60</td></tr> </tbody> </table>	No.	Address	Read Length (Word)	1	\$10	60																																														
No.	Address	Read Length (Word)																																																				
1	\$10	60																																																				

15

No.	Property	Function description
(6)	Time Format	<ul style="list-style-type: none"> <li>Two time formats are supported as follows:</li> </ul> 
	Date Format	<ul style="list-style-type: none"> <li>Seven date formats are supported as follows:</li> </ul> 
(7)	Color	<p>Set the displaying color of the date and time. The default is .</p> 
(8)	Border Color	<p>Set the Historical Event Table element border color.</p> 

No.	Property	Function description
(9)	Background Color	<p>Set the background color of the element.</p> 
(10)	Row Color	<p>Color of the odd rows. The default is  .</p> 
(11)	Alternating Row	<p>Color of the even rows. The default is  .</p> 

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No.	Property	Function description										
(12)	Select Row Color	When you select the data rows to view, the rows are in the color specified in this setting. The default is  .  <table border="1"><tr><td>15:14:13 10/21/2016 6</td></tr><tr><td>15:14:13 10/21/2016 8</td></tr><tr><td>15:14:13 10/21/2016 9</td></tr><tr><td>15:14:14 10/21/2016 0</td></tr><tr><td>15:14:14 10/21/2016 1</td></tr><tr><td>15:14:14 10/21/2016 3</td></tr><tr><td>15:14:14 10/21/2016 4</td></tr><tr><td>15:14:14 10/21/2016 6</td></tr><tr><td>15:14:14 10/21/2016 7</td></tr><tr><td>15:14:14 10/21/2016 9</td></tr></table>	15:14:13 10/21/2016 6	15:14:13 10/21/2016 8	15:14:13 10/21/2016 9	15:14:14 10/21/2016 0	15:14:14 10/21/2016 1	15:14:14 10/21/2016 3	15:14:14 10/21/2016 4	15:14:14 10/21/2016 6	15:14:14 10/21/2016 7	15:14:14 10/21/2016 9
15:14:13 10/21/2016 6												
15:14:13 10/21/2016 8												
15:14:13 10/21/2016 9												
15:14:14 10/21/2016 0												
15:14:14 10/21/2016 1												
15:14:14 10/21/2016 3												
15:14:14 10/21/2016 4												
15:14:14 10/21/2016 6												
15:14:14 10/21/2016 7												
15:14:14 10/21/2016 9												

## ■ Main-2

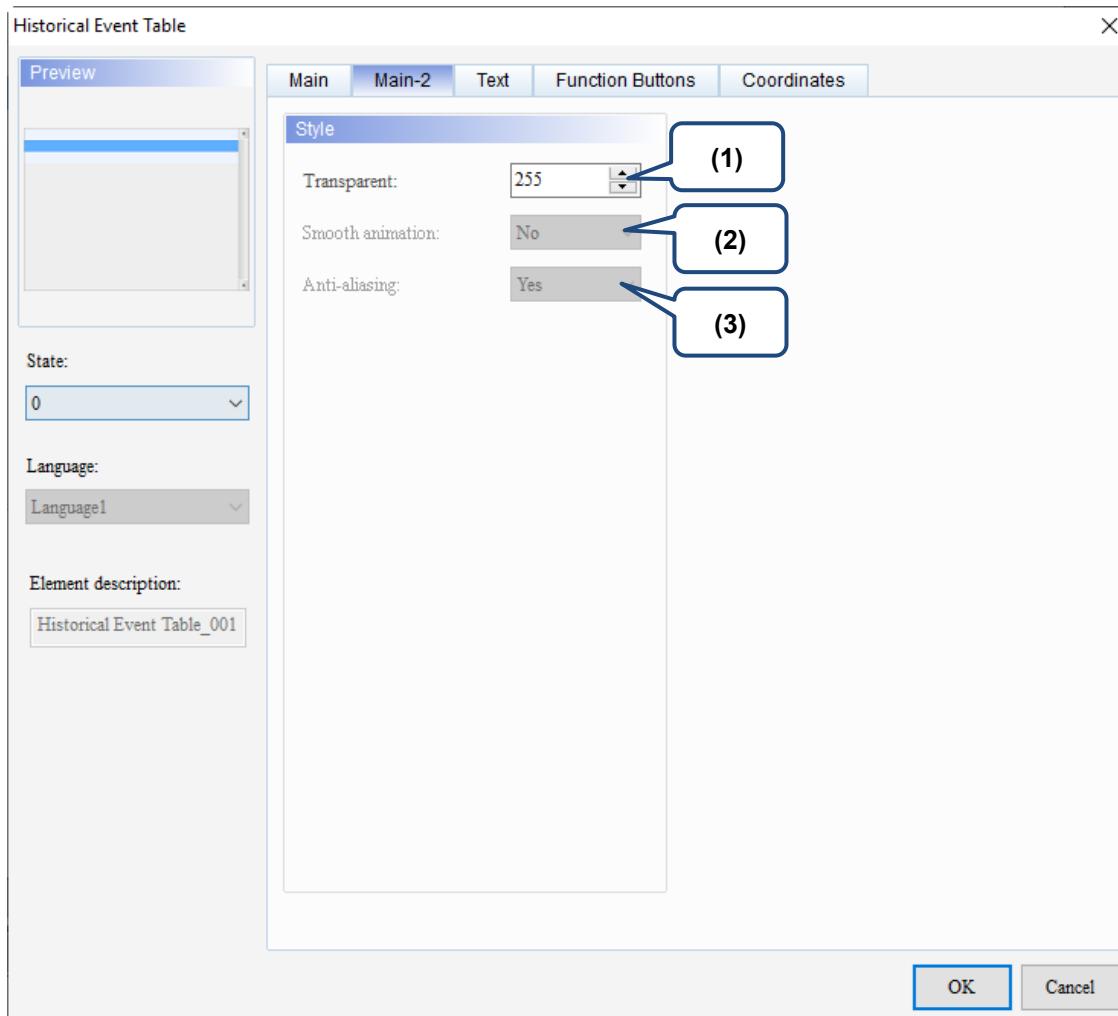


Figure 15.4.3 Main-2 property page for the Historical Event Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Text

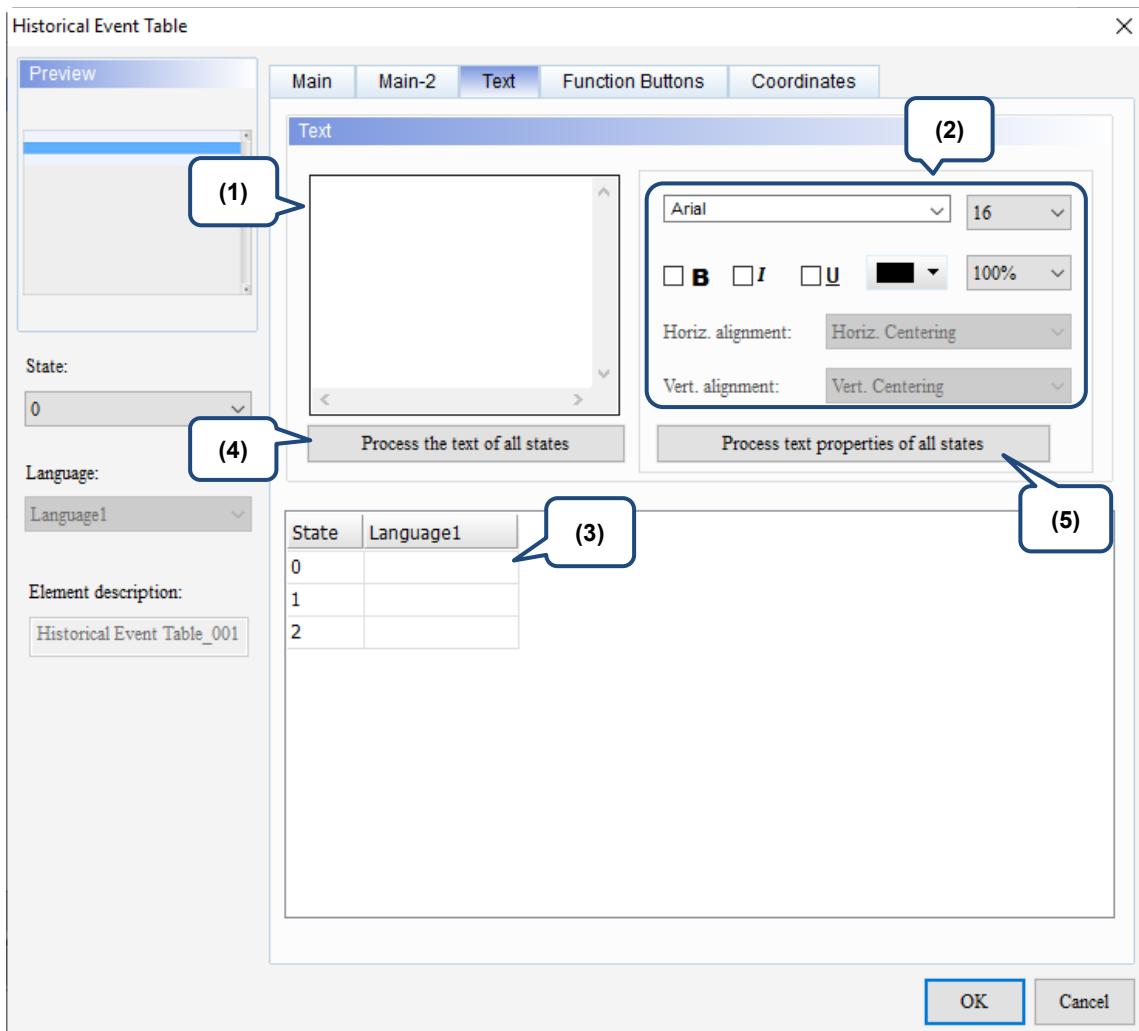
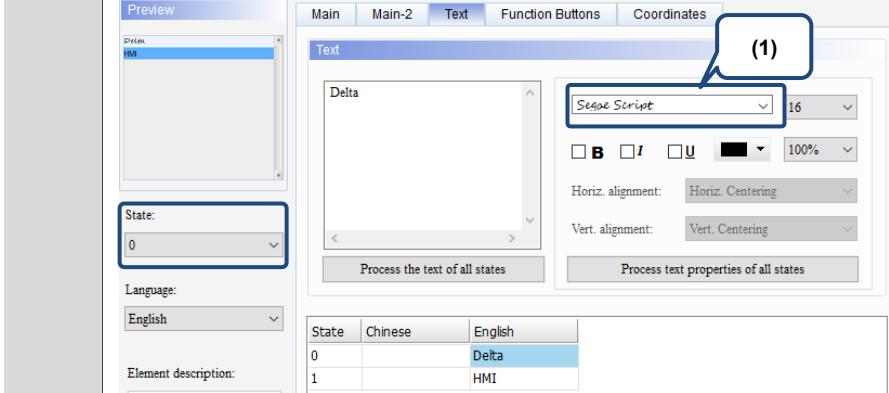
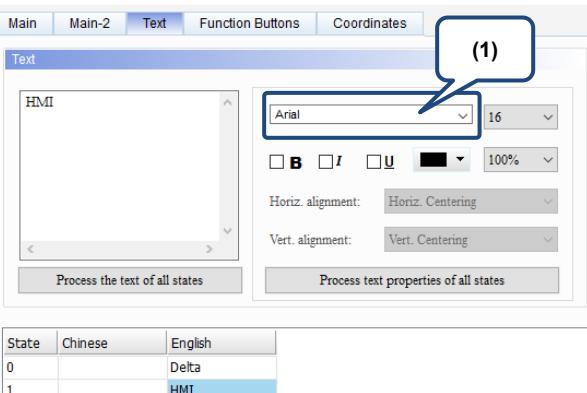
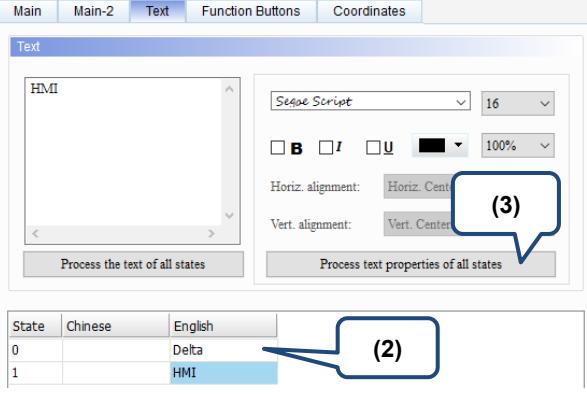


Figure 15.4.4 Text property page for the Historical Event Table element

No.	Property	Function description												
(1)	Text	<p>You can enter the text to display in this box.</p> <p>Text</p> <p>123</p> <p>Process the text of all states</p> <p>Process text properties of all states</p> <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>123</td> <td></td> </tr> <tr> <td>1</td> <td>234</td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> </tr> </tbody> </table>	State	Chinese	English	0	123		1	234		2		
State	Chinese	English												
0	123													
1	234													
2														
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts. You can refer to the Preview section in the preceding figure for the Text property setting results.												
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.												

No.	Property	Function description
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. Refer to the following example:</p> <p>Step 1: enter the text “123” for State 0 and “234” for State 1.</p> <p>Step 2: select State 0.</p> <p>Step 3: execute <b>Process the text of all states</b>, and the text of State 1 is changed to “123”.</p>
(5)	Process text properties of all states	<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p>

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No.	Property	Function description																											
(5)	Process text properties of all states	<p>Refer to the following example:</p> <p>Step 1: enter the text "Delta" for State 0 and "HMI" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</p> <p>Step 2: select State 0.</p> <p>Step 3: execute <b>Process text properties of all states</b>, and the font of State 1 is changed to Segoe Script.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>  <table border="1"> <thead> <tr> <th>State</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td>Delta</td> </tr> <tr> <td>1</td> <td></td> <td>HMI</td> </tr> </tbody> </table>	State	Chinese	English	0		Delta	1		HMI	State	Chinese	English	0		Delta	1		HMI	State	Chinese	English	0		Delta	1		HMI
State	Chinese	English																											
0		Delta																											
1		HMI																											
State	Chinese	English																											
0		Delta																											
1		HMI																											
State	Chinese	English																											
0		Delta																											
1		HMI																											
	Before change																												
	After change																												

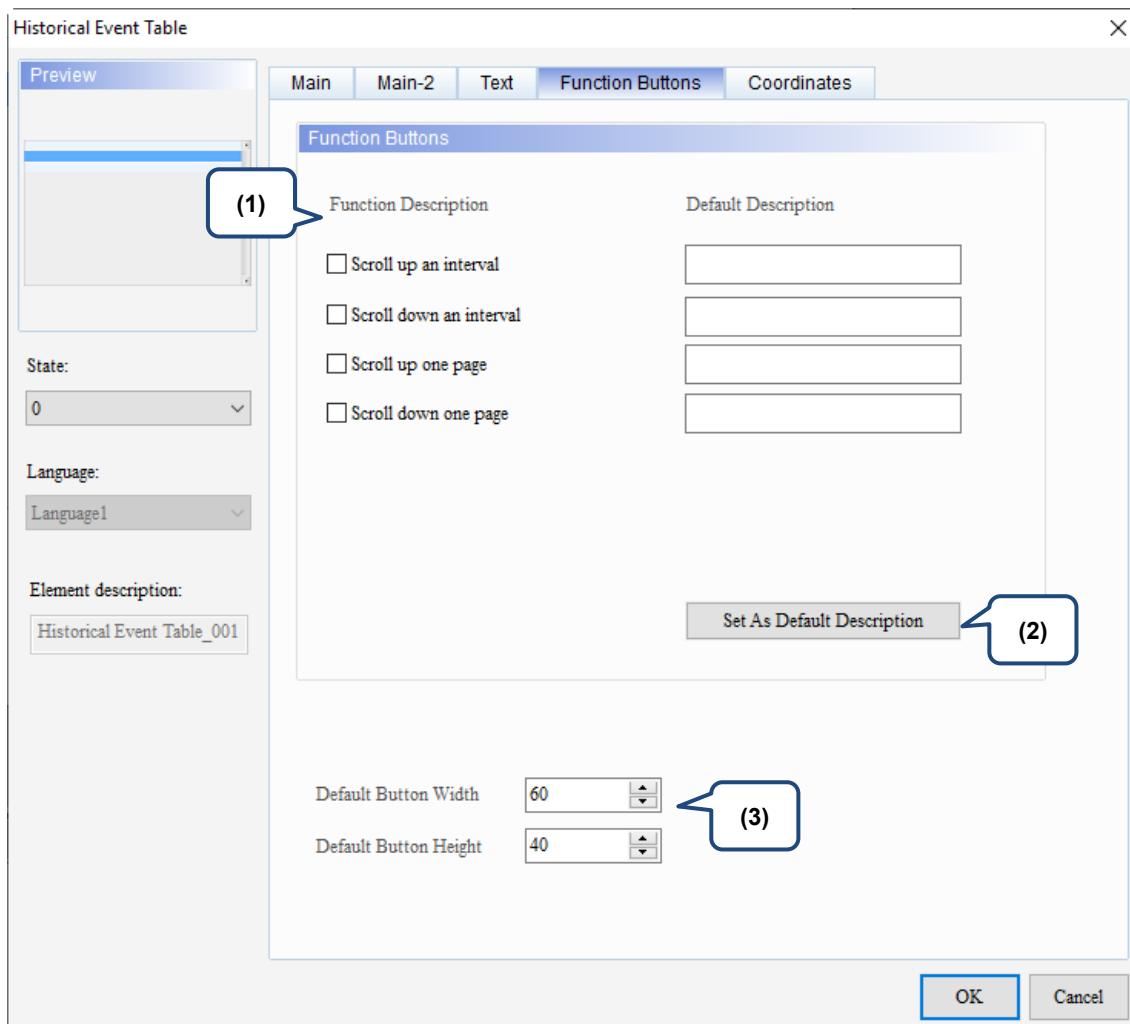
**■ Function Buttons**

Figure 15.4.5 Function Buttons property page for the Historical Event Table element

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No.	Property	Function description															
(1)	Function Description	Select the function buttons to display on the Historical Event Table element. <table border="1" style="margin-left: 20px;"> <tr> <td>Scroll up an interval</td> <td>Scroll up an interval.</td> </tr> <tr> <td>Scroll down an interval</td> <td>Scroll down an interval.</td> </tr> <tr> <td>Scroll up one page</td> <td>Scroll up one page.</td> </tr> <tr> <td>Scroll down one page</td> <td>Scroll down one page.</td> </tr> </table>	Scroll up an interval	Scroll up an interval.	Scroll down an interval	Scroll down an interval.	Scroll up one page	Scroll up one page.	Scroll down one page	Scroll down one page.							
Scroll up an interval	Scroll up an interval.																
Scroll down an interval	Scroll down an interval.																
Scroll up one page	Scroll up one page.																
Scroll down one page	Scroll down one page.																
(2)	Set As Default Description	When you press <b>Set As Default Description</b> , the default strings are automatically filled in the Default Description fields. <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding-bottom: 5px;">Function Buttons</th> <th style="text-align: left; padding-bottom: 5px;">Function Description</th> <th style="text-align: left; padding-bottom: 5px;">Default Description</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> Scroll up an interval</td> <td style="border: 1px solid #ccc; padding: 2px;">Scroll up an interval</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Scroll down an interval</td> <td style="border: 1px solid #ccc; padding: 2px;">Scroll down an interval</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Scroll up one page</td> <td style="border: 1px solid #ccc; padding: 2px;">Scroll up one page</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Scroll down one page</td> <td style="border: 1px solid #ccc; padding: 2px;">Scroll down one page</td> <td></td> </tr> </tbody> </table> <p style="text-align: right; margin-top: 10px;"><b>Set As Default Description</b></p> </div>	Function Buttons	Function Description	Default Description	<input checked="" type="checkbox"/> Scroll up an interval	Scroll up an interval		<input checked="" type="checkbox"/> Scroll down an interval	Scroll down an interval		<input checked="" type="checkbox"/> Scroll up one page	Scroll up one page		<input checked="" type="checkbox"/> Scroll down one page	Scroll down one page	
Function Buttons	Function Description	Default Description															
<input checked="" type="checkbox"/> Scroll up an interval	Scroll up an interval																
<input checked="" type="checkbox"/> Scroll down an interval	Scroll down an interval																
<input checked="" type="checkbox"/> Scroll up one page	Scroll up one page																
<input checked="" type="checkbox"/> Scroll down one page	Scroll down one page																
(3)	Default Button Width / Height	You can adjust the button height and width.															

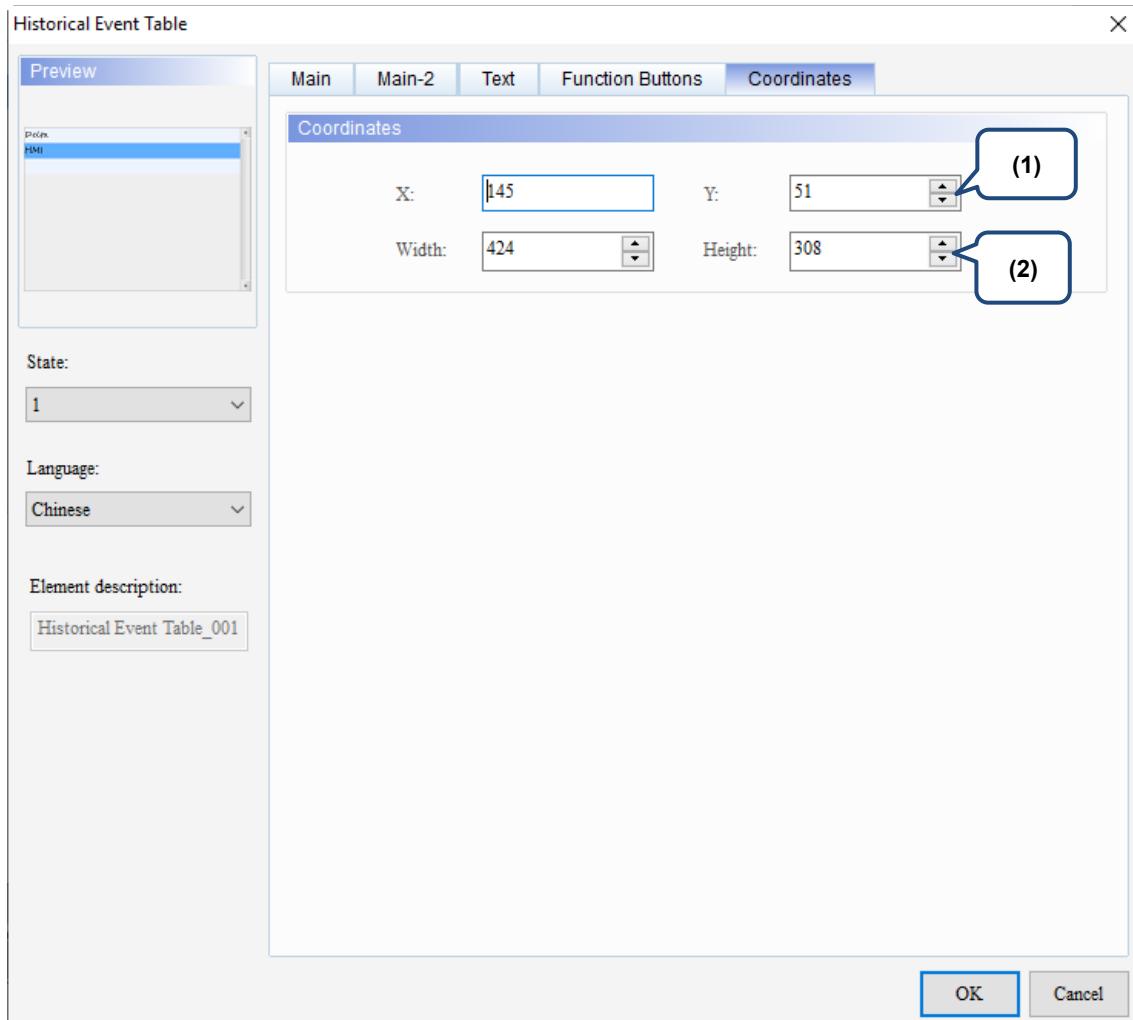
**■ Coordinates**

Figure 15.4.4 Coordinates property page for the Historical Event Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 15.5 Historical Overview Table

The Historical Overview Table element is for viewing the stored Historical Trend Graph data.

The left side of the element is the file browsing area and the right side is the trend graph. You can select Historical Trend Graph data stored in the USB Disk or SD Card through the file browsing area on the left. Like the Historical Trend Graph, a Historical Overview Table can display up to 60 curves and read 60 words.

When you double-click the Historical Overview Table, the property page is shown as follows.

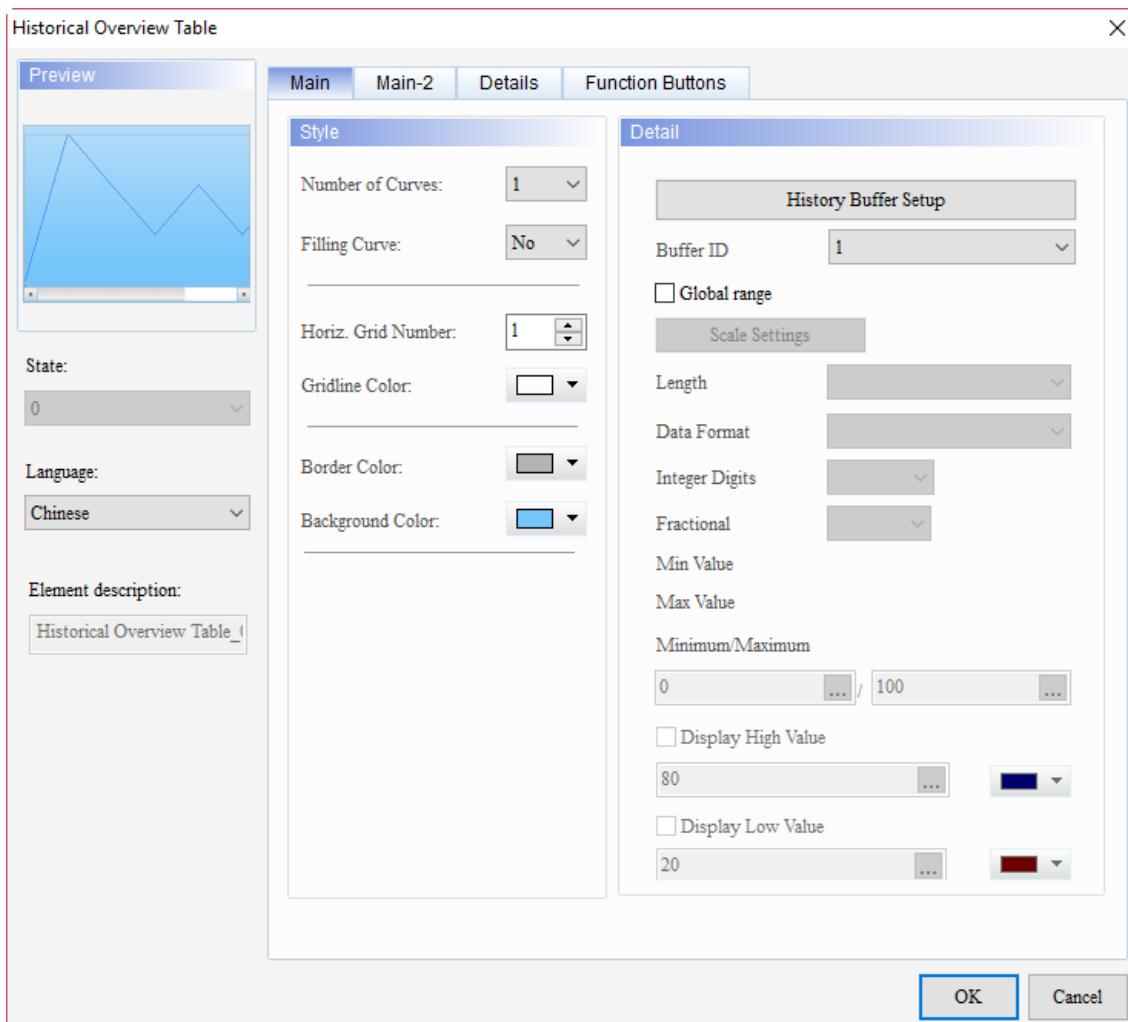


Figure 15.5.1 Properties of Historical Overview Table

Table 15.5.1 Function page of Historical Overview Table

Historical Overview Table		
Function page	Description	
Preview	The Historical Overview Table elements do not support multiple state values and multi-language data display.	
Main	Data	Set the Buffer ID.
	Global range	Set the Scale Settings, Length, Data Format, Integer Digits, Fractional, Minimum / Maximum, Display High Value, Display Low Value, High Value color, and Low Value color.
	Scale Settings	Set the Display scale, Display mark, Font size, Text Color, Mark Color, Scale Mark No., Subscale Mark No., and Scale Width.
	Style	Set the Number of Curves, Filling Curve, Horiz. Grid Number, Gridline Color, Border Color, and Background Color.
Main-2	Set the Transparent, Smooth animation, Anti-aliasing, and Margin functions.	
Details	Scope setting	Set whether to enable the curve and set the Length, Start Position, Data Format, Integer Digits, Fractional Digits, Line Color, Line Weight, Minimum, and Maximum.
	Time/Date	Select the <b>Display time/date</b> check box and set the Time Interval, Time format, Date Format, Color, and Timeline scaling.
Function Buttons	Select the function buttons to enable and set the width and height of the buttons.	

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## ■ Main

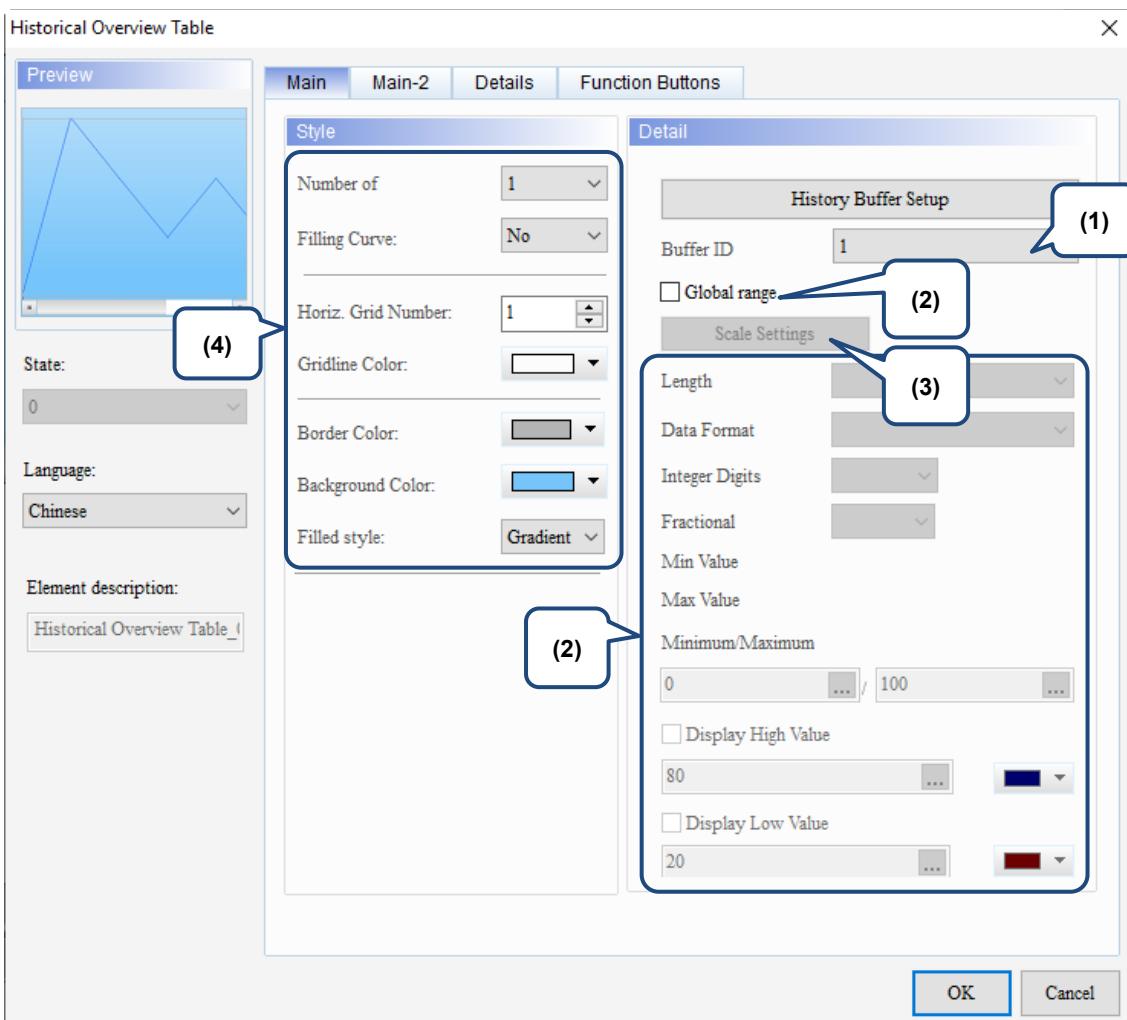
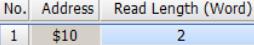
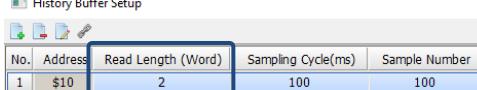
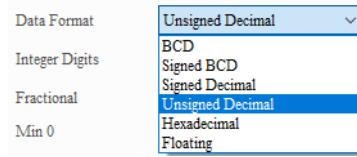
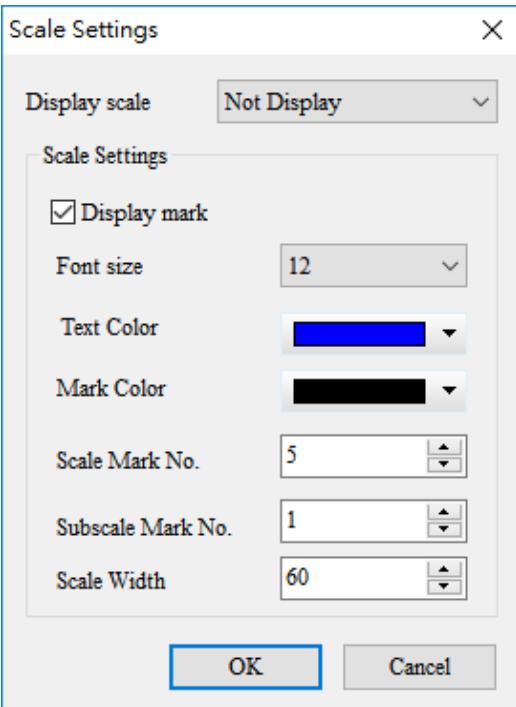


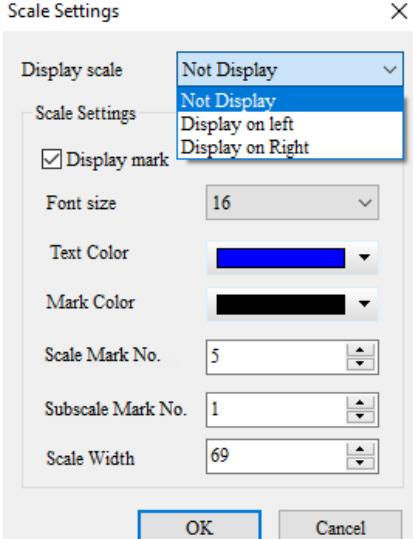
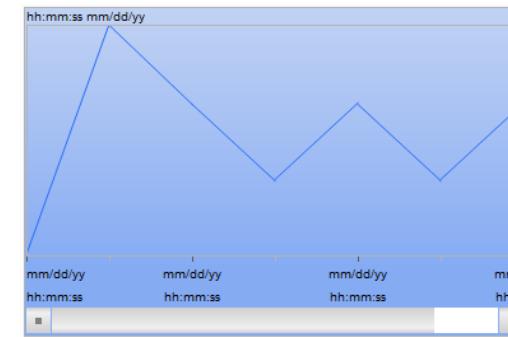
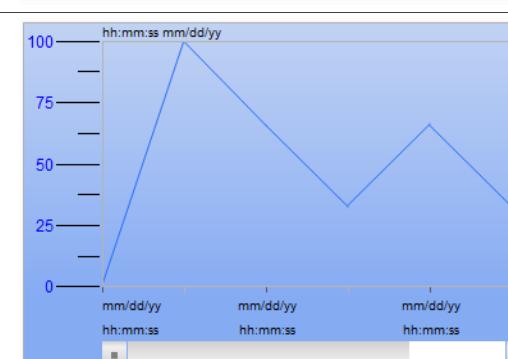
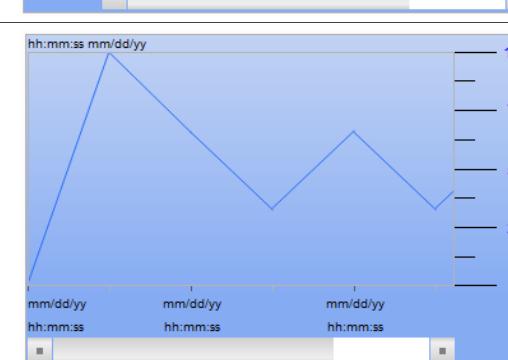
Figure 15.5.2 Main property page for the Historical Overview Table element

No.	Property	Function description																																																																	
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer Setup. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can be up to 12 sets.</p> <p>History Buffer Setup</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Address</th> <th>Read Length (Word)</th> <th>Sampling Cycle(ms)</th> </tr> </thead> <tbody> <tr><td>1</td><td>\$0</td><td>1</td><td>100</td></tr> <tr><td>2</td><td>\$1</td><td>1</td><td>100</td></tr> <tr><td>3</td><td>\$2</td><td>1</td><td>100</td></tr> <tr><td>4</td><td>\$3</td><td>1</td><td>100</td></tr> <tr><td>5</td><td>\$4</td><td>1</td><td>100</td></tr> <tr><td>6</td><td>\$5</td><td>1</td><td>100</td></tr> <tr><td>7</td><td>\$6</td><td>1</td><td>100</td></tr> <tr><td>8</td><td>\$7</td><td>1</td><td>100</td></tr> <tr><td>9</td><td>\$8</td><td>1</td><td>100</td></tr> <tr><td>10</td><td>\$9</td><td>1</td><td>100</td></tr> <tr><td>11</td><td>\$10</td><td>1</td><td>100</td></tr> <tr><td>12</td><td>\$11</td><td>1</td><td>100</td></tr> </tbody> </table> <p>Detail</p> <p>History Buffer Setup</p> <table border="1"> <thead> <tr> <th>Buffer ID</th> </tr> </thead> <tbody> <tr><td>1</td></tr> <tr><td>2</td></tr> <tr><td>3</td></tr> <tr><td>4</td></tr> <tr><td>5</td></tr> <tr><td>6</td></tr> <tr><td>7</td></tr> <tr><td>8</td></tr> <tr><td>9</td></tr> <tr><td>10</td></tr> <tr><td>11</td></tr> <tr><td>12</td></tr> </tbody> </table>	No.	Address	Read Length (Word)	Sampling Cycle(ms)	1	\$0	1	100	2	\$1	1	100	3	\$2	1	100	4	\$3	1	100	5	\$4	1	100	6	\$5	1	100	7	\$6	1	100	8	\$7	1	100	9	\$8	1	100	10	\$9	1	100	11	\$10	1	100	12	\$11	1	100	Buffer ID	1	2	3	4	5	6	7	8	9	10	11	12
No.	Address	Read Length (Word)	Sampling Cycle(ms)																																																																
1	\$0	1	100																																																																
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6	\$5	1	100																																																																
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No.	Property	Function description																										
(2)	Length	<ul style="list-style-type: none"> <li>The Length can be set as 1 or 2.</li> <li>If Length is 1, it means the length of the read data is 1 word; if Length is 2, it means the length of the read data is 2 words.</li> </ul> <p>Note: when you select 2 as the Length, the Read Length must be 2 or above.</p>   																										
		<ul style="list-style-type: none"> <li>Historical Overview Table supports the following data formats: BCD, Signed BCD, Signed Decimal, Unsigned Decimal, Hexadecimal, and Floating.</li> <li>Floating is available only when Length is 2.</li> </ul> 																										
		<p>Integer / Fractional Digits</p> <p>You can set the displaying number of integer digits and the number of decimal places.</p>																										
	Global range	<ul style="list-style-type: none"> <li>If the <b>Global range</b> check box is selected, you cannot set the Minimum and Maximum values for the curves on the Details page; instead, the range is determined by the minimum and maximum of the Global range.</li> <li>If the <b>Global range</b> check box is not selected, you can set the Minimum and Maximum values for the curves respectively.</li> <li>You can set the minimum and maximum values as constants or variables.</li> <li>When the Minimum and Maximum values are variables, the controller address (Word) and the internal register address (Word) are supported.</li> <li>When the Minimum and Maximum values are constants, the allowable ranges for the minimum and maximum values are subject to change based on the selected Data Type and Data Format.</li> </ul> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="8">DWord</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to +9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td>Floating</td> <td>0 to 9999999</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	DWord	BCD	0 to 99999999	Signed BCD	-9999999 to +9999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295	Hex	0 to 0xFFFFFFFF	Floating
Data Type	Data Format	Allowable range																										
Word	BCD	0 to 9999																										
	Signed BCD	-999 to +9999																										
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	Unsigned Decimal	0 to 65535																										
	Hex	0 to 0xFFFF																										
DWord	BCD	0 to 99999999																										
	Signed BCD	-9999999 to +9999999																										
	Signed Decimal	-2147483648 to +2147483647																										
	Unsigned Decimal	0 to 4294967295																										
	Hex	0 to 0xFFFFFFFF																										
	Floating	0 to 9999999																										
	<p>Display High Value is available on the Historical Overview Table. You can set the constant, select the internal memory or the controller register address (Word), and set the displaying color for the Display High Value.</p>																											
	<p>Display Low Value is available on the Historical Overview Table. You can set the constant, select the internal memory or the controller register address (Word), and set the displaying color for the Display Low Value.</p>																											

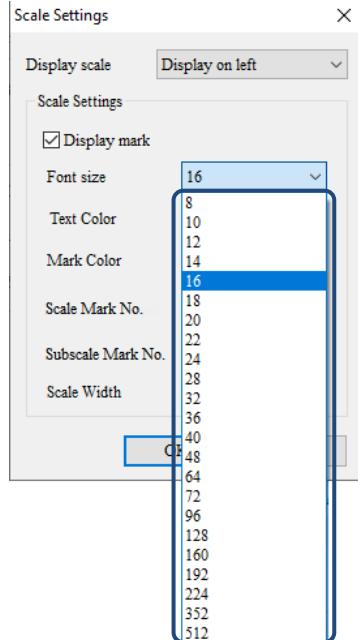
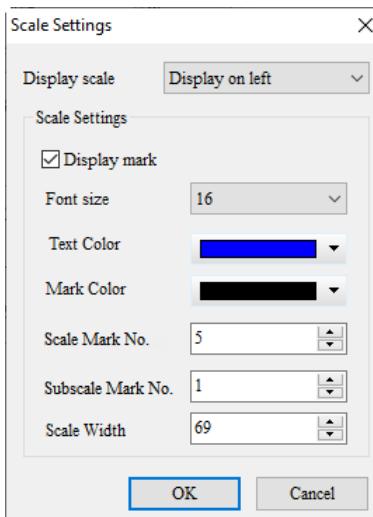
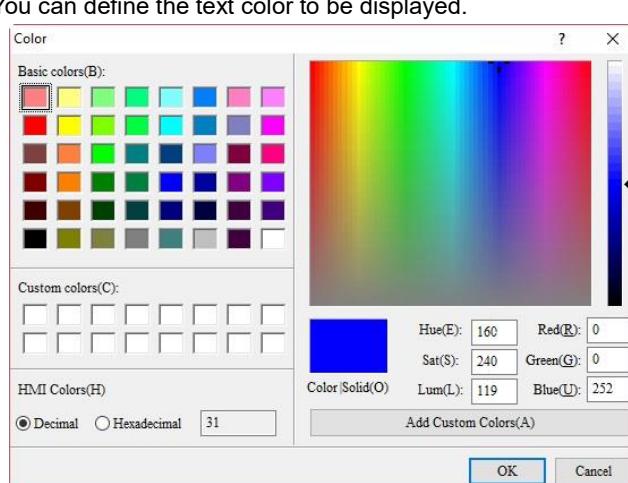
15

No.	Property	Function description				
		 <p>The dialog box shows the following settings:</p> <ul style="list-style-type: none"> <li>Display scale: Not Display</li> <li>Display mark: checked</li> <li>Font size: 12</li> <li>Text Color: Blue</li> <li>Mark Color: Black</li> <li>Scale Mark No.: 5</li> <li>Subscale Mark No.: 1</li> <li>Scale Width: 60</li> </ul> <p>Buttons: OK, Cancel</p>				
(3)	Scale Settings	<p>Scale Settings is available only when the <b>Global range</b> check box is selected.</p> <table border="1"> <tr> <td style="text-align: center; padding: 5px;">Not selected</td> <td style="padding: 5px;"> <input type="checkbox"/> Global range  <b>Scale Settings</b>  Length: 1  Data Format: Unsigned Decimal  Integer Digits: 4  Fractional: 0 </td> </tr> <tr> <td style="text-align: center; padding: 5px;">Selected</td> <td style="padding: 5px;"> <input checked="" type="checkbox"/> Global range  <b>Scale Settings</b>  Length: 1  Data Format: Unsigned Decimal  Integer Digits: 4  Fractional: 0 </td> </tr> </table>	Not selected	<input type="checkbox"/> Global range <b>Scale Settings</b> Length: 1 Data Format: Unsigned Decimal Integer Digits: 4 Fractional: 0	Selected	<input checked="" type="checkbox"/> Global range <b>Scale Settings</b> Length: 1 Data Format: Unsigned Decimal Integer Digits: 4 Fractional: 0
Not selected	<input type="checkbox"/> Global range <b>Scale Settings</b> Length: 1 Data Format: Unsigned Decimal Integer Digits: 4 Fractional: 0					
Selected	<input checked="" type="checkbox"/> Global range <b>Scale Settings</b> Length: 1 Data Format: Unsigned Decimal Integer Digits: 4 Fractional: 0					

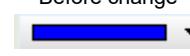
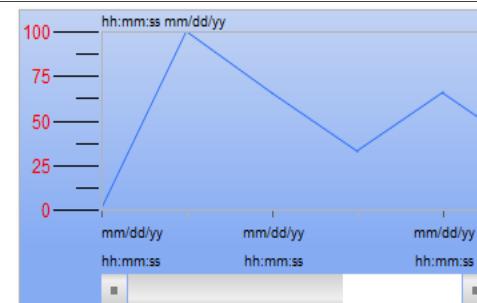
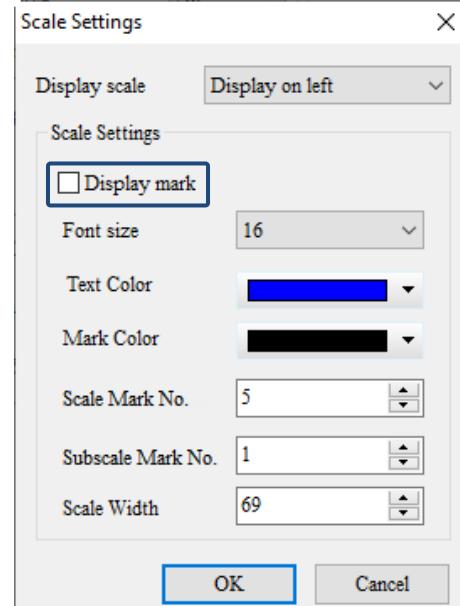
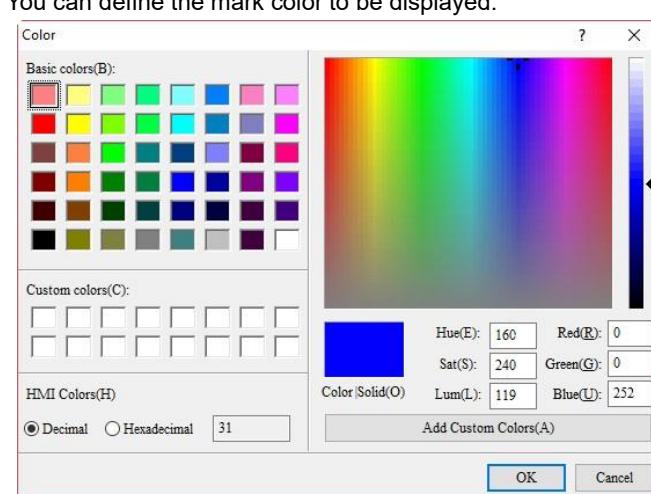
No.	Property	Function description	
			
		<p>The Display scale options include Not Display, Display on left, and Display on Right.</p>	
(3)	Scale Settings	<p>Display scale</p> <p>Not Display</p>	
		<p>Display on left</p>	
		<p>Display on Right</p>	

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No.	Property	Function description
	Display mark	<p>Select to display the scale numbers or not.</p> <p>Not selected</p> <p>Selected</p>
(3)	Scale Settings	<p>If the <b>Display mark</b> check box is not selected when you set the Font size, the texts are not displayed on the scale, but the spacing for the set Font size is reserved on the scale. For example, if you selected 72 for the Font size, the spacing on the scale is wider, but without the texts.</p>
	Font size	<p>Scale Settings</p> <p>Display scale: Display on left</p> <p>Scale Settings</p> <p><input type="checkbox"/> <b>Display mark</b></p> <p>Font size: 16</p> <p>Text Color: [blue square]</p> <p>Mark Color: [black square]</p> <p>Scale Mark No.: 5</p> <p>Subscale Mark No.: 1</p> <p>Scale Width: 69</p> <p>OK Cancel</p>

No.	Property	Function description
	Font size	<p>The Font size is for setting the size of the numbers displayed on the scale with the sizes 8 - 512 available.</p> 
(3)	Scale Settings	<ul style="list-style-type: none"> <li>The Text Color setting is valid only when the <b>Display mark</b> check box is selected.</li> </ul>  <ul style="list-style-type: none"> <li>You can define the text color to be displayed.</li> </ul> 

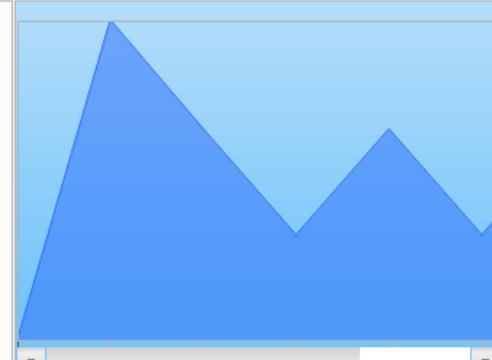
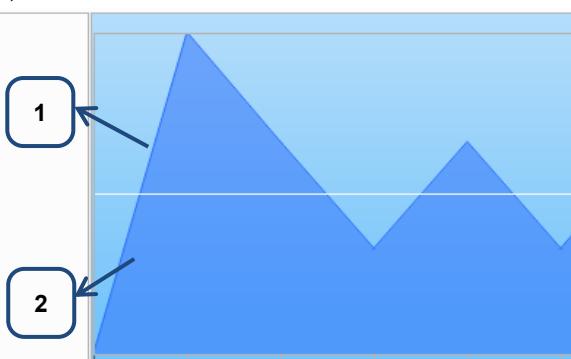
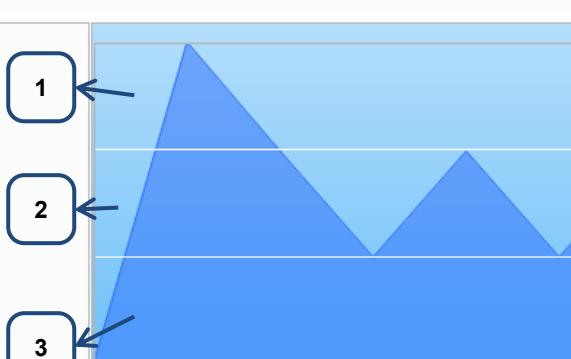
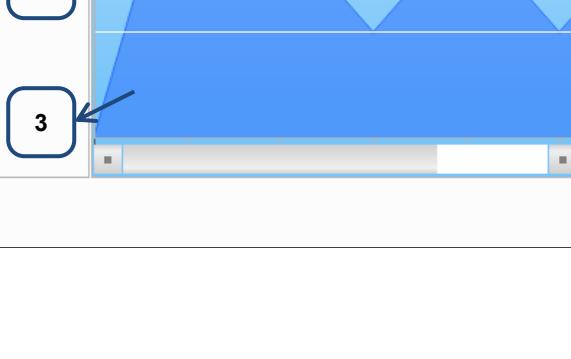
15

No.	Property	Function description	
	Text Color	<p>Before change</p> 	
		<p>After change</p> 	
(3)	Scale Settings	<ul style="list-style-type: none"> <li>The Mark Color setting is valid even if the <b>Display mark</b> check box is not selected.</li> </ul>	
	Mark Color	<ul style="list-style-type: none"> <li>You can define the mark color to be displayed.</li> </ul>	

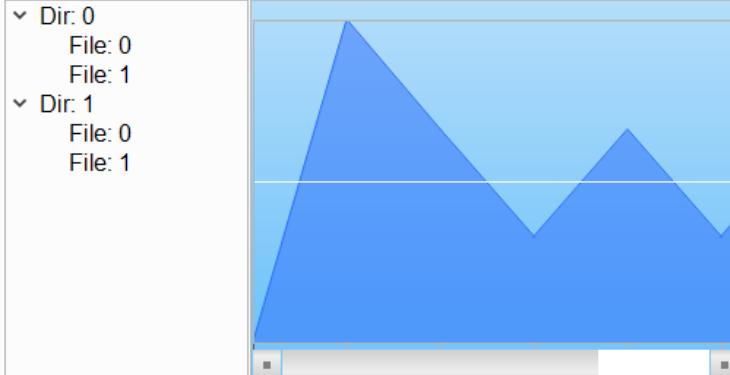
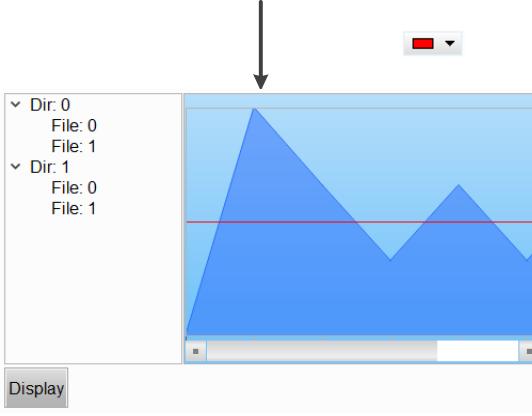
No.	Property	Function description	
	Mark Color	Before change 	
		After change 	
(3)	Scale Mark No.	<ul style="list-style-type: none"> <li>The Scale Mark No. and Subscale Mark No. settings are valid even if the <b>Display mark</b> check box is not selected.</li> </ul>	
	Subscale Mark No.	<ul style="list-style-type: none"> <li>The minimum is 1 and the maximum is 99 for both the Scale Mark No. and Subscale Mark No.</li> <li>When the Scale Mark No. is 5 and the Subscale Mark No. is 1, the graph is as follows.</li> </ul>	

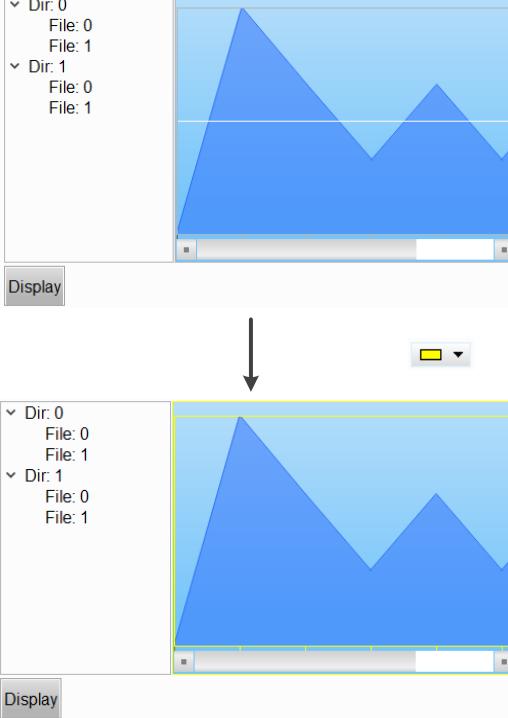
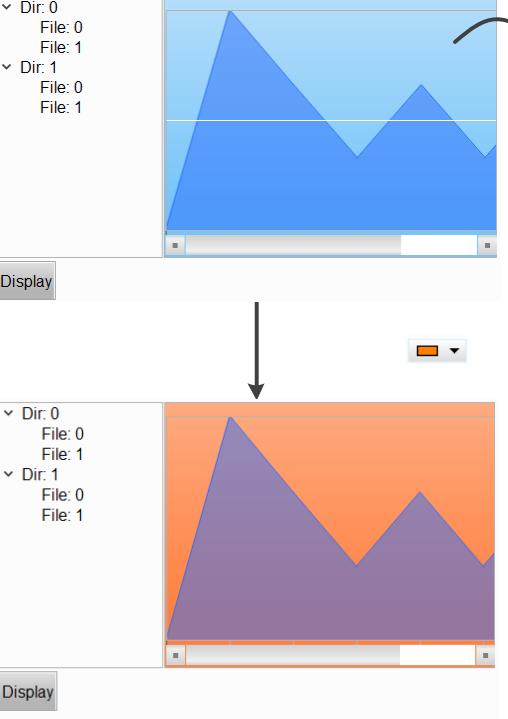
15

No.	Property	Function description
(3)	Scale Settings Scale Width	<p>When the font size is set too big, you can adjust Scale Width to show the text.</p> <p>Note:</p> <ol style="list-style-type: none"> <li>1. The Scale Width must be smaller than the element width.</li> <li>2. When you set the value to be larger than the element width, the Scale Width is immediately adjusted to the element width minus 1.</li> <li>3. If you enter a non-numeric character, the software displays the following error message.</li> </ol>
(4)	Style Number of Curves	<ul style="list-style-type: none"> <li>■ A Historical Overview Table element supports up to 60 curves.</li> </ul> <ul style="list-style-type: none"> <li>■ If you select 60 curves, you can still change the width and color of each curve.</li> </ul>

No.	Property	Function description
	Filling Curve	<ul style="list-style-type: none"> <li>■ Set to fill the area under the curve.</li> <li>■ The default is No. If set to Yes, the curve is as follows.</li> </ul> <div style="display: flex; align-items: center;"> <div style="flex: 1; padding-right: 10px;"> <ul style="list-style-type: none"> <li>▼ Dir: 0 File: 0 File: 1</li> <li>▼ Dir: 1 File: 0 File: 1</li> </ul> </div> <div style="flex: 1; position: relative;">  <div style="position: absolute; bottom: -10px; left: 0; width: 100%; height: 10px; background-color: #f0f0f0;"></div> </div> </div> <p style="text-align: center;"><b>Display</b></p>
(4)	Style  Horiz. Grid Number	<ul style="list-style-type: none"> <li>■ The maximum horizontal grid count is 50.</li> <li>■ Horiz. Grid Number sets the number of zones the trend graph on the right side of the Historical Overview Table is divided into. The default is 1, meaning there is no grid line. If the Horiz. Grid Number is set to 2, there is one grid line dividing the trend graph into 2 zones; if set to 3, there are two grid lines dividing the trend graph into 3 zones, and so on.</li> </ul> <div style="display: flex; align-items: center;"> <div style="flex: 1; padding-right: 10px;"> <ul style="list-style-type: none"> <li>▼ Dir: 0 File: 0 File: 1</li> <li>▼ Dir: 1 File: 0 File: 1</li> </ul> </div> <div style="flex: 1; position: relative;">  <div style="position: absolute; bottom: -10px; left: 0; width: 100%; height: 10px; background-color: #f0f0f0;"></div> </div> </div> <p style="text-align: center;"><b>Display</b></p> <div style="display: flex; align-items: center;"> <div style="flex: 1; padding-right: 10px;"> <ul style="list-style-type: none"> <li>▼ Dir: 0 File: 0 File: 1</li> <li>▼ Dir: 1 File: 0 File: 1</li> </ul> </div> <div style="flex: 1; position: relative;">  <div style="position: absolute; bottom: -10px; left: 0; width: 100%; height: 10px; background-color: #f0f0f0;"></div> </div> </div> <p style="text-align: center;"><b>Display</b></p> <div style="display: flex; align-items: center;"> <div style="flex: 1; padding-right: 10px;"> <ul style="list-style-type: none"> <li>▼ Dir: 0 File: 0 File: 1</li> <li>▼ Dir: 1 File: 0 File: 1</li> </ul> </div> <div style="flex: 1; position: relative;">  <div style="position: absolute; bottom: -10px; left: 0; width: 100%; height: 10px; background-color: #f0f0f0;"></div> </div> </div> <p style="text-align: center;"><b>Display</b></p>

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No.	Property	Function description
(4)	Style Gridline Color	<p>■ The Gridline Color is the color of the grid line in the trend graph on the right side of the Historical Overview Table.</p> <p>The default is .</p>  <p>Display</p> <p>■ You can change the color of the grid line.</p>   <p>Display</p>

No.	Property	Function description
(4)	Border Color	<p>Set the Historical Overview Table element border color.</p> 
	Background Color	<p>Set the Historical Overview Table element background color.</p> 

## ■ Main-2

15

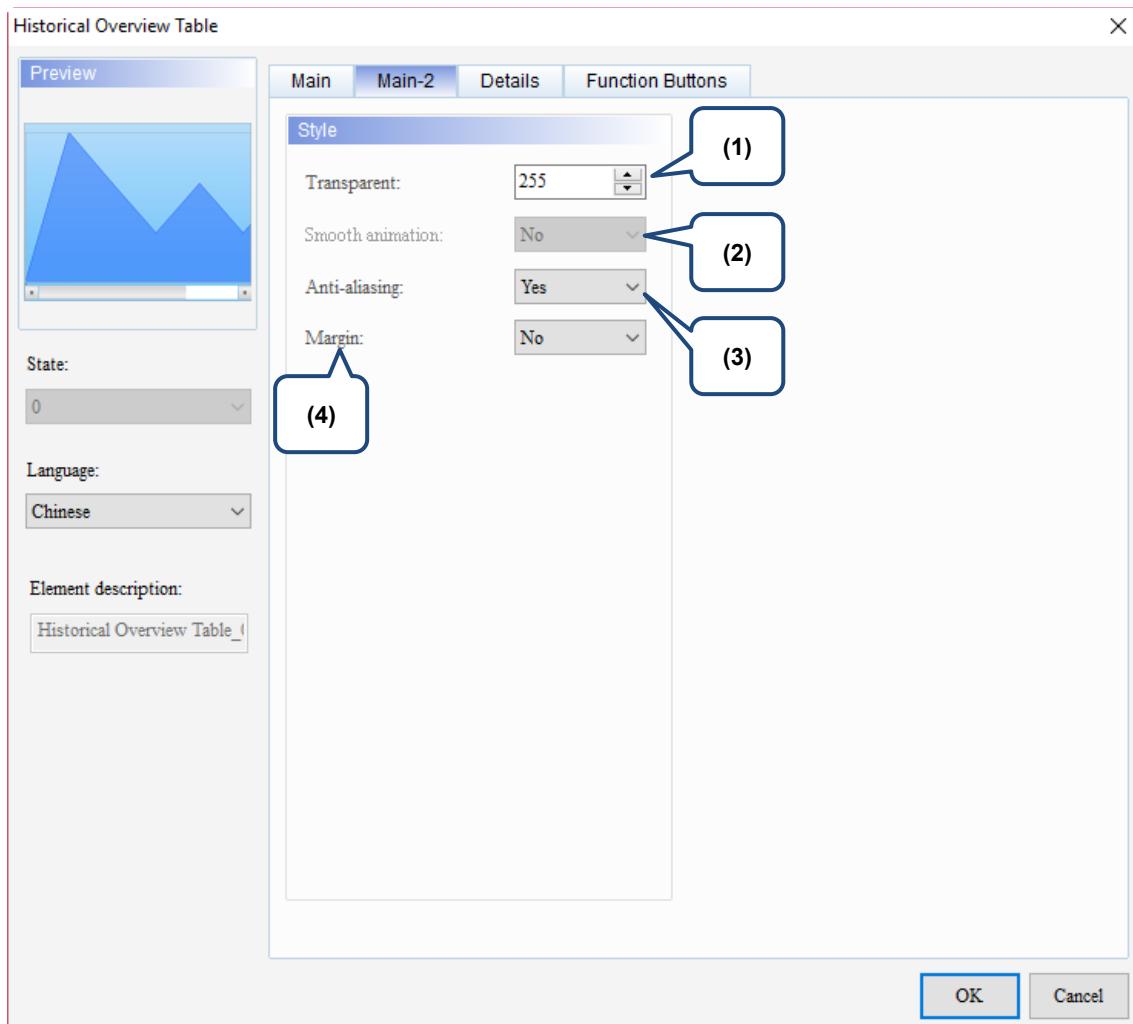


Figure 15.5.3 Main-2 property page for the Historical Overview Table element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	The Anti-aliasing function is available for this element. When this function is enabled, the element display becomes more delicate without jagged edges.				
(4)	Margin	<p>The Margin function is available for this element. When you select Yes for Margin, the element indents as shown in the following figure.</p> <table border="1" style="margin-top: 10px;"> <tr> <td style="text-align: center; padding: 5px;">Margin is set to Yes</td> <td style="text-align: center; padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">Margin is set to No</td> <td style="text-align: center; padding: 5px;"></td> </tr> </table>	Margin is set to Yes		Margin is set to No	
Margin is set to Yes						
Margin is set to No						

15

## ■ Details

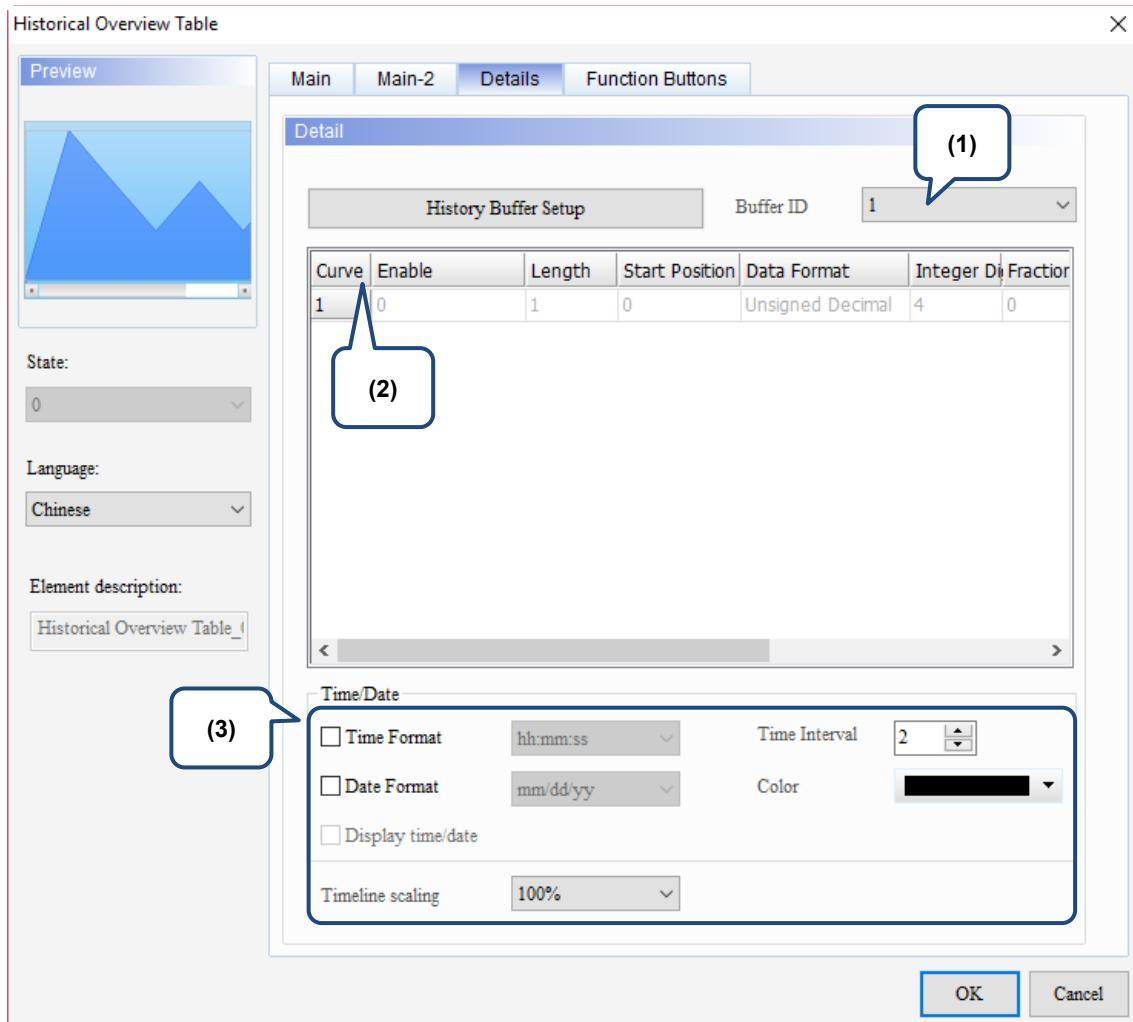
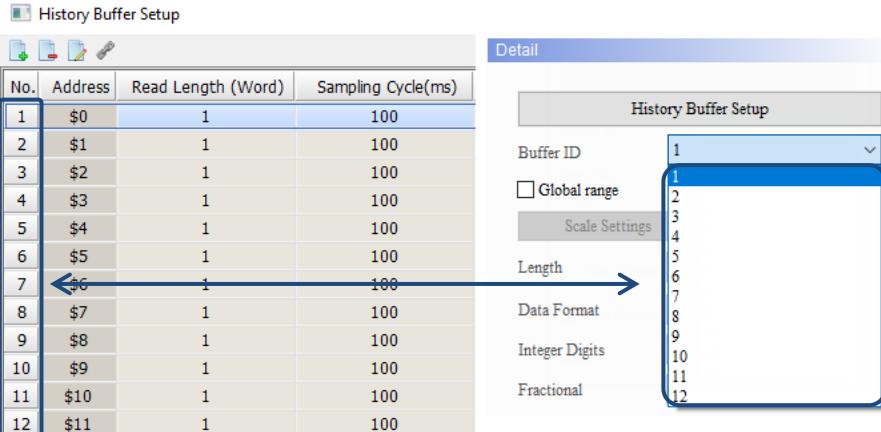
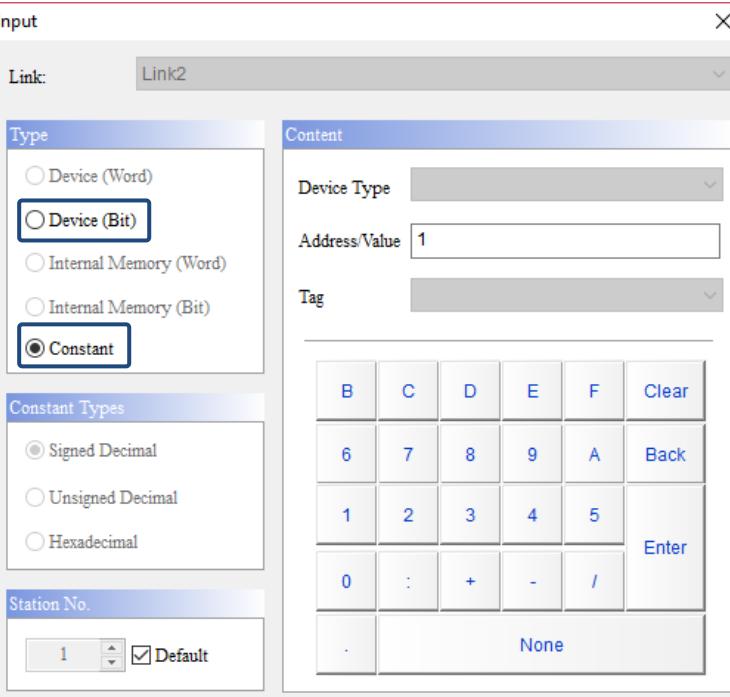
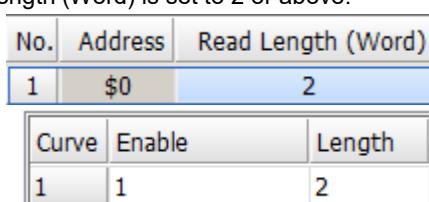
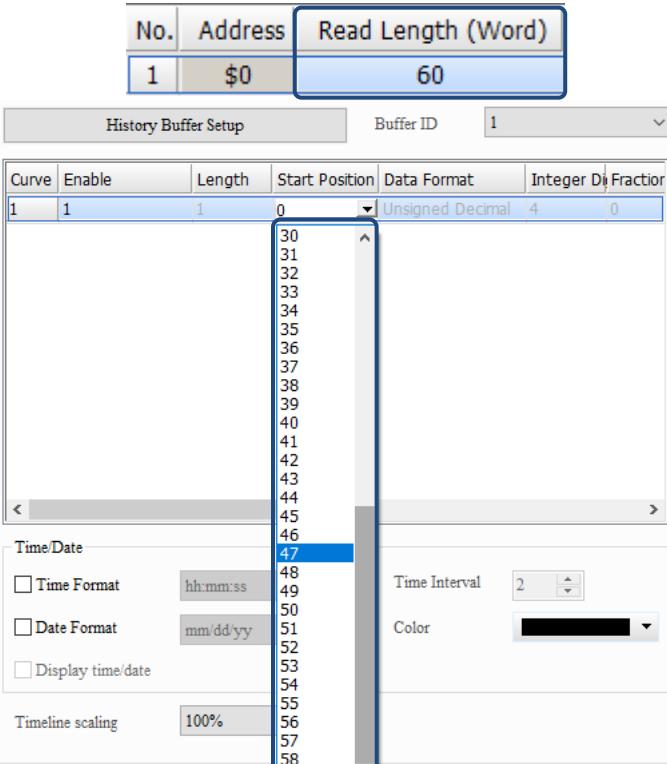
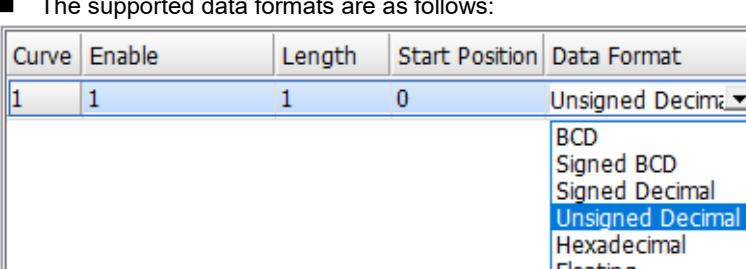
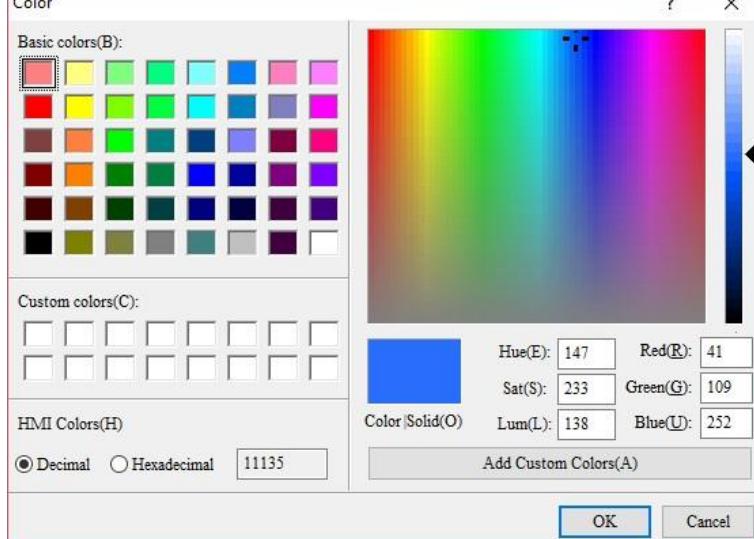
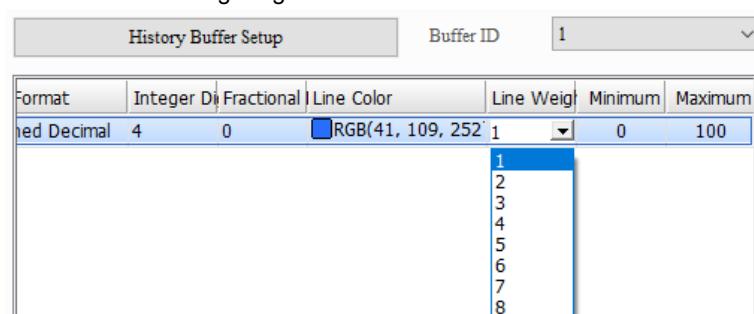


Figure 15.5.4 Details property page for the Historical Overview Table element

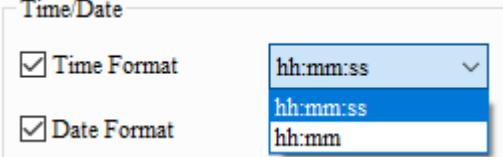
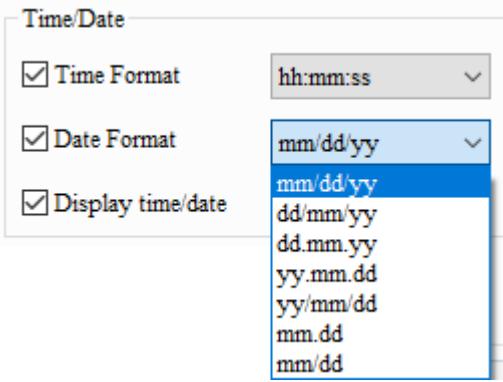
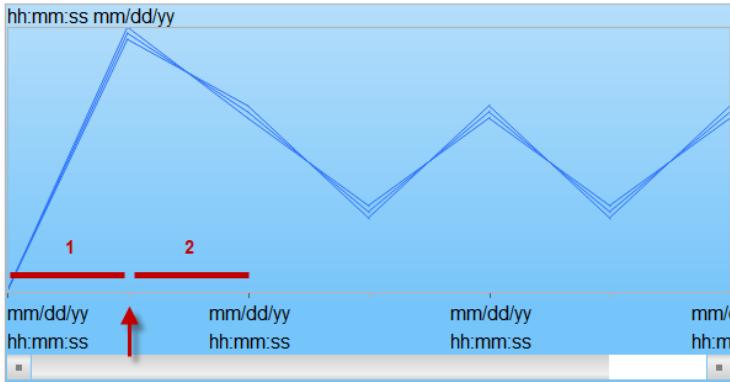
No.	Property	Function description
(1)	Buffer ID	<p>The Buffer ID corresponds to the set data number in the History Buffer Setup. The History Buffer Setup can set up to 12 sets of data, so the Buffer ID can be up to 12 sets.</p> 
(2)	Curve setting	<ul style="list-style-type: none"> <li>Set whether to enable the curve for data reading.</li> <li>If Constant is selected for Type, then setting the value to 1 indicates to enable and setting to 0 indicates to disable.</li> <li>If Bit is selected for Type, then Bit On indicates to enable and Bit Off indicates to disable.</li> <li>The value supports the Bit of the element, Bit of the internal memory, and constant setting.</li> </ul> 
	Length	<ul style="list-style-type: none"> <li>You can set Length to 1 or 2. You can set the Length to 2 only when the Read Length (Word) is set to 2 or above.</li> </ul>  <ul style="list-style-type: none"> <li>When the <b>Global range</b> check box is selected, you cannot set this function.</li> </ul>

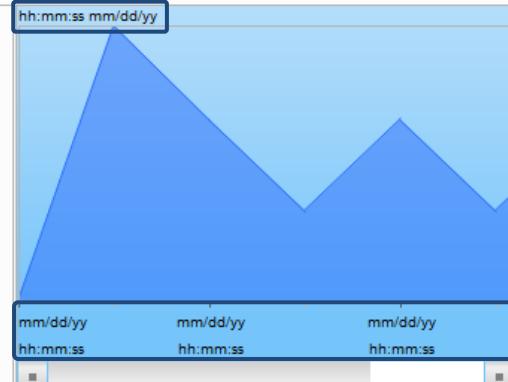
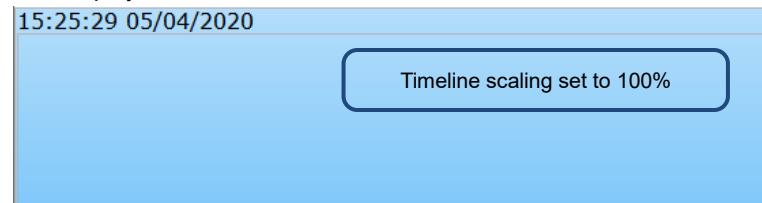
15

No.	Property	Function description
(2)	Curve setting	<p>■ The Start Position setting is determined by the set Read Length (Word).</p> <p>■ If the Read Length (Word) is 60, the Start Position ranges from 0 to 59.</p> 
		<p>■ The supported data formats are as follows:</p>  <p>■ When the <b>Global range</b> check box is selected, you cannot set this function.</p> <p>Note:</p> <ol style="list-style-type: none"> <li>If you select Floating as the Data Format, set the Length to 2.</li> <li>If you select Floating as the Data Format, but set the Length to 1 word, the software displays a message to remind you that you need to set Length to 2 or above.</li> </ol> <div style="border: 1px solid red; padding: 10px;"> <p>DOPSoft <span style="float: right;">×</span></p> <p> Select Floating Data Format (At least 2 words are required for the sampling data format in history buffer.)</p> <p style="text-align: right;"><span style="border: 1px solid blue; padding: 2px;">OK</span></p> </div>

No.	Property	Function description																											
(2)	Integer / Fractional Digits	<ul style="list-style-type: none"> <li>You can set the displaying number of integer digits and the number of decimal places.</li> <li>When the <b>Global range</b> check box is selected, you cannot set this function.</li> </ul>																											
	Line Color	<p>You can set the line color for the curve.</p> 																											
	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 																											
	Minimum / Maximum	<ul style="list-style-type: none"> <li>If the <b>Global range</b> check box is selected, you cannot set the Minimum and Maximum values for the curves; instead, the range is determined by the minimum and maximum of the Global range. If the <b>Global range</b> check box is not selected, you can set the Minimum and Maximum values for the curves.</li> <li>The allowable ranges for the Minimum and Maximum values are subject to change based on the selected Data Type and Data Format.</li> </ul> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="6">DWord</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-99999999 to +99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294697295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> <tr> <td>Floating</td> <td>0 to 99999999</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	DWord	BCD	0 to 99999999	Signed BCD	-99999999 to +99999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294697295	Hex	0 to 0xFFFFFFFF	Floating	0 to 99999999
Data Type	Data Format	Allowable range																											
Word	BCD	0 to 9999																											
	Signed BCD	-999 to +9999																											
	Signed Decimal	-32768 to +32767																											
	Unsigned Decimal	0 to 65535																											
	Hex	0 to 0xFFFF																											
DWord	BCD	0 to 99999999																											
	Signed BCD	-99999999 to +99999999																											
	Signed Decimal	-2147483648 to +2147483647																											
	Unsigned Decimal	0 to 4294697295																											
	Hex	0 to 0xFFFFFFFF																											
	Floating	0 to 99999999																											

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No.	Property	Function description
	Display time/date	<ul style="list-style-type: none"> <li>When you select the <b>Display time/date</b> check box, the time scale displays at the bottom of the trend graph; if it is not selected, the time scale does not display.</li> </ul> 
(3)	Time/Date Time Format / Date Format	<ul style="list-style-type: none"> <li>You can set the number of the Time Interval (up to 9,999) when you select the <b>Display time/date</b> check box. The preceding figure displays two time intervals.</li> <li>Two time formats are supported as follows:</li> </ul>  <ul style="list-style-type: none"> <li>Seven date formats are supported as follows:</li> </ul> 
	Time Interval	<ul style="list-style-type: none"> <li>Select the <b>Display time/date</b> check box to enable this function.</li> <li>The default setting is 2, meaning there are two intervals between each displayed time/date.</li> </ul> 

No.	Property	Function description
	Color	<p>With this setting, you can change the displaying color of the time and date, including the recorded time and date shown on top of the trend graph and the time scales. The default is .</p>  <p>Dir: 0 File: 0 File: 1 Dir: 1 File: 0 File: 1</p> <p>mm/dd/yy hh:mm:ss      mm/dd/yy hh:mm:ss      mm/dd/yy hh:mm:ss</p> <p>Display</p>
(3)	Time/Date	<ul style="list-style-type: none"> <li>■ The default is 100%.</li> <li>■ The smaller the setting value, the more sampling points can be displayed.</li> </ul>  <p>15:25:29 05/04/2020</p> <p>Timeline scaling set to 100%</p> <p>15:25:29 05/04/2020      15:25:29 05/04/2020      15:25:29 05/04/2020</p>  <p>15:25:29 05/04/2020</p> <p>Timeline scaling set to 5%</p> <p>15:25:26 05/04/2020</p>

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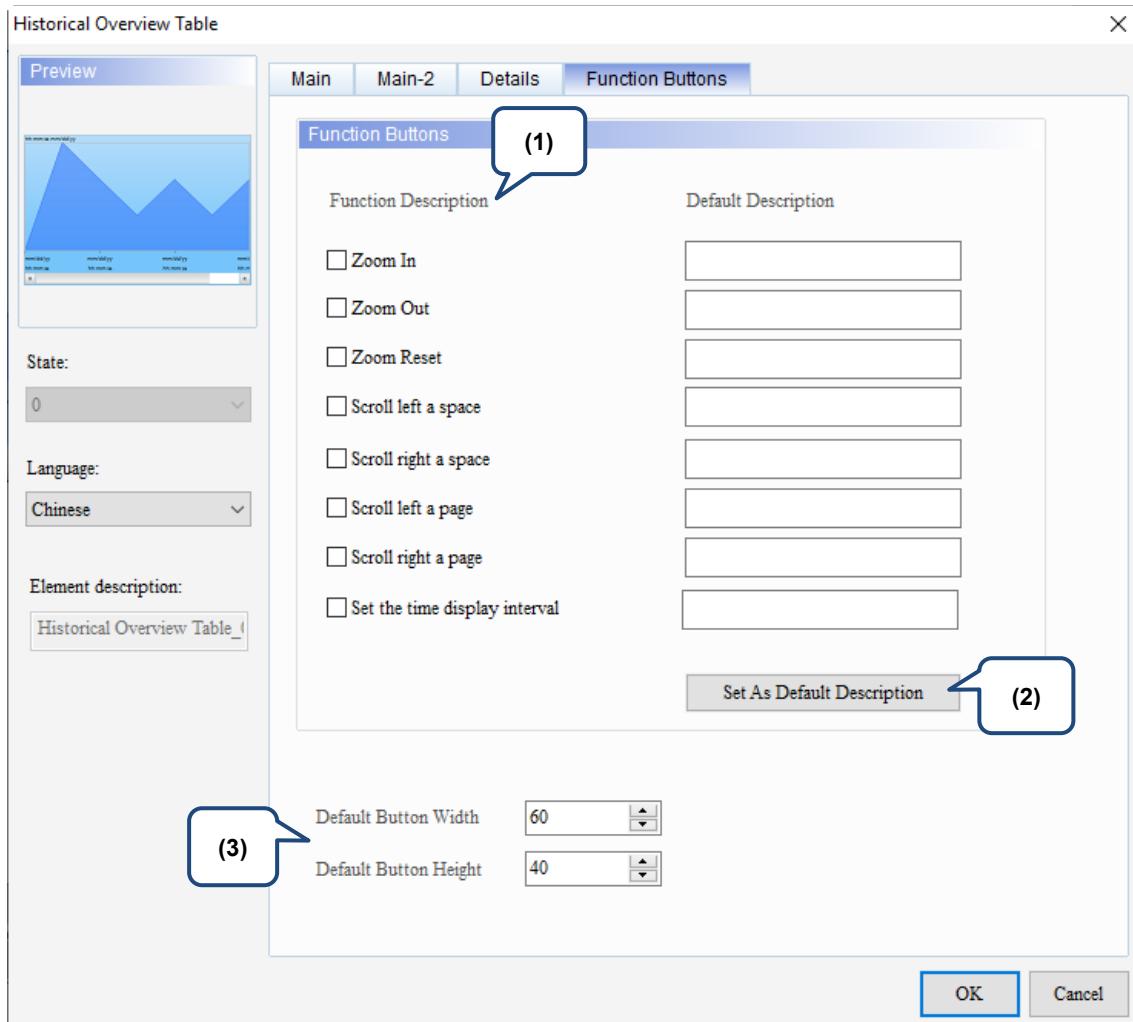
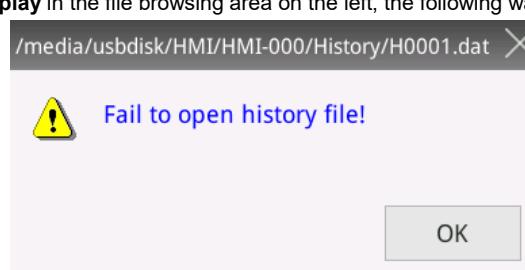
**■ Function Buttons**

Figure 15.5.5 Function Buttons property page for the Historical Overview Table element

No.	Property	Function description																
(1)	Function description	<p>Select the function buttons to display on the Historical Overview Table element.</p> <table border="1"> <tr><td>Zoom In</td><td>Zoom in on the history data of X-axis.</td></tr> <tr><td>Zoom Out</td><td>Zoom out on the history data of X-axis.</td></tr> <tr><td>Zoom Reset</td><td>Reset the history data of X-axis to the default size.</td></tr> <tr><td>Scroll left a space</td><td>Scroll to the left a bit.</td></tr> <tr><td>Scroll right a space</td><td>Scroll to the right a bit.</td></tr> <tr><td>Scroll left a page</td><td>Scroll to the left for a page.</td></tr> <tr><td>Scroll right a page</td><td>Scroll to the right for a page.</td></tr> <tr><td>Set the time display interval</td><td>Display the corresponding data according to the set time interval.</td></tr> </table>	Zoom In	Zoom in on the history data of X-axis.	Zoom Out	Zoom out on the history data of X-axis.	Zoom Reset	Reset the history data of X-axis to the default size.	Scroll left a space	Scroll to the left a bit.	Scroll right a space	Scroll to the right a bit.	Scroll left a page	Scroll to the left for a page.	Scroll right a page	Scroll to the right for a page.	Set the time display interval	Display the corresponding data according to the set time interval.
Zoom In	Zoom in on the history data of X-axis.																	
Zoom Out	Zoom out on the history data of X-axis.																	
Zoom Reset	Reset the history data of X-axis to the default size.																	
Scroll left a space	Scroll to the left a bit.																	
Scroll right a space	Scroll to the right a bit.																	
Scroll left a page	Scroll to the left for a page.																	
Scroll right a page	Scroll to the right for a page.																	
Set the time display interval	Display the corresponding data according to the set time interval.																	
(2)	Set As Default Description	<p>When you press <b>Set As Default Description</b>, the default strings are automatically filled in the Default Description fields.</p> <p><b>Function Buttons</b></p> <table> <thead> <tr> <th>Function Description</th> <th>Default Description</th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/> Zoom In</td><td>Zoom In</td></tr> <tr><td><input type="checkbox"/> Zoom Out</td><td>Zoom Out</td></tr> <tr><td><input type="checkbox"/> Zoom Reset</td><td>Zoom Reset</td></tr> <tr><td><input type="checkbox"/> Scroll left a space</td><td>Scroll left a space</td></tr> <tr><td><input type="checkbox"/> Scroll right a space</td><td>Scroll right a space</td></tr> <tr><td><input type="checkbox"/> Scroll left a page</td><td>Scroll left a page</td></tr> <tr><td><input type="checkbox"/> Scroll right a page</td><td>Scroll right a page</td></tr> </tbody> </table> <p><b>Set As Default Description</b></p> <p>Note:</p> <ol style="list-style-type: none"> <li>1. The display area for the trend graph on the right can only display .dat files.</li> <li>2. If the file in the file browsing area has the same file name as the File Name set in the Buffer Properties without containing any time and date, it means the History Buffer file is still sampling and cannot be displayed by the Historical Overview Table . If you press <b>Display</b> in the file browsing area on the left, the following warning appears.</li> </ol> 	Function Description	Default Description	<input type="checkbox"/> Zoom In	Zoom In	<input type="checkbox"/> Zoom Out	Zoom Out	<input type="checkbox"/> Zoom Reset	Zoom Reset	<input type="checkbox"/> Scroll left a space	Scroll left a space	<input type="checkbox"/> Scroll right a space	Scroll right a space	<input type="checkbox"/> Scroll left a page	Scroll left a page	<input type="checkbox"/> Scroll right a page	Scroll right a page
Function Description	Default Description																	
<input type="checkbox"/> Zoom In	Zoom In																	
<input type="checkbox"/> Zoom Out	Zoom Out																	
<input type="checkbox"/> Zoom Reset	Zoom Reset																	
<input type="checkbox"/> Scroll left a space	Scroll left a space																	
<input type="checkbox"/> Scroll right a space	Scroll right a space																	
<input type="checkbox"/> Scroll left a page	Scroll left a page																	
<input type="checkbox"/> Scroll right a page	Scroll right a page																	
(3)	Default Button Width / Height	You can adjust the button height and width.																

## 15.6 Operation Log Table

The Operation Log Table is for recording the operation and date/time of the operation of each element when you enter the HMI screen. The operations include changing the element data, security level, and switching elements. You may refer to the Operation Log Table when the machine malfunctions or there are defects in the products. In addition, you can save the records as CSV files and view them with PCs.

Note:

1. The default for the Operation Log Table is a CSV file which saves up to 10,000 sets of data.

When you save data in the HMI, the maximum number of data records is 10,000. When you save data in the USB disk or SD card, if the default 10,000 records have been exceeded, the HMI then operates with the setting of Overwrite Files or Stop Log in the Save Settings.

2. The Operation Log Table can be saved in the HMI, USB Disks, or SD Cards. When you save data in the HMI, the read / write speed is faster. When you save data in the external device, the read speed is determined by the read / write speed of the external device. If the read / write speed of the external storage device is slow, the display speed of the Operation Log Table and the update speed of the screen operation are affected.

When you double-click the Operation Log Table, the property page is shown as follows.

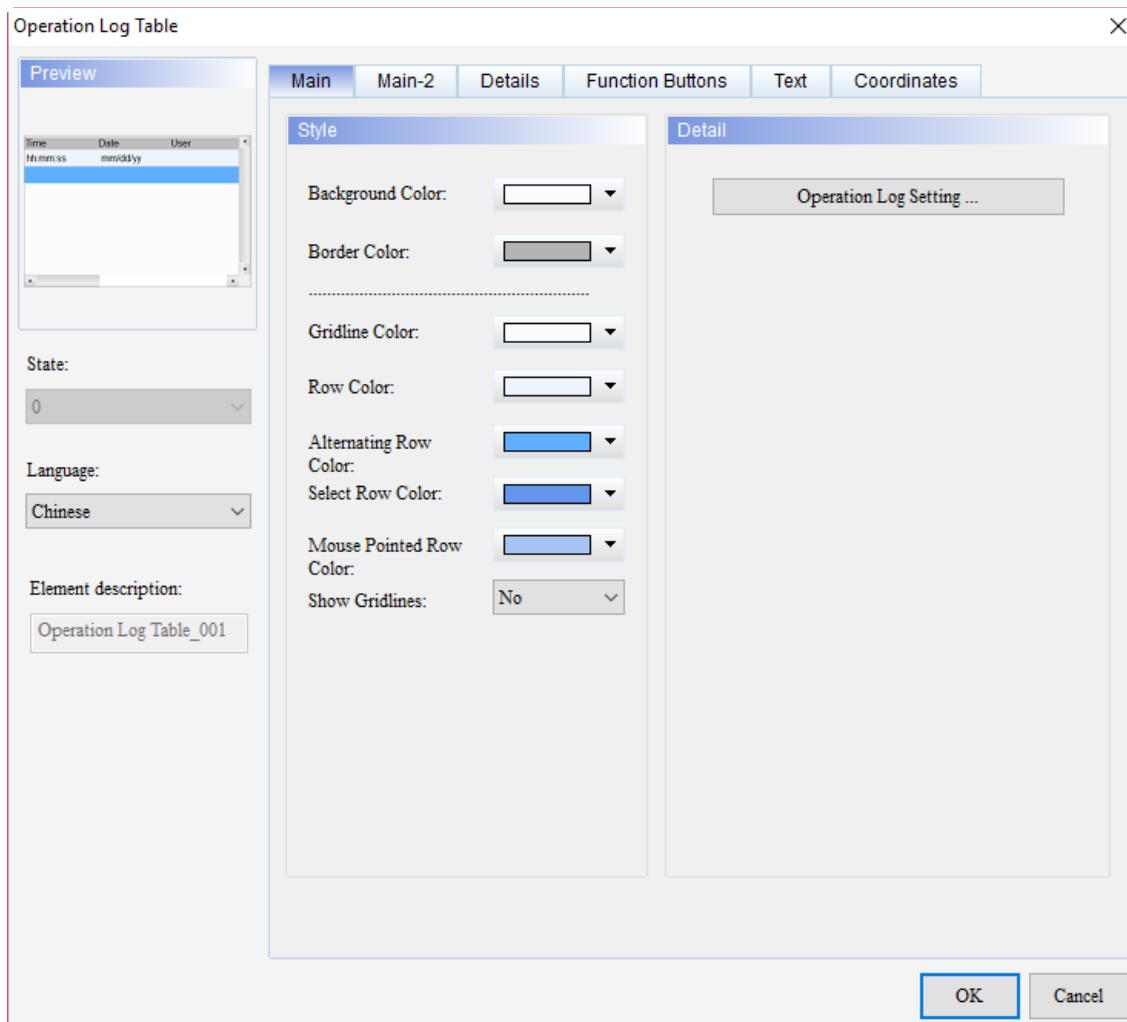


Figure 15.6.1 Properties of Operation Log Table

Table 15.6.1 Function page of Operation Log Table

Operation Log Table		
Function page	Description	
Preview	The Operation Log Table elements do not support multiple state values and multi-language data display.	
Main	Style	Set the Background Color, Border Color, Gridline Color, Row Color, Alternating Row Color, Select Row Color, Mouse Pointed Row Color, and Show Gridlines.
	Detail	Enable, Trigger, Save Settings (storage space setting and solutions for insufficient space), and CSV output settings (set the Time/Date Format and select the titles to output to the CSV file in an external device).
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.	
Details	Display settings	You can set whether to record the Time, Date, User Account, Level, Screen, Description, Action, Address, Previous value, New value, and adjust the Column order.
	Title setting	Set the text alignment, background color, and text color.
	Time/Date	Set the Time Format, Date Format, and Color.
Function Buttons	Select the function buttons to enable, and set the width and height of the buttons.	
Text	Set the text font, size, and color.	
Coordinates	Set the X and Y coordinates, width, and height of the elements.	

## ■ Main

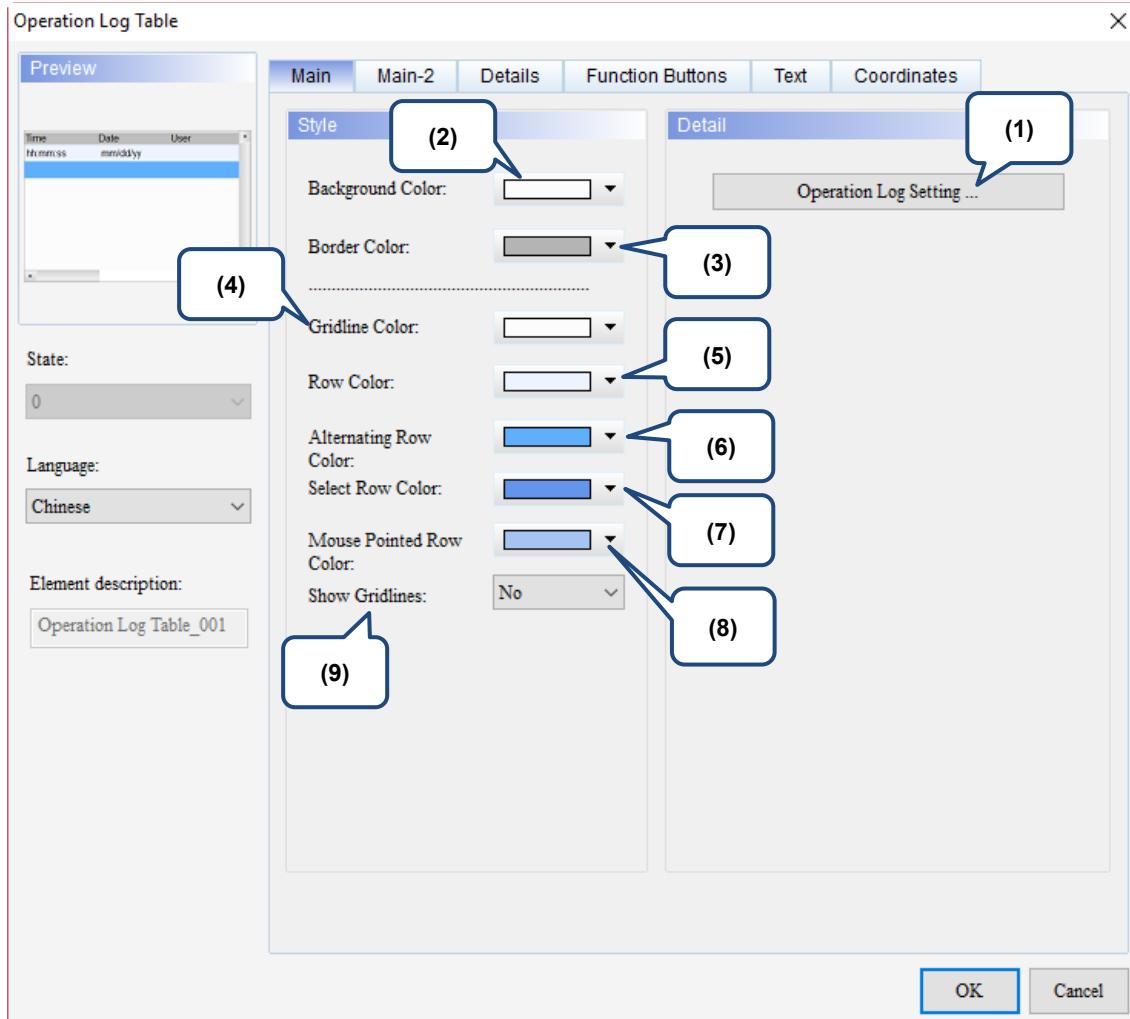
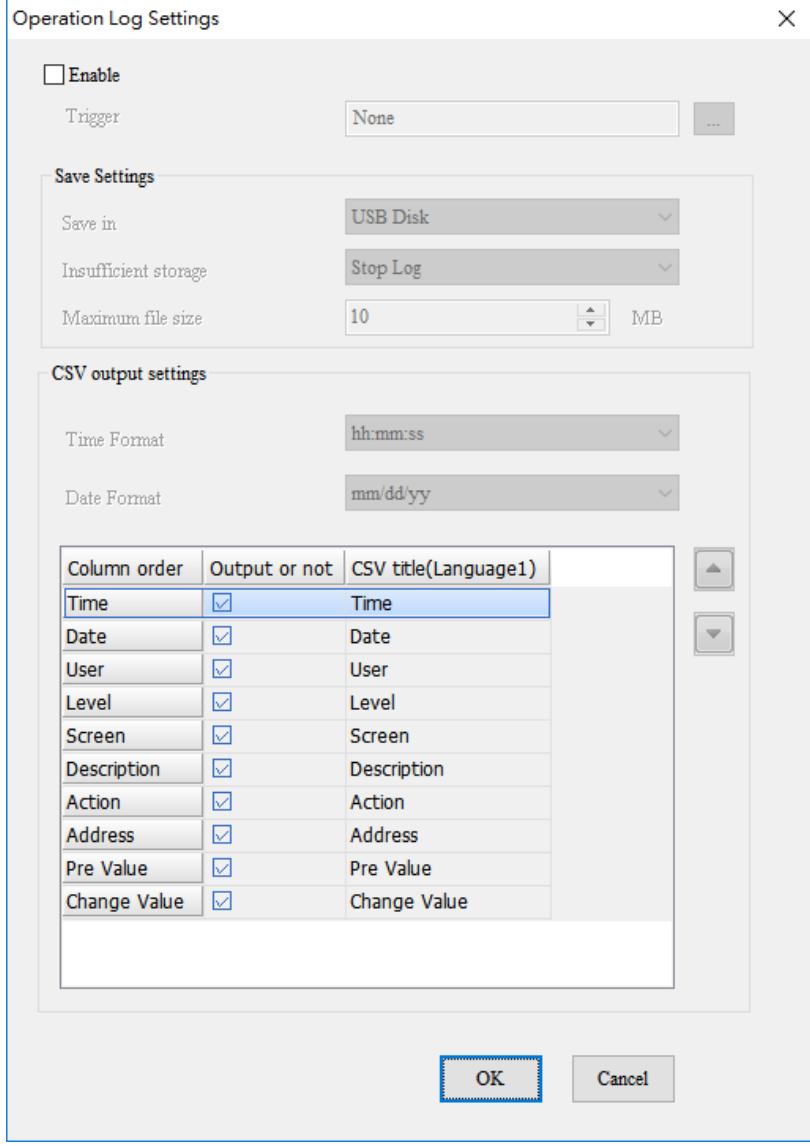
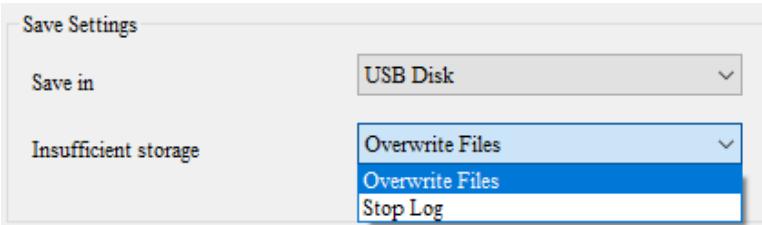
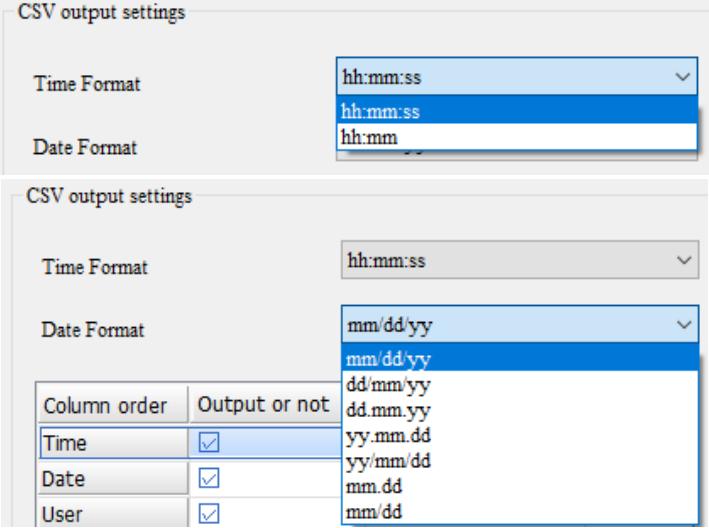
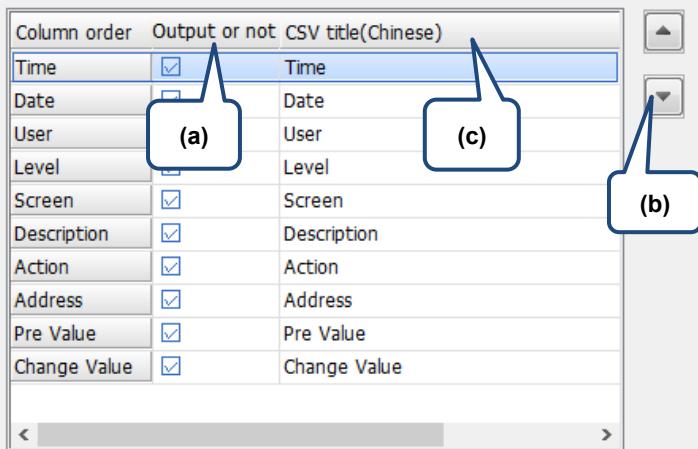


Figure 15.6.2 Main property page for the Operation Log Table element

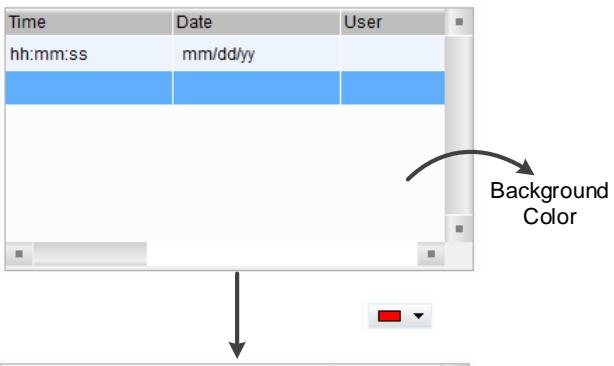
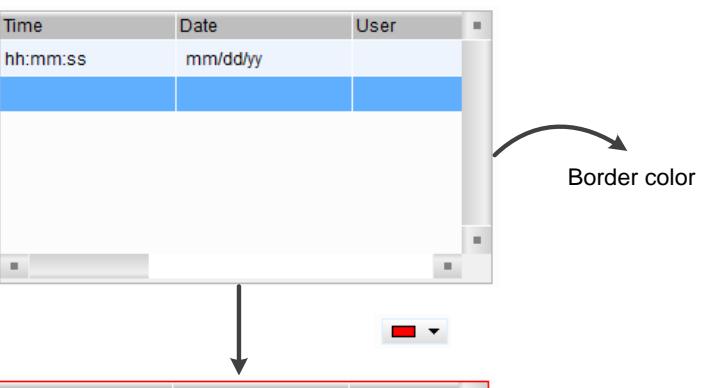
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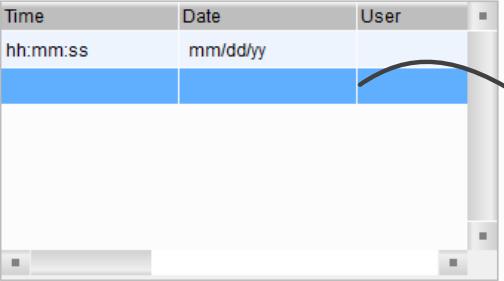
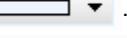
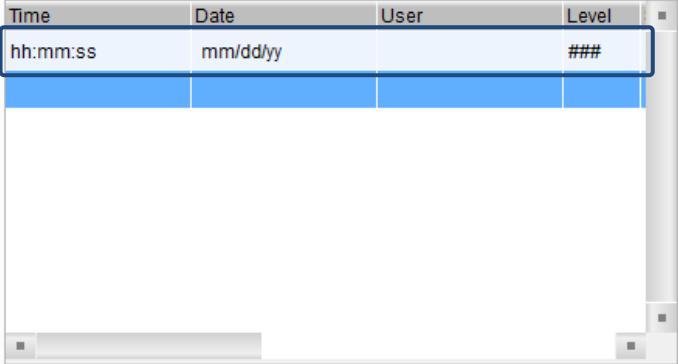
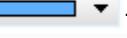
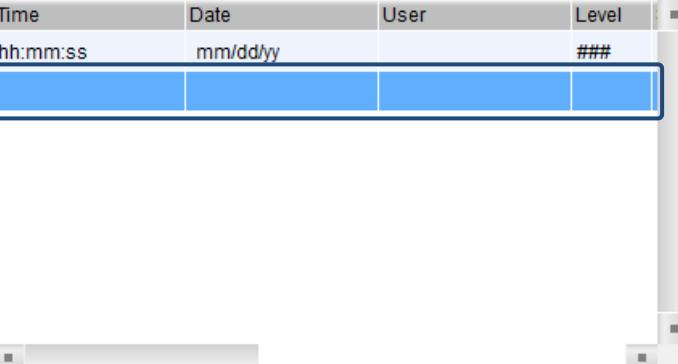
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No.	Property	Function description
(1)	Operation Log Settings	<p>You can start the setting by pressing <b>Operation Log Setting...</b> or by going to [Options] &gt; [Operation Log Settings].</p> 
	Enable	Not enabled by default. Select the <b>Enable</b> check box to edit settings.
	Trigger	Set the Operation Log Table trigger address, which supports addresses of the internal memory and the external PLC. This function only supports bit trigger. As soon as this address is triggered, the Operation Log Table starts recording all operations of the HMI.
	Save Settings	<ul style="list-style-type: none"> <li>■ Set to save the Operation Log Table in the HMI, USB Disk, or SD Card in CSV format.</li> <li>■ When the external storage space is insufficient, two solutions are available, Stop Log and Overwrite Files. Stop Log is to stop recording the HMI operations; Overwrite Files is to delete the recorded operation data and start recording the operations all over again.</li> </ul> 

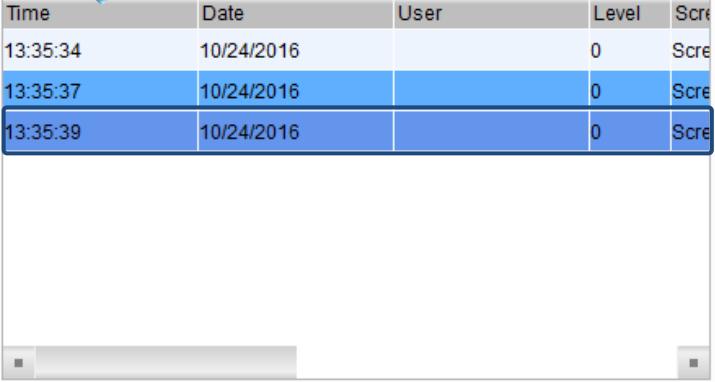
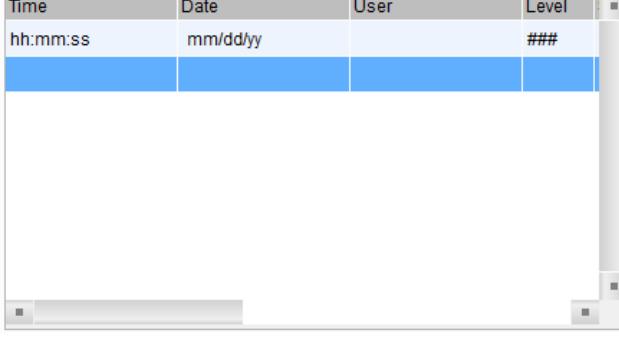
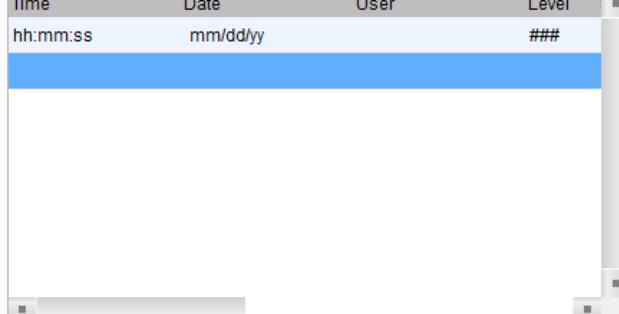
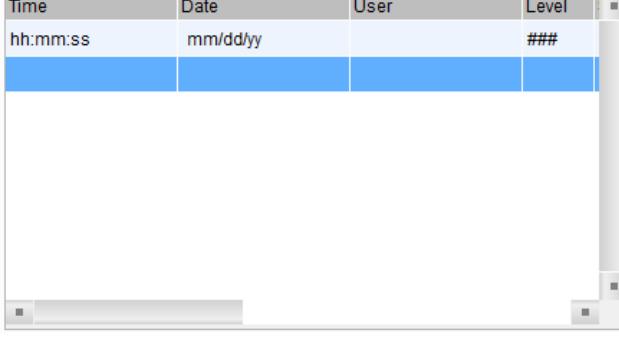
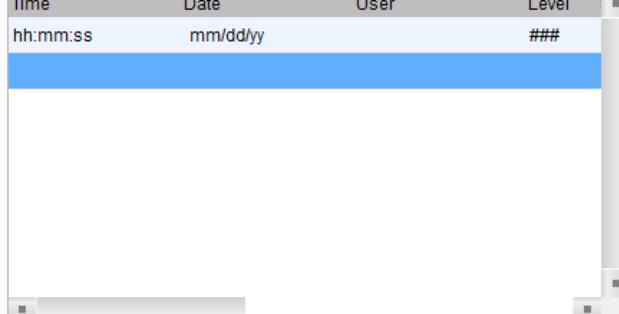
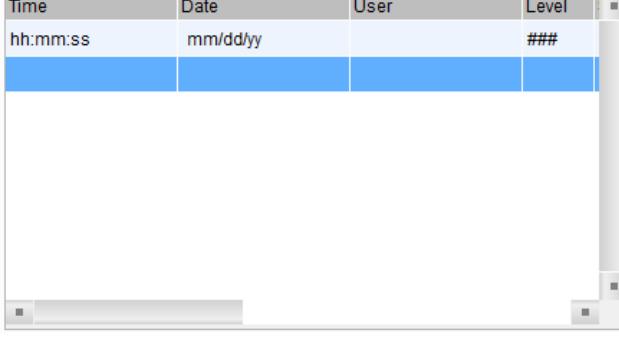
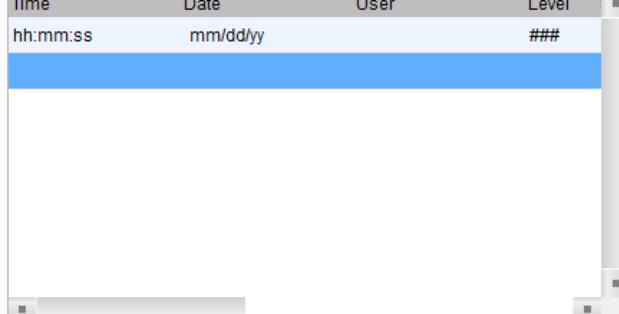
No.	Property	Function description
(1)	Operation Log Settings	<p>■ Set the recording time and date formats for the CSV file to output.</p>  <p>■ Select the display columns to output to the CSV file (a), adjust the column displaying order (b), and define the display titles of the selected columns (c).</p> 

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No.	Property	Function description
(2)	Background Color	<p>Set the background color for the Operation Log Table element.</p> 
(3)	Border Color	<p>Set the border color of the Operation Log Table element.</p> 

No.	Property	Function description
(4)	Gridline Color	<p>Set the gridline color of the Operation Log Table element.</p>  <p>The screenshot shows a table with columns labeled 'Time', 'Date', 'User', and a fourth column which is partially visible. The first row has a blue background. A color picker dropdown is open, showing a red square. An arrow points from the color picker to the second row, which now has red gridlines. The third row also has red gridlines.</p>
(5)	Row Color	<p>Color of the odd rows. The default is  .</p>  <p>The screenshot shows a table with columns labeled 'Time', 'Date', 'User', and 'Level'. The first row has a blue background. A color picker dropdown is open, showing a blue square. An arrow points from the color picker to the second row, which now has a blue background. The third row has a white background.</p>
(6)	Alternating Row Color	<p>Color of the even rows. The default is  .</p>  <p>The screenshot shows a table with columns labeled 'Time', 'Date', 'User', and 'Level'. The first row has a white background. A color picker dropdown is open, showing a blue square. An arrow points from the color picker to the second row, which now has a blue background. The third row has a white background.</p>

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No.	Property	Function description				
(7)	Select Row Color	<p>When you select the data rows to view, the rows are in the color specified in this setting. The default is </p> 				
(8)	Mouse Pointed Row Color	<p>When the cursor is enabled, the row changes to the specified color where the cursor is placed at.</p>				
(9)	Show Gridlines	<p>The default is Yes meaning to show gridlines between each data entry in the Operation Log Table.</p> <table border="1"> <tr> <td style="text-align: center; padding: 10px;">Select Yes for Show Gridlines</td> <td style="padding: 10px;">  </td> </tr> </table> <table border="1"> <tr> <td style="text-align: center; padding: 10px;">Select No for Show Gridlines</td> <td style="padding: 10px;">  </td> </tr> </table>	Select Yes for Show Gridlines		Select No for Show Gridlines	
Select Yes for Show Gridlines						
Select No for Show Gridlines						

## ■ Main-2

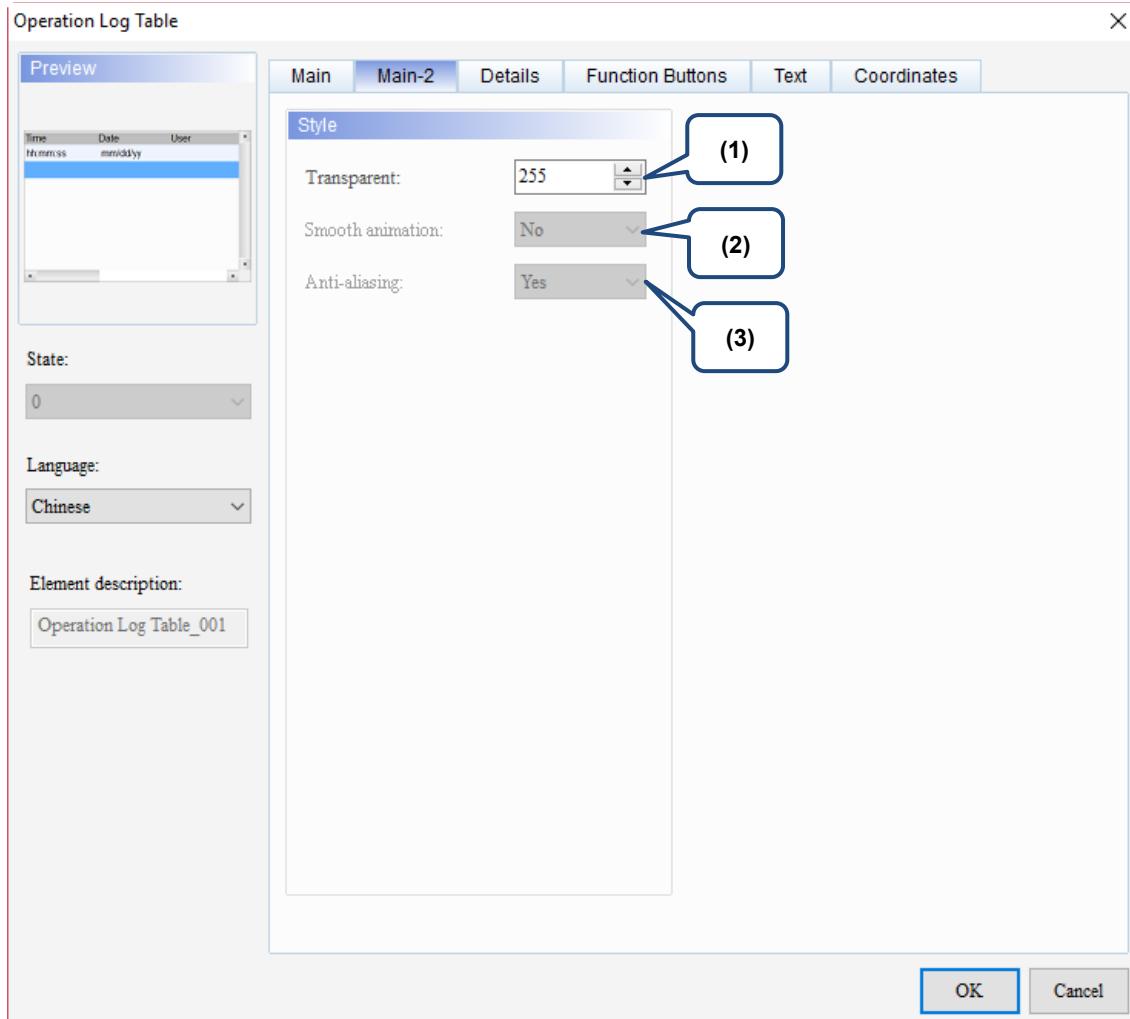


Figure 15.6.3 Main-2 property page for the Operation Log Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Details

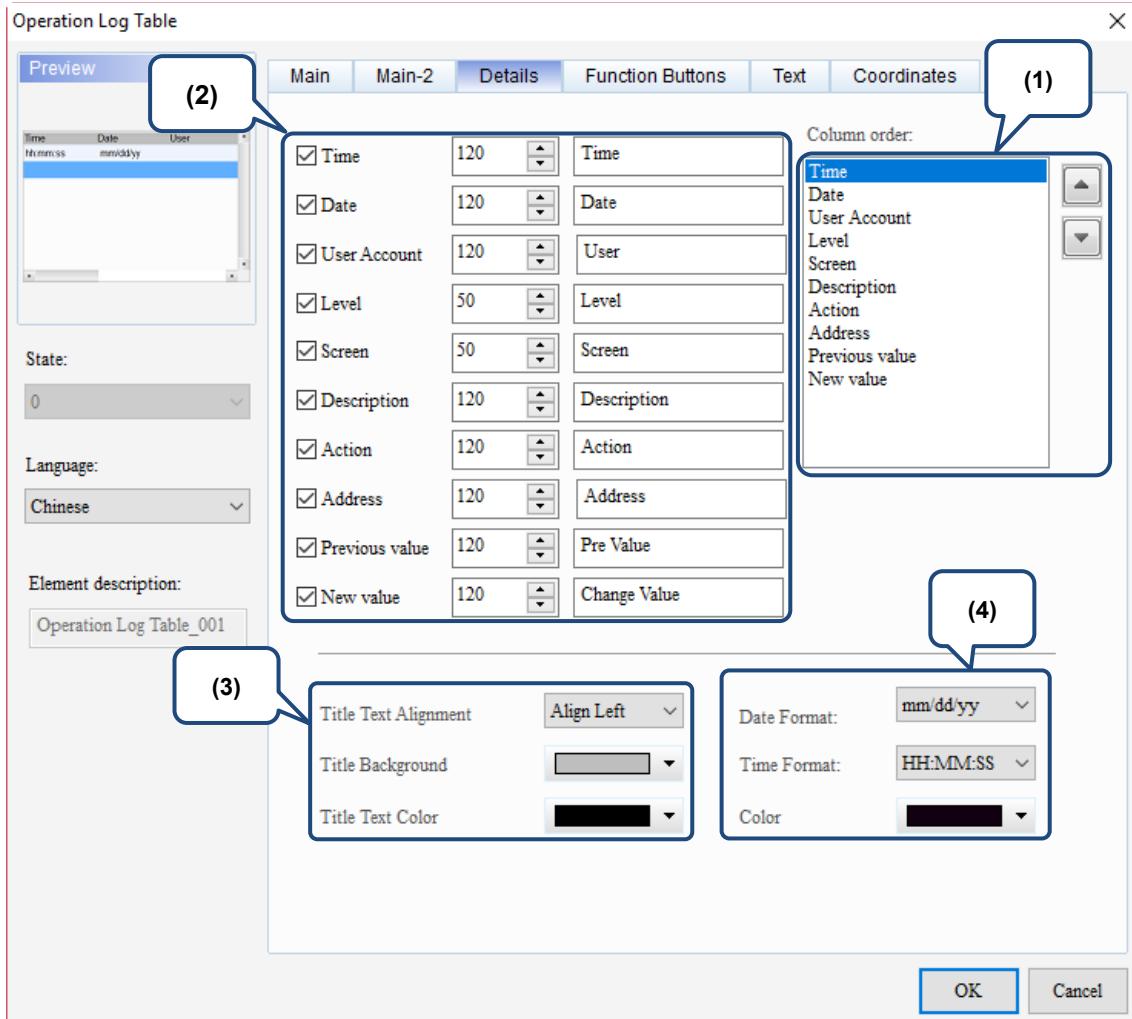
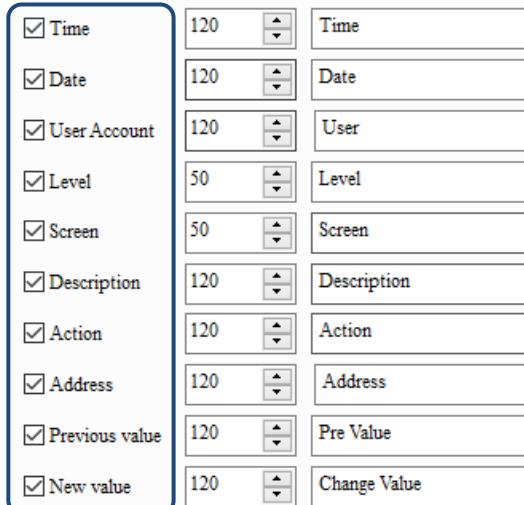
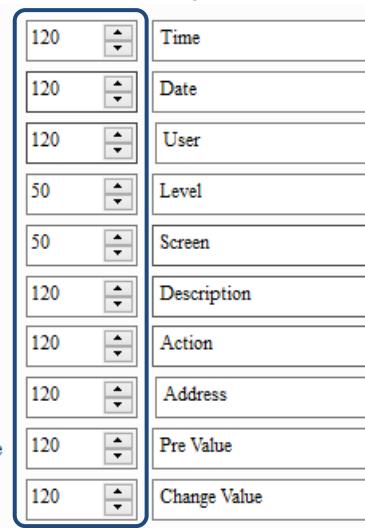
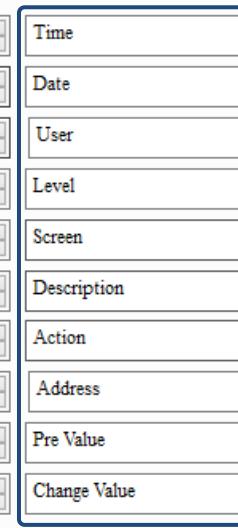
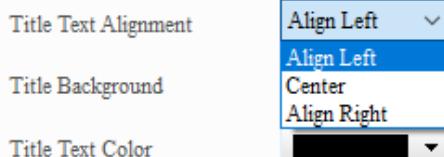
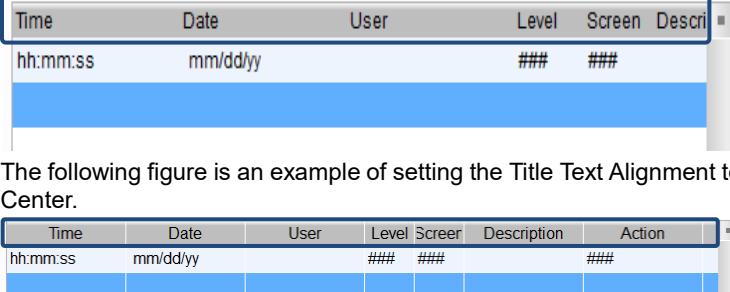
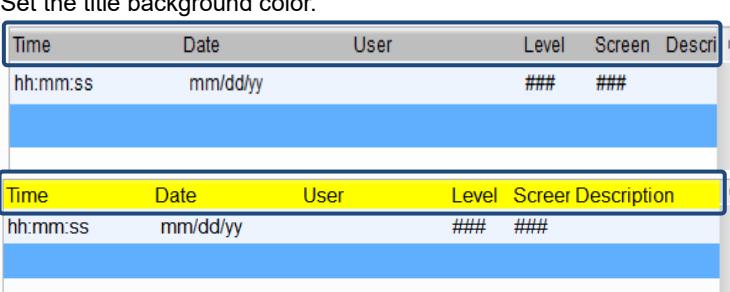
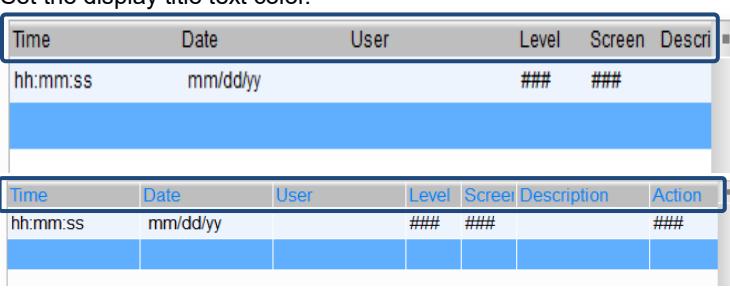
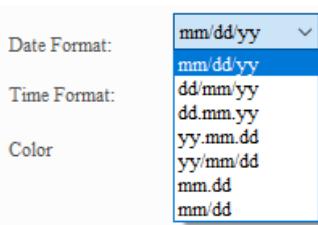
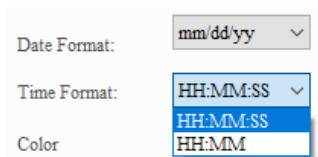
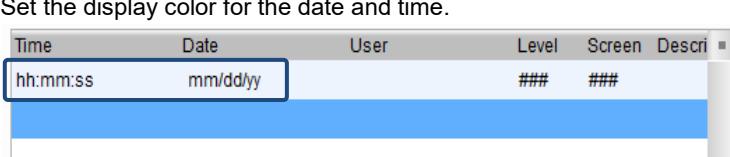


Figure 15.6.4 Details property page for the Operation Log Table element

No.	Property	Function description
(1)	Column order	<p>Set the column display order in the Operation Log Table.</p> <p>Column order:</p>

No.	Property	Function description
(2)	Select the columns to display	In the default setting, all columns are selected and shown in the Operation Log Table. You can select or clear the check boxes of the display columns as required.  
	Adjust column width	Adjust the column width in the Operation Log Table.  
	Edit display title	You can edit the column titles in the Operation Log Table. The defaults are English strings, but Chinese characters are also supported.  

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No.	Property	Function description
(3)	Title Text Alignment	<p>Adjust the alignment of the titles.</p>  <p>The following figure is an example of setting the Title Text Alignment to Center.</p> 
	Title Background	<p>Set the title background color.</p> 
	Title Text Color	<p>Set the display title text color.</p> 
(4)	Date Format	<p>Set the date display format.</p> 
	Time Format	<p>Set the time display format.</p> 
	Color	<p>Set the display color for the date and time.</p> 

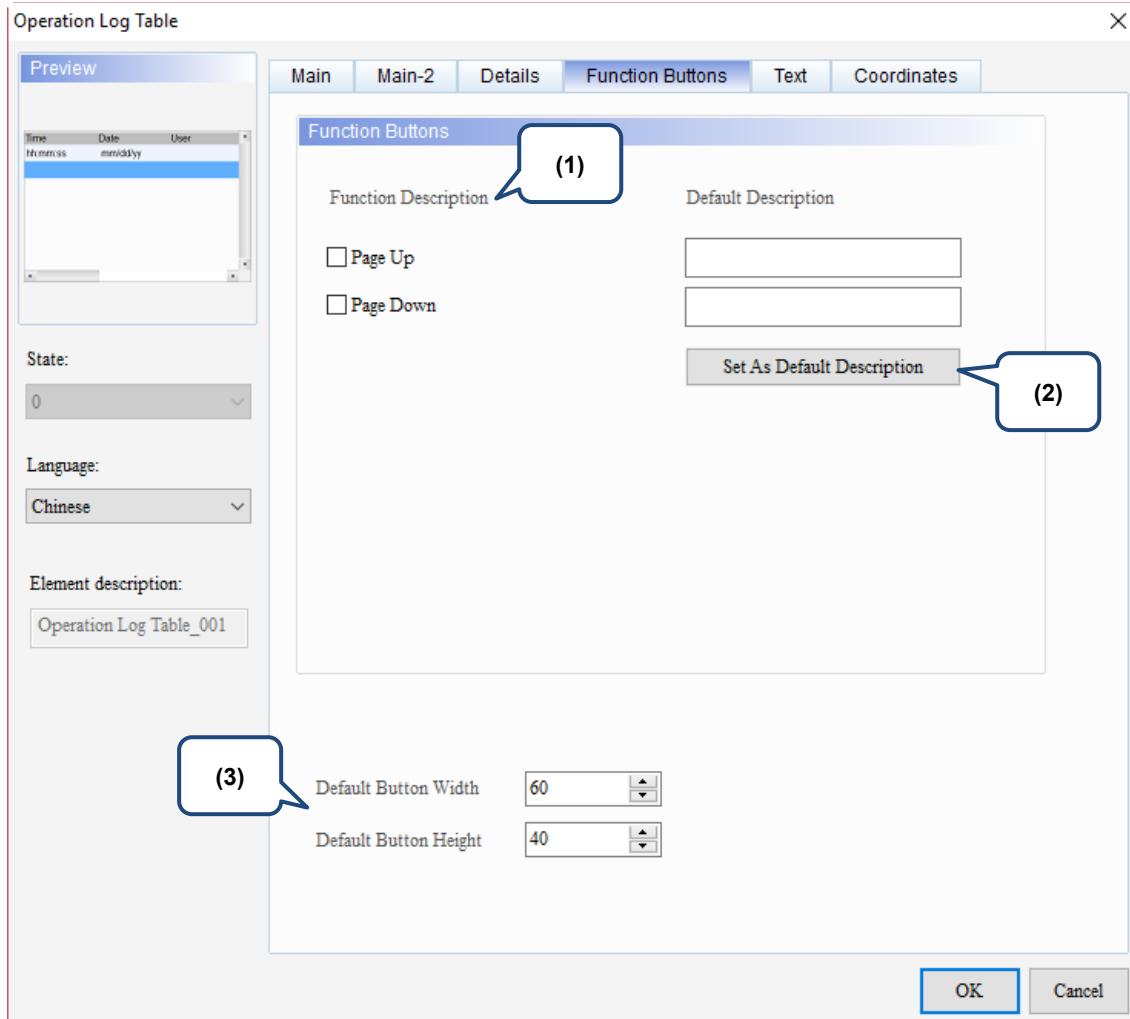
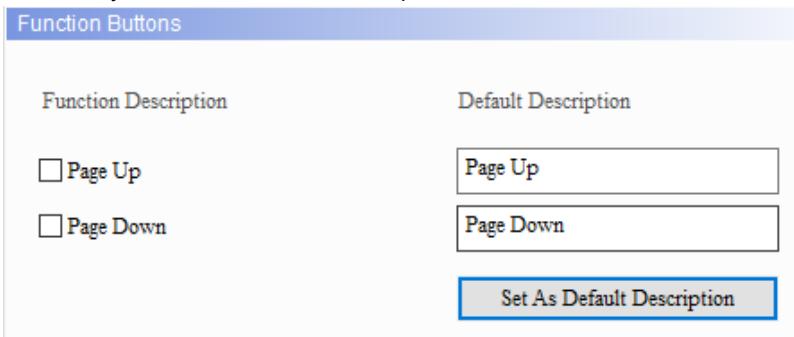
**■ Function Buttons**

Figure 15.6.5 Function Buttons property page for the Operation Log Table element

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No.	Property	Function description				
(1)	Function Description	<ul style="list-style-type: none"> <li>■ Select the function buttons to display on the Operation Log Table element.           <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Page Up</td> <td style="padding: 2px;">Go to the previous page of the Operation Log Table.</td> </tr> <tr> <td style="padding: 2px;">Page Down</td> <td style="padding: 2px;">Go to the next page of the Operation Log Table.</td> </tr> </table> </li> <li>■ You can use <b>Page Up</b> and <b>Page Down</b> to change the page only when there are more than 10,000 sets of data in the Operation Log Table. That is, one CSV file contains 10,000 operation log data, and <b>Page Up</b> and <b>Page Down</b> are for switching between files of Operation Log Tables.</li> </ul>	Page Up	Go to the previous page of the Operation Log Table.	Page Down	Go to the next page of the Operation Log Table.
Page Up	Go to the previous page of the Operation Log Table.					
Page Down	Go to the next page of the Operation Log Table.					
(2)	Set As Default Description	<p>When you press <b>Set As Default Description</b>, the default strings are automatically filled in the Default Description fields.</p> 				
(3)	Default Button Width / Height	You can adjust the button height and width.				

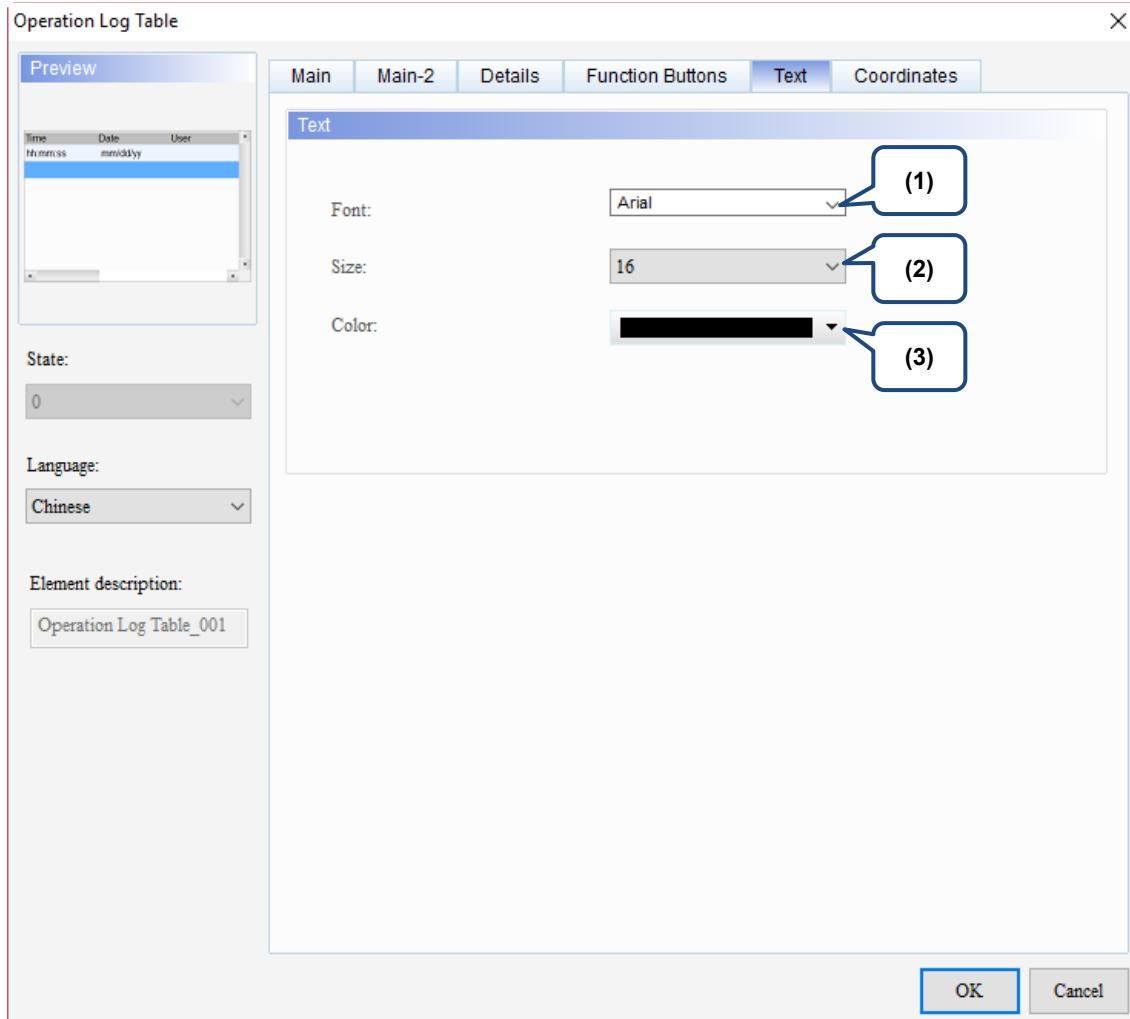
**■ Text**

Figure 15.6.6 Text property page for the Operation Log Table element

No.	Property	Function description
(1)	Font	Set the display text font of the Operation Log Table.
(2)	Size	Set the display text size of the Operation Log Table.
(3)	Color	Set the display text color of the Operation Log Table.

15

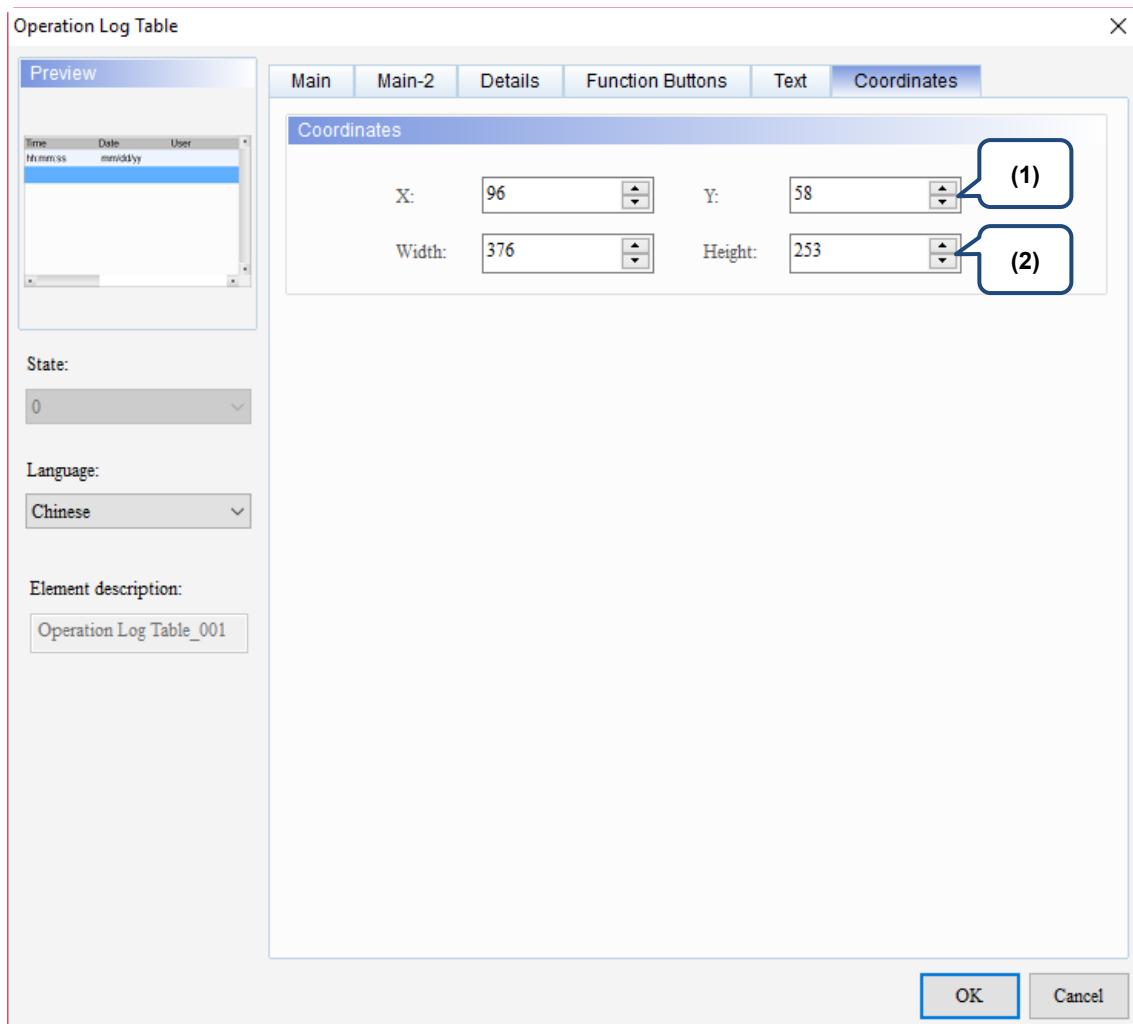
**■ Coordinates**

Figure 15.6.7 Coordinates property page for the Operation Log Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

# 16

## Alarm

This chapter provides the usage and setting details for the Alarm elements.

16.1	Alarm Settings .....	16-2
16.2	Alarm History Table .....	16-31
16.3	Active Alarm List .....	16-49
16.4	Alarm Frequency Table.....	16-67
16.5	Alarm Moving Sign .....	16-86

# 16

## 16.1 Alarm Settings

The Alarm Settings page is for setting the read address, sampling cycle, maximum savable data, non-volatile memory, alarm moving sign, exporting the data to a CSV file, and editing the alarm message to be displayed for the displaying alarm.

The DOP-B and DOP-H series HMIs use continuous Word addresses for the alarms, while the DOP-W and DOP-100 series HMIs use non-continuous addresses. Through non-continuous addresses, alarms can be triggered with either Bit or Word addresses, which is more flexible and user-friendly. In addition, alarm messages now support dynamic modification. In the previous version, the temperatures displayed on the alarm messages were fixed, e.g. 100 degrees; now you can add %d1 and %f1 to the alarm message and use the monitoring address in Alarm Settings to input the value, so the HMI displays the modified value when the alarm is triggered next time.

Alarm message supports up to 4,096 data entries. DOPSoft also provides a batch tasks tool which allows you to quickly complete the group settings when you input the alarm group numbers. You can sort and filter the display of the alarms on the Alarm History Table, so the alarm messages are displayed in a way that is easier for you to view.

The formula provided by the software computes all the alarm relevant data edited by the users. Then, the set non-volatile memory saves these computation results. If the data is saved in the HMI, the alarm data size is subject to change based on the HMI model. Refer to the specifications for non-volatile memory in the HMI installation manual. For data saved in the USB Disk or SD Card, the alarm data size is determined by the external storage devices.

The alarm formulas are applicable to the alarm log file and Alarm Frequency Table, but since the CSV file size is determined by the message (length) input by the user, there is no formula for the CSV file.

The following are the formulas for the alarm log file and Alarm Frequency Table:

■ Alarm log file

$$\{[6 \text{ Bytes}(a) + 2 \text{ Bytes}(b)] \times N(c)\} + 6 \text{ Bytes}(d) = \text{Actual file size Bytes}$$

a	Time / date data
b	Alarm data
c	Sampling number
d	Data file header

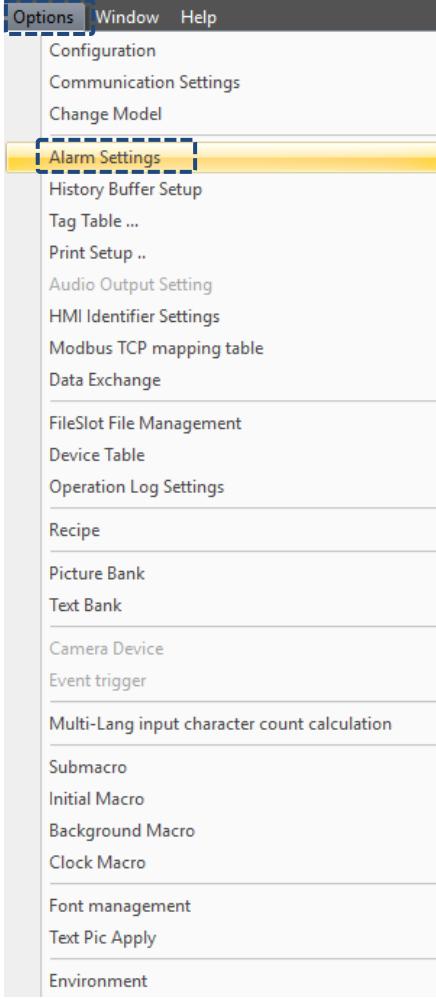
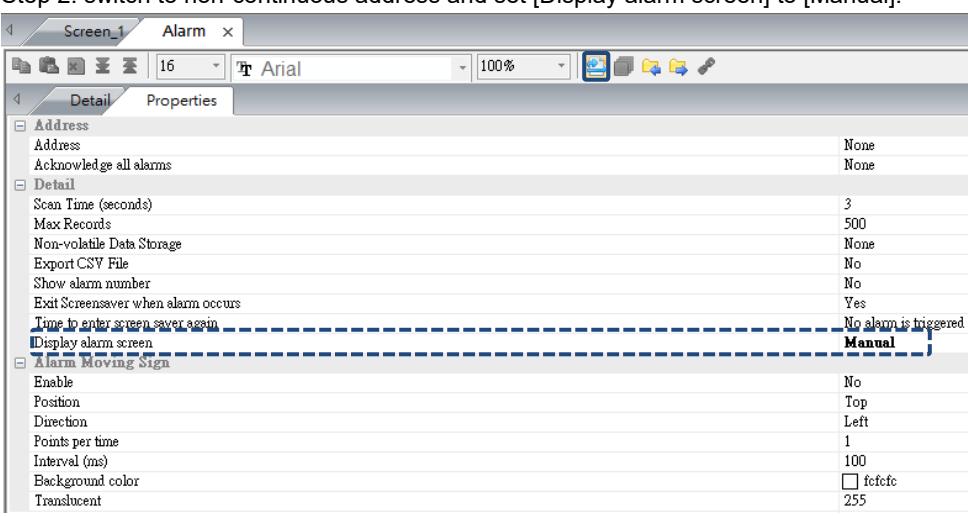
■ Alarm Frequency Table

$$2 \text{ Bytes}(a) \times N(b) = \text{Actual file size Bytes}$$

a	Alarm frequency data
b	Alarm records

The following section provides an example for non-continuous addresses settings. Refer to Table 16.1.1 shown as follows.

Table 16.1.1 Alarm Settings example

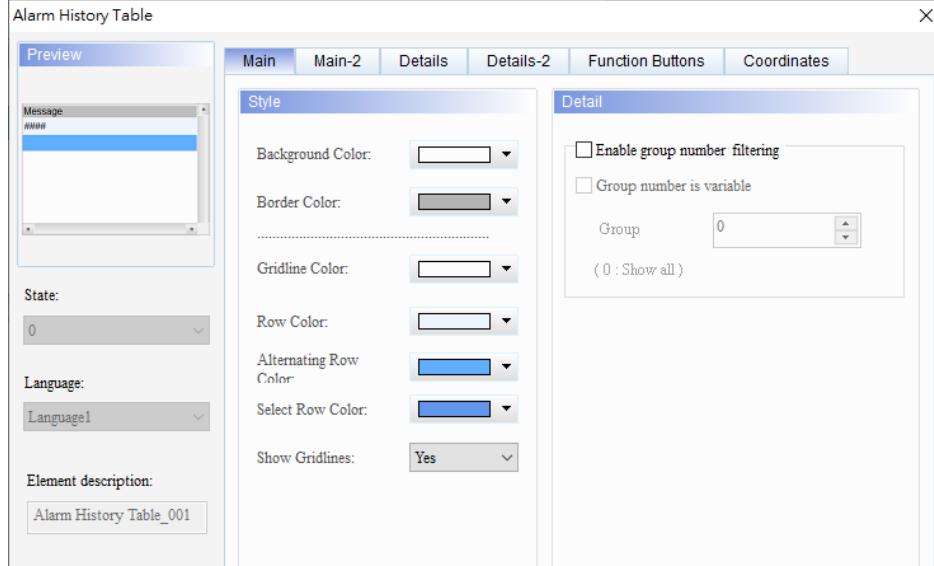
Alarm setting steps	<p>Step 1: go to [Options] &gt; [Alarm Settings] to set up the alarm message display properties.</p>  <p>Step 2: switch to non-continuous address and set [Display alarm screen] to [Manual].</p> 
---------------------	---

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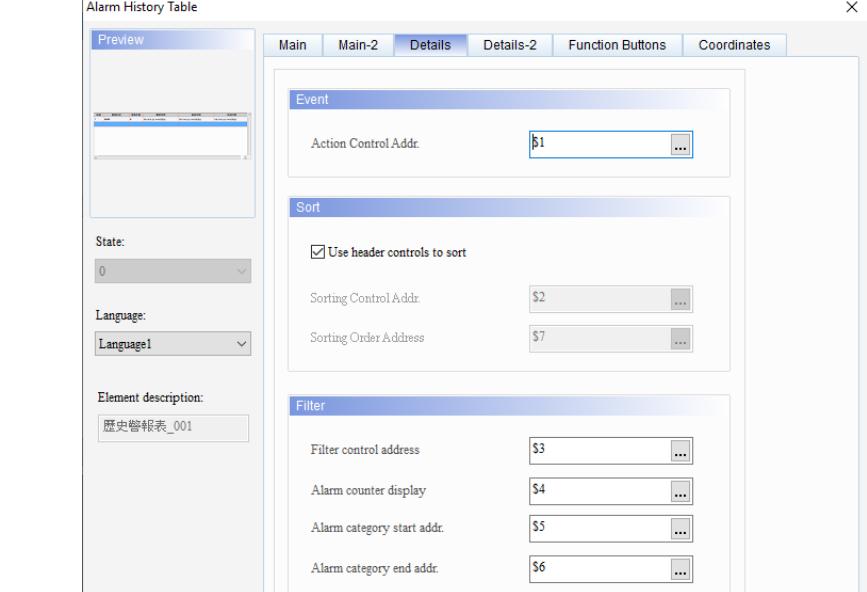
Alarm setting steps

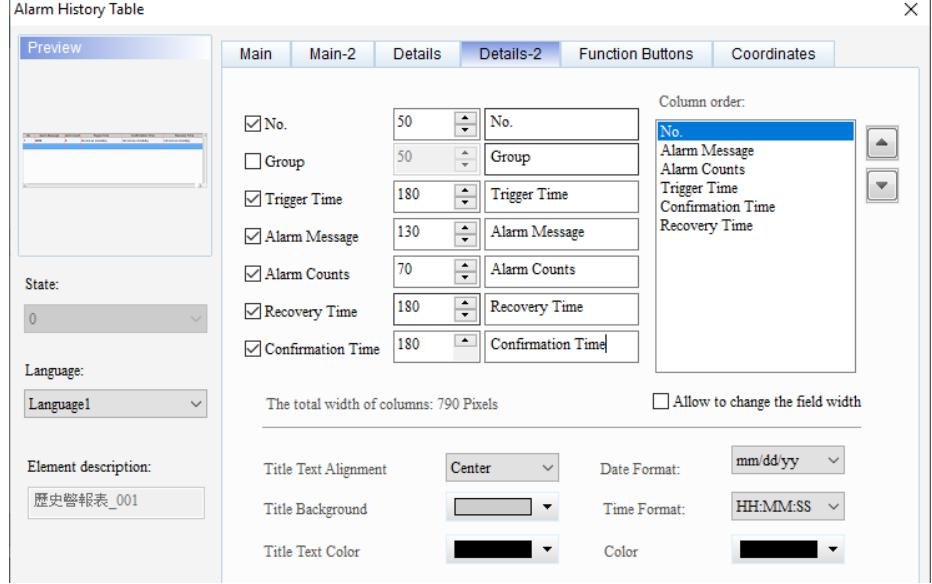
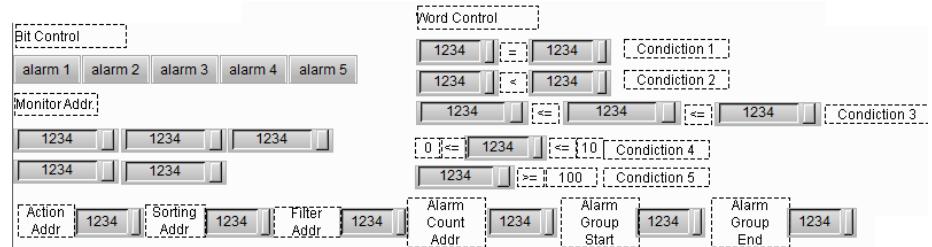
Set ten alarms as follows:

No.	Message Content	Category	Type	Address	Trigger Condition	Monitor At	Text Color	Alarm Screen
1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	*	RGB(0, 0, 0)	2 - Screen_2
2*	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	*	RGB(0, 0, 0)	None
3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	*	RGB(0, 0, 0)	None
4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	*	RGB(0, 0, 0)	None
5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	*	RGB(0, 0, 0)	None
6*	Alarm 6	5	Word	\$100	\$100 = \$200	...	RGB(0, 0, 0)	2 - Screen_2
7*	Alarm 7	5	Word	\$110	\$110 < \$210	...	RGB(0, 0, 0)	None
8*	Alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100	...	RGB(0, 0, 0)	None
9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	...	RGB(0, 0, 0)	None
10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100	...	RGB(0, 0, 0)	None

**■ Set the Main page as follows:**

Create Alarm History Table element

**■ Set the Details page as follows:**

<p style="text-align: center;"><b>Alarm Settings</b></p> <p>■ Set the Details-2 page as follows:</p> 																																																																																																				
<p>Create Alarm History Table element</p>																																																																																																				
<p>Create Numeric Entry elements and Maintained buttons for Alarm Settings and Alarm History Table addresses</p>	<p>Create Maintained buttons and Numeric Entry elements.</p> 																																																																																																			
<p>Create Alarm Screens</p>	<p>After you create an alarm screen and define it as a sub-screen, go to [Options] &gt; [Alarms Settings] to specify Alarm 1 and Alarm 6 screens as Screen_2.</p>  <table border="1"> <thead> <tr> <th>No.</th><th>Message Content</th><th>Category</th><th>Type</th><th>Address</th><th>Trigger Condition</th><th>Monitor Adr</th><th>Text Color</th><th>Alarm Screen</th></tr> </thead> <tbody> <tr> <td>1*</td><td>Alarm 1 %d1 degree(s)</td><td>1</td><td>Bit</td><td>\$50.0</td><td>On</td><td>*</td><td>RGB(0, 0, 0)</td><td>2 - Screen_2</td></tr> <tr> <td>2</td><td>Alarm 2 %d1 kilogram(s)</td><td>1</td><td>Bit</td><td>\$50.1</td><td>On</td><td>*</td><td>RGB(0, 0, 0)</td><td>None</td></tr> <tr> <td>3*</td><td>Alarm 3 %d1 gram(s)</td><td>1</td><td>Bit</td><td>\$50.2</td><td>On</td><td>*</td><td>RGB(0, 0, 0)</td><td>None</td></tr> <tr> <td>4*</td><td>Alarm 4 %d1 meter(s)</td><td>1</td><td>Bit</td><td>\$50.3</td><td>On</td><td>*</td><td>RGB(0, 0, 0)</td><td>None</td></tr> <tr> <td>5*</td><td>Alarm 5 %d1 inch(es)</td><td>1</td><td>Bit</td><td>\$50.4</td><td>On</td><td>*</td><td>RGB(0, 0, 0)</td><td>None</td></tr> <tr> <td>6*</td><td>Alarm 6</td><td>5</td><td>Word</td><td>\$100 = \$200</td><td>...</td><td>...</td><td>RGB(0, 0, 0)</td><td>2 - Screen_2</td></tr> <tr> <td>7*</td><td>Alarm 7</td><td>5</td><td>Word</td><td>\$110 &lt; \$210</td><td>...</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td></tr> <tr> <td>8*</td><td>Alarm 8</td><td>5</td><td>Word</td><td>{Link2}1@D200 &lt;= {Link2}1@D100</td><td>...</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td></tr> <tr> <td>9*</td><td>Alarm 9</td><td>5</td><td>Word</td><td>\$120</td><td>0 &lt;= \$120 &lt;= 10</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td></tr> <tr> <td>10*</td><td>Alarm 10</td><td>5</td><td>Word</td><td>{Link2}1@M16</td><td>{Link2}1@M16 &gt;= 100</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td></tr> </tbody> </table>	No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Adr	Text Color	Alarm Screen	1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	*	RGB(0, 0, 0)	2 - Screen_2	2	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	*	RGB(0, 0, 0)	None	3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	*	RGB(0, 0, 0)	None	4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	*	RGB(0, 0, 0)	None	5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	*	RGB(0, 0, 0)	None	6*	Alarm 6	5	Word	\$100 = \$200	...	...	RGB(0, 0, 0)	2 - Screen_2	7*	Alarm 7	5	Word	\$110 < \$210	...	...	RGB(0, 0, 0)	None	8*	Alarm 8	5	Word	{Link2}1@D200 <= {Link2}1@D100	...	...	RGB(0, 0, 0)	None	9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	...	RGB(0, 0, 0)	None	10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100	...	RGB(0, 0, 0)	None
No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Adr	Text Color	Alarm Screen																																																																																												
1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	*	RGB(0, 0, 0)	2 - Screen_2																																																																																												
2	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	*	RGB(0, 0, 0)	None																																																																																												
3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	*	RGB(0, 0, 0)	None																																																																																												
4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	*	RGB(0, 0, 0)	None																																																																																												
5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	*	RGB(0, 0, 0)	None																																																																																												
6*	Alarm 6	5	Word	\$100 = \$200	...	...	RGB(0, 0, 0)	2 - Screen_2																																																																																												
7*	Alarm 7	5	Word	\$110 < \$210	...	...	RGB(0, 0, 0)	None																																																																																												
8*	Alarm 8	5	Word	{Link2}1@D200 <= {Link2}1@D100	...	...	RGB(0, 0, 0)	None																																																																																												
9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	...	RGB(0, 0, 0)	None																																																																																												
10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100	...	RGB(0, 0, 0)	None																																																																																												

# 16

Write Macro Commands

Go to [&Initial Macro] to edit the commands as follows. The action is set to "when the HMI screen is turned on", Alarms 6 - 10 are on because the trigger conditions are met.

6*	alarm 6	5	Word	\$100	\$100 = \$200
7*	alarm 7	5	Word	\$110	\$110 < \$210
8*	alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300
9*	alarm 9	5	Word	\$120	0 <= \$120 <= 10
10*	alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100

\*[&Initial Macro]

```

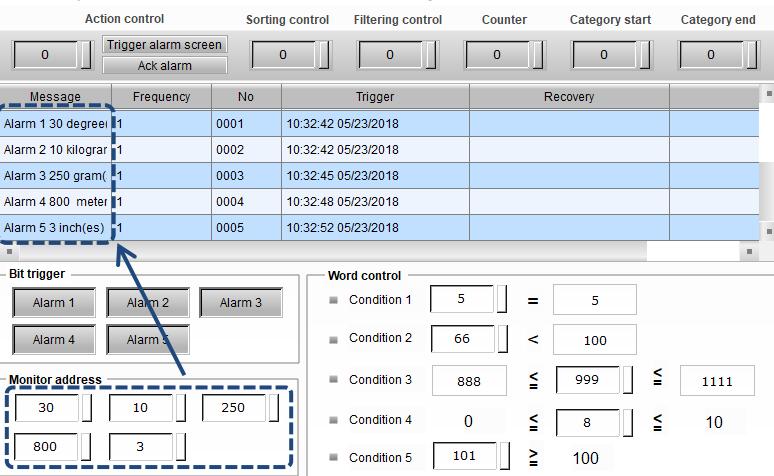
1 #Word Control
2 #rule1 $100 = $200
3 $100 = 5
4 $200 = 5
5 #Word Control
6 #rule2 $110 < $210
7 $110 = 66
8 $210 = 100
9 #Word Control
10 #rule3 {Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300
11 ({Link2}1@D200) = 888
12 ({Link2}1@D100) = 999
13 ({Link2}1@D300) = 1111
14 #Word Control
15 #rule4 0 <= $120 <= 10
16 $120 = 8
17 #Word Control
18 #rule5 {Link2}1@M16 >= 100
19 ({Link2}1@M16) = 101
20
21 #Monitor address
22 $500 = 30
23 $501 = 10
24 $502 = 250
25 $503 = 800
26 $504 = 3

```

Max limit of Row: 512 lines, Max limit of Line: 640 bytes | Line: 17

### Alarm Settings

Compile and download all screen data to the HMI. The actions are illustrated as follows:

<b>Display alarm screen action</b>  <b>Execution results</b>	<ul style="list-style-type: none"> <li>■ The setting conditions for this example: set [Display alarm screen] to Manual and set Action Control Addr. to 2, and then the HMI displays the alarm screen.</li> <li>■ If you set [Display alarm screen] to Auto and the trigger condition for Alarm 6 is met and thus the alarm switches to on, then the HMI automatically displays the set alarm screen.</li> </ul> 
<b>Trigger Alarms 1 - 5 with Bit Control</b>	<ul style="list-style-type: none"> <li>■ Close the alarm display screen.</li> <li>■ Use Bit addresses to trigger Alarms 1- 5, and the Alarm History Table displays the user-defined alarm messages.</li> </ul> 

### Trigger Alarms 1 - 5 with Bit Control

Alarm Settings						
Action control	Sorting control	Filtering control	Counter	Category start	Category end	
0	Trigger alarm screen	0	0	0	0	0
	Ack alarm					
Message	Frequency	No	Trigger	Recovery		
Alarm 1 40 degree	2	0001	10:34:20 05/23/2018			
Alarm 2 20 kilogr	2	0002	10:34:29 05/23/2018			
Alarm 3 300 gram(	2	0003	10:34:32 05/23/2018			
Alarm 4 700 meter	2	0004	10:34:36 05/23/2018			
Alarm 5 5 inch(es)	2	0005	10:34:39 05/23/2018			
<b>Bit trigger</b>						
Alarm 1		Alarm 2		Alarm 3		
Alarm 4		Alarm 5				
<b>Word control</b>						
Condition 1	5	=	5			
Condition 2	66	<	100			
Condition 3	888	$\leq$	999	$\leq$	1111	
Condition 4	0	$\leq$	8	$\leq$	10	
Condition 5	101	$\geq$	100			

### Execution results

When you use Bit or Word addresses to trigger the alarm and the trigger conditions are met, the Alarm History Table shows the trigger date and time.

### Trigger Time

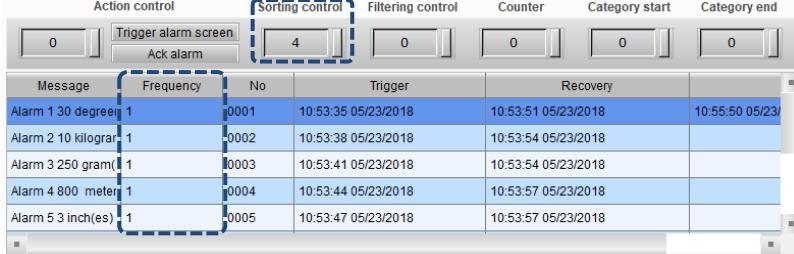
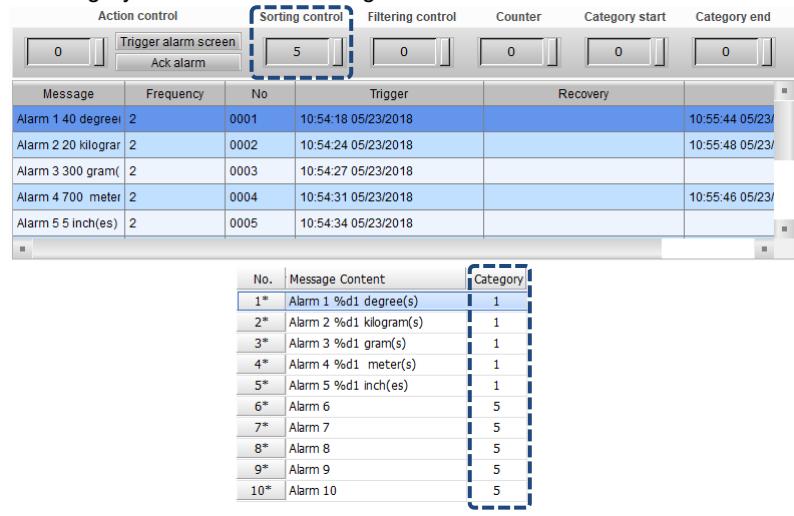
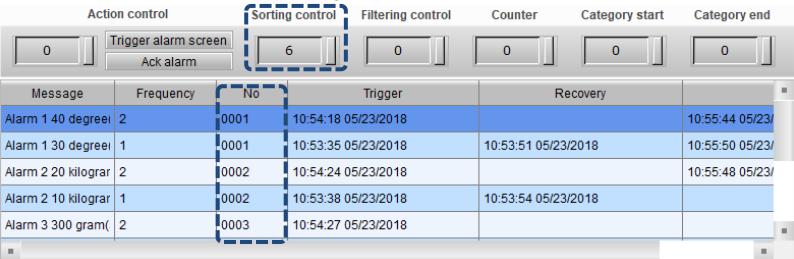
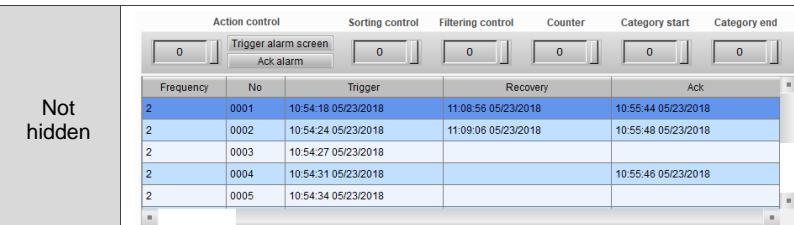
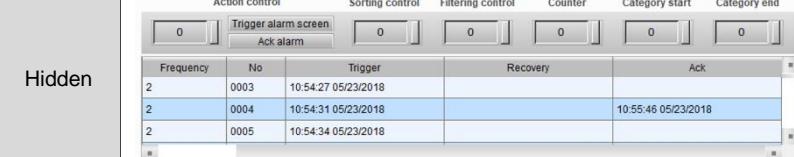
Message	Frequency	No	Trigger	Recovery	
Alarm 1 40 degree	2	0001	10:34:20 05/23/2018		
Alarm 2 20 kilogr	2	0002	10:34:29 05/23/2018		
Alarm 3 300 gram(	2	0003	10:34:32 05/23/2018		
Alarm 4 700 meter	2	0004	10:34:36 05/23/2018		
Alarm 5 5 inch(es)	2	0005	10:34:39 05/23/2018		

### Acknowledge Time

Specify an alarm with the setting of Action Control Addr. as 1, and then the alarm acknowledge time is displayed.

Action control	Sorting control	Filtering control	Counter	Category start	Category end	
1	Trigger alarm screen	0	0	0	0	0
	Ack alarm					
Frequency	No	Trigger	Recovery	Ack		
2	0001	10:34:20 05/23/2018		10:37:47 05/23/2018		
2	0002	10:34:29 05/23/2018		10:37:50 05/23/2018		
2	0003	10:34:32 05/23/2018				
2	0004	10:34:36 05/23/2018				
2	0005	10:34:39 05/23/2018				

Alarm Settings						
Recovery Time	When you use Bit addresses to cancel the alarm-triggering action or when the Word trigger conditions are not met (such as Condition 1 and Condition 2), the Alarm History Table will show the recovery time.					
Action Control Addr.	<ul style="list-style-type: none"> <li>■ If Action Control Addr. is 0, the Alarm History Table has no action.</li> <li>■ If Action Control Addr. is 1, the Alarm History Table shows the acknowledge time.</li> <li>■ If Action Control Addr. is 2 and [Display alarm screen] is set to Manual, the HMI displays the alarm screen.</li> </ul>					
Execution results	<ul style="list-style-type: none"> <li>■ If Sorting Control Addr. is 0, the Alarm History Table has no action.</li> <li>■ If Sorting Control Addr. is 1, the alarms are sorted based on the trigger time.</li> </ul>					
Sorting Control Addr.	<ul style="list-style-type: none"> <li>■ If Sorting Control Addr. is 2, the alarms are sorted based on the acknowledge time.</li> <li>■ If Sorting Control Addr. is 3, the alarms are sorted based on the recovery time.</li> </ul>					

		Alarm Settings																																																																																								
		<ul style="list-style-type: none"> <li>If Sorting Control Addr. is 4, the alarms are sorted based on the alarm frequency from low to high.</li> </ul>																																																																																								
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1	0002	10:53:38 05/23/2018	10:53:54 05/23/2018																																																																																																																																																																																																																																																																																																
1	0003	10:53:41 05/23/2018	10:53:54 05/23/2018																																																																																																																																																																																																																																																																																																
■ If Filtering Control Addr. is 4, the Alarm History Table hides the alarms with acknowledge time.																																																																																																																																																																																																																																																																																																			

## 16

Alarm Settings								
Execution results	Filtering Control Addr.	<b>Filtering control</b> 		<b>Counter</b> 				
		Action control	Sorting control	Filtering control	Counter	Category start	Category end	
Not hidden	5	0	Trigger alarm screen	0	0	0	0	
	1	0	Ack alarm	5	1	0	0	
Hidden	2	0	Trigger alarm screen	0	1	0	0	
	0	0	Ack alarm	5	1	0	0	
Not hidden	1	0	Trigger alarm screen	0	0	0	0	
	0	0	Ack alarm	0	0	0	0	
Hidden	1	0	Trigger alarm screen	0	5	2	0	
	0	0	Ack alarm	5	2	0	0	

■ When Filtering Control Addr. is 5 and [Counter] (Alarm counter display) is set to 1, the Alarm History Table hides the data with the alarm frequency less than 1. In this example, since there is no alarm frequency less than 1, all alarms are displayed.

■ When Filtering Control Addr. is 5 and [Counter] (Alarm counter display) is set to 2, the Alarm History Table hides the data with the alarm frequency less than 2. In this example, all the alarms occurred only once, so all alarms are hidden.

**Alarm Settings**

■ When Filtering Control Addr. is 6 with the alarm category display start address [Category start] as 1 and the end address [Category end] as 3, the alarm category numbers that are out of the range specified by [Category start] and [Category end] will be hidden.

Filtering control	Counter	Category start	Category end
6	0	1	3

No.	Message Content	Category
1*	Alarm 1 %d1 degree(s)	1
2*	Alarm 2 %d1 kilogram(s)	1
3*	Alarm 3 %d1 gram(s)	1
4*	Alarm 4 %d1 meter(s)	1
5*	Alarm 5 %d1 inch(es)	1
6*	Alarm 6	5
7*	Alarm 7	5
8*	Alarm 8	5
9*	Alarm 9	5
10*	Alarm 10	5

Action control	Sorting control	Filtering control	Counter	Category start	Category end																																				
0	Trigger alarm screen	0	0	0	0																																				
<table border="1"> <thead> <tr> <th>Message</th> <th>Frequency</th> <th>No</th> <th>Trigger</th> <th>Recovery</th> <th>Ack</th> </tr> </thead> <tbody> <tr> <td>Alarm 6</td> <td>1</td> <td>0006</td> <td>11:27:59 05/23/2018</td> <td></td> <td></td> </tr> <tr> <td>Alarm 7</td> <td>1</td> <td>0007</td> <td>11:27:59 05/23/2018</td> <td></td> <td></td> </tr> <tr> <td>Alarm 8</td> <td>1</td> <td>0008</td> <td>11:27:59 05/23/2018</td> <td></td> <td></td> </tr> <tr> <td>Alarm 9</td> <td>1</td> <td>0009</td> <td>11:27:59 05/23/2018</td> <td></td> <td></td> </tr> <tr> <td>Alarm 10</td> <td>1</td> <td>0010</td> <td>11:27:59 05/23/2018</td> <td></td> <td></td> </tr> </tbody> </table>						Message	Frequency	No	Trigger	Recovery	Ack	Alarm 6	1	0006	11:27:59 05/23/2018			Alarm 7	1	0007	11:27:59 05/23/2018			Alarm 8	1	0008	11:27:59 05/23/2018			Alarm 9	1	0009	11:27:59 05/23/2018			Alarm 10	1	0010	11:27:59 05/23/2018		
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Not hidden

Action control	Sorting control	Filtering control	Counter	Category start	Category end																																				
0	Trigger alarm screen	0	6	0	1																																				
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Hidden

■ When Filtering Control Addr. is 6 with the alarm category display start address [Category start] as 3 and the end address [Category end] as 5, the alarm category numbers that are out of the range specified by [Category start] and [Category end] will be hidden.

Filtering control	Counter	Category start	Category end
6	0	3	5

No.	Message Content	Category
1*	Alarm 1 %d1 degree(s)	1
2*	Alarm 2 %d1 kilogram(s)	1
3*	Alarm 3 %d1 gram(s)	1
4*	Alarm 4 %d1 meter(s)	1
5*	Alarm 5 %d1 inch(es)	1
6*	Alarm 6	5
7*	Alarm 7	5
8*	Alarm 8	5
9*	Alarm 9	5
10*	Alarm 10	5

16

Alarm Settings								
Execution results	Filtering Control Addr.	Not hidden	Action control	Sorting control	Filtering control	Counter	Category start	Category end
			<input type="button" value="0"/> Trigger alarm screen	<input type="button" value="0"/>				
			Ack alarm					
			Message	Frequency	No	Trigger	Recovery	Ack
			Alarm 1 40 degree(s)	2	0001	11:22:30 05/23/2018	11:23:04 05/23/2018	11:22:59 05/23/2018
		Hidden	Alarm 2 20 kilogram	2	0002	11:22:33 05/23/2018	11:23:07 05/23/2018	11:23:01 05/23/2018
			Alarm 3 300 gram(	2	0003	11:22:36 05/23/2018		
			Alarm 4 700 meter	2	0004	11:22:39 05/23/2018	11:23:22 05/23/2018	
			Alarm 5 5 inch(es)	2	0005	11:22:42 05/23/2018		

Alarm Settings								
Execution results	Filtering Control Addr.	Not hidden	Action control	Sorting control	Filtering control	Counter	Category start	Category end
			<input type="button" value="0"/> Trigger alarm screen	<input type="button" value="0"/>	<input type="button" value="6"/>	<input type="button" value="0"/>	<input type="button" value="3"/>	<input type="button" value="5"/>
			Ack alarm					
			Message	Frequency	No	Trigger	Recovery	Ack
			Alarm 6	1	0006	11:27:59 05/23/2018		
		Hidden	Alarm 7	1	0007	11:27:59 05/23/2018		
			Alarm 8	1	0008	11:27:59 05/23/2018		
			Alarm 9	1	0009	11:27:59 05/23/2018		
			Alarm 10	1	0010	11:27:59 05/23/2018		

The following introduces the detailed property functions for Alarm Settings.

Table 16.1.2 Properties of Alarm Settings

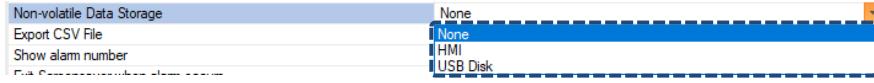
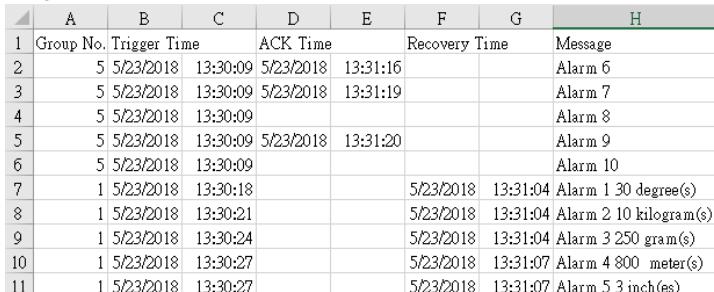
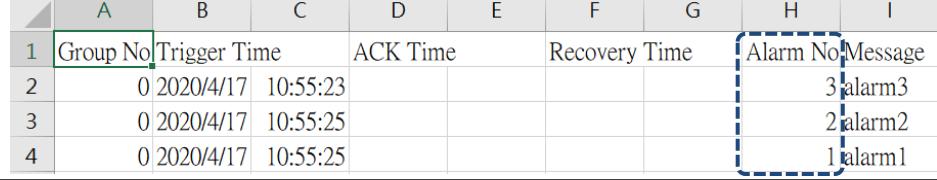
16

Properties of Alarm Settings																																																																																																																																																																																																							
<b>Alarm Settings</b> <ul style="list-style-type: none"> <li>■ The default is continuous address. Its usage is the same as that of the DOP-B models.</li> <li>■ Press the  button, and the setting changes to non-continuous address. When the setting is non-continuous address, you can use Bit or Word addresses for alarm triggering.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Message Content</th> <th>Category</th> <th>Trigger Condition</th> <th>Monitor A</th> <th>Text Color</th> <th>Alarm Screen</th> <th>Mail</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>2</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>3</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>5</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>6</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>7</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>8</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>9</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>10</td><td></td><td>0</td><td>On</td><td>...</td><td><input checked="" type="checkbox"/> RGB(0, 0, 0)</td><td>None</td><td></td></tr> </tbody> </table> <table border="1" style="width: 100%; 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Switch between continuous and non-continuous addresses

16-15

Properties of Alarm Settings											
Alarm Settings											
Read Address	<ul style="list-style-type: none"> <li>■ Only applicable to continuous addresses.</li> <li>■ You can select the internal memory or the controller register address.</li> <li>■ Select Link Name or Element Style. Refer to Chapter 5 Buttons for details.</li> </ul> <p>Note: if you have created an alarm related element without setting the alarm read address, the software displays the following message when compiling data.</p>										
Scan Time (seconds)	<p>Scan Time specifies the frequency to execute the sampling action.</p> <table border="1" style="margin-left: 20px; margin-top: 10px;"> <tr><td>Scan Time (seconds)</td></tr> <tr><td>Max Records</td></tr> <tr><td>Non-volatile Data Storage</td></tr> <tr><td>Export CSV File</td></tr> <tr><td>Show alarm number</td></tr> <tr><td>Exit Screensaver when alarm occurs</td></tr> <tr><td>Time to enter screen saver again</td></tr> <tr><td>Display alarm screen</td></tr> <tr><td>Alarm Moving Sign</td></tr> <tr><td>Enable</td></tr> </table>	Scan Time (seconds)	Max Records	Non-volatile Data Storage	Export CSV File	Show alarm number	Exit Screensaver when alarm occurs	Time to enter screen saver again	Display alarm screen	Alarm Moving Sign	Enable
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Export CSV File											
Show alarm number											
Exit Screensaver when alarm occurs											
Time to enter screen saver again											
Display alarm screen											
Alarm Moving Sign											
Enable											
Max Records	<ul style="list-style-type: none"> <li>■ Max Records refers to the recorded data. When the recorded sampling number reaches the maximum, the record starts from 1 and overwrites the previous data.</li> <li>■ The maximum record is 9,999.</li> </ul> <p>Note:</p> <ol style="list-style-type: none"> <li>1. The maximum record must not be 0.</li> <li>2. If you enter 0, the software displays the following message.</li> </ol>										

Properties of Alarm Settings								
Alarm Settings								
Non-volatile Data Storage		<ul style="list-style-type: none"> <li>■ Options for the storage location include None, HMI, USB Disk, and SD Card.</li> <li>■ If the model does not support using an SD Card, it only shows HMI and USB Disk; on the other hand, if the model does not support using a USB Disk, it only shows HMI and SD Card.</li> </ul> 						
Export CSV File		<ul style="list-style-type: none"> <li>■ When you set to store the data in the HMI, it means when the power is cut off, the data is saved in the HMI SRAM.</li> <li>■ If [Export CSV File] is set to Yes, set the non-volatile memory to USB Disk or SD Card.</li> </ul>						
Show alarm number		<p>Setting [Export CSV File] to Yes means you can save the alarm data as CSV files in the external storage devices such as USB Disks or SD Cards.</p>  <p>When you set [Show alarm number] to Yes, the exported CSV files include the alarm numbers. When you set [Show alarm number] to No, the alarm numbers are not displayed.</p> 						

**Properties of Alarm Settings**

**Alarm Settings**

- These functions are used with the screensaver. The default setting for [Exit Screensaver when alarm occurs] is Yes.
- Assume that the screensaver is enabled and the screensaver image is set, the HMI does not show the screensaver image if alarm occurs; if the screensaver image is not set, the HMI does not enter the backlight mode.
- If you disable the [Exit Screensaver when alarm occurs] function, then the HMI exits the screensaver when the alarm is triggered for the first time. After that, whether the alarm is cleared or not, the HMI enters the screensaver mode according to the set time.
- [Time to enter screen saver again] is enabled only when [Exit Screensaver when alarm occurs] is set to Yes. It is enabled under either of the two conditions, [No alarm is triggered] or [No alarm is triggered during the screen saver waiting time].

Time to enter screen saver again  
Display alarm screen  
Alarm Moving Sign

No alarm is triggered	When [Exit Screensaver when alarm occurs] is set to Yes for the HMI, once the alarm occurs, the screensaver is exited immediately. If [Time to enter screen saver again] is set to <b>No alarm is triggered</b> , as long as no alarm is triggered, the HMI can enter the screensaver mode.
No alarm is triggered during the screen saver waiting time	When [Exit Screensaver when alarm occurs] is set to Yes for the HMI, once the alarm occurs, the screensaver is exited immediately. If [Time to enter screen saver again] is set to <b>No alarm is triggered during the screen saver waiting time</b> , as long as no alarm is triggered during the waiting time, the HMI can enter the screensaver mode.

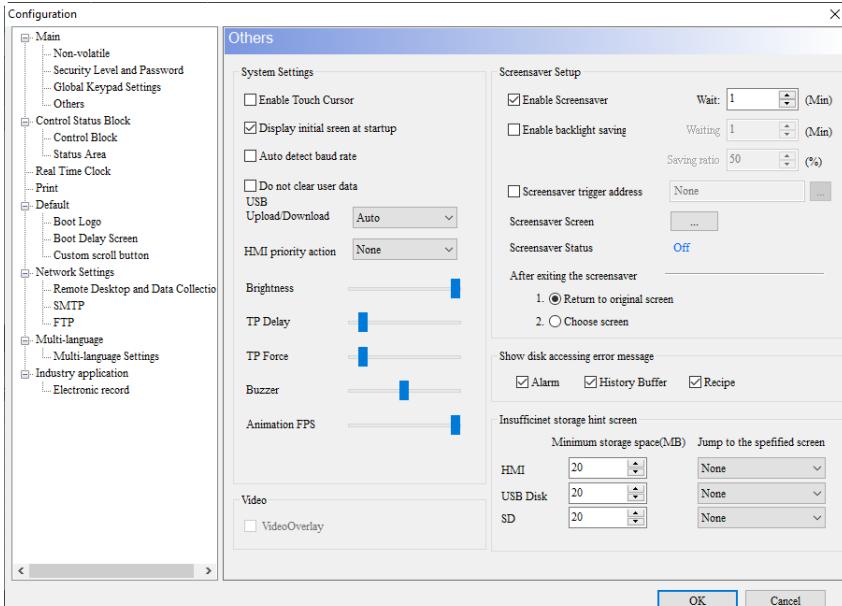
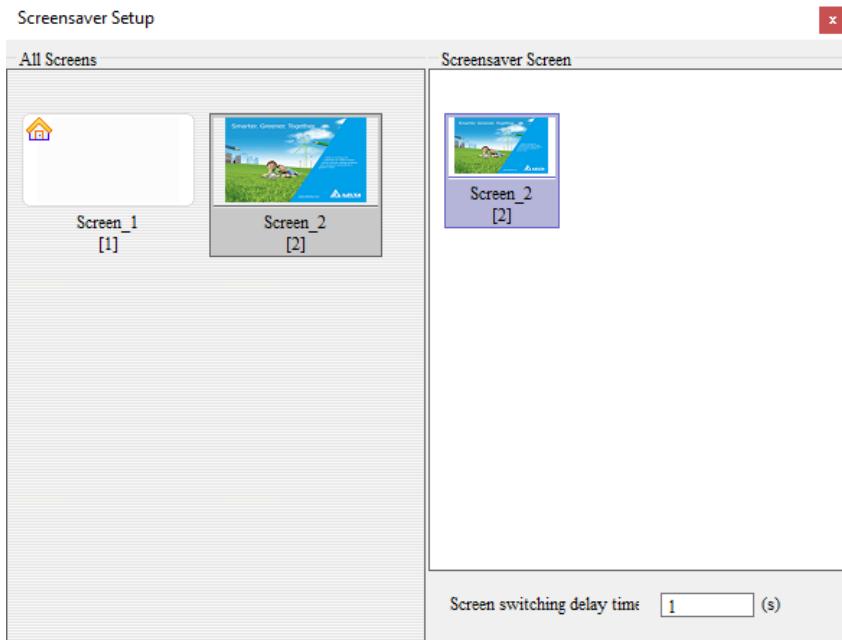
Screensaver Setup

Enable Screensaver Wait: 1 (Min)

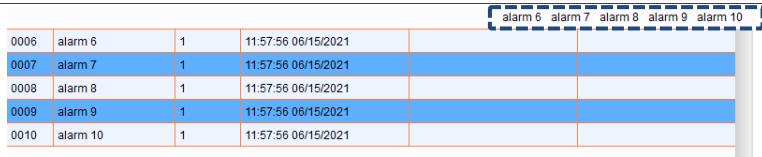
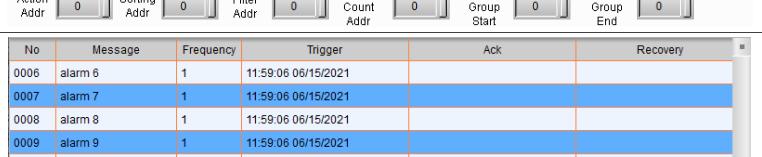
**Example**

- Create the alarm data.

No.	Message Content	Category	Trigger Condition	Monitor Action	Text Color	Alarm Screen
1*	111	0	On	...	RGB(0, 0, 0)	None
2*	222	0	On	...	RGB(0, 0, 0)	None
3*	333	0	On	...	RGB(0, 0, 0)	None

Properties of Alarm Settings	
Alarm Settings	
	<ul style="list-style-type: none"> <li>■ Create a Numeric Entry element and set the Write Address to \$100.</li> <li>■ Go to [Options] &gt; [Configuration] &gt; [Main] &gt; [Others], and select the <b>Enable Screensaver</b> check box and set the waiting time as 1 minute.</li> </ul> 
Exit Screensaver when alarm occurs	<ul style="list-style-type: none"> <li>■ Go to [Screen] &gt; [Screensaver Setup] to create the screensaver screen.</li> </ul> 
	<ul style="list-style-type: none"> <li>■ Compile the project and download the screen to the HMI. Enter 1 to the Numeric Entry element \$100 to trigger the alarm. Wait 1 minute for the screensaver to enable. When the HMI detects an alarm, it automatically exits the screensaver mode.</li> </ul>
Display alarm screen	<ul style="list-style-type: none"> <li>■ It can be set to Auto or Manual mode.</li> <li>■ Auto: the HMI displays the alarm screen as soon as the alarm with a set alarm screen is triggered.</li> <li>■ Manual: to have the HMI display the alarm screen, you must go to the Details page of the Alarm History Table element and enter 2 to Action Control Addr., or you can select the <b>Trigger alarm screen</b> check box in the Function Buttons page of the Alarm History Table element to display the alarm screen.</li> </ul>

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Properties of Alarm Settings																										
Alarm Moving Sign																										
Enable	<p>You can set Yes or No for this function. When the alarm is triggered, selecting Yes means the alarm message shows at the specified position on the screen, whereas No means not to show the alarm message.</p> <div style="border: 1px solid #ccc; padding: 5px;"> <p><input checked="" type="checkbox"/> <b>Alarm Moving Sign</b></p> <table> <tr> <td>Enable</td> <td>No</td> </tr> <tr> <td>Position</td> <td>No</td> </tr> <tr> <td>Direction</td> <td>Yes</td> </tr> <tr> <td>Points per time</td> <td>1</td> </tr> <tr> <td>Interval (ms)</td> <td>100</td> </tr> <tr> <td>Background color</td> <td><input type="color" value="#fcfcfc"/></td> </tr> <tr> <td>Translucent</td> <td>255</td> </tr> </table> </div>		Enable	No	Position	No	Direction	Yes	Points per time	1	Interval (ms)	100	Background color	<input type="color" value="#fcfcfc"/>	Translucent	255										
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Position	<p>Available display positions are Top and Bottom. If you select Top, once the alarm is triggered, the alarm message shows at the top of the HMI screen; if you select Bottom, the alarm message shows at the bottom of the HMI screen.</p> <div style="border: 1px solid #ccc; padding: 5px;"> <p><input checked="" type="checkbox"/> <b>Alarm Moving Sign</b></p> <table> <tr> <td>Enable</td> <td>No</td> </tr> <tr> <td>Position</td> <td>Top</td> </tr> <tr> <td>Direction</td> <td>Top</td> </tr> <tr> <td>Points per time</td> <td>Bottom</td> </tr> <tr> <td>Interval (ms)</td> <td>100</td> </tr> <tr> <td>Background color</td> <td><input type="color" value="#fcfcfc"/></td> </tr> <tr> <td>Translucent</td> <td>255</td> </tr> </table> </div>		Enable	No	Position	Top	Direction	Top	Points per time	Bottom	Interval (ms)	100	Background color	<input type="color" value="#fcfcfc"/>	Translucent	255										
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Top	 <p>The screenshot shows a list of 10 alarms at the top of the screen. Each row contains the alarm number, message, frequency, and trigger time. The first five alarms (0006 to 0010) are highlighted in blue, indicating they are active.</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Frequency</th> <th>Trigger</th> </tr> </thead> <tbody> <tr><td>0006</td><td>alarm 6</td><td>1</td><td>11:57:56 06/15/2021</td></tr> <tr><td>0007</td><td>alarm 7</td><td>1</td><td>11:57:56 06/15/2021</td></tr> <tr><td>0008</td><td>alarm 8</td><td>1</td><td>11:57:56 06/15/2021</td></tr> <tr><td>0009</td><td>alarm 9</td><td>1</td><td>11:57:56 06/15/2021</td></tr> <tr><td>0010</td><td>alarm 10</td><td>1</td><td>11:57:56 06/15/2021</td></tr> </tbody> </table>		No	Message	Frequency	Trigger	0006	alarm 6	1	11:57:56 06/15/2021	0007	alarm 7	1	11:57:56 06/15/2021	0008	alarm 8	1	11:57:56 06/15/2021	0009	alarm 9	1	11:57:56 06/15/2021	0010	alarm 10	1	11:57:56 06/15/2021
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Bottom	 <p>The screenshot shows a list of 10 alarms at the bottom of the screen. The layout is identical to the top version, with the first five alarms (0006 to 0010) highlighted in blue.</p> <table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Frequency</th> <th>Trigger</th> </tr> </thead> <tbody> <tr><td>0006</td><td>alarm 6</td><td>1</td><td>11:59:06 06/15/2021</td></tr> <tr><td>0007</td><td>alarm 7</td><td>1</td><td>11:59:06 06/15/2021</td></tr> <tr><td>0008</td><td>alarm 8</td><td>1</td><td>11:59:06 06/15/2021</td></tr> <tr><td>0009</td><td>alarm 9</td><td>1</td><td>11:59:06 06/15/2021</td></tr> <tr><td>0010</td><td>alarm 10</td><td>1</td><td>11:59:06 06/15/2021</td></tr> </tbody> </table>		No	Message	Frequency	Trigger	0006	alarm 6	1	11:59:06 06/15/2021	0007	alarm 7	1	11:59:06 06/15/2021	0008	alarm 8	1	11:59:06 06/15/2021	0009	alarm 9	1	11:59:06 06/15/2021	0010	alarm 10	1	11:59:06 06/15/2021
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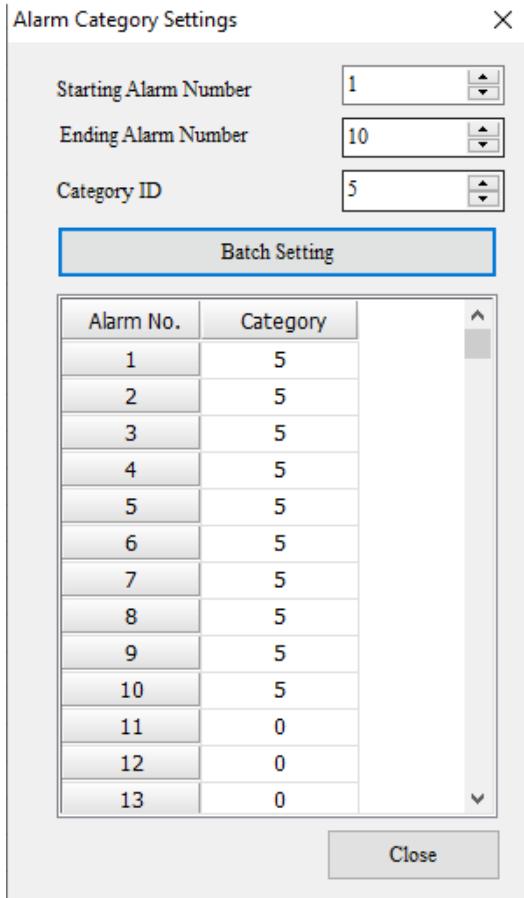
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Points per time	The greater the number, the greater the distance each time the text moves. The setting range is 1 - 50 pixels.																																			
Interval (ms)	The Interval (ms) defines the time interval (unit: ms) between two message movements of the Moving Sign. The moving distance is determined by the setting of Points per time.																																			
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16

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No.	<ul style="list-style-type: none"> <li>No. stands for the alarm message number, which maximum is 4,096.</li> </ul> <table border="1"> <thead> <tr> <th>No.</th> <th>Message Content</th> <th>Category</th> <th>Type</th> <th>Address</th> <th>Trigger Condition</th> <th>Monitor Ac</th> <th>Text Color</th> <th>Alarm Screen</th> <th>Mail</th> </tr> </thead> <tbody> <tr><td>4068</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4069</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4070</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4071</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4072</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4073</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4074</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4075</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4076</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4077</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4078</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4079</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4080</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4081</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4082</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4083</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4084</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4085</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4086</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4087</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4088</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4089</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4090</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4091</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4092</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4093</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4094</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4095</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> <tr><td>4096</td><td>0</td><td>0</td><td>Bit</td><td>None</td><td>On</td><td>...</td><td>RGB(0, 0, 0)</td><td>None</td><td></td></tr> </tbody> </table>									No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Ac	Text Color	Alarm Screen	Mail	4068	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4069	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4070	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4071	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4072	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4073	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4074	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4075	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4076	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4077	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4078	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4079	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4080	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4081	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4082	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4083	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4084	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4085	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4086	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4087	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4088	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4089	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4090	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4091	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4092	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4093	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4094	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4095	0	0	Bit	None	On	...	RGB(0, 0, 0)	None		4096	0	0	Bit	None	On	...	RGB(0, 0, 0)	None	
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Message Content	<ul style="list-style-type: none"> <li>In the Message Content field, you can edit the alarm messages to be displayed.</li> <li>To modify the message, you can modify it directly in the field.</li> <li>You can add the "%d1" formatted string after the message content, e.g. Alarm%d1. This string must be used with monitoring addresses.</li> </ul> <p>Note: if you have created an alarm related element with alarm read address but leave the message content blank, the software displays the following message when compiling data.</p> <p>Output</p> <p>Message</p> <p>Alarm function must be enabled before the alarm element is used.</p>																																																																																																																																																																																																																																																																																																																				

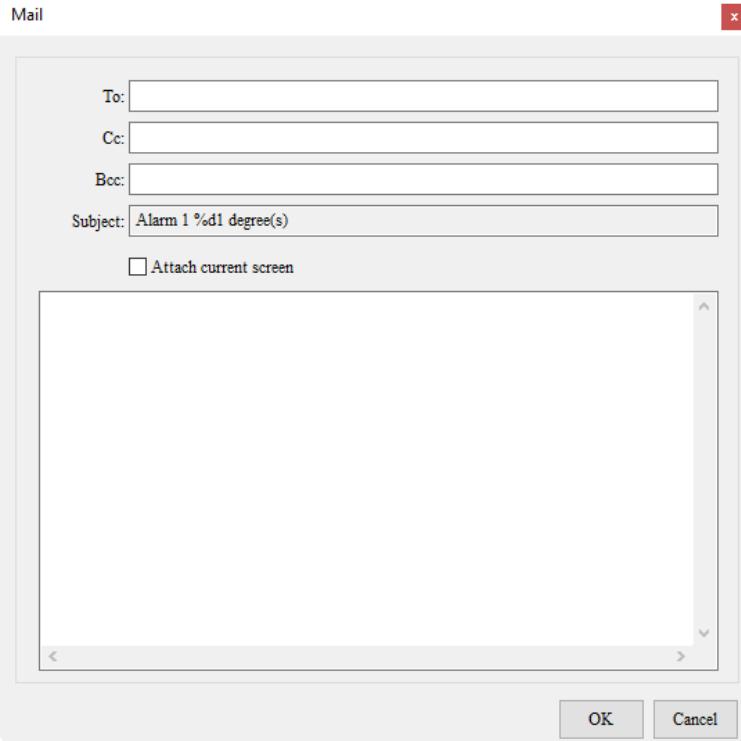
16

Properties of Alarm Settings																													
Alarm Message Display Content																													
Category	<ul style="list-style-type: none"> <li>Refers to the category of the alarm number, which idea is similar to groups.</li> <li>The supported range is 0 - 4095.</li> <li>You can use the batch tasks tool  to quickly set the category numbers.</li> </ul> <p></p> <table border="1"> <thead> <tr> <th>Alarm No.</th> <th>Category</th> </tr> </thead> <tbody> <tr><td>1</td><td>5</td></tr> <tr><td>2</td><td>5</td></tr> <tr><td>3</td><td>5</td></tr> <tr><td>4</td><td>5</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>5</td></tr> <tr><td>7</td><td>5</td></tr> <tr><td>8</td><td>5</td></tr> <tr><td>9</td><td>5</td></tr> <tr><td>10</td><td>5</td></tr> <tr><td>11</td><td>0</td></tr> <tr><td>12</td><td>0</td></tr> <tr><td>13</td><td>0</td></tr> </tbody> </table>	Alarm No.	Category	1	5	2	5	3	5	4	5	5	5	6	5	7	5	8	5	9	5	10	5	11	0	12	0	13	0
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Type	<ul style="list-style-type: none"> <li>When the alarm continuous address button  is canceled, this field is displayed. Cancel the selection of this field and then the alarm read address is disabled. You can trigger the alarms individually depending on the alarm address type setting which is Bit or Word.</li> <li>Available types are Bit and Word.</li> <li>Bit address: user-defined Bit address for alarm triggering.</li> <li>Word address: user-defined Word address for alarm triggering.</li> </ul>																												

Properties of Alarm Settings																	
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Address	<ul style="list-style-type: none"> <li>■ When the alarm continuous address button  is canceled, this field is displayed. Cancel the selection of this field and then the alarm read address is disabled. You can trigger the alarms individually depending on the alarm address type setting which is Bit or Word.</li> <li>■ You can set the corresponding addresses to trigger the alarms according to the type settings (Bit or Word).</li> <li>■ If you select Bit, enter the Bit address for alarm triggering.</li> <li>■ If you select Word, statements for determining when to trigger the alarm are provided.</li> </ul> <table border="1"> <thead> <tr> <th>Statement</th><th>Description</th></tr> </thead> <tbody> <tr> <td>=</td><td>Equal to</td></tr> <tr> <td>&gt;</td><td>Greater than</td></tr> <tr> <td>&lt;</td><td>Less than</td></tr> <tr> <td>&gt;=</td><td>Greater than or equal to</td></tr> <tr> <td>&lt;=</td><td>Less than or equal to</td></tr> <tr> <td>&gt;, &lt;</td><td>Out of the range</td></tr> <tr> <td>&lt;=, &lt;=</td><td>Within the range</td></tr> </tbody> </table>	Statement	Description	=	Equal to	>	Greater than	<	Less than	>=	Greater than or equal to	<=	Less than or equal to	>, <	Out of the range	<=, <=	Within the range
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Trigger Condition	The trigger conditions are On and off. If you select On, it means the alarm is triggered when the bit is on; if you select Off, it means the alarm is triggered when the bit is off.																
Monitor Address	<ul style="list-style-type: none"> <li>■ Monitor Address is for displaying the user-defined alarm messages.</li> </ul> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 5px;"> <p>Watch address setting <span style="float: right;">X</span></p> <p></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Item</th><th style="width: 20%;">Variable defin</th><th style="width: 30%;">Watch address</th><th style="width: 10%;">Reading num</th><th style="width: 30%;">Data Format</th></tr> </thead> <tbody> <tr> <td>1</td><td>%f1</td><td>\$1000</td><td>2</td><td>Floating</td></tr> </tbody> </table> <p style="text-align: right; margin-top: 10px;"> <span style="border: 1px solid #0070C0; padding: 2px 10px; color: #0070C0; cursor: pointer;">OK</span> <span style="margin-left: 10px;">Cancel</span> </p> </div>	Item	Variable defin	Watch address	Reading num	Data Format	1	%f1	\$1000	2	Floating						
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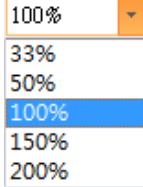
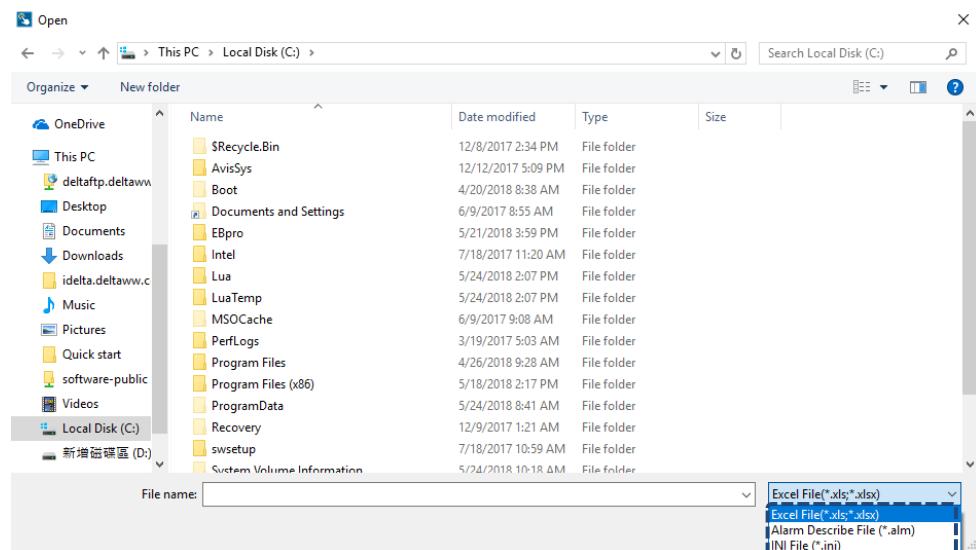
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	<ul style="list-style-type: none"> <li>Two types of format are supported, %d (positive integer) and %f (floating-point number). Besides, one alarm can set up to 8 monitoring addresses.</li> </ul>																																												
<thead> <tr> <th>Item</th><th>Variable defi</th><th>Watch address</th><th>Reading num</th><th>Data Format</th></tr> </thead> <tbody> <tr><td>1</td><td>%d1</td><td>\$1</td><td>1</td><td>Unsigned Decimal</td></tr> <tr><td>2</td><td>%d2</td><td>\$2</td><td>1</td><td>Unsigned Decimal</td></tr> <tr><td>3</td><td>%d3</td><td>\$3</td><td>1</td><td>Unsigned Decimal</td></tr> <tr><td>4</td><td>%d4</td><td>\$4</td><td>1</td><td>Unsigned Decimal</td></tr> <tr><td>5</td><td>%d5</td><td>\$5</td><td>1</td><td>Unsigned Decimal</td></tr> <tr><td>6</td><td>%d6</td><td>\$6</td><td>1</td><td>Unsigned Decimal</td></tr> <tr><td>7</td><td>%f7</td><td>\$7</td><td>2</td><td>Floating</td></tr> <tr><td>8</td><td>%f8</td><td>\$9</td><td>2</td><td>Floating</td></tr> </tbody>	Item	Variable defi	Watch address	Reading num	Data Format	1	%d1	\$1	1	Unsigned Decimal	2	%d2	\$2	1	Unsigned Decimal	3	%d3	\$3	1	Unsigned Decimal	4	%d4	\$4	1	Unsigned Decimal	5	%d5	\$5	1	Unsigned Decimal	6	%d6	\$6	1	Unsigned Decimal	7	%f7	\$7	2	Floating	8	%f8	\$9	2	Floating
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					- Enter the alarm message to be displayed in the Message Content field, and add the set monitoring address such as %dx or %fx where x indicates 1 - 8.																							
					-----------------------	---------	---		Alarm message setting	Detail	Properties			No.	Message Content			1*	X:%d1,Y:%d2,Velocity:%d3,Acceleration:%d4,Frequency:%d5,Temperature:%d6, Angle:%f7,length:%f8		Execution results	Message	X:1,Y:2,Velocity:3,Acceleration:4,Frequency:-5,Temperature:-9,Angle:5.9,length:66.8					
Title Text Color	The text color of the displaying alarm message. The default is black.																											
Alarm Screen	Set whether to show the specified alarm screen when the alarm is triggered. If you have created other screens, use the drop-down list box to select the screen number to display.																											
					--------------	--------------		Text Color	Alarm Screen		RGB(0, 0, 0)	2 - Screen_2		RGB(0, 0, 0)	None		RGB(0, 0, 0)	1 - Screen_1			2 - Screen_2							

Properties of Alarm Settings	
Alarm Message Display Content	
	<ul style="list-style-type: none"> <li>■ When an alarm occurs, the Mail function sends an e-mail to relevant recipients. Note that you must go to [Options] &gt; [Configuration] &gt; [Network Settings] to enable the [SMTP] function to have the Mail function work.</li> <li>■ After the SMTP function is enabled, you can enter the email content in the Mail data fields.</li> </ul>  <p>The screenshot shows a 'Mail' dialog box with the following fields:</p> <ul style="list-style-type: none"> <li>To: [Text input field]</li> <li>Cc: [Text input field]</li> <li>Bcc: [Text input field]</li> <li>Subject: [Text input field] - contains "Alarm 1 %d1 degree(s)"</li> <li><input type="checkbox"/> Attach current screen</li> </ul> <p>At the bottom right of the dialog box are 'OK' and 'Cancel' buttons.</p>
To	Fill in the recipient's email address for receiving the notification when an alarm occurs. Same as regular email systems, you can fill in multiple recipients by using semi-columns (;) to separate the recipients' email addresses.
Cc	Apart from the main recipients, you can also send alarm notifications to other recipients by entering their email addresses in this field. Note that main recipients can see those who are in the Cc field.
Bcc	Send blind copies to the recipients in this field. The main and carbon copy recipients cannot see those who are in the Bcc field in the alarm notification.
Subject	The content in the Subject field is not editable in the Mail screen. The subject is generated based on the alarm message content. To modify the subject, go to the message content field to change the display message.
Attach current screen	If you select this option, the current alarm screen is attached in this email and sent to the recipients. The attachment is in .bmp format.
Content	<ul style="list-style-type: none"> <li>■ You can enter the email content as needed.</li> <li>■ This content supports the formatted strings "%d" and "%f", which must be used with monitoring addresses.</li> </ul>

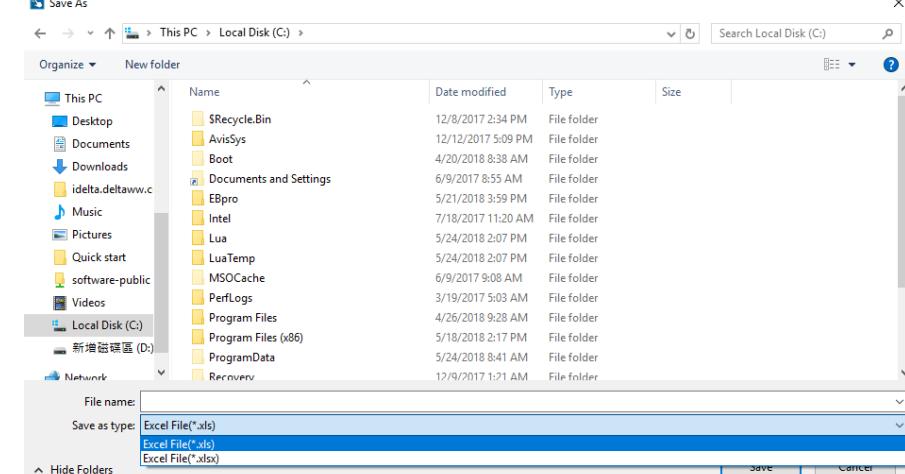
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Properties of Alarm Settings											
Alarm Message Text Properties											
Copy 	<ul style="list-style-type: none"> <li>■ Support single and multiple copy functions.</li> <li>■ Use the <b>Ctrl</b> key to select the alarm number to copy, and use the <b>Shift</b> key to select a range of alarm numbers to copy.</li> </ul>										
Paste 	The Paste function becomes available after you execute the Copy function. It supports single and multiple paste functions.										
Delete 	<p>After creating the alarm message, you can select the message to be deleted and press the Delete button to complete the deletion.</p> <p>Note: if you enter the message in the Message Content field and then move on to the next row, it means you have created a new alarm message. Next, if you delete this alarm message with the <b>Delete</b> or <b>Backspace</b> key on your keyboard instead of the Delete button, the HMI shows a blank alarm at the specified position after you exit Alarm Settings and download the screens to the HMI.</p> <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> <th>Frequency</th> <th>Recovery</th> </tr> </thead> <tbody> <tr> <td>0001</td> <td style="border: 2px dashed blue;"> </td> <td>12:09:25 06/15/ 1</td> <td></td> <td></td> </tr> </tbody> </table>	No	Message	Trigger	Frequency	Recovery	0001		12:09:25 06/15/ 1		
No	Message	Trigger	Frequency	Recovery							
0001		12:09:25 06/15/ 1									
Font	You can set the font for the displaying alarm message. 										
Size	<p>The size for the displaying alarm message.</p> <div style="border: 1px solid #ccc; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <span style="border: 1px solid #0070C0; padding: 2px 5px; background-color: #F0F0F0;">16</span> <span>18</span> <span>10</span> <span>12</span> <span>14</span> <span>16</span> <span>18</span> <span>20</span> <span>22</span> <span style="background-color: #0070C0; color: white; padding: 2px 5px;">24</span> <span>28</span> <span>32</span> <span>36</span> <span>40</span> <span>48</span> <span>64</span> <span>72</span> <span>96</span> <span>128</span> <span>160</span> <span>192</span> <span>224</span> <span>352</span> <span>512</span> </div>										

Properties of Alarm Settings												
Alarm Message Text Properties												
	<p>If you have set the zooming function, you can see the zooming effect on the title and text. The default is 100%.</p> 											
Resize	100%	<table border="1"> <thead> <tr> <th>Message</th> <th>Trigger</th> <th>No</th> </tr> </thead> <tbody> <tr> <td>#####</td> <td>hh:mm:ss mm/dd/yy</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Message	Trigger	No	#####	hh:mm:ss mm/dd/yy	1			
Message	Trigger	No										
#####	hh:mm:ss mm/dd/yy	1										
	150%	<table border="1"> <thead> <tr> <th>Message</th> <th>Trigger</th> <th>No</th> </tr> </thead> <tbody> <tr> <td>#####</td> <td>hh:mm:ss m...</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Message	Trigger	No	#####	hh:mm:ss m...	1			
Message	Trigger	No										
#####	hh:mm:ss m...	1										
Next 2,048 entries	<p>When you press this button, it shows Alarm No. 2049 - 4096.</p> 											
Previous 2,048 entries	<p>When you press this button, it shows Alarm No. 1 - 2048.</p> 											
Import	<p>You can press this button to import the alarm data. Supported file formats are .xls or .xlsx, .alm, and .ini.</p> 											

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16

Properties of Alarm Settings	
Alarm Message Text Properties	
<ul style="list-style-type: none"> <li>You can export the edited alarm messages. Supported file formats are .xls and .xlsx.</li> </ul> 	
<ul style="list-style-type: none"> <li>Apart from the alarm messages, the editable alarm parameters include the alarm mail and alarm properties, as shown in the following diagram.</li> </ul> 	
Enable optimized alarm reading 	Switch the addresses from continuous to non-continuous to enable this function. This function optimizes the speed of alarm reading for non-continuous addresses.

## 16.2 Alarm History Table

Different from the previous alarm recording method, the Alarm History Table adds alarm trigger time, alarm acknowledge time, and alarm recovery time so the alarm triggered and recovered times are displayed in the same row, making it easier for viewing.

No	Message	Frequency	Trigger	Ack	Recovery
0006	alarm 6	1	18:00:57 02/09/2017		18:01:02 02/09/2017
0007	alarm 7	1	18:00:57 02/09/2017		
0008	alarm 8	1	18:00:57 02/09/2017	18:01:16 02/09/2017	
0009	alarm 9	1	18:00:57 02/09/2017	18:01:18 02/09/2017	18:01:24 02/09/2017
0010	alarm 10	1	18:00:57 02/09/2017		

This element provides sorting and filtering functions for you to filter the information you want to see and sort them in ascending or descending order, enhancing the readability of data.

Refer to Table 16.1.1 Alarm Settings example for the Alarm History Table setting example.

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When you double-click the Alarm History Table, the property page is shown as follows.

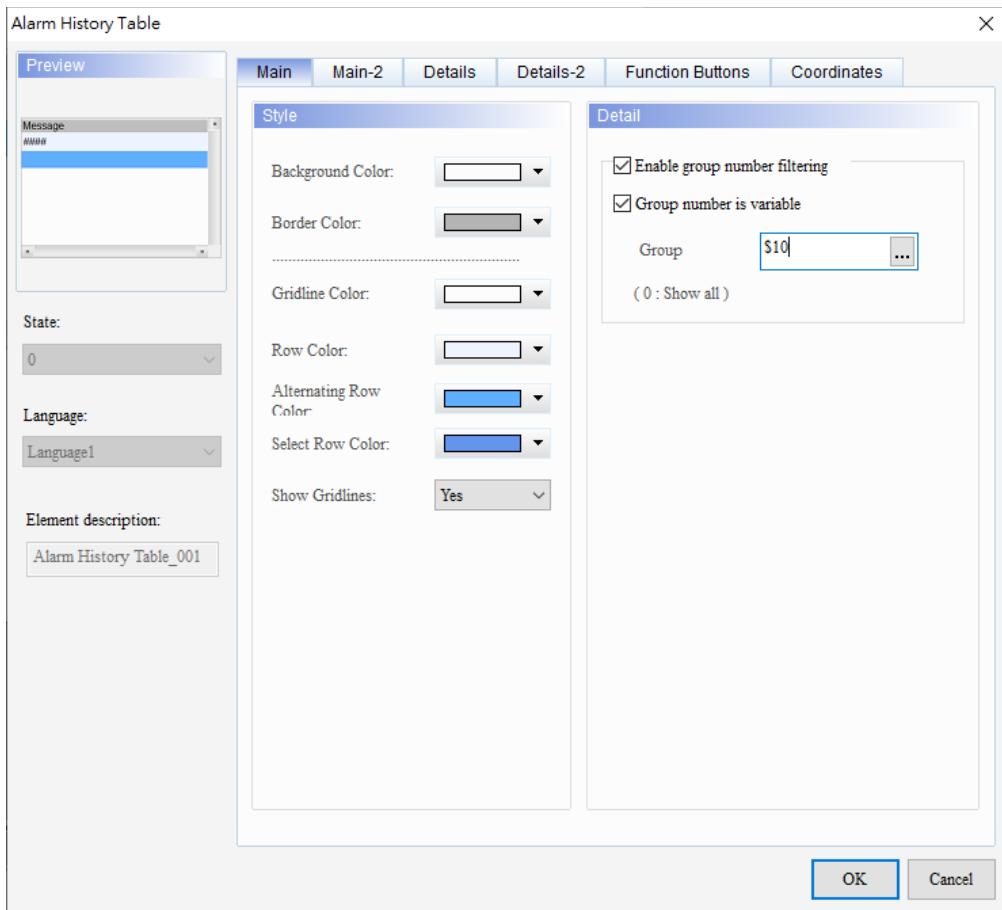


Figure 16.2.1 Properties of Alarm History Table

Table 16.2.1 Function page of Alarm History Table

Alarm History Table	
Function page	Description
Preview	The Alarm History Table elements do not support multiple state values and multi-language data display.
Main	Style: set the Background Color, Border Color, Gridline Color, Row Color, Alternating Row Color, Select Row Color, and Show Gridlines of the elements. Detail: select the <b>Enable group number filtering</b> check box.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Details	Set the Action Control Addr.; select the <b>Use header controls to sort</b> check box, set Sorting Control Addr. and Sorting Order Address; set Filter control address, Alarm counter display (addr.), Alarm category start addr., and Alarm category end addr.
Details-2	Set the displaying alarm columns, width, description, the order of the columns, and select the <b>Allow to change the field width</b> check box. Set the Title Text Alignment, Title Background, Title Text Color, and format / color of the date / time.
Function Buttons	Set Function Buttons: select the <b>Trigger alarm screen</b> and <b>Ack alarm</b> check boxes. Select the <b>Scroll up an interval</b> , <b>Scroll down an interval</b> , <b>Scroll up one page</b> , and <b>Scroll down one page</b> check boxes. Set the displaying texts and default width / height of the buttons.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

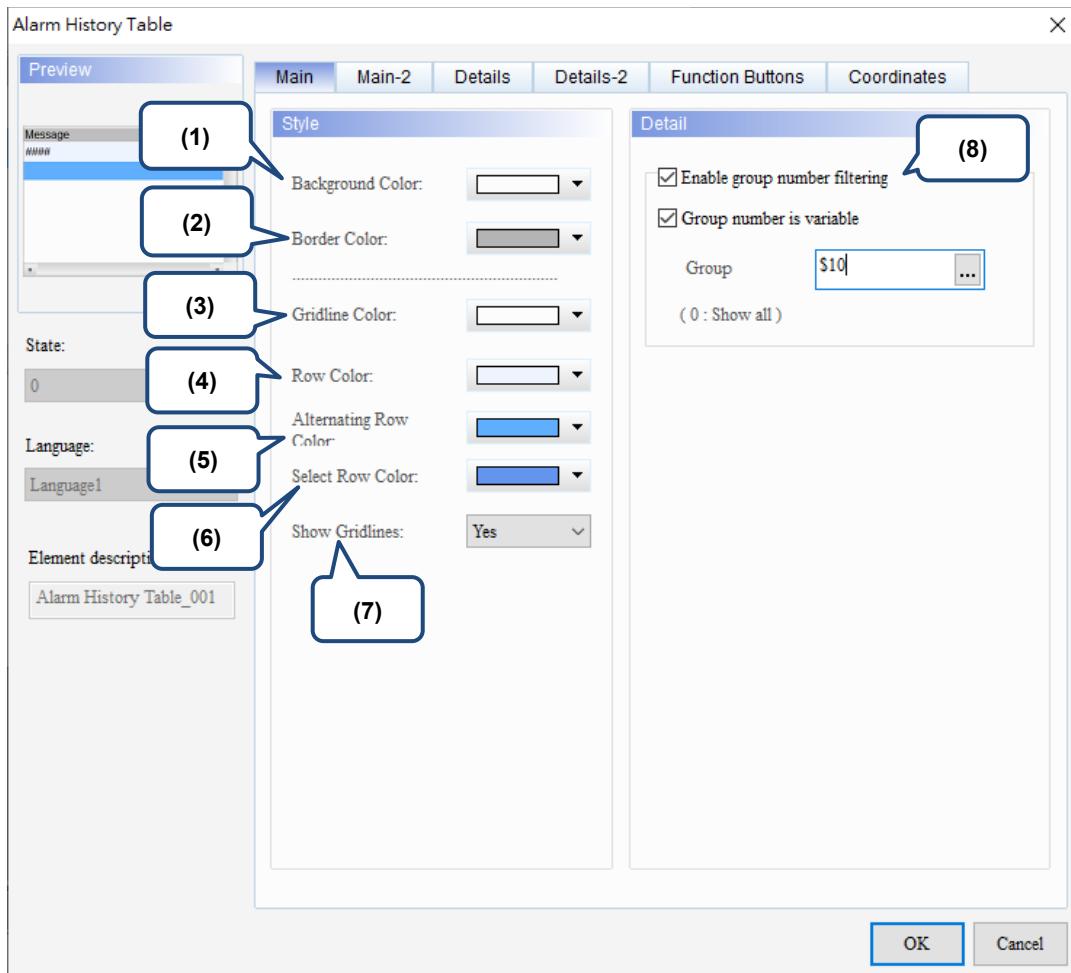
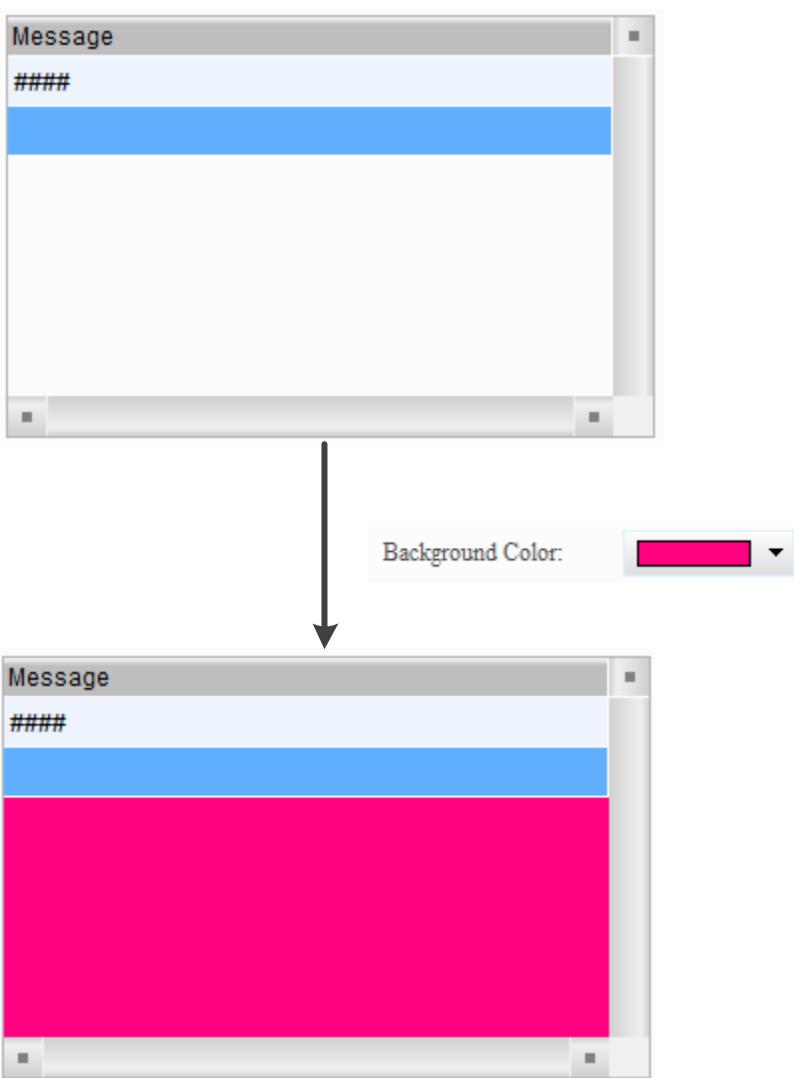
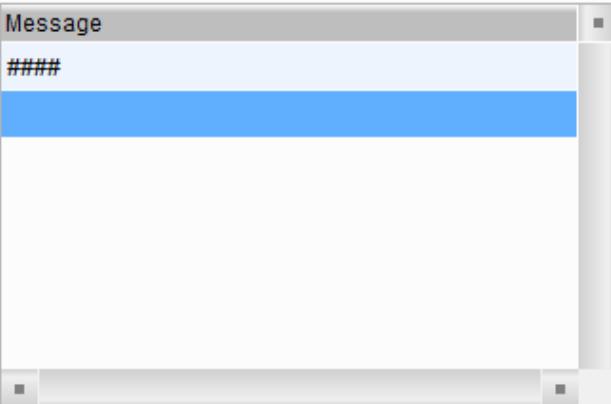
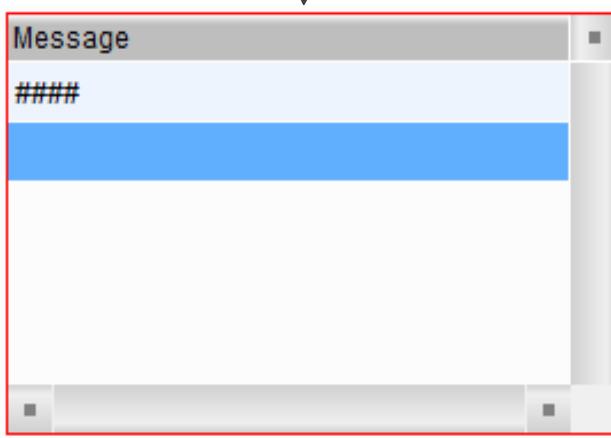


Figure 16.2.2 Main property page for the Alarm History Table element

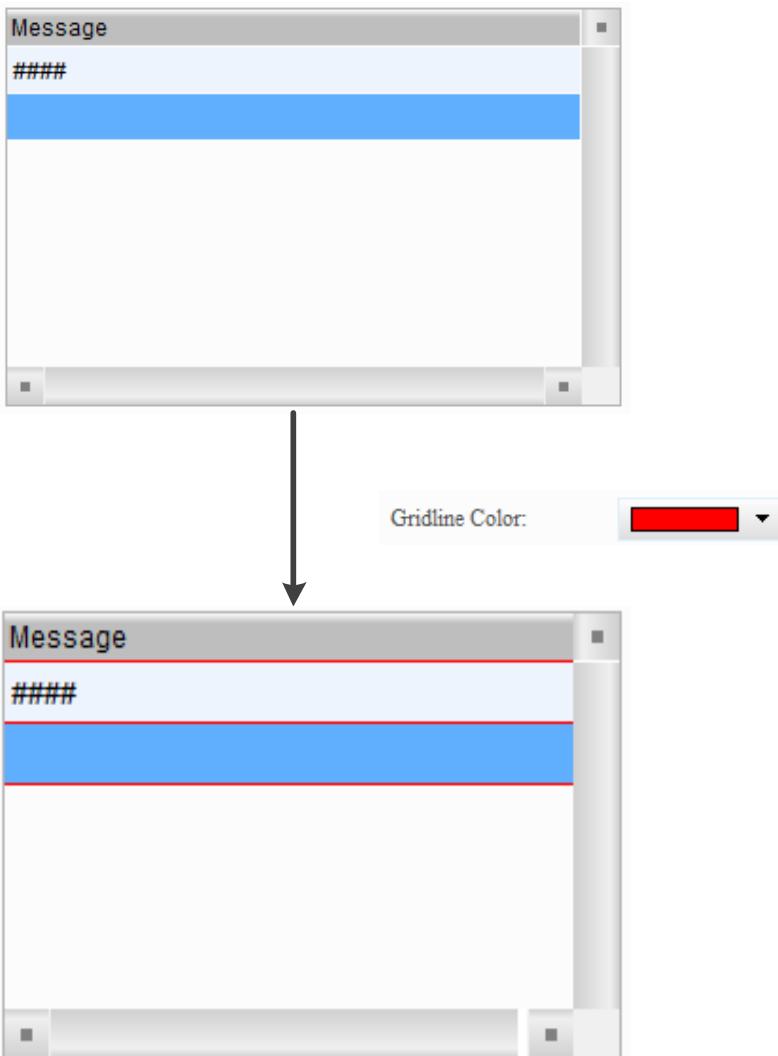
16

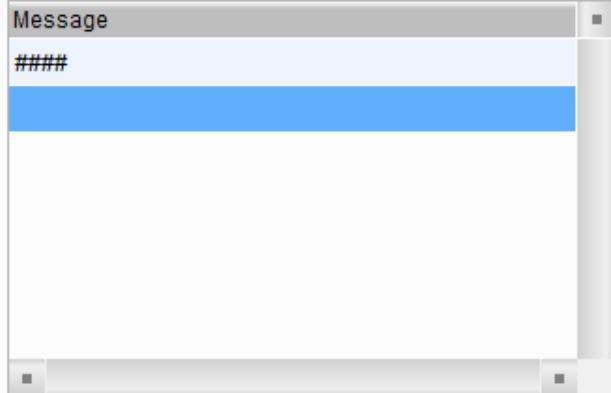
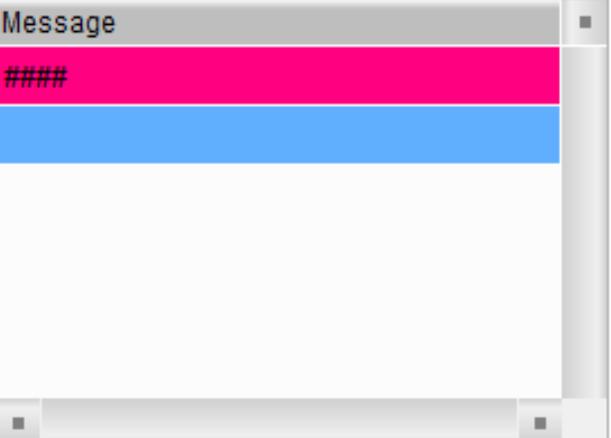
No.	Property	Function description
(1)	Background Color	<p>Set the Background Color of the element. The default is white.</p>  <p>Background Color:</p> 

No.	Property	Function description
(2)	Border Color	<p>Set the Border Color of the element. The default is gray.</p>  <p>Border Color: <input type="color" value="#FF0000"/> ▾</p> 

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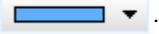
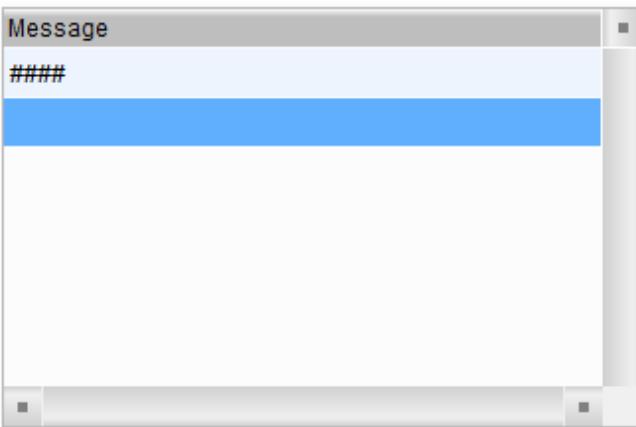
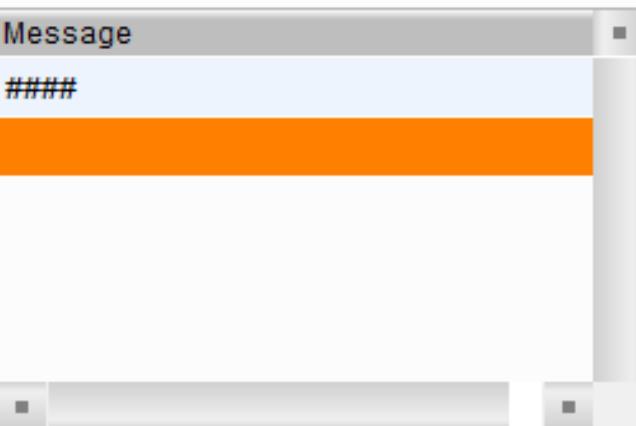
16

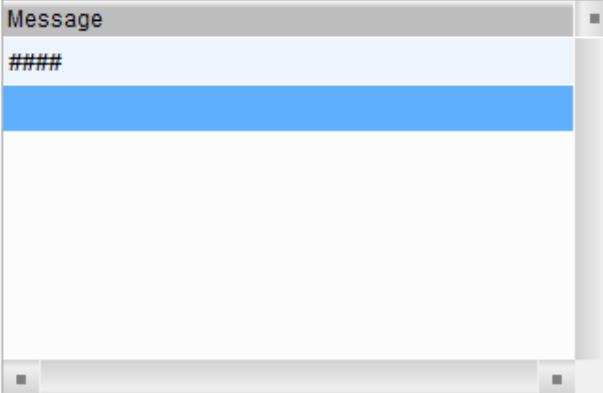
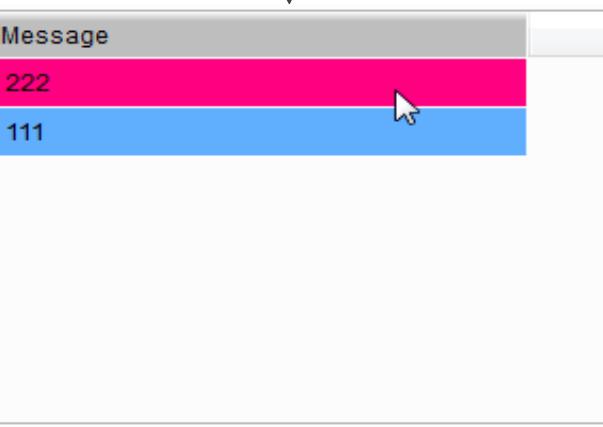
No.	Property	Function description
(3)	Gridline Color	<ul style="list-style-type: none"><li>■ The Gridline Color setting is valid only when you select <b>Yes</b> for Show Gridlines.</li><li>■ Set the Gridline Color of the element. The default is white.</li></ul> 

No.	Property	Function description
(4)	Row Color	<p>Set the color for each row of the alarm. The default is .</p> <p><b>Message</b></p>  <p>Row Color: </p> <p><b>Message</b></p> 

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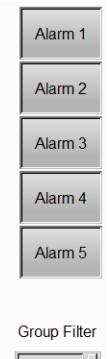
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No.	Property	Function description
(5)	Alternating Row Color	<p>Set the color for the alternating row of the alarm. The default is  .</p>  <p>↓</p> 

No.	Property	Function description
(6)	Select Row Color	<ul style="list-style-type: none"><li>■ The row color when you select an alarm history data.</li><li>■ Set the color of the selected row. The default is </li></ul>  <p>↓</p>  
(7)	Show Gridlines	<ul style="list-style-type: none"><li>■ The default is Yes.</li><li>■ When you select No, the Gridline Color setting is invalid.</li></ul>

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No.	Property	Function description																																																						
(8)	Enable group number filtering	<ul style="list-style-type: none"> <li>■ Select the <b>Enable group number filtering</b> check box to filter the alarms to be displayed. You can specify the group number to display the alarms in groups.</li> <li>■ The value of the group number can be a variable or constant.</li> <li>■ When the Group is 0, all alarms are displayed.</li> </ul> <p style="text-align: center;"><a href="#">Detail</a></p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <input checked="" type="checkbox"/> Enable group number filtering  <input checked="" type="checkbox"/> Group number is variable          Group <input type="text" value="\$10"/> <a href="#">...</a>          ( <a href="#">0</a> : Show all )       </div> <p>■ Display example:</p> <p>When the Group is 0:</p> <div style="display: flex; align-items: center;"> <table border="1" style="border-collapse: collapse; width: 60%;"> <thead> <tr> <th>No</th> <th>Group</th> <th>Message</th> <th>Trigger</th> <th>Frequency</th> <th>Recovery</th> </tr> </thead> <tbody> <tr><td>0001</td><td>1</td><td>alarm 1</td><td>14:23:18 06/15/</td><td>1</td><td></td></tr> <tr><td>0002</td><td>1</td><td>alarm 2</td><td>14:23:19 06/15/</td><td>1</td><td></td></tr> <tr><td>0003</td><td>2</td><td>alarm 3</td><td>14:23:19 06/15/</td><td>1</td><td></td></tr> <tr><td>0004</td><td>3</td><td>alarm 4</td><td>14:23:20 06/15/</td><td>1</td><td></td></tr> <tr><td>0005</td><td>5</td><td>alarm 5</td><td>14:23:20 06/15/</td><td>1</td><td></td></tr> </tbody> </table> <div style="flex-grow: 1; margin-left: 20px;">  </div> <p>When the Group is 1:</p> <div style="display: flex; align-items: center;"> <table border="1" style="border-collapse: collapse; width: 60%;"> <thead> <tr> <th>No</th> <th>Group</th> <th>Message</th> <th>Trigger</th> <th>Frequency</th> <th>Recovery</th> </tr> </thead> <tbody> <tr><td>0001</td><td>1</td><td>alarm 1</td><td>14:23:18 06/15/</td><td>1</td><td></td></tr> <tr><td>0002</td><td>1</td><td>alarm 2</td><td>14:23:19 06/15/</td><td>1</td><td></td></tr> </tbody> </table> <div style="flex-grow: 1; margin-left: 20px;">  </div> </div> </div>	No	Group	Message	Trigger	Frequency	Recovery	0001	1	alarm 1	14:23:18 06/15/	1		0002	1	alarm 2	14:23:19 06/15/	1		0003	2	alarm 3	14:23:19 06/15/	1		0004	3	alarm 4	14:23:20 06/15/	1		0005	5	alarm 5	14:23:20 06/15/	1		No	Group	Message	Trigger	Frequency	Recovery	0001	1	alarm 1	14:23:18 06/15/	1		0002	1	alarm 2	14:23:19 06/15/	1	
No	Group	Message	Trigger	Frequency	Recovery																																																			
0001	1	alarm 1	14:23:18 06/15/	1																																																				
0002	1	alarm 2	14:23:19 06/15/	1																																																				
0003	2	alarm 3	14:23:19 06/15/	1																																																				
0004	3	alarm 4	14:23:20 06/15/	1																																																				
0005	5	alarm 5	14:23:20 06/15/	1																																																				
No	Group	Message	Trigger	Frequency	Recovery																																																			
0001	1	alarm 1	14:23:18 06/15/	1																																																				
0002	1	alarm 2	14:23:19 06/15/	1																																																				

## ■ Main-2

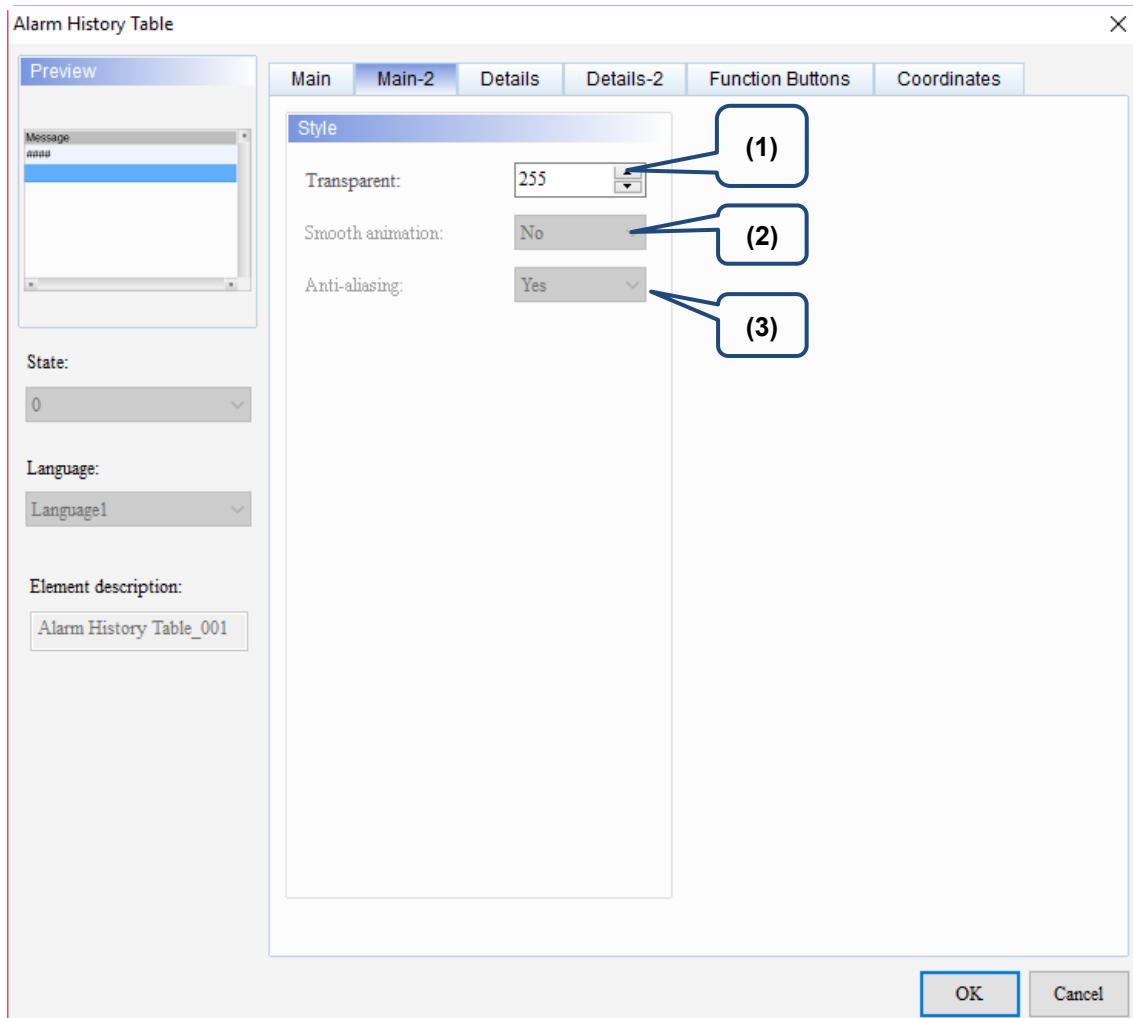


Figure 16.2.3 Main-2 property page for the Alarm History Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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■ Details

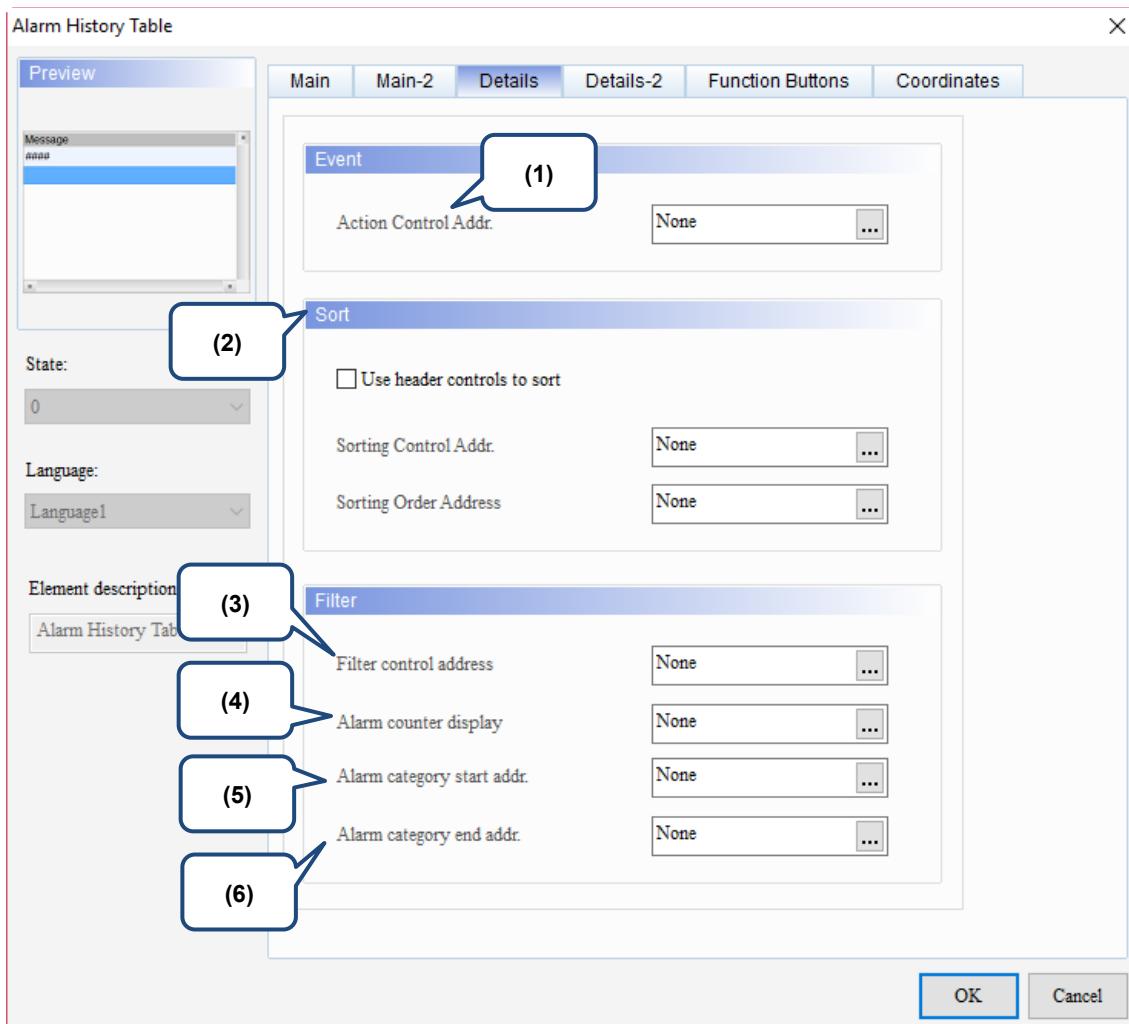


Figure 16.2.4 Details property page for the Alarm History Table element

No.	Property	Function description																																				
(1)	Action Control Addr.	<p>You can specify the alarms to change screens or acknowledge the alarms with Action Control Addr.</p> <table border="1"> <thead> <tr> <th>Value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>Default; no actions.</td></tr> <tr> <td>1</td><td>Acknowledge the selected alarms in the Alarm History Table.</td></tr> <tr> <td>2</td><td>If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.</td></tr> </tbody> </table>	Value	Description	0	Default; no actions.	1	Acknowledge the selected alarms in the Alarm History Table.	2	If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.																												
Value	Description																																					
0	Default; no actions.																																					
1	Acknowledge the selected alarms in the Alarm History Table.																																					
2	If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.																																					
(2)	Sort Control Addr.	<ul style="list-style-type: none"> <li>When you select the <b>Use header controls to sort</b> check box, you can press the Alarm History Table header to sort the alarms in ascending or descending order. Once you select this function, you cannot set Sorting Control Addr. and Sorting Order Address.</li> </ul> <table border="1"> <thead> <tr> <th>No</th><th>Message</th><th>Frequency</th><th>Trigger</th><th>Ack</th><th>Recovery</th></tr> </thead> <tbody> <tr> <td>0006</td><td>alarm 6</td><td>1</td><td>18:00:57 02/09/2017</td><td></td><td></td></tr> <tr> <td>0007</td><td>alarm 7</td><td>1</td><td>18:00:57 02/09/2017</td><td></td><td></td></tr> <tr> <td>0008</td><td>alarm 8</td><td>1</td><td>18:00:57 02/09/2017</td><td>18:01:16 02/09/2017</td><td></td></tr> <tr> <td>0009</td><td>alarm 9</td><td>1</td><td>18:00:57 02/09/2017</td><td>18:01:18 02/09/2017</td><td>18:01:24 02/09/2017</td></tr> <tr> <td>0010</td><td>alarm 10</td><td>1</td><td>18:00:57 02/09/2017</td><td></td><td></td></tr> </tbody> </table>	No	Message	Frequency	Trigger	Ack	Recovery	0006	alarm 6	1	18:00:57 02/09/2017			0007	alarm 7	1	18:00:57 02/09/2017			0008	alarm 8	1	18:00:57 02/09/2017	18:01:16 02/09/2017		0009	alarm 9	1	18:00:57 02/09/2017	18:01:18 02/09/2017	18:01:24 02/09/2017	0010	alarm 10	1	18:00:57 02/09/2017		
No	Message	Frequency	Trigger	Ack	Recovery																																	
0006	alarm 6	1	18:00:57 02/09/2017																																			
0007	alarm 7	1	18:00:57 02/09/2017																																			
0008	alarm 8	1	18:00:57 02/09/2017	18:01:16 02/09/2017																																		
0009	alarm 9	1	18:00:57 02/09/2017	18:01:18 02/09/2017	18:01:24 02/09/2017																																	
0010	alarm 10	1	18:00:57 02/09/2017																																			

No.	Property	Function description																						
(2)	Sort Control Addr.	<ul style="list-style-type: none"> <li>■ The Use header controls to sort function does not support the sorting of the Message column.</li> <li>■ You can specify the item for sorting with Sort Control Addr.</li> </ul> <table border="1"> <thead> <tr> <th>Value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>Default; no sorting.</td></tr> <tr> <td>1</td><td>Sort by Trigger Time.</td></tr> <tr> <td>2</td><td>Sort by Acknowledge Time.</td></tr> <tr> <td>3</td><td>Sort by Recovery Time.</td></tr> <tr> <td>4</td><td>Sort by the alarm count.</td></tr> <tr> <td>5</td><td>Sort by the alarm category.</td></tr> <tr> <td>6</td><td>Sort by the alarm No.</td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>■ The values of Sorting Order Address and Sorting Control Addr. determine the ascending or descending order of the items. For example, if you set Sorting Control Addr. to 1 and Sorting Order Address to 0, the trigger time is sorted in ascending order.</li> </ul> <table border="1"> <thead> <tr> <th>Value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>Sort in ascending order.</td></tr> <tr> <td>1</td><td>Sort in descending order.</td></tr> </tbody> </table>	Value	Description	0	Default; no sorting.	1	Sort by Trigger Time.	2	Sort by Acknowledge Time.	3	Sort by Recovery Time.	4	Sort by the alarm count.	5	Sort by the alarm category.	6	Sort by the alarm No.	Value	Description	0	Sort in ascending order.	1	Sort in descending order.
Value	Description																							
0	Default; no sorting.																							
1	Sort by Trigger Time.																							
2	Sort by Acknowledge Time.																							
3	Sort by Recovery Time.																							
4	Sort by the alarm count.																							
5	Sort by the alarm category.																							
6	Sort by the alarm No.																							
Value	Description																							
0	Sort in ascending order.																							
1	Sort in descending order.																							
(3)	Filter control address	<p>You can filter the specified items with Filter control address.</p> <table border="1"> <thead> <tr> <th>Value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>Default; display all triggered alarms.</td></tr> <tr> <td>1</td><td>Hide the alarms with both Recovery Time and Acknowledge Time.</td></tr> <tr> <td>2</td><td>Hide the alarms with Recovery Time.</td></tr> <tr> <td>3</td><td>Hide the alarms with Recovery Time or Acknowledge Time.</td></tr> <tr> <td>4</td><td>Hide the alarms with Acknowledge Time.</td></tr> <tr> <td>5</td><td>This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.</td></tr> <tr> <td>6</td><td>This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.</td></tr> </tbody> </table>	Value	Description	0	Default; display all triggered alarms.	1	Hide the alarms with both Recovery Time and Acknowledge Time.	2	Hide the alarms with Recovery Time.	3	Hide the alarms with Recovery Time or Acknowledge Time.	4	Hide the alarms with Acknowledge Time.	5	This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.	6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.						
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6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.																							
(4)	Alarm counter display	<ul style="list-style-type: none"> <li>■ This setting must be used with Filter control address.</li> <li>■ When Filter control address is set to 5, input the value of the alarm count.</li> </ul> <table border="1"> <thead> <tr> <th>Example</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Triggered alarms with alarm counts of 1, 2, and 3 times</td><td>If you input 1, the Alarm History Table displays the triggered alarms with 1 or more alarm counts; if you input 2, the Table displays the triggered alarms with 2 or more alarm counts; if you input 3, the Table displays the triggered alarms with 3 or more alarm counts.</td></tr> </tbody> </table>	Example	Description	Triggered alarms with alarm counts of 1, 2, and 3 times	If you input 1, the Alarm History Table displays the triggered alarms with 1 or more alarm counts; if you input 2, the Table displays the triggered alarms with 2 or more alarm counts; if you input 3, the Table displays the triggered alarms with 3 or more alarm counts.																		
Example	Description																							
Triggered alarms with alarm counts of 1, 2, and 3 times	If you input 1, the Alarm History Table displays the triggered alarms with 1 or more alarm counts; if you input 2, the Table displays the triggered alarms with 2 or more alarm counts; if you input 3, the Table displays the triggered alarms with 3 or more alarm counts.																							
(5)	Alarm category start addr.	<ul style="list-style-type: none"> <li>■ This setting must be used with Filter control address.</li> <li>■ When Filter control address is set to 6, input the alarm category number.</li> </ul> <table border="1"> <thead> <tr> <th>Example</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Alarms with alarm category numbers 1 and 5</td><td>When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms. When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</td></tr> </tbody> </table>	Example	Description	Alarms with alarm category numbers 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms. When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.																		
Example	Description																							
Alarms with alarm category numbers 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms. When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.																							
(6)	Alarm category end addr.																							

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## ■ Details-2

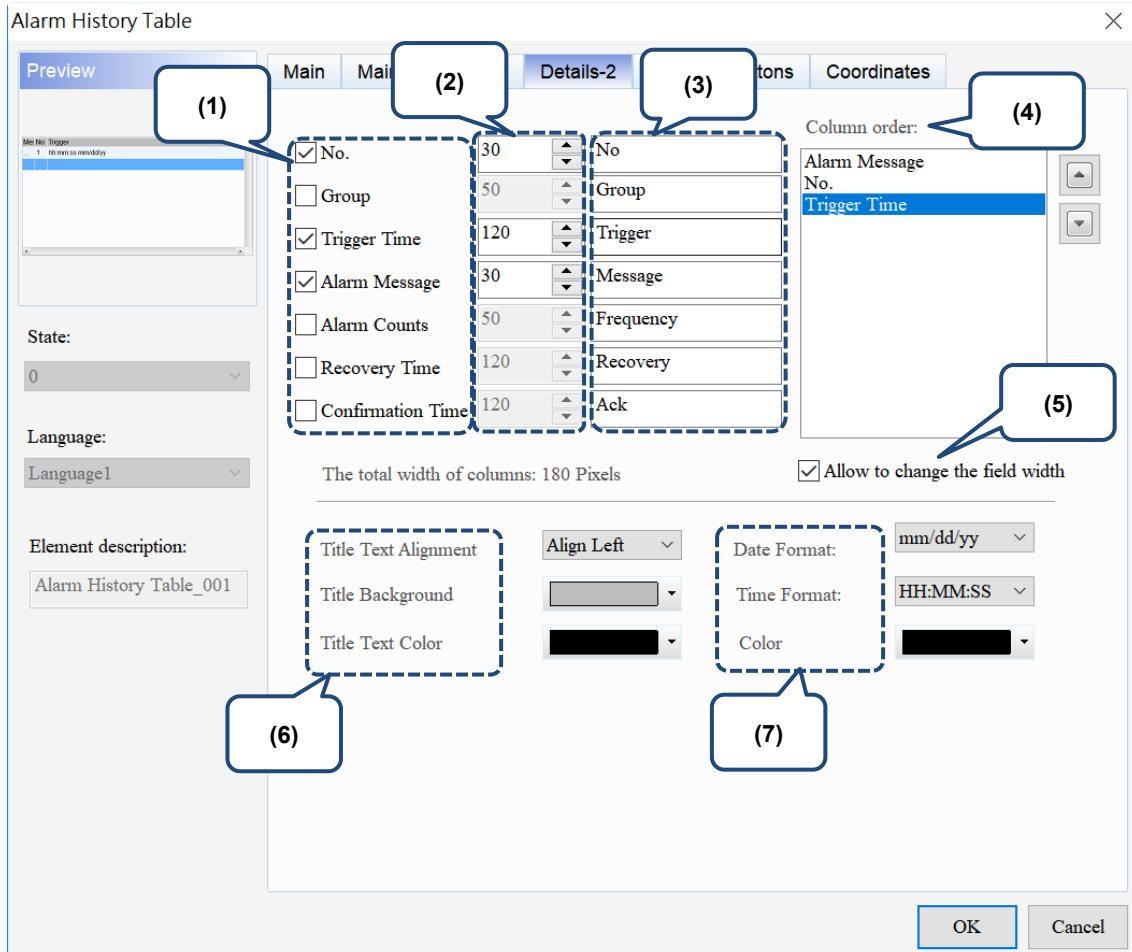


Figure 16.2.5 Details-2 property page for the Alarm History Table element

No.	Property	Function description
(1)	Column display	Select the columns you want to display in the element.
(2)	Column Width	You can adjust the width for each column.
(3)	Column title	You can define the titles for each column.
(4)	Column order	After selecting the columns you want to display, you can use  and  to adjust the column displaying order.
(5)	Allow to change the field width	After selecting this check box, you can drag to adjust the displaying field width on the HMI.

No.	Property	Function description		
(6)	Title Text Alignment	Set the column title to align left, center, or right.		
		Align Left		
		Center		
	Title Background	Align Right		
		Default		
		After		
	Title Text Color	Default		
		After		
(7)	Date Format	Select the display format for the date from the following options.		
		Date Format:		
	Time Format	Time Format:		
		Color		
	Color	Select the display format for the time from the following options.		
		Time Format:		
		Color		

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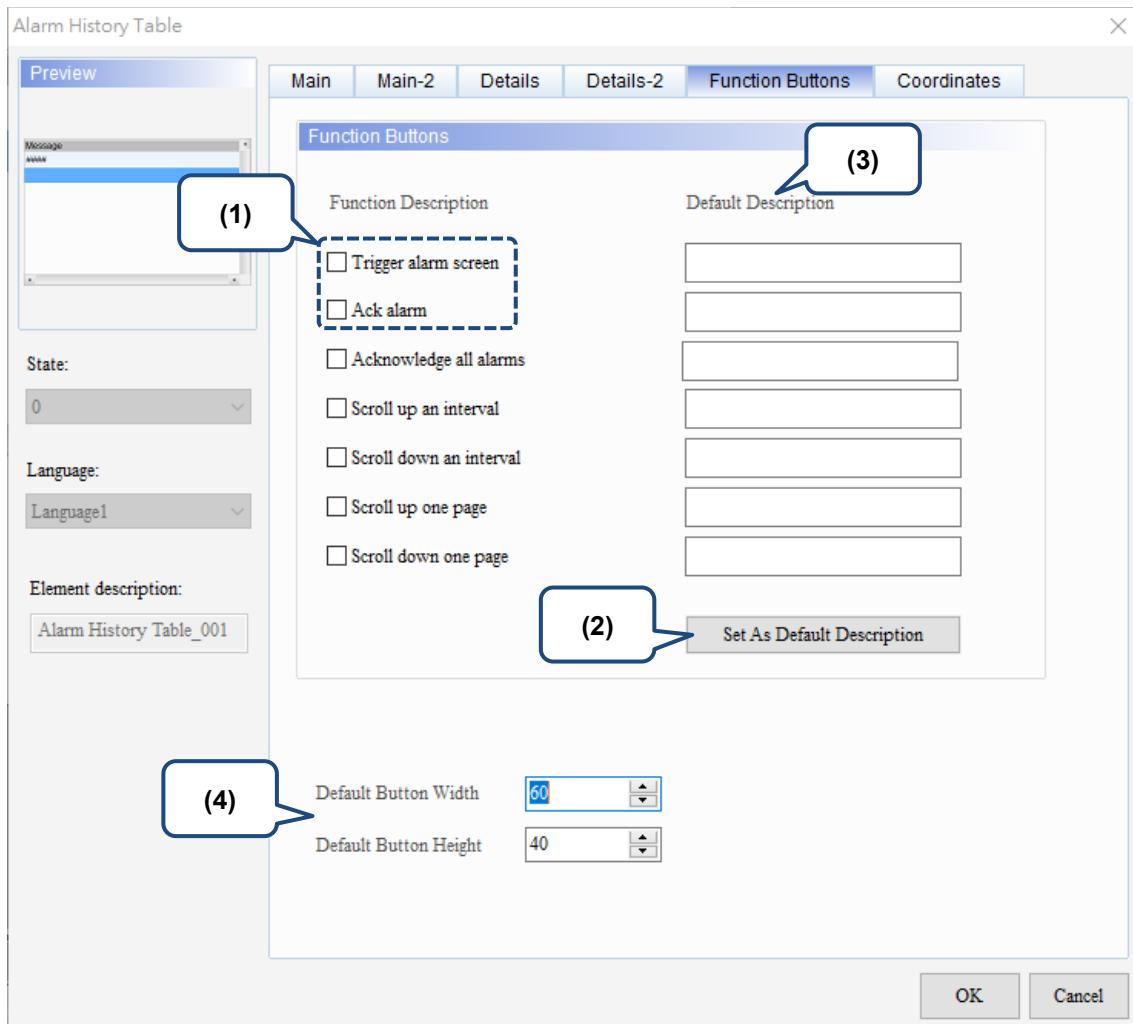
**■ Function Buttons**

Figure 16.2.6 Function Buttons property page for the Alarm History Table element

No.	Property	Function description																						
(1)	Function Buttons	<ul style="list-style-type: none"> <li>■ Two button options are provided for the Action Control function: Trigger alarm screen and Ack alarm.</li> <li>■ By triggering the Function Buttons, it is easier to edit the screen. You can use the functions provided by Action Control Addr. without setting the address and value.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Value</th><th style="text-align: center;">Function button</th><th style="text-align: center;">Description</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td><td colspan="2">Default; no actions.</td></tr> <tr> <td style="text-align: center;">1</td><td style="text-align: center;">Ack alarm</td><td>Acknowledge the selected alarms in the Alarm History Table.</td></tr> <tr> <td style="text-align: center;">2</td><td style="text-align: center;">Trigger alarm screen</td><td>If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.</td></tr> </tbody> </table> <p>Description for other function buttons are as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center;">Scroll up an interval</td><td style="text-align: center;">Scroll up an interval.</td></tr> <tr> <td style="text-align: center;">Scroll down an interval</td><td style="text-align: center;">Scroll down an interval.</td></tr> <tr> <td style="text-align: center;">Scroll up one page</td><td style="text-align: center;">Scroll up one page.</td></tr> <tr> <td style="text-align: center;">Scroll down one page</td><td style="text-align: center;">Scroll down one page.</td></tr> </tbody> </table>			Value	Function button	Description	0	Default; no actions.		1	Ack alarm	Acknowledge the selected alarms in the Alarm History Table.	2	Trigger alarm screen	If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.	Scroll up an interval	Scroll up an interval.	Scroll down an interval	Scroll down an interval.	Scroll up one page	Scroll up one page.	Scroll down one page	Scroll down one page.
Value	Function button	Description																						
0	Default; no actions.																							
1	Ack alarm	Acknowledge the selected alarms in the Alarm History Table.																						
2	Trigger alarm screen	If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.																						
Scroll up an interval	Scroll up an interval.																							
Scroll down an interval	Scroll down an interval.																							
Scroll up one page	Scroll up one page.																							
Scroll down one page	Scroll down one page.																							
(2)	Set As Default Description	Press this button to insert the default strings to the Default Description fields.																						
(3)	Default Description	Press <b>Set As Default Description</b> to insert the default strings to the fields. You can also enter user-defined strings.																						
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.																						

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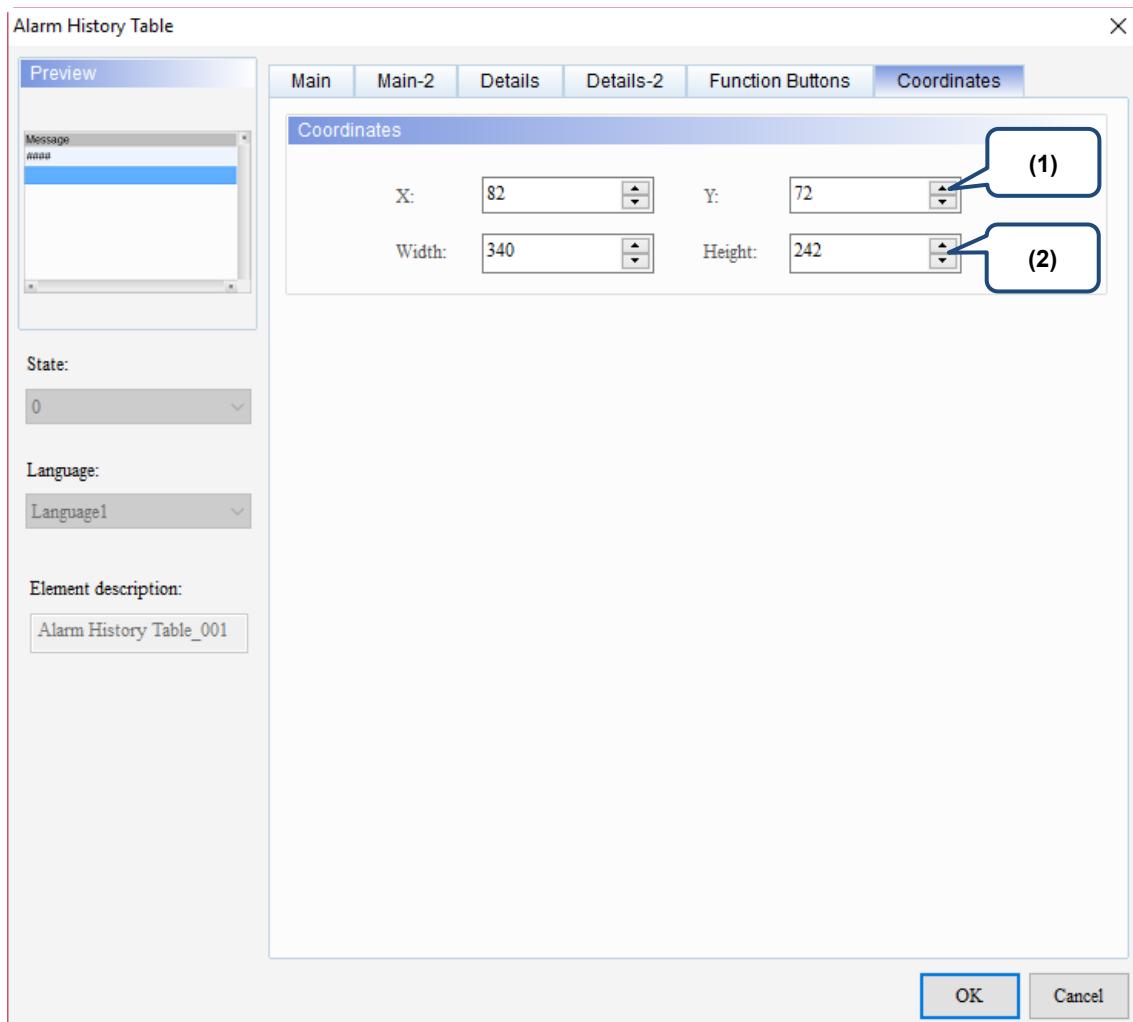
**■ Coordinates**

Figure 16.2.7 Coordinates property page for the Alarm History Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 16.3 Active Alarm List

The Active Alarm List element displays the information of the current alarms. Refer to Table 16.3.1 for the Active Alarm List example.

Table 16.3.1 Active Alarm List example

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**Active Alarm List**

This example uses the alarm parameters in Table 16.1.1 Alarm Settings example.

The screenshot shows the DOPSoft User Manual interface with the following details:

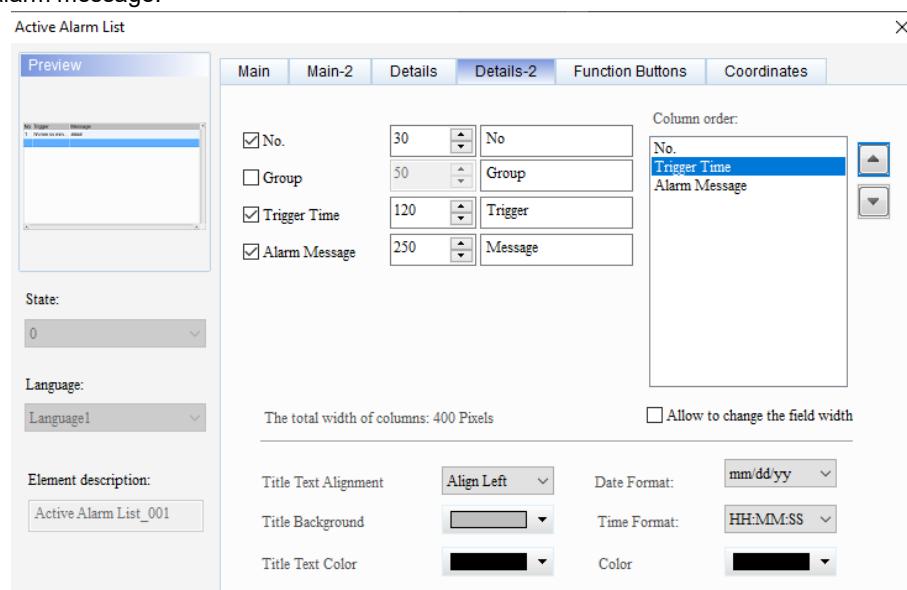
- Top Bar:** Screen\_1, Alarm, Font size 16, Arial, 100% zoom.
- Toolbars:** Standard toolbar, Properties toolbar.
- Left Panel:** Configuration tree for "Active Alarm List" settings, including Address, Detail, Scan Time, Max Records, Non-volatile Data Storage, Export CSV File, Show alarm number, Exit Screensaver when alarm occurs, Time to enter screen saver again, Display alarm screen, Alarm Moving Sign, and Action control.
- Table View:** A table listing 10 alarms with columns: No., Message Content, Category, Type, Address, Trigger Condition, Monitor Address, Text Color, and Alarm Screen. The first alarm is selected.
- Action Control Buttons:** Trigger alarm screen, Ack alarm.
- Sorting Control:** Buttons for sorting by Message, Frequency, No., Trigger, Recovery, and Category.
- Filtering Control:** Buttons for filtering by Counter, Category start, and Category end.
- Message Log:** A table for triggering messages with columns: Message, Frequency, No., Trigger, Recovery, and a preview area.
- Bit trigger:** Buttons for Alarm 1, Alarm 2, Alarm 3, Alarm 4, and Alarm 5.
- Word control:** Logic conditions for monitoring addresses (1234) using operators =, <, ≤, ≥, and >.
- Monitor address:** Buttons for monitoring addresses (1234).

# 16

Create Active Alarm List element

Active Alarm List		
Step 1: create an Active Alarm List element.		
No	Trigger	Message
1	hh:mm:ss mm/dd/yy	#####

Step 2: select the **No.** and **Trigger Time** check boxes. **Alarm Message** is selected by default. Then, the Active Alarm List will display the alarm number, alarm trigger time, and alarm message.



After creating the Active Alarm List element, compile and download it to the HMI. When the trigger conditions are met for Alarms 6 - 10, the Active Alarm List displays the current alarm time and date, alarm No., and alarm message. When the alarms are cleared, no items are displayed on the Active Alarm List.

Execution results

Alarm on	No	Trigger	Message
	0006	17:36:08 03/06/2017	alarm 6
	0007	17:36:08 03/06/2017	alarm 7
	0008	17:36:08 03/06/2017	alarm 8
	0009	17:36:08 03/06/2017	alarm 9
	0010	17:36:08 03/06/2017	alarm 10

Alarm off	No	Trigger	Message

When you double-click the Active Alarm List, the property page is shown as follows.

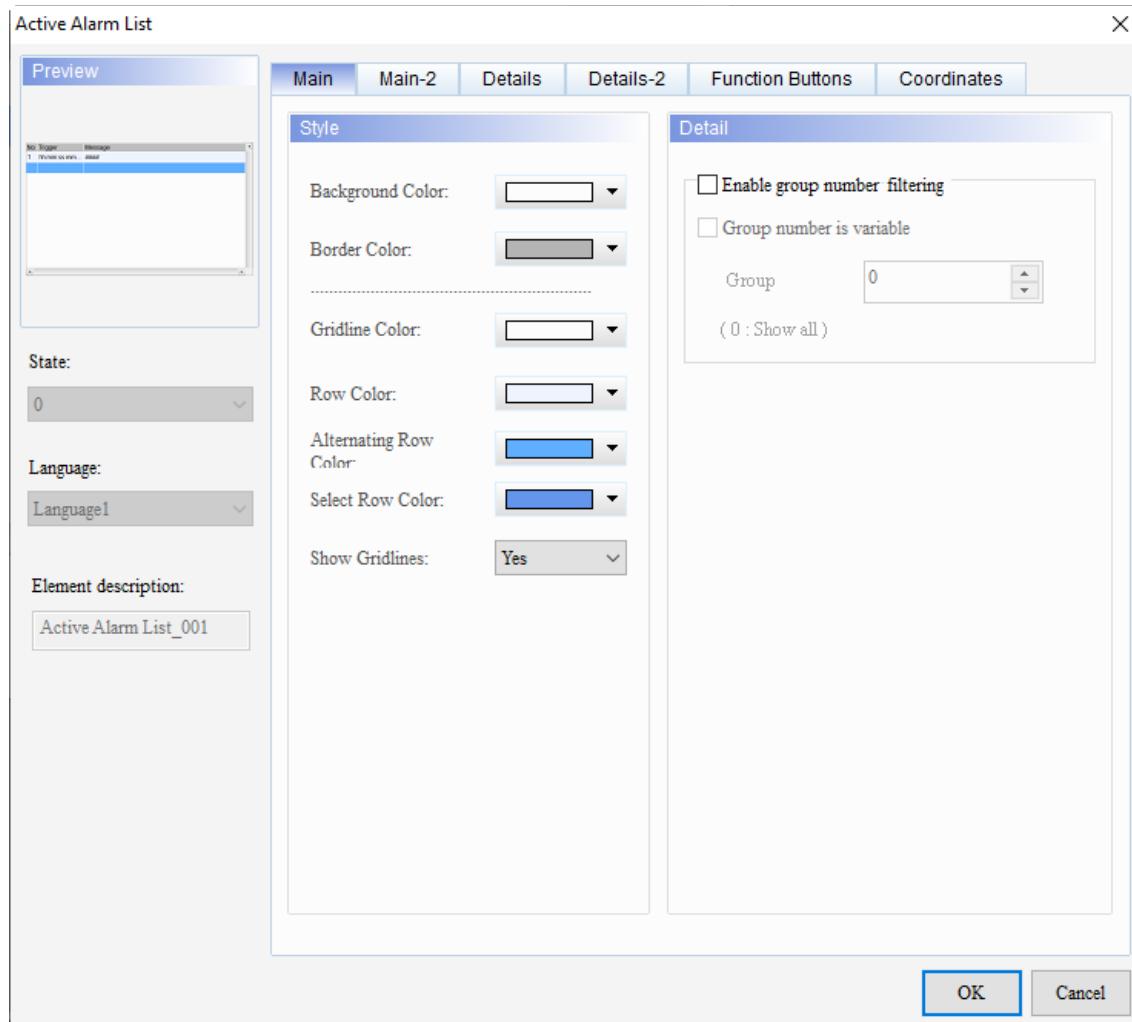


Figure 16.3.1 Properties of Active Alarm List

Table 16.3.2 Function page of Active Alarm List

Active Alarm List	
Function page	Description
Preview	The Active Alarm List elements do not support multiple state values and multi-language data display.
Main	Style: set the Background Color, Border Color, Gridline Color, Row Color, Alternating Row Color, Select Row Color, and Show Gridlines. Detail: select the <b>Enable group number filtering</b> check box.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Details	Set the Filter control address, Alarm category start addr., and Alarm category end addr. Select the <b>Use header controls to sort</b> check box and set the Default sort field.
Details-2	Set the displaying alarm columns, width, description, the order of the columns, and select the <b>Allow to change the field width</b> check box. Set the Title Text Alignment, Title Background, Title Text Color, and format / color of the date / time.
Function Buttons	Select the <b>Scroll up an interval</b> , <b>Scroll down an interval</b> , <b>Scroll up one page</b> , and <b>Scroll down one page</b> check boxes. Set the displaying texts and default width / height of the buttons.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

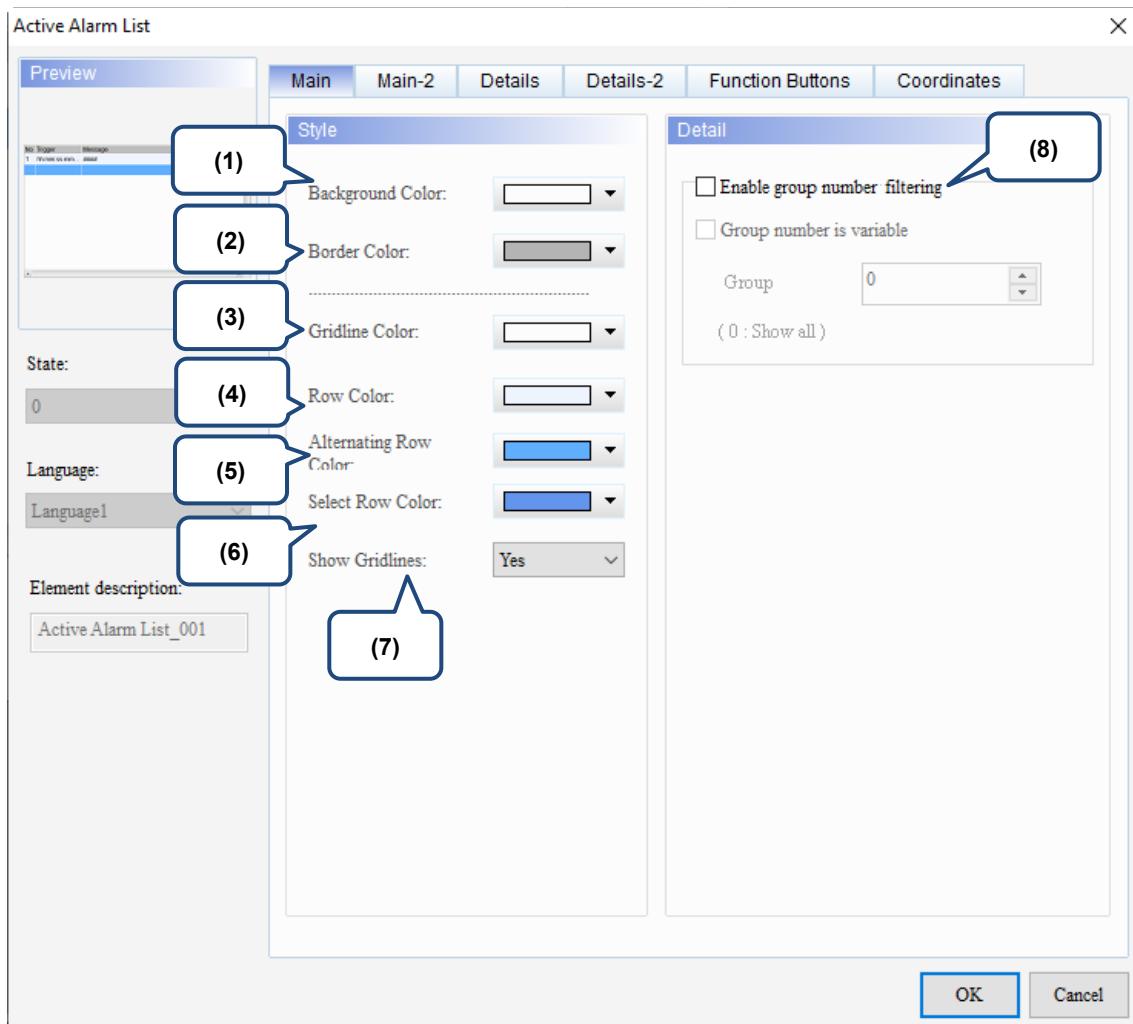
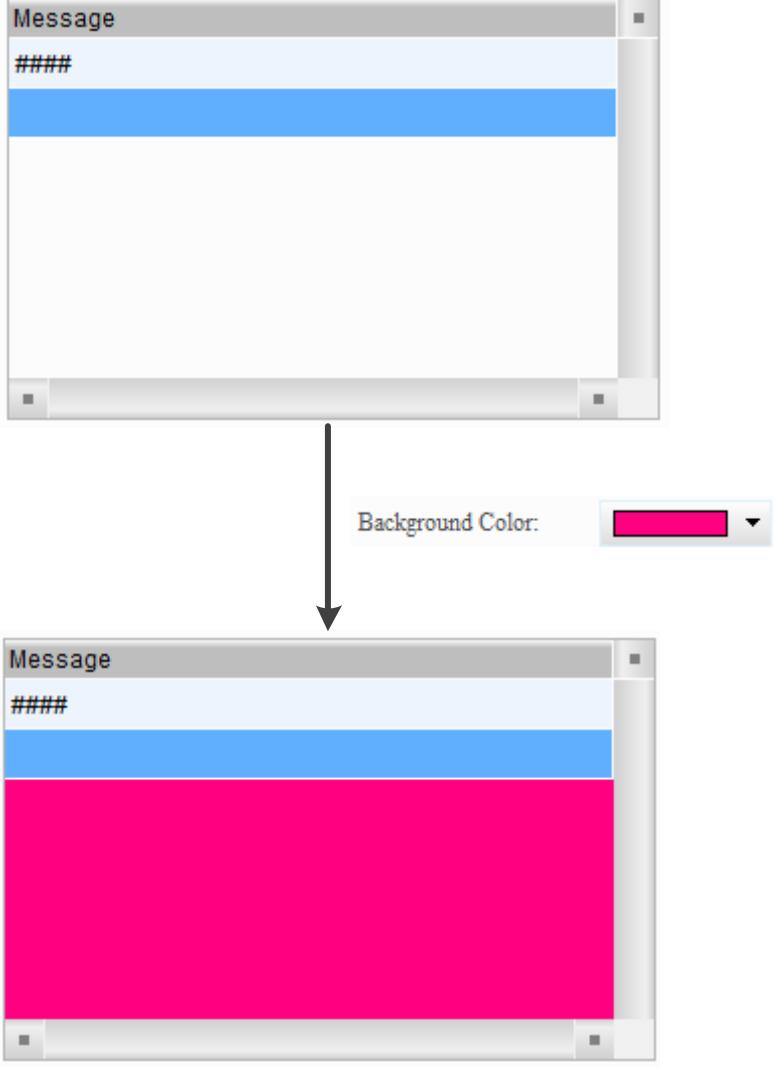
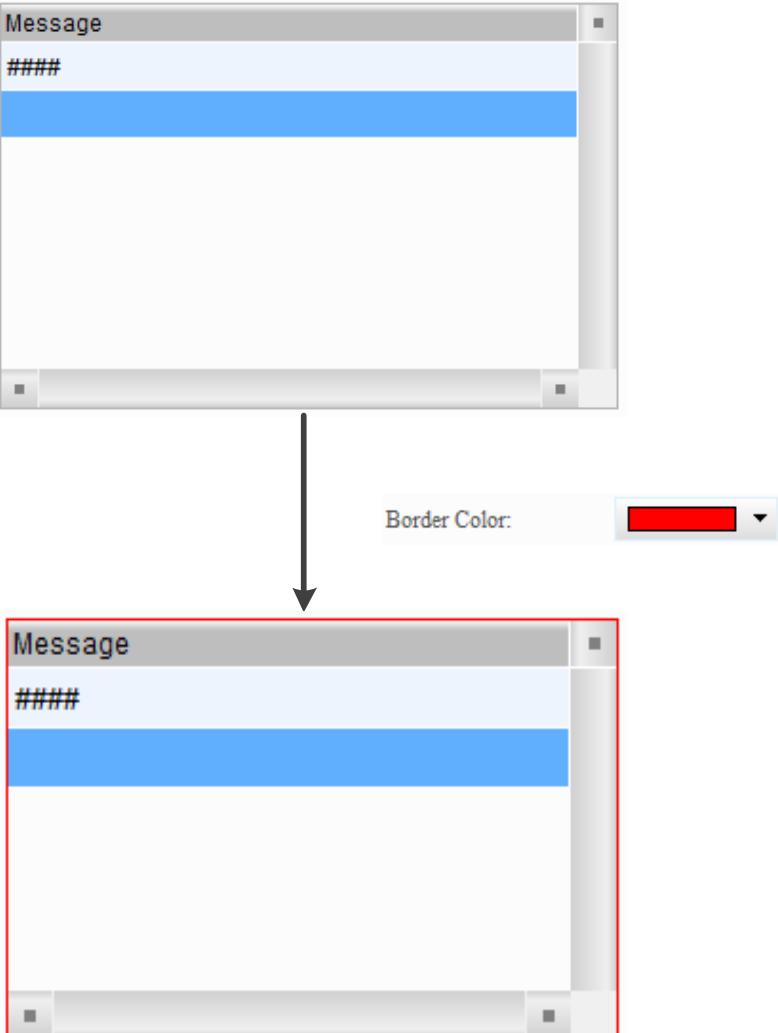
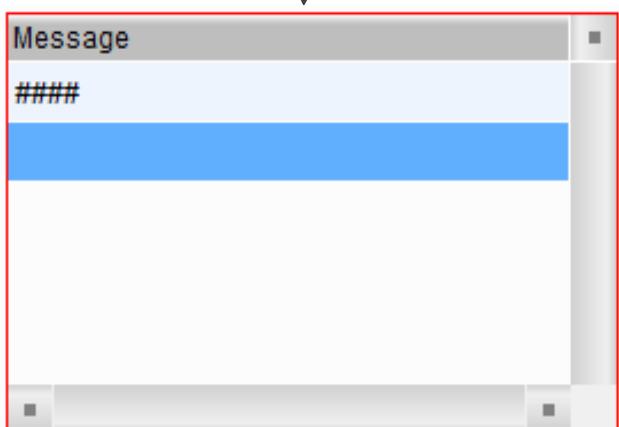


Figure 16.3.2 Main property page for the Active Alarm List element

No.	Property	Function description
(1)	Background Color	<p>Set the Background Color of the element. The default is white.</p>  <p>Message</p> <p>#####</p> <p>Background Color: </p> <p>Message</p> <p>#####</p> <p>Background Color: </p>

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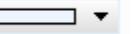
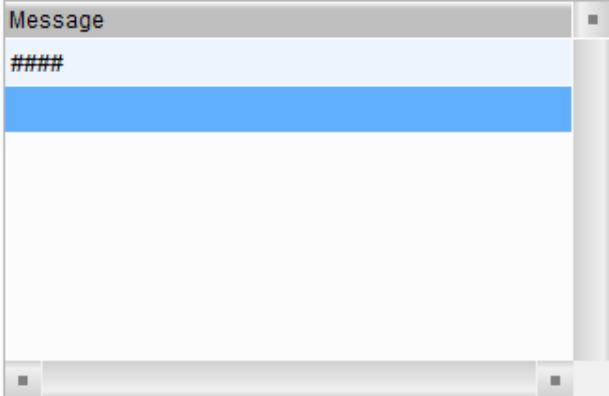
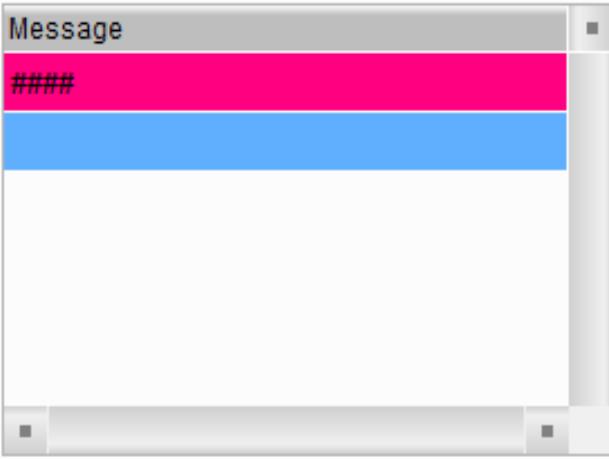
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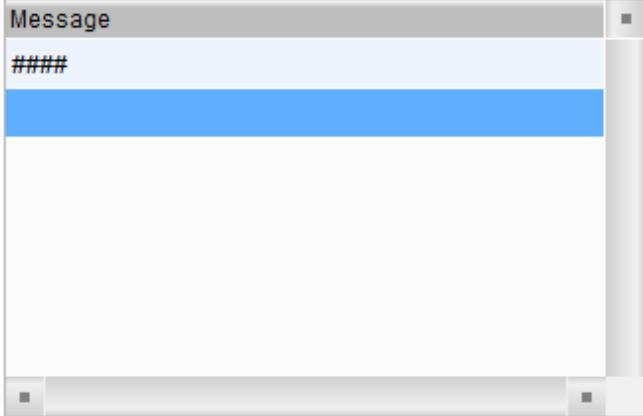
No.	Property	Function description
(2)	Border Color	<p>Set the Border Color of the element. The default is gray.</p>  <p>Border Color:</p> 

No.	Property	Function description
(3)	Gridline Color	<ul style="list-style-type: none"><li>■ The Gridline Color setting is valid only when you select <b>Yes</b> for Show Gridlines.</li><li>■ Set the Gridline Color of the element. The default is white.</li></ul> 

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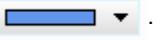
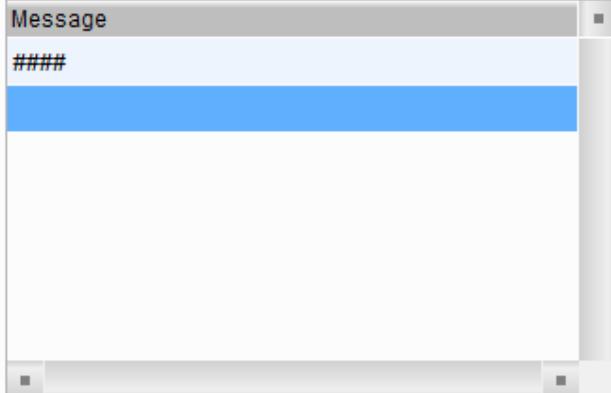
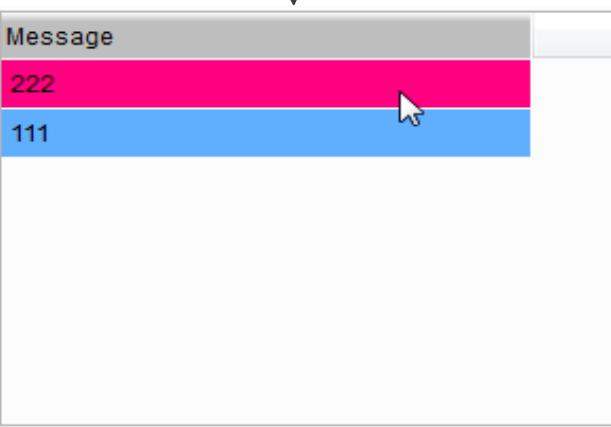
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No.	Property	Function description
(4)	Row Color	<p>Set the color for each row of the alarm. The default is </p> <p></p> <p>↓</p> <p>Row Color: </p> <p></p>

No.	Property	Function description
(5)	Alternating Row Color	<p>Set the color for the alternating row of the alarm. The default is  .</p>  <p>↓</p> 

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No.	Property	Function description
(6)	Selected Row Color	<ul style="list-style-type: none"><li>■ The row color when you select an alarm history data.</li><li>■ Set the color of the selected row. The default is </li></ul>  <p>Select Row Color: </p> 
(7)	Show Gridlines	<ul style="list-style-type: none"><li>■ The default is Yes.</li><li>■ When you select No, the Gridline Color setting is invalid.</li></ul>

No.	Property	Function description																																																						
(8)	Enable group number filtering	<ul style="list-style-type: none"> <li>Select the <b>Enable group number filtering</b> check box to filter the alarms to be displayed. You can specify the group number to display the alarms in groups.</li> <li>The value of the group number can be a variable or constant.</li> <li>When the Group is 0, all alarms are displayed.</li> </ul> <p style="text-align: center;"><a href="#">Detail</a></p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <input checked="" type="checkbox"/> Enable group number filtering  <input checked="" type="checkbox"/> Group number is variable          Group <input type="text" value="\$10"/> <a href="#">...</a>          ( <a href="#">0 : Show all</a> )       </div> <p>■ Display example:</p> <p>When the Group is 0:</p> <div style="display: flex; align-items: center;"> <table border="1" style="border-collapse: collapse; width: 60%;"> <thead> <tr> <th>No</th> <th>Group</th> <th>Message</th> <th>Trigger</th> <th>Frequency</th> <th>Recovery</th> </tr> </thead> <tbody> <tr><td>0001</td><td>1</td><td>alarm 1</td><td>14:23:18 06/15/</td><td>1</td><td></td></tr> <tr><td>0002</td><td>1</td><td>alarm 2</td><td>14:23:19 06/15/</td><td>1</td><td></td></tr> <tr><td>0003</td><td>2</td><td>alarm 3</td><td>14:23:19 06/15/</td><td>1</td><td></td></tr> <tr><td>0004</td><td>3</td><td>alarm 4</td><td>14:23:20 06/15/</td><td>1</td><td></td></tr> <tr><td>0005</td><td>5</td><td>alarm 5</td><td>14:23:20 06/15/</td><td>1</td><td></td></tr> </tbody> </table> <div style="flex-grow: 1; margin-left: 10px;">  <p>Group Filter 0</p> </div> <p>When the Group is 1:</p> <div style="display: flex; align-items: center;"> <table border="1" style="border-collapse: collapse; width: 60%;"> <thead> <tr> <th>No</th> <th>Group</th> <th>Message</th> <th>Trigger</th> <th>Frequency</th> <th>Recovery</th> </tr> </thead> <tbody> <tr><td>0001</td><td>1</td><td>alarm 1</td><td>14:23:18 06/15/</td><td>1</td><td></td></tr> <tr><td>0002</td><td>1</td><td>alarm 2</td><td>14:23:19 06/15/</td><td>1</td><td></td></tr> </tbody> </table> <div style="flex-grow: 1; margin-left: 10px;">  <p>Group Filter 1</p> </div> </div> </div>	No	Group	Message	Trigger	Frequency	Recovery	0001	1	alarm 1	14:23:18 06/15/	1		0002	1	alarm 2	14:23:19 06/15/	1		0003	2	alarm 3	14:23:19 06/15/	1		0004	3	alarm 4	14:23:20 06/15/	1		0005	5	alarm 5	14:23:20 06/15/	1		No	Group	Message	Trigger	Frequency	Recovery	0001	1	alarm 1	14:23:18 06/15/	1		0002	1	alarm 2	14:23:19 06/15/	1	
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0002	1	alarm 2	14:23:19 06/15/	1																																																				

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## ■ Main-2

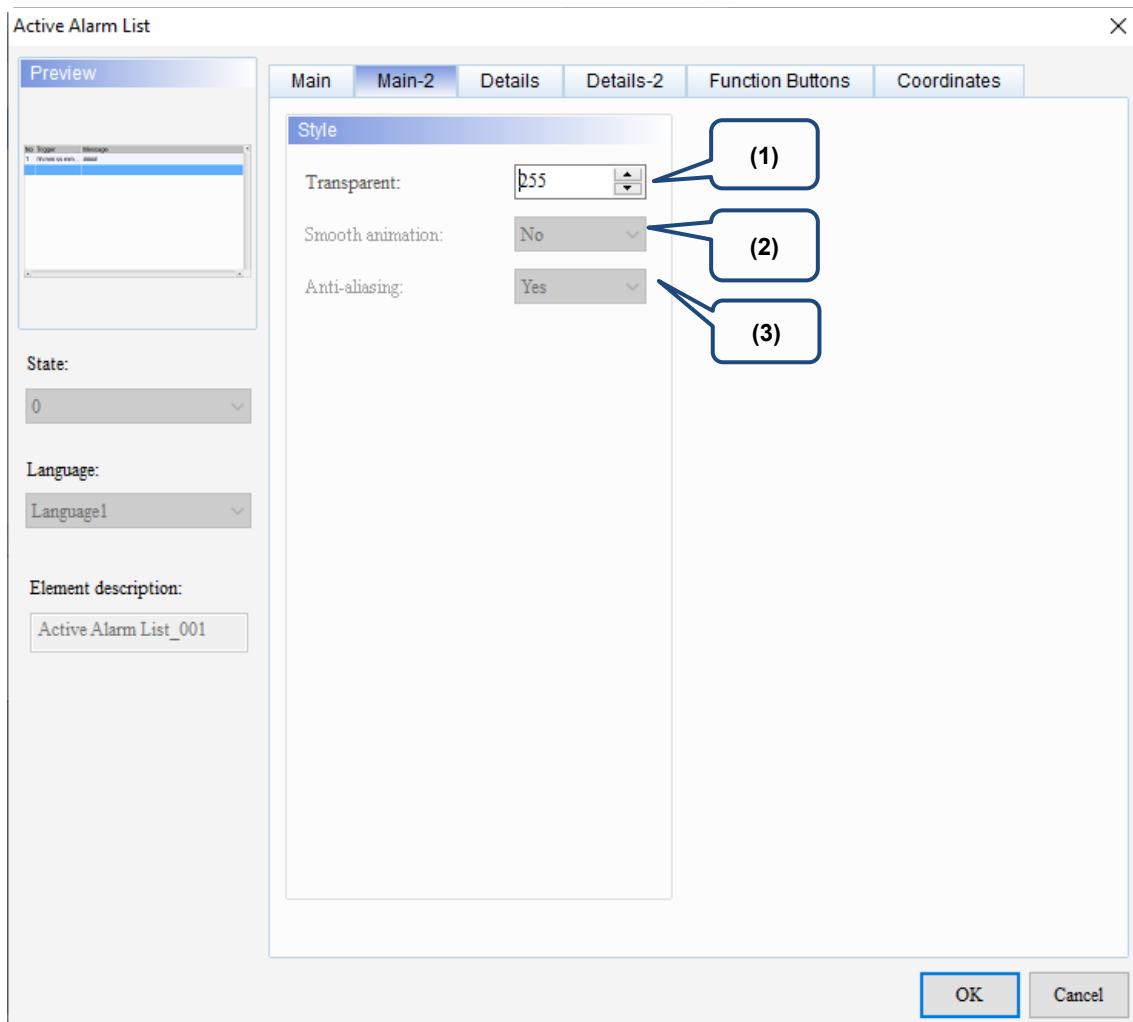


Figure 16.3.3 Main-2 property page for the Active Alarm List element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Details

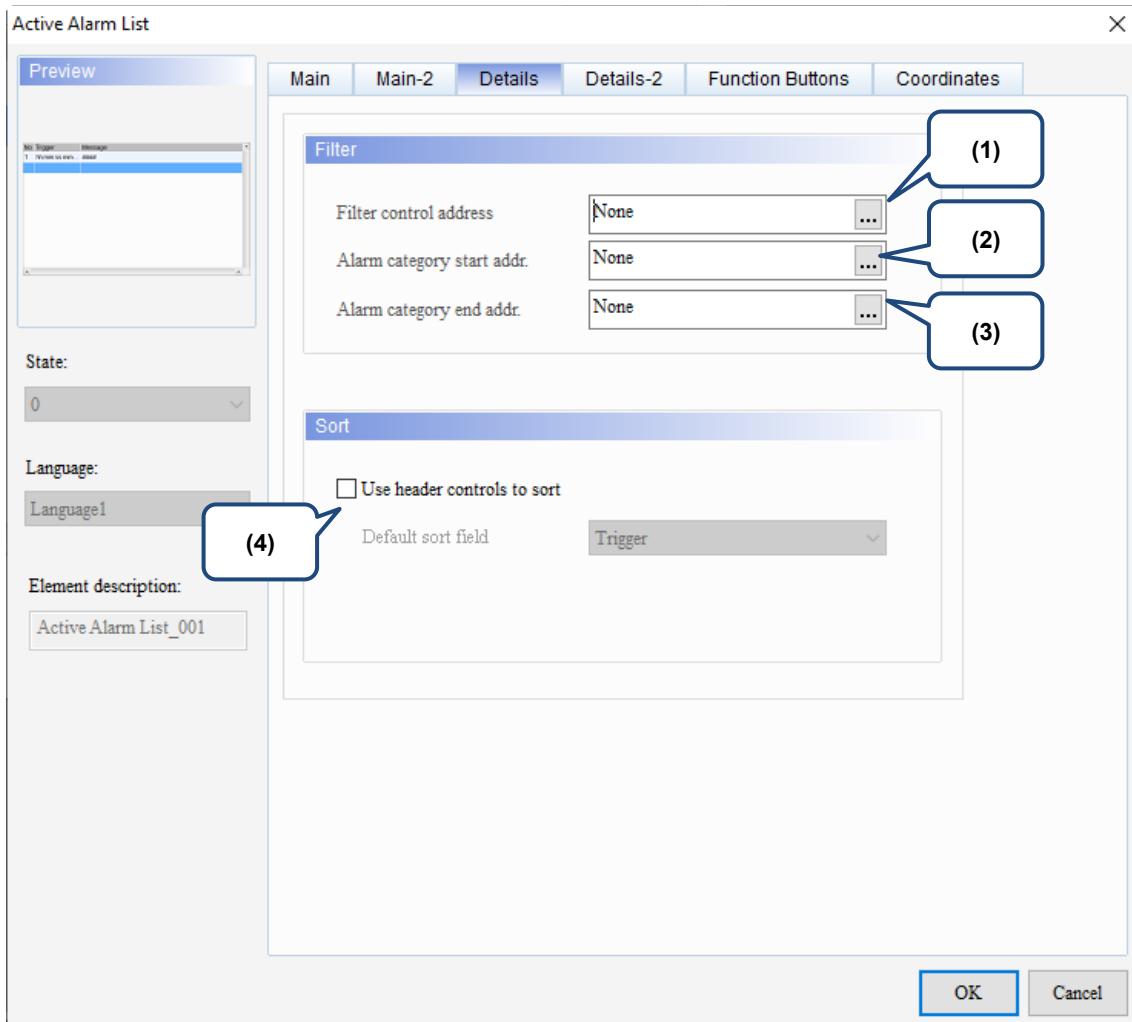
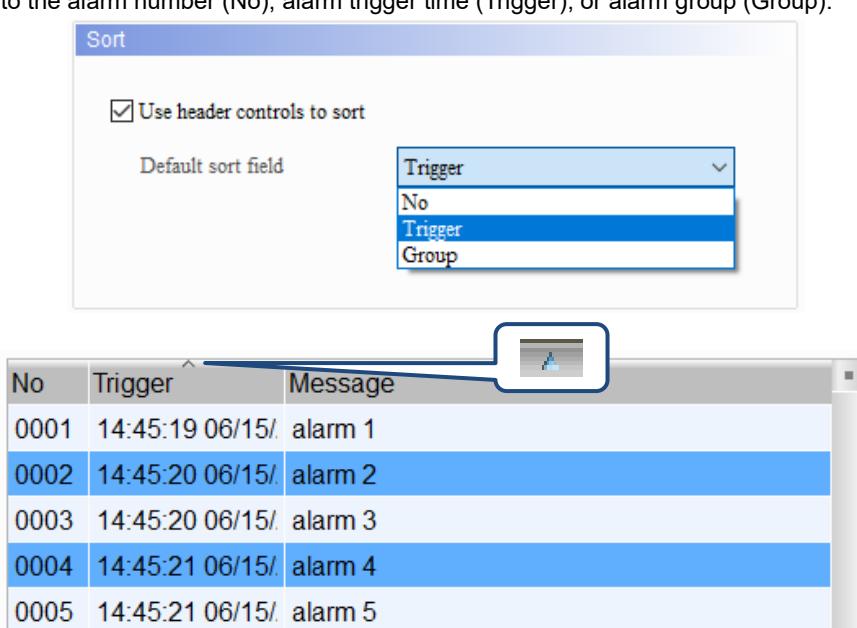


Figure 16.3.4 Details property page for the Active Alarm List element

No.	Property	Function description																
(1)	Filter control address	<p>You can filter the specified items with Filter control address.</p> <table border="1"> <thead> <tr> <th>Value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>Default; display all triggered alarms.</td></tr> <tr> <td>1</td><td>Hide the alarms with both Recovery Time and Acknowledge Time.</td></tr> <tr> <td>2</td><td>Hide the alarms with Recovery Time.</td></tr> <tr> <td>3</td><td>Hide the alarms with Recovery Time or Acknowledge Time.</td></tr> <tr> <td>4</td><td>Hide the alarms with Acknowledge Time.</td></tr> <tr> <td>5</td><td>This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.</td></tr> <tr> <td>6</td><td>This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.</td></tr> </tbody> </table>	Value	Description	0	Default; display all triggered alarms.	1	Hide the alarms with both Recovery Time and Acknowledge Time.	2	Hide the alarms with Recovery Time.	3	Hide the alarms with Recovery Time or Acknowledge Time.	4	Hide the alarms with Acknowledge Time.	5	This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.	6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.
Value	Description																	
0	Default; display all triggered alarms.																	
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6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.																	

No.	Property	Function description																			
(2)	Alarm category start addr.	<ul style="list-style-type: none"> <li>■ This setting must be used with Filter control address.</li> <li>■ When Filter control address is set to 6, input the alarm category number.</li> </ul>																			
(3)	Alarm category end addr.	Example	Description																		
(4)	Sorting control address	<p>When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms.</p> <p>When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</p> <p>Select the <b>Use header controls to sort</b> check box and set the Default sort field to the alarm number (No), alarm trigger time (Trigger), or alarm group (Group).</p>  <table border="1"> <thead> <tr> <th>No</th> <th>Trigger</th> <th>Message</th> </tr> </thead> <tbody> <tr> <td>0001</td> <td>14:45:19 06/15/</td> <td>alarm 1</td> </tr> <tr> <td>0002</td> <td>14:45:20 06/15/</td> <td>alarm 2</td> </tr> <tr> <td>0003</td> <td>14:45:20 06/15/</td> <td>alarm 3</td> </tr> <tr> <td>0004</td> <td>14:45:21 06/15/</td> <td>alarm 4</td> </tr> <tr> <td>0005</td> <td>14:45:21 06/15/</td> <td>alarm 5</td> </tr> </tbody> </table>		No	Trigger	Message	0001	14:45:19 06/15/	alarm 1	0002	14:45:20 06/15/	alarm 2	0003	14:45:20 06/15/	alarm 3	0004	14:45:21 06/15/	alarm 4	0005	14:45:21 06/15/	alarm 5
No	Trigger	Message																			
0001	14:45:19 06/15/	alarm 1																			
0002	14:45:20 06/15/	alarm 2																			
0003	14:45:20 06/15/	alarm 3																			
0004	14:45:21 06/15/	alarm 4																			
0005	14:45:21 06/15/	alarm 5																			

## ■ Details-2

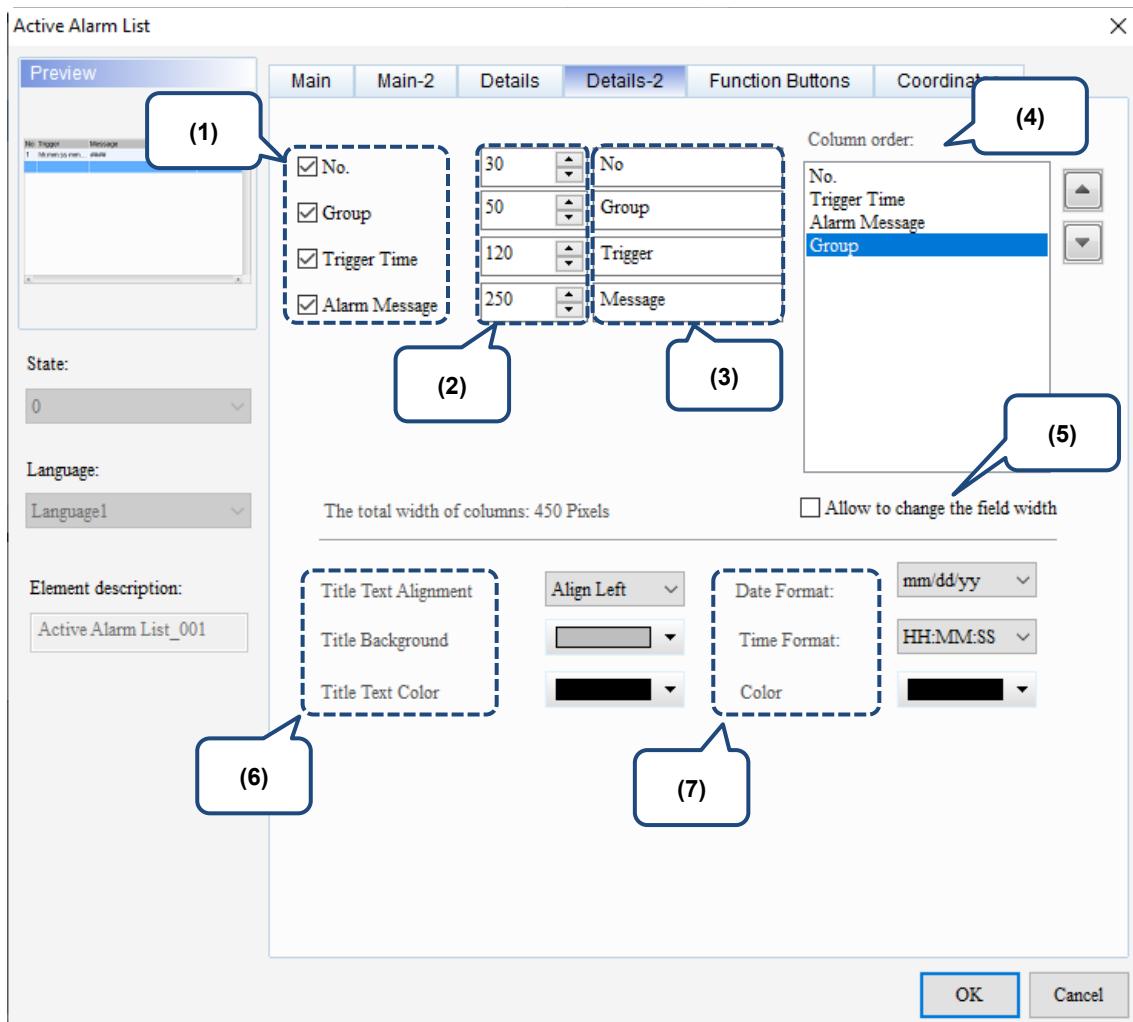
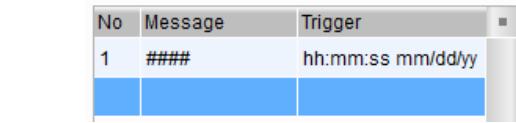
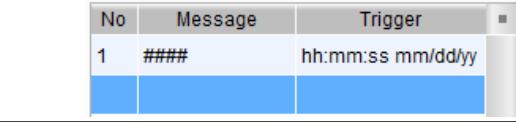
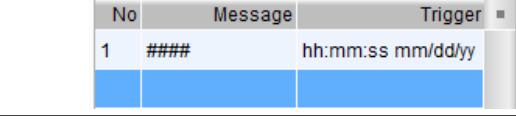
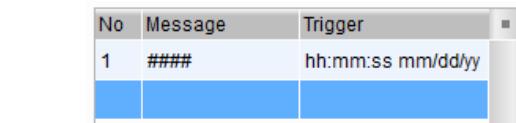
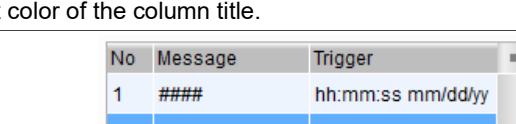
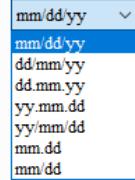
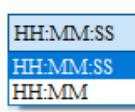
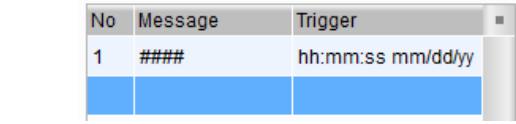
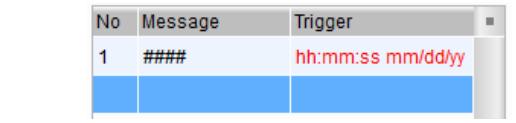


Figure 16.3.5 Details-2 property page for the Active Alarm List element

No.	Property	Function description
(1)	Column display	Select the columns you want to display in the element.
(2)	Column Width	You can adjust the width for each column.
(3)	Column title	You can define the titles for each column.
(4)	Column order	After selecting the columns you want to display, you can use  and  to adjust the column displaying order.
(5)	Allow to change the field width	After selecting this check box, you can drag to adjust the displaying field width on the HMI.

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No.	Property	Function description			
(6)	Title	Title Text Alignment	Set the column title to align left, center, or right.		
			Align Left		
			Center		
		Title Background	Align Right		
			Default		
		Title Text Color	After		
			Default		
	Date and time	Date Format	Set the display format for the date from the following options.		
			Date Format:		
		Time Format	Select the display format for the time from the following options.		
			Time Format:		
		Color	Set the display color for the date and time.		
			Default		
		After	After		

## ■ Function Buttons

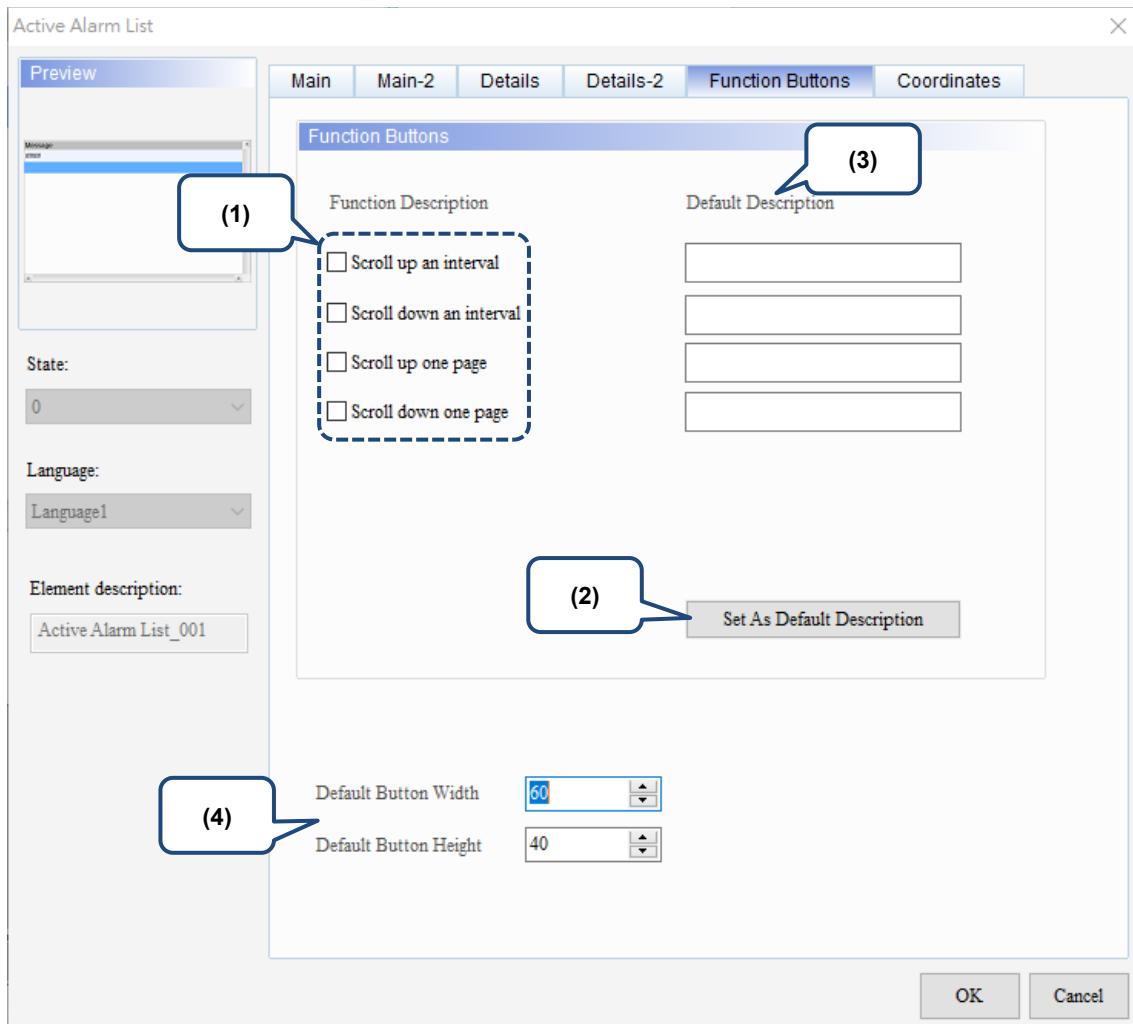


Figure 16.3.6 Function Buttons property page for the Active Alarm List element

No.	Property	Function description								
(1)	Function Buttons	Description for function buttons are as follows: <table border="1"> <tr><td>Scroll up an interval</td><td>Scroll up an interval.</td></tr> <tr><td>Scroll down an interval</td><td>Scroll down an interval.</td></tr> <tr><td>Scroll up one page</td><td>Scroll up one page.</td></tr> <tr><td>Scroll down one page</td><td>Scroll down one page.</td></tr> </table>	Scroll up an interval	Scroll up an interval.	Scroll down an interval	Scroll down an interval.	Scroll up one page	Scroll up one page.	Scroll down one page	Scroll down one page.
Scroll up an interval	Scroll up an interval.									
Scroll down an interval	Scroll down an interval.									
Scroll up one page	Scroll up one page.									
Scroll down one page	Scroll down one page.									
(2)	Set As Default Description	Press this button to insert the default strings to the Default Description fields.								
(3)	Default Description	Press <b>Set As Default Description</b> to insert the default strings to the fields. You can also enter user-defined strings.								
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.								

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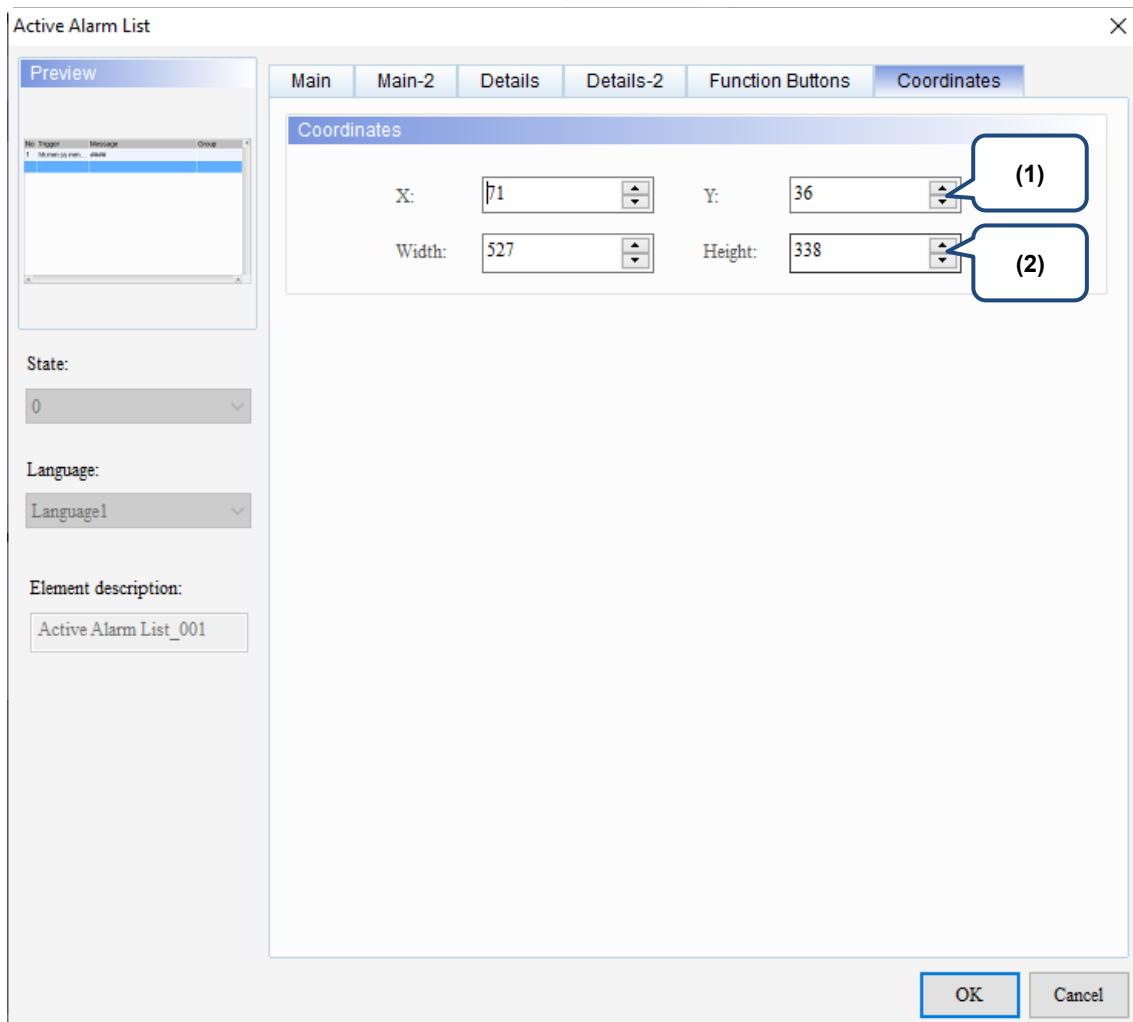
**■ Coordinates**

Figure 16.3.7 Coordinates property page for the Active Alarm List element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 16.4 Alarm Frequency Table

The Alarm Frequency Table element records and displays the occurrence times of each alarm.

Refer to Table 16.4.1 for the Alarm Frequency Table example.

Table 16.4.1 Alarm Frequency Table example

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**Alarm Frequency Table**

This example uses the alarm parameters in Table 16.1.1 Alarm Settings example.

No.	Message Content	Category	Type	Address	Trigger Condition	Monitor At	Text Color	Alarm Screen
1*	Alarm 1 %d1 degree(s)	1	Bit	\$50.0	On	*	■RGB(0, 0, 0)	2 - Screen_2
2*	Alarm 2 %d1 kilogram(s)	1	Bit	\$50.1	On	*	■RGB(0, 0, 0)	None
3*	Alarm 3 %d1 gram(s)	1	Bit	\$50.2	On	*	■RGB(0, 0, 0)	None
4*	Alarm 4 %d1 meter(s)	1	Bit	\$50.3	On	*	■RGB(0, 0, 0)	None
5*	Alarm 5 %d1 inch(es)	1	Bit	\$50.4	On	*	■RGB(0, 0, 0)	None
6*	Alarm 6	5	Word	\$100	\$100 = \$200	...	■RGB(0, 0, 0)	2 - Screen_2
7*	Alarm 7	5	Word	\$110	\$110 < \$210	...	■RGB(0, 0, 0)	None
8*	Alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100	...	■RGB(0, 0, 0)	None
9*	Alarm 9	5	Word	\$120	0 <= \$120 <= 10	...	■RGB(0, 0, 0)	None
10*	Alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100	...	■RGB(0, 0, 0)	None

Action control      Sorting control      Filtering control      Counter      Category start      Category end

1234      Trigger alarm screen      1234      1234      1234      1234      1234

Ack alarm

Message	Frequency
####	#

Bit trigger

Alarm 1    Alarm 2    Alarm 3  
Alarm 4    Alarm 5

Monitor address

1234    1234    1234  
1234    1234

Word control

Condition 1: 1234 = 1234  
Condition 2: 1234 < 1234  
Condition 3: 1234 ≤ 1234 ≤ 1234  
Condition 4: 0 ≤ 1234 ≤ 10  
Condition 5: 1234 ≥ 100

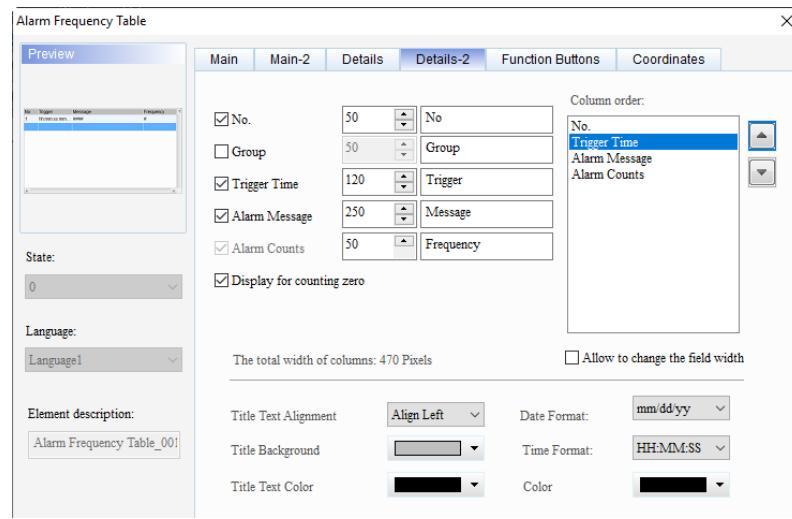
## 16

Create  
Alarm  
Frequency  
Table  
element

Step 1: create an Alarm Frequency Table element.

Message	Frequency
#####	#

Step 2: select the **No.** and **Trigger Time** check boxes. **Alarm Message**, **Alarm Counts**, and **Display for counting zero** are selected by default. Then, the Alarm Frequency Table will display the alarm number, alarm trigger time, alarm message, and will also record the occurrence times of each alarm.



- After creating the Alarm Frequency Table element, compile and download it to the HMI. When the trigger conditions are met for Alarms 6 - 10, the Alarm Frequency Table shows the current alarm time and date, alarm No., alarm message, and alarm counts. When the **Display for counting zero** check box is selected, the Alarm Frequency Table displays Alarms 1 - 5 with the Frequency as 0 even though they are not triggered.
- After the alarm is cleared, the recorded alarm counts in the Alarm Frequency Table will not be cleared.

Execution results

Alarm on	No	Trigger	Message	Frequency
	0001	00:00:00 00/00/0000	Alarm 1 %d1 degree(s)	0
	0002	00:00:00 00/00/0000	Alarm 2 %d1 kilogram(s)	0
	0003	00:00:00 00/00/0000	Alarm 3 %d1 gram(s)	0
	0004	00:00:00 00/00/0000	Alarm 4 %d1 meter(s)	0
	0005	00:00:00 00/00/0000	Alarm 5 %d1 inch(es)	0
	0006	14:52:07 05/25/2018	Alarm 6	1

Alarm off	No	Trigger	Message	Frequency
	0001	00:00:00 00/00/0000	Alarm 1 %d1 degree(s)	0
	0002	00:00:00 00/00/0000	Alarm 2 %d1 kilogram(s)	0
	0003	00:00:00 00/00/0000	Alarm 3 %d1 gram(s)	0
	0004	00:00:00 00/00/0000	Alarm 4 %d1 meter(s)	0
	0005	00:00:00 00/00/0000	Alarm 5 %d1 inch(es)	0
	0006	14:52:07 05/25/2018	Alarm 6	1

When you double-click the Alarm Frequency Table, the property page is shown as follows.

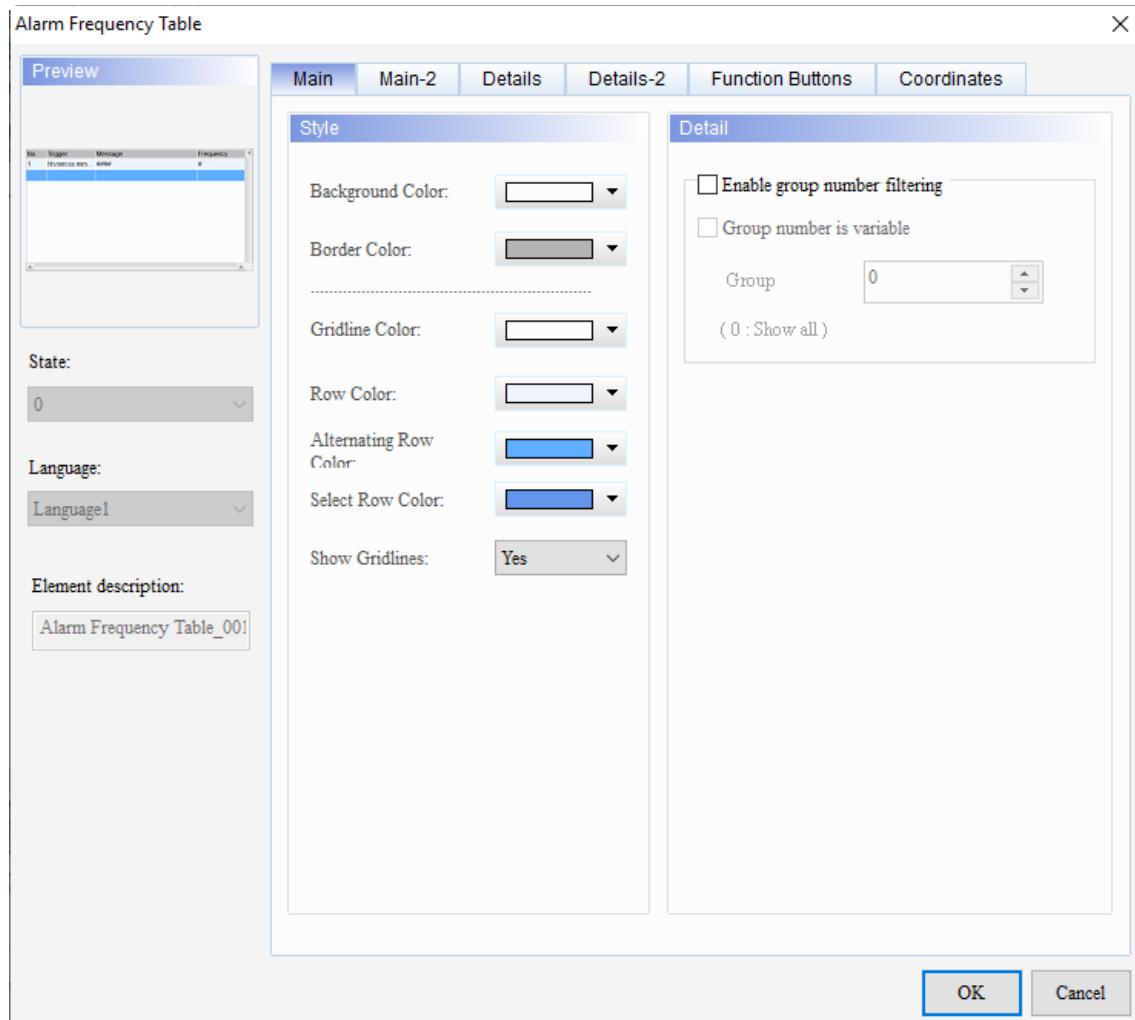


Figure 16.4.1 Properties of Alarm Frequency Table

Table 16.4.2 Function page of Alarm Frequency Table

Alarm Frequency Table	
Function page	Description
Preview	The Alarm Frequency Table elements do not support multiple state values and multi-language data display.
Main	Style: set the Background Color, Border Color, Gridline Color, Row Color, Alternating Row Color, Select Row Color, and Show Gridlines of the elements. Detail: select the <b>Enable group number filtering</b> check box.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Details	Set the Filter control address, Alarm category start addr., and Alarm category end addr. Select the <b>Use header controls to sort</b> check box and set the Default sort field.
Details-2	Set the displaying alarm columns, width, description, the order of the columns, and select the <b>Allow to change the field width</b> check box. Set the Title Text Alignment, Title Background, Title Text Color, and format / color of the date / time.
Function Buttons	Select the <b>Scroll up an interval</b> , <b>Scroll down an interval</b> , <b>Scroll up one page</b> , and <b>Scroll down one page</b> check boxes. Set the displaying texts and default width / height of the buttons.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

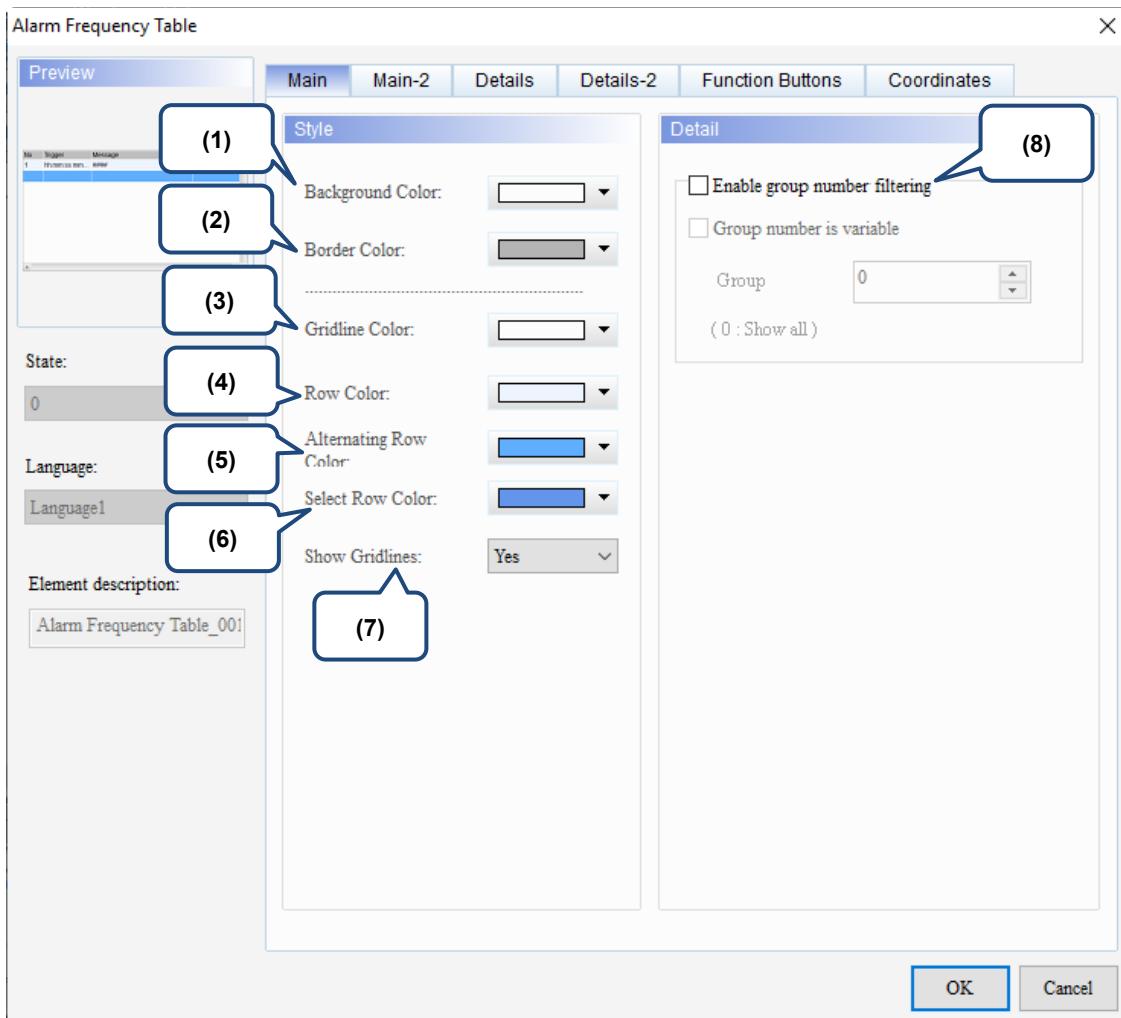
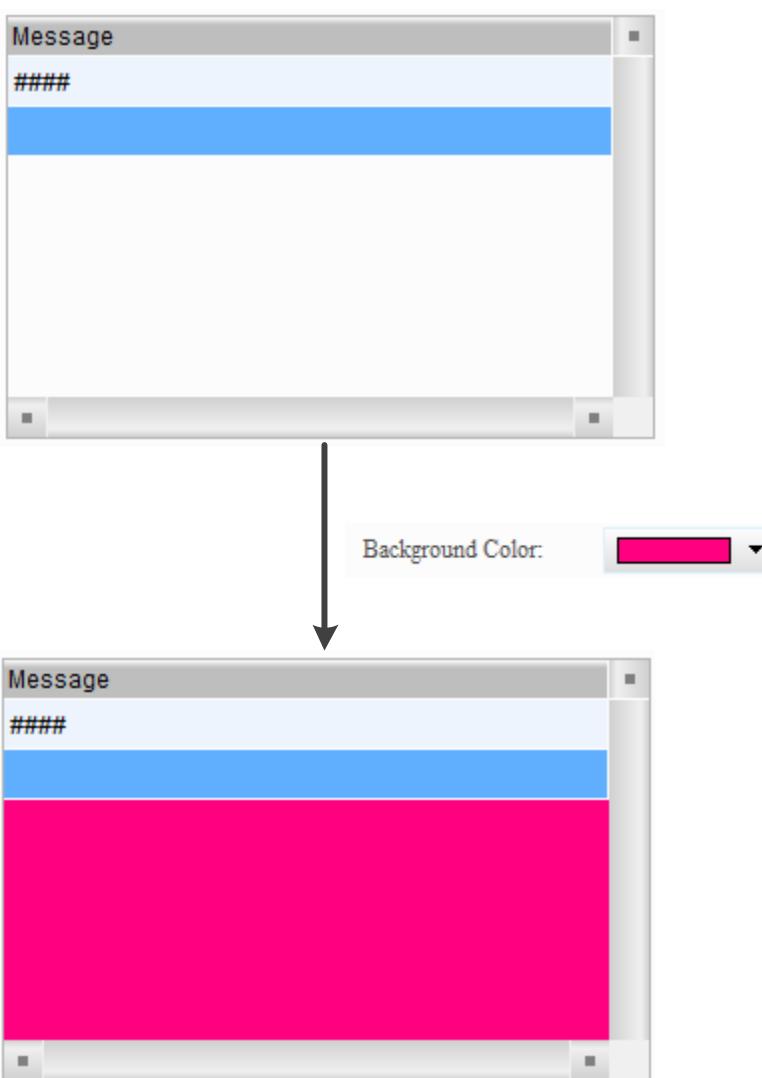


Figure 16.4.2 Main property page for the Alarm Frequency Table element

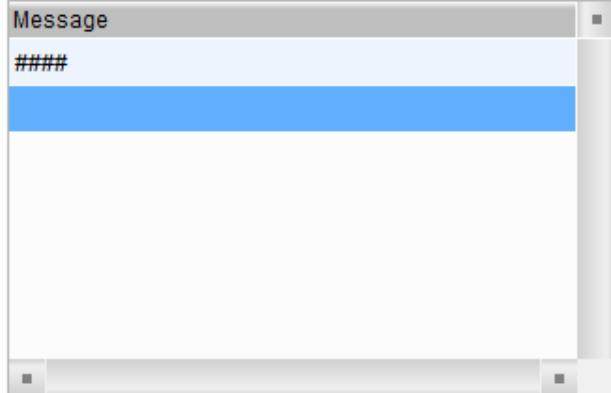
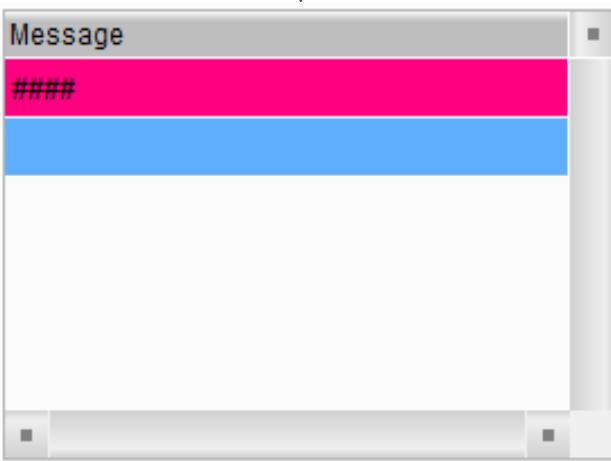
No.	Property	Function description
(1)	Background Color	<p>Set the Background Color of the element. The default is white.</p>  <p>The screenshot illustrates the 'Message' element's properties. The top part shows the element with a blue background color. A vertical arrow points down to a color picker dialog titled 'Background Color:' which displays a pink color swatch. The bottom part shows the element with a pink background color.</p>

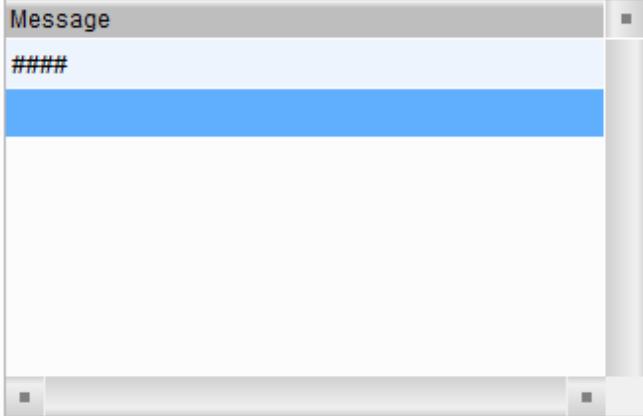
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No.	Property	Function description
(2)	Border Color	<p>Set the Border Color of the element. The default is gray.</p> <p>Border Color: <input type="color" value="#FF0000"/></p>

No.	Property	Function description
(3)	Gridline Color	<ul style="list-style-type: none"><li>■ The Gridline Color setting is valid only when you select <b>Yes</b> for Show Gridlines.</li><li>■ Set the Gridline Color of the element. The default is white.</li></ul> 

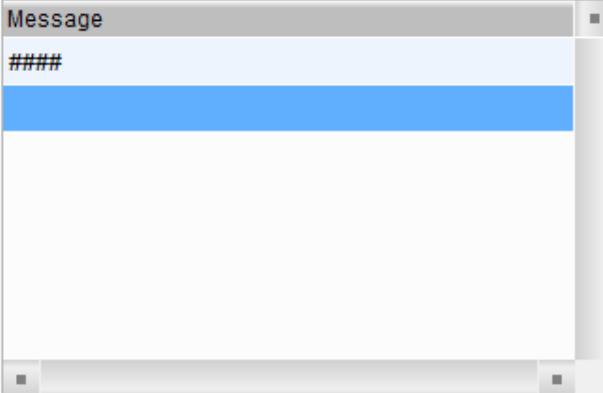
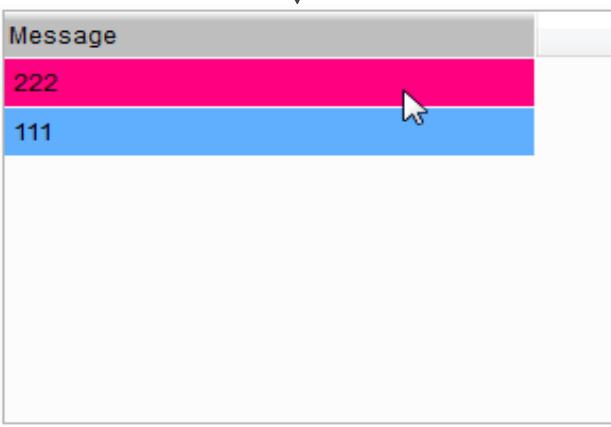
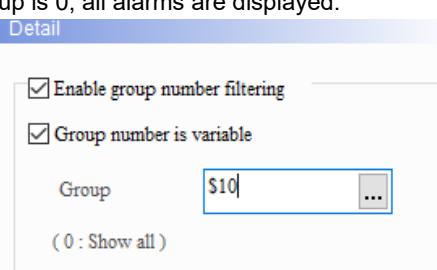
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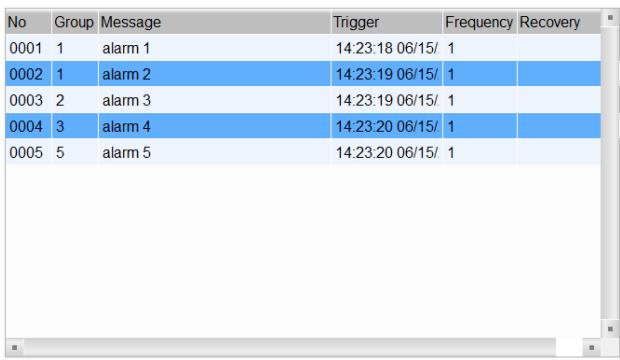
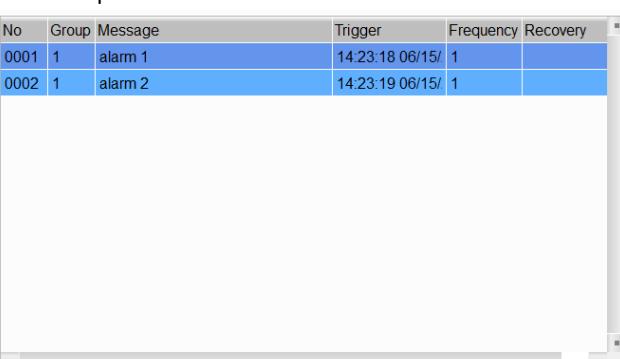
No.	Property	Function description
		Set the color for each row of the alarm. The default is  .
(4)	Row Color	 Row Color:  

No.	Property	Function description
(5)	Alternating Row Color	<p>Set the color for the alternating row of the alarm. The default is  .</p>  <p>↓</p> 

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No.	Property	Function description
(6)	Selected Row Color	<ul style="list-style-type: none"> <li>■ The row color when you select an alarm history data.</li> <li>■ Set the color of the selected row. The default is </li> </ul>  <p>Select Row Color: </p> 
(7)	Show Gridlines	<ul style="list-style-type: none"> <li>■ The default is Yes.</li> <li>■ When you select No, the Gridline Color setting is invalid.</li> </ul>
(8)	Enable group number filtering	<ul style="list-style-type: none"> <li>■ Select the <b>Enable group number filtering</b> check box to filter the alarms to be displayed. You can specify the group number to display the alarms in groups.</li> <li>■ The value of the group number can be a variable or constant.</li> <li>■ When the Group is 0, all alarms are displayed.</li> </ul> 

No.	Property	Function description																																																																								
(8)	Enable group number filtering	<p>■ Display example:</p> <p>When the Group is 0:</p>  <table border="1"> <thead> <tr> <th>No</th> <th>Group</th> <th>Message</th> <th>Trigger</th> <th>Frequency</th> <th>Recovery</th> </tr> </thead> <tbody> <tr> <td>0001</td> <td>1</td> <td>alarm 1</td> <td>14:23:18 06/15/</td> <td>1</td> <td></td> </tr> <tr> <td>0002</td> <td>1</td> <td>alarm 2</td> <td>14:23:19 06/15/</td> <td>1</td> <td></td> </tr> <tr> <td>0003</td> <td>2</td> <td>alarm 3</td> <td>14:23:19 06/15/</td> <td>1</td> <td></td> </tr> <tr> <td>0004</td> <td>3</td> <td>alarm 4</td> <td>14:23:20 06/15/</td> <td>1</td> <td></td> </tr> <tr> <td>0005</td> <td>5</td> <td>alarm 5</td> <td>14:23:20 06/15/</td> <td>1</td> <td></td> </tr> </tbody> </table> <p>When the Group is 1:</p>  <table border="1"> <thead> <tr> <th>No</th> <th>Group</th> <th>Message</th> <th>Trigger</th> <th>Frequency</th> <th>Recovery</th> </tr> </thead> <tbody> <tr> <td>0001</td> <td>1</td> <td>alarm 1</td> <td>14:23:18 06/15/</td> <td>1</td> <td></td> </tr> <tr> <td>0002</td> <td>1</td> <td>alarm 2</td> <td>14:23:19 06/15/</td> <td>1</td> <td></td> </tr> <tr> <td>0003</td> <td>2</td> <td>alarm 3</td> <td>14:23:19 06/15/</td> <td>1</td> <td></td> </tr> <tr> <td>0004</td> <td>3</td> <td>alarm 4</td> <td>14:23:20 06/15/</td> <td>1</td> <td></td> </tr> <tr> <td>0005</td> <td>5</td> <td>alarm 5</td> <td>14:23:20 06/15/</td> <td>1</td> <td></td> </tr> </tbody> </table>	No	Group	Message	Trigger	Frequency	Recovery	0001	1	alarm 1	14:23:18 06/15/	1		0002	1	alarm 2	14:23:19 06/15/	1		0003	2	alarm 3	14:23:19 06/15/	1		0004	3	alarm 4	14:23:20 06/15/	1		0005	5	alarm 5	14:23:20 06/15/	1		No	Group	Message	Trigger	Frequency	Recovery	0001	1	alarm 1	14:23:18 06/15/	1		0002	1	alarm 2	14:23:19 06/15/	1		0003	2	alarm 3	14:23:19 06/15/	1		0004	3	alarm 4	14:23:20 06/15/	1		0005	5	alarm 5	14:23:20 06/15/	1	
No	Group	Message	Trigger	Frequency	Recovery																																																																					
0001	1	alarm 1	14:23:18 06/15/	1																																																																						
0002	1	alarm 2	14:23:19 06/15/	1																																																																						
0003	2	alarm 3	14:23:19 06/15/	1																																																																						
0004	3	alarm 4	14:23:20 06/15/	1																																																																						
0005	5	alarm 5	14:23:20 06/15/	1																																																																						
No	Group	Message	Trigger	Frequency	Recovery																																																																					
0001	1	alarm 1	14:23:18 06/15/	1																																																																						
0002	1	alarm 2	14:23:19 06/15/	1																																																																						
0003	2	alarm 3	14:23:19 06/15/	1																																																																						
0004	3	alarm 4	14:23:20 06/15/	1																																																																						
0005	5	alarm 5	14:23:20 06/15/	1																																																																						

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## ■ Main-2

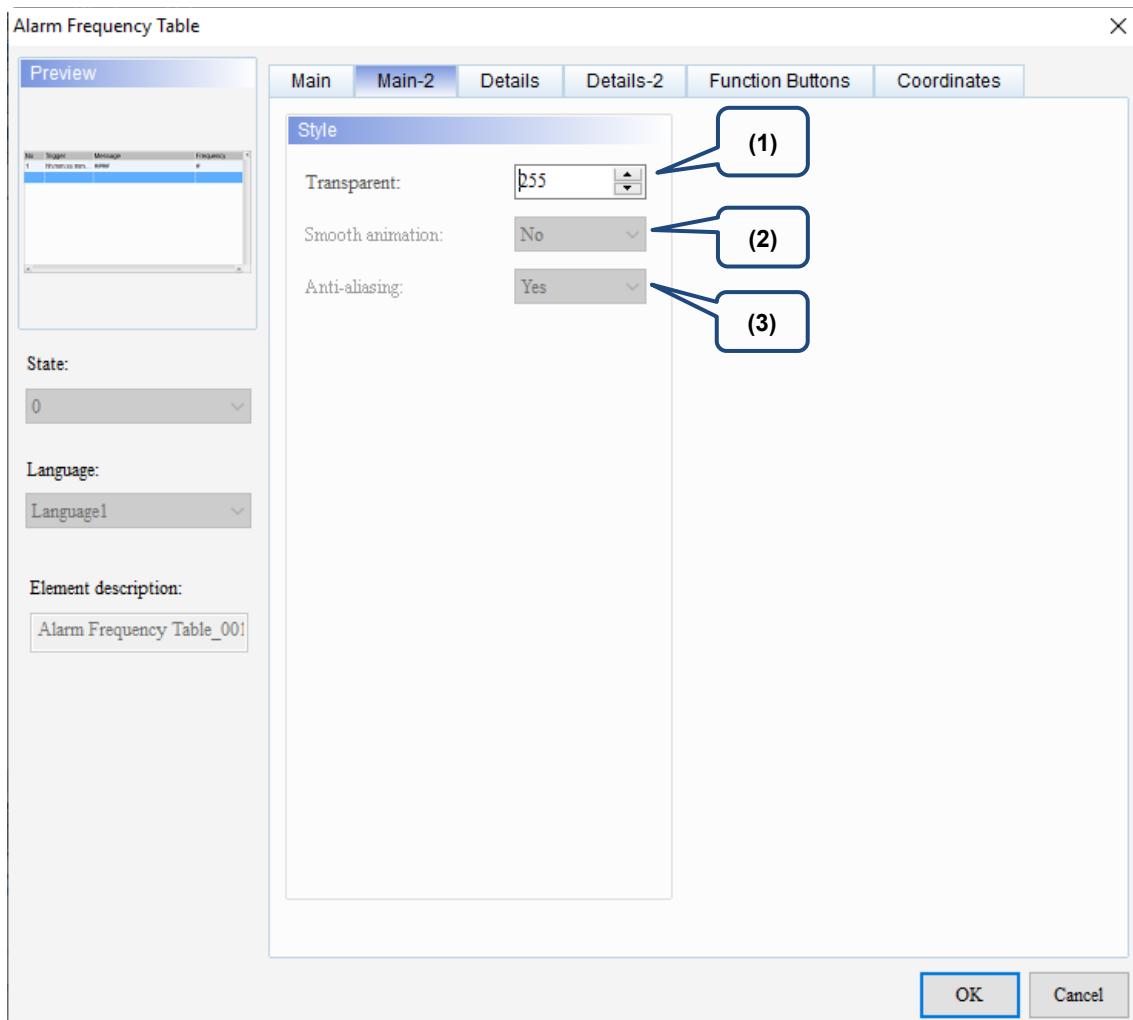


Figure 16.4.3 Main-2 property page for the Alarm Frequency Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Details

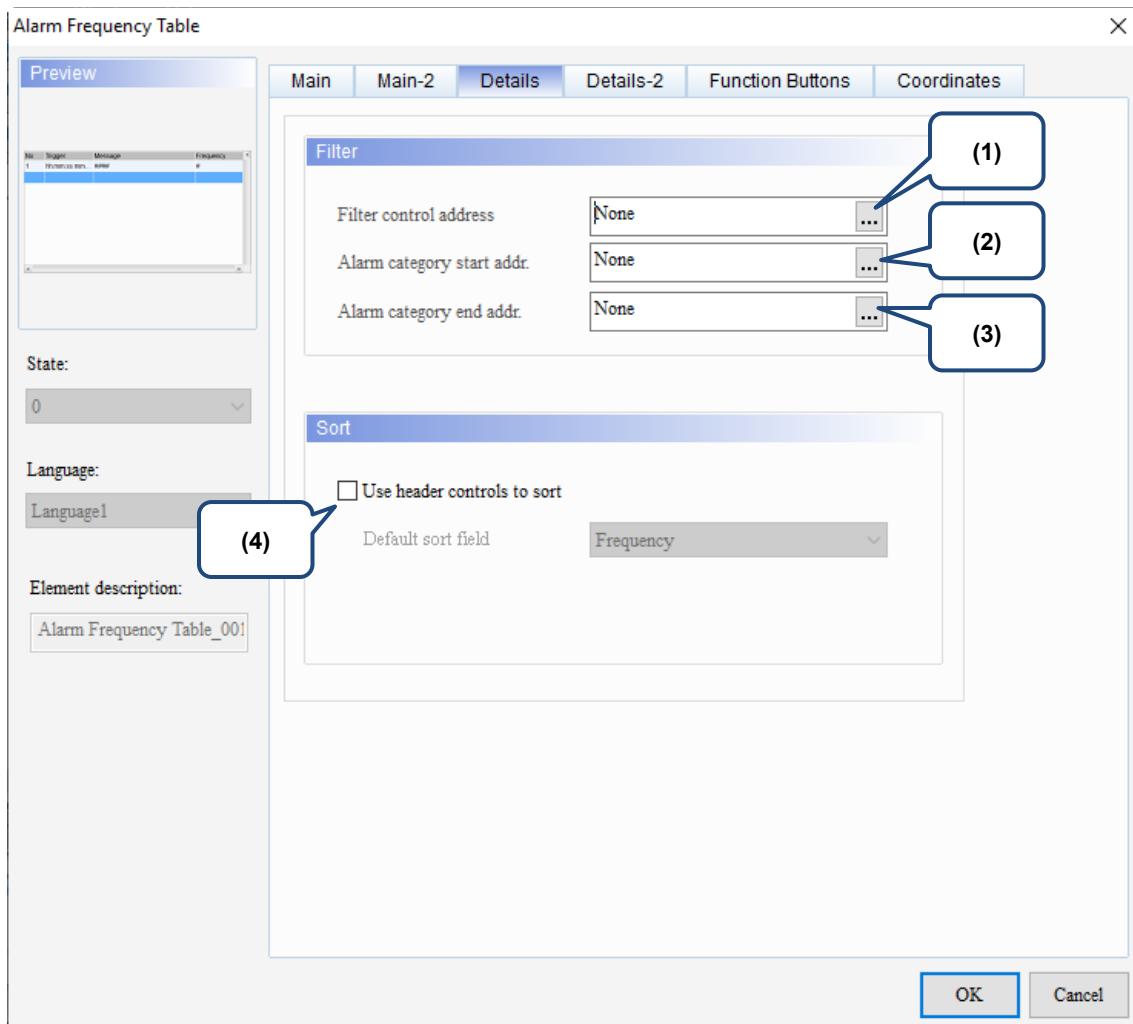


Figure 16.4.4 Details property page for the Alarm Frequency Table element

No.	Property	Function description																
(1)	Filter control address	<p>You can filter the specified items with Filter control address.</p> <table border="1"> <thead> <tr> <th>Value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>Default; display all triggered alarms.</td></tr> <tr> <td>1</td><td>Hide the alarms with both Recovery Time and Acknowledge Time.</td></tr> <tr> <td>2</td><td>Hide the alarms with Recovery Time.</td></tr> <tr> <td>3</td><td>Hide the alarms with Recovery Time or Acknowledge Time.</td></tr> <tr> <td>4</td><td>Hide the alarms with Acknowledge Time.</td></tr> <tr> <td>5</td><td>This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.</td></tr> <tr> <td>6</td><td>This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.</td></tr> </tbody> </table>	Value	Description	0	Default; display all triggered alarms.	1	Hide the alarms with both Recovery Time and Acknowledge Time.	2	Hide the alarms with Recovery Time.	3	Hide the alarms with Recovery Time or Acknowledge Time.	4	Hide the alarms with Acknowledge Time.	5	This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.	6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.
Value	Description																	
0	Default; display all triggered alarms.																	
1	Hide the alarms with both Recovery Time and Acknowledge Time.																	
2	Hide the alarms with Recovery Time.																	
3	Hide the alarms with Recovery Time or Acknowledge Time.																	
4	Hide the alarms with Acknowledge Time.																	
5	This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.																	
6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.																	

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No.	Property	Function description																								
(2)	Alarm category start addr.	<ul style="list-style-type: none"> <li>■ This setting must be used with Filter control address.</li> <li>■ When Filter control address is set to 6, input the alarm category number.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Example</th> <th style="text-align: center;">Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Alarms with alarm category numbers 1 and 5</td> <td style="text-align: center;">When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms. When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</td> </tr> </tbody> </table>	Example	Description	Alarms with alarm category numbers 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms. When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.																				
Example	Description																									
Alarms with alarm category numbers 1 and 5	When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms. When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.																									
(3)	Alarm category end addr.																									
(4)	Sorting control address	<p>Select the <b>Use header controls to sort</b> check box and set the Default sort field to the alarm number (No), alarm trigger time (Trigger), alarm count (Frequency), or alarm group (Group).</p> <div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <p style="margin: 0;">Sort</p> <p style="margin: 0;"><input checked="" type="checkbox"/> Use header controls to sort</p> </div> <div style="display: flex; justify-content: space-between;"> <span style="flex: 1;">Default sort field</span> <div style="border: 1px solid #ccc; padding: 2px; width: 150px;"> Frequency           <ul style="list-style-type: none"> <li>No</li> <li>Trigger</li> <li style="background-color: #0070C0; color: white; font-weight: bold;">Frequency</li> <li>Group</li> </ul> </div> </div> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 10%;">No</th> <th style="width: 20%;">Trigger</th> <th style="width: 20%;">Message</th> <th style="width: 10%;">Frequency</th> </tr> </thead> <tbody> <tr> <td>0005</td> <td>00:00:00 00/00/</td> <td>alarm 5</td> <td>0</td> </tr> <tr style="background-color: #0070C0; color: white;"> <td>0001</td> <td>14:51:25 06/15/</td> <td>alarm 1</td> <td>1</td> </tr> <tr> <td>0002</td> <td>14:51:26 06/15/</td> <td>alarm 2</td> <td>1</td> </tr> <tr style="background-color: #0070C0; color: white;"> <td>0003</td> <td>14:51:28 06/15/</td> <td>alarm 3</td> <td>1</td> </tr> <tr> <td>0004</td> <td>14:51:29 06/15/</td> <td>alarm 4</td> <td>1</td> </tr> </tbody> </table>	No	Trigger	Message	Frequency	0005	00:00:00 00/00/	alarm 5	0	0001	14:51:25 06/15/	alarm 1	1	0002	14:51:26 06/15/	alarm 2	1	0003	14:51:28 06/15/	alarm 3	1	0004	14:51:29 06/15/	alarm 4	1
No	Trigger	Message	Frequency																							
0005	00:00:00 00/00/	alarm 5	0																							
0001	14:51:25 06/15/	alarm 1	1																							
0002	14:51:26 06/15/	alarm 2	1																							
0003	14:51:28 06/15/	alarm 3	1																							
0004	14:51:29 06/15/	alarm 4	1																							

## ■ Details-2

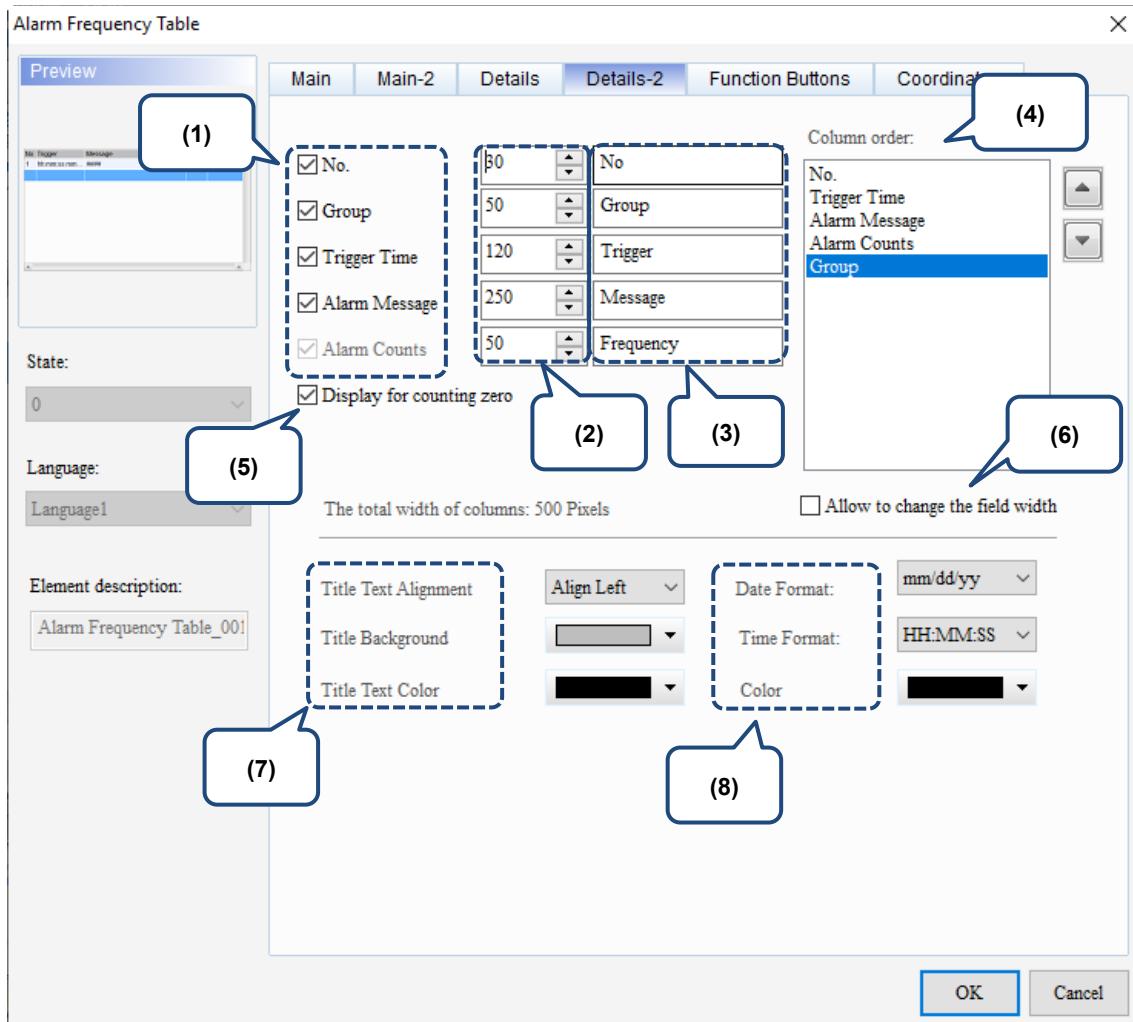
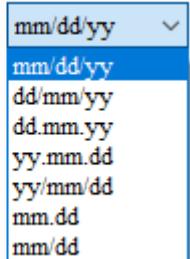
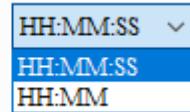


Figure 16.4.5 Details-2 property page for the Alarm Frequency Table element

No.	Property	Function description
(1)	Column display	Select the columns you want to display in the element.
(2)	Column Width	You can adjust the width for each column.
(3)	Column title	You can define the titles for each column.
(4)	Column order	After selecting the columns you want to display, you can use  and  to adjust the column displaying order.

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No.	Property	Function description			
(5)	Display for counting zero	If the check box of this option is selected, 0 is displayed on the Alarm Frequency Table when the alarm is not triggered; otherwise, the alarm message is not displayed when the occurrence time of the alarm is zero.			
		Selected	No	Trigger	Message
			0001	00:00:00 00/00/0000	Alarm 1 %d1 degree(s)
			0002	00:00:00 00/00/0000	Alarm 2 %d1 kilogram(s)
			0003	00:00:00 00/00/0000	Alarm 3 %d1 gram(s)
			0004	00:00:00 00/00/0000	Alarm 4 %d1 meter(s)
		Not selected	0005	00:00:00 00/00/0000	Alarm 5 %d1 inch(es)
			0006	14:53:32 05/25/2018	Alarm 6
			No	Trigger	Message
			0006	15:03:44 05/25/2018	Alarm 6
(6)	Allow to change the field width	After selecting the check box of this option, you can drag to adjust the displaying field width on the HMI.			
		Title	Set the column title to align left, center, or right.		
			Align Left	No	Message
				1	#####
					hh:mm:ss mm/dd/yy
			Center	No	Message
				1	#####
					hh:mm:ss mm/dd/yy
			Align Right	No	Message
				1	#####
					hh:mm:ss mm/dd/yy
(7)	Title	Set the background color of the column title.			
		Title Background	No	Message	
			1	#####	
				hh:mm:ss mm/dd/yy	
		After	No	Message	
			1	#####	
				hh:mm:ss mm/dd/yy	
			Set the text color of the column title.		
		Title Text Color	Default	No	Message
				1	#####
					hh:mm:ss mm/dd/yy
		After	After	No	Message
				1	#####
					hh:mm:ss mm/dd/yy

No.	Property	Function description											
(8)	Date and time	Date Format	Select the display format for the date from the following options.	<p>Date Format:</p> 									
		Time Format	Select the display format for the time from the following options.	<p>Time Format:</p> 									
	Color	Set the display color for the date and time.											
		Default	<table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>#####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		No	Message	Trigger	1	#####	hh:mm:ss mm/dd/yy			
No	Message	Trigger											
1	#####	hh:mm:ss mm/dd/yy											
		After	<table border="1"> <thead> <tr> <th>No</th> <th>Message</th> <th>Trigger</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>#####</td> <td>hh:mm:ss mm/dd/yy</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		No	Message	Trigger	1	#####	hh:mm:ss mm/dd/yy			
No	Message	Trigger											
1	#####	hh:mm:ss mm/dd/yy											

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## ■ Function Buttons

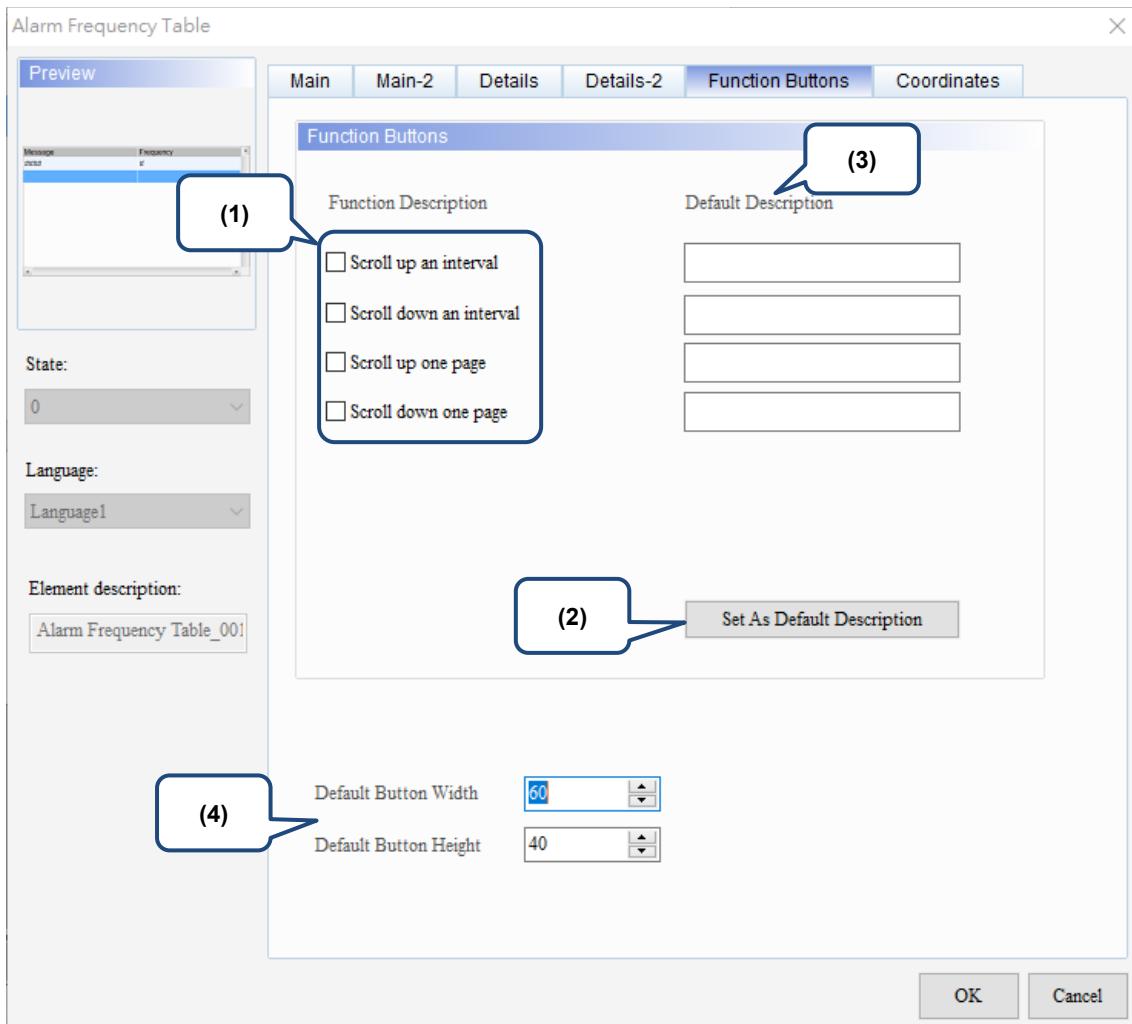


Figure 16.4.6 Function Buttons property page for the Alarm Frequency Table element

No.	Property	Function description								
(1)	Function Buttons	Description for function buttons are as follows: <table border="1"> <tr><td>Scroll up an interval</td><td>Scroll up an interval.</td></tr> <tr><td>Scroll down an interval</td><td>Scroll down an interval.</td></tr> <tr><td>Scroll up one page.</td><td>Scroll up one page.</td></tr> <tr><td>Scroll down one page.</td><td>Scroll down one page.</td></tr> </table>	Scroll up an interval	Scroll up an interval.	Scroll down an interval	Scroll down an interval.	Scroll up one page.	Scroll up one page.	Scroll down one page.	Scroll down one page.
Scroll up an interval	Scroll up an interval.									
Scroll down an interval	Scroll down an interval.									
Scroll up one page.	Scroll up one page.									
Scroll down one page.	Scroll down one page.									
(2)	Set As Default Description	Press this button to insert the default strings to the Default Description fields.								
(3)	Default Description	Press <b>Set As Default Description</b> to insert the default strings to the fields. You can also enter user-defined strings.								
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.								

## ■ Coordinates

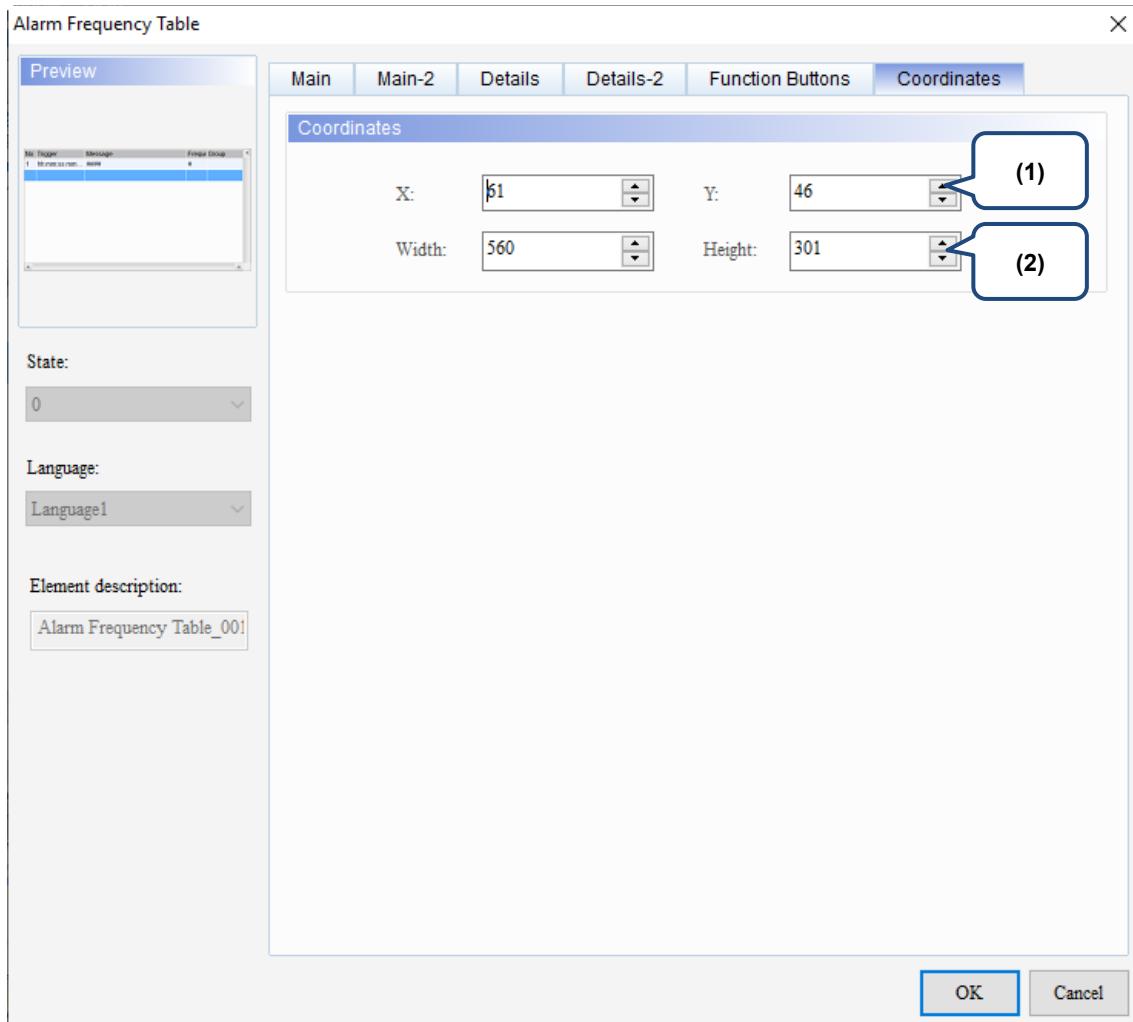


Figure 16.4.7 Coordinates property page for the Alarm Frequency Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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## 16.5 Alarm Moving Sign

The Alarm Moving Sign element records the alarm number and the alarm trigger time and date.

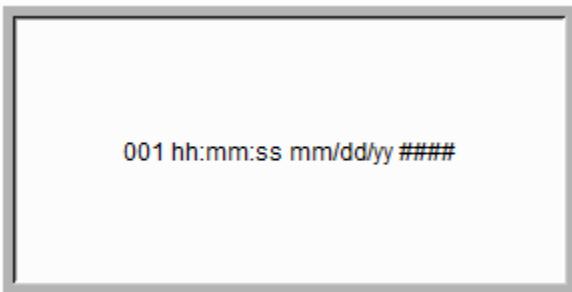
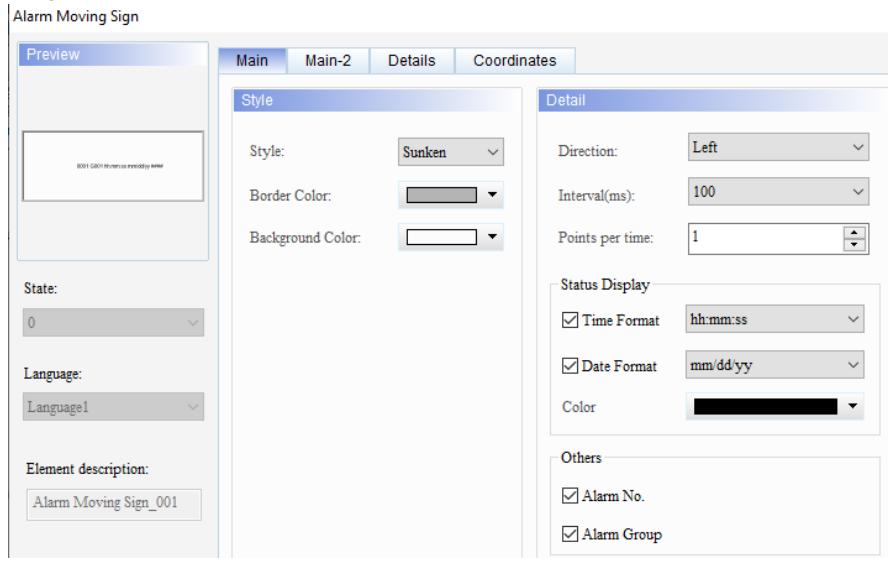
You can also define the time interval and moving distance of the Alarm Moving Sign.

The effects of the Alarm Moving Sign element and the Alarm Moving Sign in [Options] > [Alarm Settings] are the same, such as the moving distance and the time interval. The main difference is the Alarm Moving Sign in the Alarm Settings generates a moving sign message as soon as an alarm is triggered regardless of the operating page you are on. You can use both functions at the same time, but the two settings are independent and not cross-referenced.

Refer to Table 16.5.1 for the Alarm Moving Sign example.

Table 16.5.1 Alarm Moving Sign example

Alarm Moving Sign								
This example uses the alarm parameters in Table 16.1.1 Alarm Settings example.								
No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen
1*	alarm 1 %d1 度	1	Bit	\$50.0	On	*	RGB(0, 0, 0)	2 - Screen_2
2*	alarm 2 %d1 斤	1	Bit	\$50.1	On	*	RGB(0, 0, 0)	None
3*	alarm 3 %d1 克	1	Bit	\$50.2	On	*	RGB(0, 0, 0)	None
4*	alarm 4 %d1 尺	1	Bit	\$50.3	On	*	RGB(0, 0, 0)	None
5*	alarm 5 %d1 时	1	Bit	\$50.4	On	*	RGB(0, 0, 0)	None
6*	alarm 6	5	Word	\$100	\$100 = \$200	...	RGB(0, 0, 0)	2 - Screen_2
7*	alarm 7	5	Word	\$110	\$110 < \$210	...	RGB(0, 0, 0)	None
8*	alarm 8	5	Word	\$Link21@D100	{Link2}1@D200 <= {Link2}1@D100	...	RGB(0, 0, 0)	None
9*	alarm 9	5	Word	\$120	0 <= \$120 <= 10	...	RGB(0, 0, 0)	None
10*	alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100	...	RGB(0, 0, 0)	None

Alarm Moving Sign					
Create Alarm Moving Sign element	<p>Step 1: create an Alarm Moving Sign element.</p>  <p>Step 2: select the <b>Time Format</b>, <b>Date Format</b>, and <b>Alarm No.</b> check boxes. Then, the Alarm Moving Sign will display the alarm number, alarm trigger time and date, and alarm message.</p> 				
Execution results	<ul style="list-style-type: none"> <li>■ After creating the Alarm Moving Sign element, compile and download it to the HMI. When the trigger conditions are met for Alarms 6 - 10, the Alarm Moving Sign shows the alarm time and date, alarm number, and alarm message of the current alarm.</li> <li>■ After the alarm is cleared, the Alarm Moving Sign will not show any alarm.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; vertical-align: top; text-align: center;">Alarm on</td><td style="width: 85%;">  </td></tr> <tr> <td style="vertical-align: top; text-align: center;">Alarm off</td><td>  </td></tr> </table>	Alarm on		Alarm off	
Alarm on					
Alarm off					

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When you double-click the Alarm Moving Sign, the property page is shown as follows.

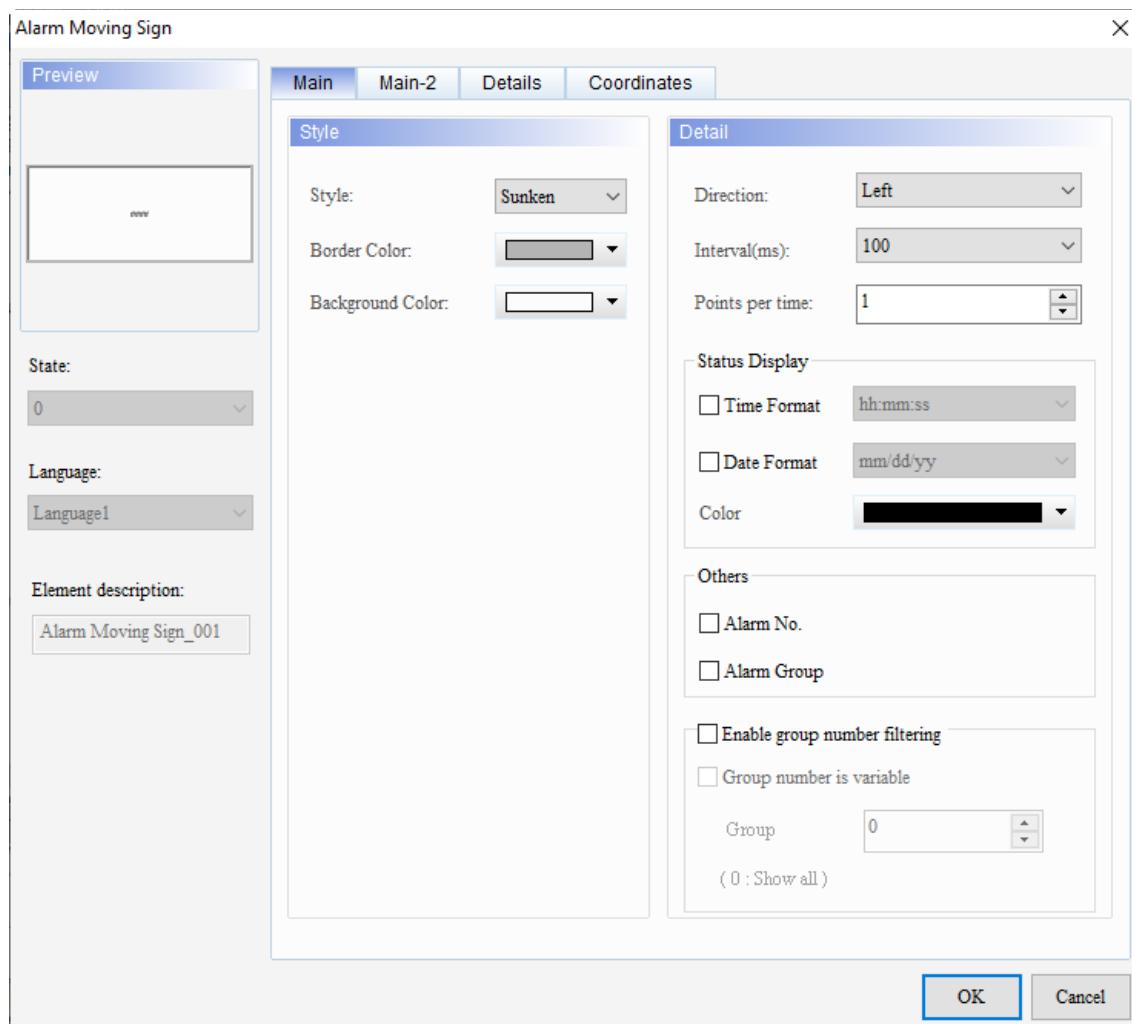


Figure 16.5.1 Properties of Alarm Moving Sign

Table 16.5.2 Function page of Alarm Moving Sign

Alarm Moving Sign	
Function page	Description
Preview	The Alarm Moving Sign elements do not support multiple state values and multi-language data display.
Main	Set the Style, Border Color, Background Color, Direction, Interval (ms), Points per time, <b>Time Format</b> , <b>Date Format</b> , Color, <b>Alarm No.</b> , and <b>Alarm Group</b> . Select the <b>Enable group number filtering</b> check box.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing.
Details	Set the Filter control address, Alarm category start addr., and Alarm category end addr.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

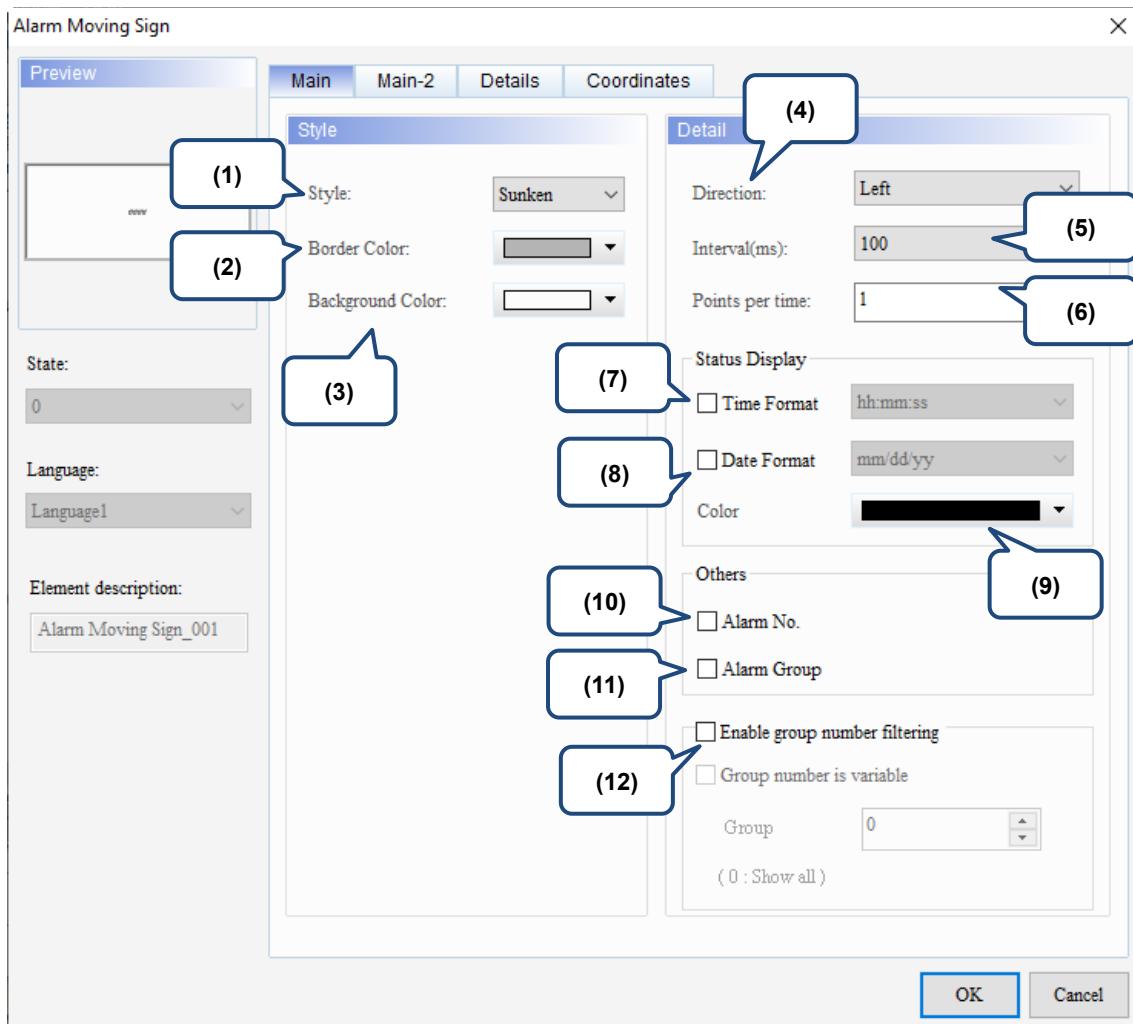
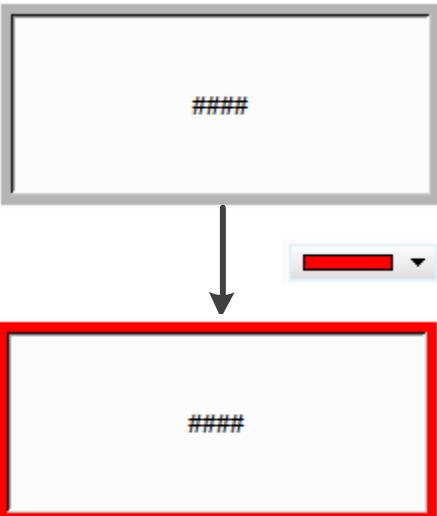
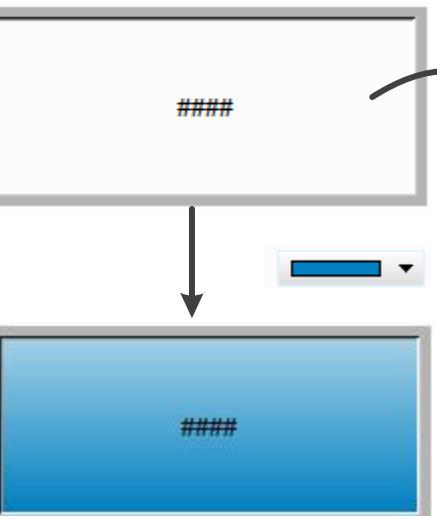
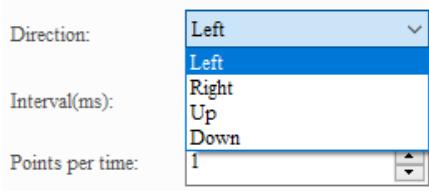
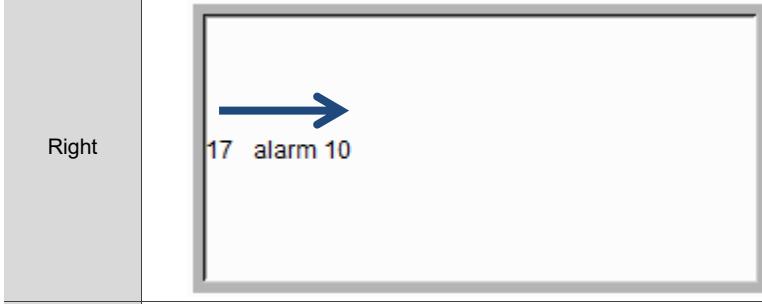
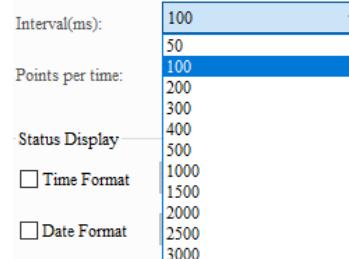


Figure 16.5.2 Main property page for the Alarm Moving Sign element

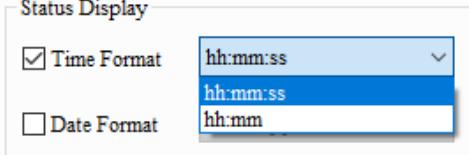
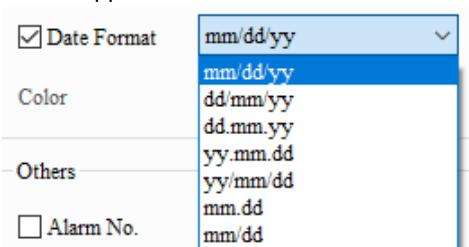
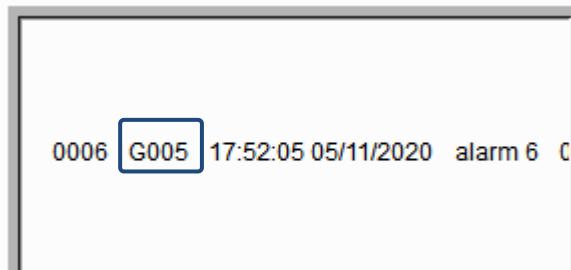
No.	Property	Function description															
(1)	Style	The available element styles are Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting. <table border="1" style="margin-top: 10px;"> <tr> <td>Standard</td> <td>Raised</td> <td>Sunken</td> <td>Transparent</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>#####</td> <td>#####</td> <td>#####</td> <td>#####</td> </tr> </table>				Standard	Raised	Sunken	Transparent					#####	#####	#####	#####
Standard	Raised	Sunken	Transparent														
#####	#####	#####	#####														

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No.	Property	Function description
(2)	Border Color	<p>Set the Border Color of the element. The default is gray.</p>  <p>The diagram illustrates the 'Border Color' property. It shows a rectangular element with a gray border and the text '#####'. A curved arrow points from the text 'Border Color' to the right side of the element. Below this, a color selection palette shows a red square, indicating the new border color. A second rectangular element below it has a red border and the same '#####' text, demonstrating the result of applying the red border color.</p>
(3)	Background Color	<p>Set the Background Color of the element. The default is white.</p>  <p>The diagram illustrates the 'Background Color' property. It shows a rectangular element with a gray border and the text '#####'. A curved arrow points from the text 'Background Color' to the top right corner of the element. Below this, a color selection palette shows a blue square, indicating the new background color. A second rectangular element below it has a blue background and the same '#####' text, demonstrating the result of applying the blue background color.</p>

No.	Property	Function description
(4)	Direction	Available display directions are Left, Right, Up, and Down. 
		Left 
		Right 
		Up 
		Down 
(5)	Interval (ms)	The Interval (ms) defines the time interval (unit: ms) between two message movements of the Alarm Moving Sign. The moving distance is determined by the setting of Points per time. 

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No.	Property	Function description
(6)	Points per time	The greater the number, the greater the distance each time the text moves. The setting range is 1 - 50 pixels.
(7)	Time Format	Two time formats are supported. 
(8)	Date Format	Seven date formats are supported. 
(9)	Color	Set the display color for the date and time. The default is 
(10)	Alarm No.	If the <b>Alarm No.</b> check box is selected, the element shows the alarm number when an alarm is triggered. 
(11)	Alarm Group	If the <b>Alarm Group</b> check box is selected, the element shows the alarm group when an alarm is triggered. 

No.	Property	Function description																																																																
(12)	Enable group number filtering	<ul style="list-style-type: none"> <li>■ Select the <b>Enable group number filtering</b> check box to filter the alarms to be displayed. You can specify the group number to display the alarms in groups.</li> <li>■ The value of the group number can be a variable or constant.</li> <li>■ When the Group is 0, all alarms are displayed.</li> </ul> <p style="text-align: center;"><b>Detail</b></p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <input checked="" type="checkbox"/> Enable group number filtering  <input checked="" type="checkbox"/> Group number is variable  <div style="display: flex; align-items: center; justify-content: space-between;"> <span>Group</span> <input type="text" value="\$10"/> <span>...</span> </div> <p style="margin-top: 10px;">( 0 : Show all )</p> </div> <p>■ Display example:</p> <p>When the Group is 0:</p> <div style="display: flex; align-items: flex-start;"> <table border="1" style="border-collapse: collapse; width: 60%;"> <thead> <tr> <th>No</th> <th>Group</th> <th>Message</th> <th>Trigger</th> <th>Frequency</th> <th>Recovery</th> </tr> </thead> <tbody> <tr><td>0001</td><td>1</td><td>alarm 1</td><td>14:23:18 06/15/</td><td>1</td><td></td></tr> <tr><td>0002</td><td>1</td><td>alarm 2</td><td>14:23:19 06/15/</td><td>1</td><td></td></tr> <tr><td>0003</td><td>2</td><td>alarm 3</td><td>14:23:19 06/15/</td><td>1</td><td></td></tr> <tr><td>0004</td><td>3</td><td>alarm 4</td><td>14:23:20 06/15/</td><td>1</td><td></td></tr> <tr><td>0005</td><td>5</td><td>alarm 5</td><td>14:23:20 06/15/</td><td>1</td><td></td></tr> </tbody> </table> <div style="flex-grow: 1; margin-left: 20px;"> <div style="display: flex; align-items: flex-end;"> <div style="flex-grow: 1;"> <table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td>Alarm 1</td></tr> <tr><td>Alarm 2</td></tr> <tr><td>Alarm 3</td></tr> <tr><td>Alarm 4</td></tr> <tr><td>Alarm 5</td></tr> </table> </div> <div style="margin-left: 10px;"> <span>Group Filter</span> <input type="button" value="0"/> </div> </div> </div> <p>When the Group is 1:</p> <div style="display: flex; align-items: flex-start;"> <table border="1" style="border-collapse: collapse; width: 60%;"> <thead> <tr> <th>No</th> <th>Group</th> <th>Message</th> <th>Trigger</th> <th>Frequency</th> <th>Recovery</th> </tr> </thead> <tbody> <tr><td>0001</td><td>1</td><td>alarm 1</td><td>14:23:18 06/15/</td><td>1</td><td></td></tr> <tr><td>0002</td><td>1</td><td>alarm 2</td><td>14:23:19 06/15/</td><td>1</td><td></td></tr> </tbody> </table> <div style="flex-grow: 1; margin-left: 20px;"> <div style="display: flex; align-items: flex-end;"> <div style="flex-grow: 1;"> <table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td>Alarm 1</td></tr> <tr><td>Alarm 2</td></tr> <tr><td>Alarm 3</td></tr> <tr><td>Alarm 4</td></tr> <tr><td>Alarm 5</td></tr> </table> </div> <div style="margin-left: 10px;"> <span>Group Filter</span> <input type="button" value="1"/> </div> </div> </div> </div> </div>	No	Group	Message	Trigger	Frequency	Recovery	0001	1	alarm 1	14:23:18 06/15/	1		0002	1	alarm 2	14:23:19 06/15/	1		0003	2	alarm 3	14:23:19 06/15/	1		0004	3	alarm 4	14:23:20 06/15/	1		0005	5	alarm 5	14:23:20 06/15/	1		Alarm 1	Alarm 2	Alarm 3	Alarm 4	Alarm 5	No	Group	Message	Trigger	Frequency	Recovery	0001	1	alarm 1	14:23:18 06/15/	1		0002	1	alarm 2	14:23:19 06/15/	1		Alarm 1	Alarm 2	Alarm 3	Alarm 4	Alarm 5
No	Group	Message	Trigger	Frequency	Recovery																																																													
0001	1	alarm 1	14:23:18 06/15/	1																																																														
0002	1	alarm 2	14:23:19 06/15/	1																																																														
0003	2	alarm 3	14:23:19 06/15/	1																																																														
0004	3	alarm 4	14:23:20 06/15/	1																																																														
0005	5	alarm 5	14:23:20 06/15/	1																																																														
Alarm 1																																																																		
Alarm 2																																																																		
Alarm 3																																																																		
Alarm 4																																																																		
Alarm 5																																																																		
No	Group	Message	Trigger	Frequency	Recovery																																																													
0001	1	alarm 1	14:23:18 06/15/	1																																																														
0002	1	alarm 2	14:23:19 06/15/	1																																																														
Alarm 1																																																																		
Alarm 2																																																																		
Alarm 3																																																																		
Alarm 4																																																																		
Alarm 5																																																																		

## ■ Main-2

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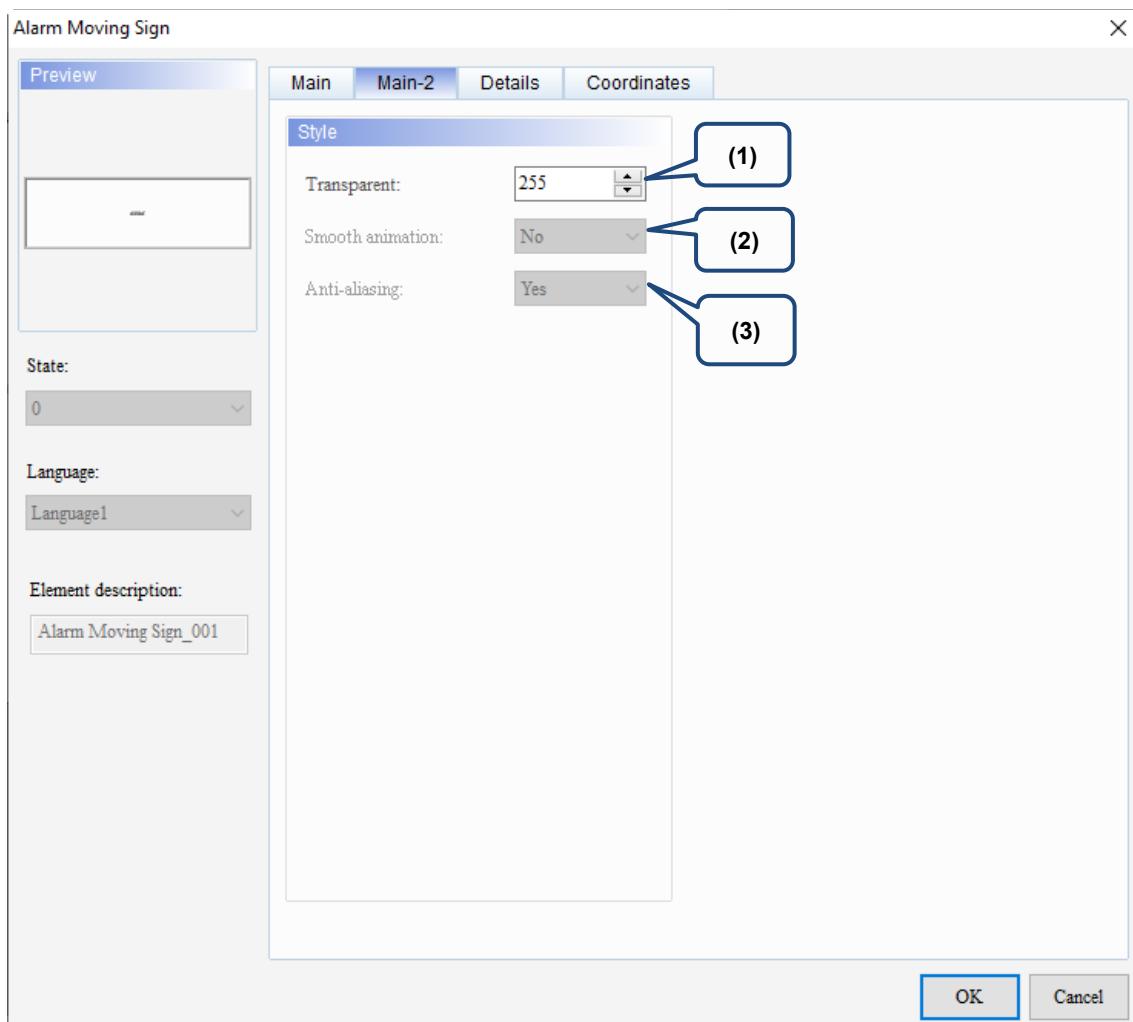


Figure 16.5.3 Main-2 property page for the Alarm Moving Sign element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

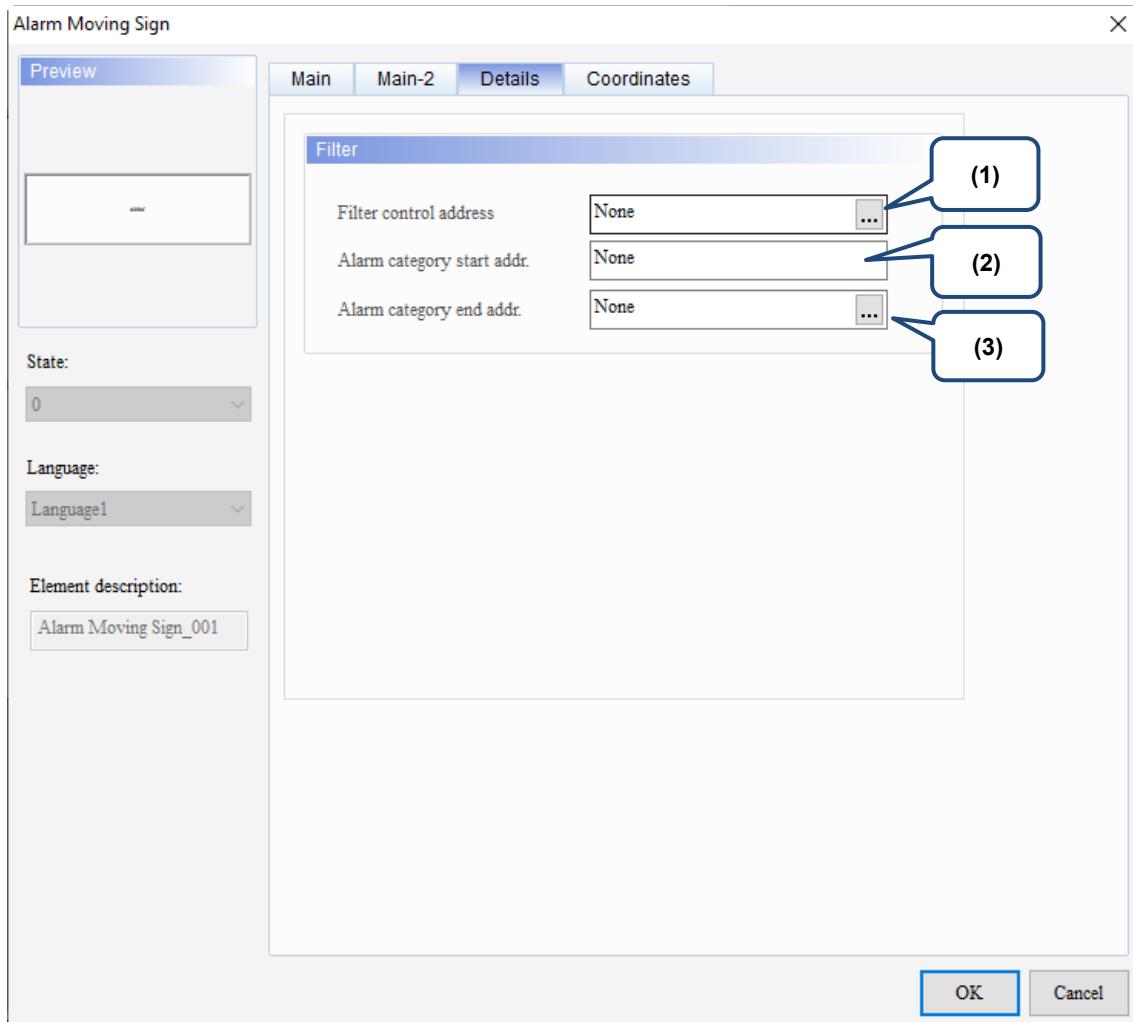
**■ Details**

Figure 16.5.4 Details property page for the Alarm Moving Sign element

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No.	Property	Function description																
(1)	Filter control address	<p>You can filter the specified items with Filter control address.</p> <table border="1"> <thead> <tr> <th>Value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>Default; display all triggered alarms.</td></tr> <tr> <td>1</td><td>Hide the alarms with both Recovery Time and Acknowledge Time.</td></tr> <tr> <td>2</td><td>Hide the alarms with Recovery Time.</td></tr> <tr> <td>3</td><td>Hide the alarms with Recovery Time or Acknowledge Time.</td></tr> <tr> <td>4</td><td>Hide the alarms with Acknowledge Time.</td></tr> <tr> <td>5</td><td>This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.</td></tr> <tr> <td>6</td><td>This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.</td></tr> </tbody> </table>	Value	Description	0	Default; display all triggered alarms.	1	Hide the alarms with both Recovery Time and Acknowledge Time.	2	Hide the alarms with Recovery Time.	3	Hide the alarms with Recovery Time or Acknowledge Time.	4	Hide the alarms with Acknowledge Time.	5	This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.	6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.
Value	Description																	
0	Default; display all triggered alarms.																	
1	Hide the alarms with both Recovery Time and Acknowledge Time.																	
2	Hide the alarms with Recovery Time.																	
3	Hide the alarms with Recovery Time or Acknowledge Time.																	
4	Hide the alarms with Acknowledge Time.																	
5	This setting must be used with Alarm counter display. The alarm display count refers to the value of Alarm counter display. When the alarm display count is smaller than this value, the alarm is hidden.																	
6	This setting must be used with Alarm category start addr. and Alarm category end addr. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.																	
(2)	Alarm category start addr.	<ul style="list-style-type: none"> <li>■ This setting must be used with Filter control address.</li> <li>■ When Filter control address is set to 6, input the alarm category number.</li> </ul>																
(3)	Alarm category end addr.	<table border="1"> <thead> <tr> <th>Example</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Alarms with alarm category numbers 1 and 5</td><td> <p>When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms.</p> <p>When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</p> </td></tr> </tbody> </table>	Example	Description	Alarms with alarm category numbers 1 and 5	<p>When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms.</p> <p>When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</p>												
Example	Description																	
Alarms with alarm category numbers 1 and 5	<p>When you input 1 to Alarm category start addr. and 3 to Alarm category end addr., the Alarm History Table displays the category 1 triggered alarms.</p> <p>When you input 1 to Alarm category start addr. and 5 to Alarm category end addr., the Alarm History Table displays the category 1 and 5 triggered alarms.</p>																	

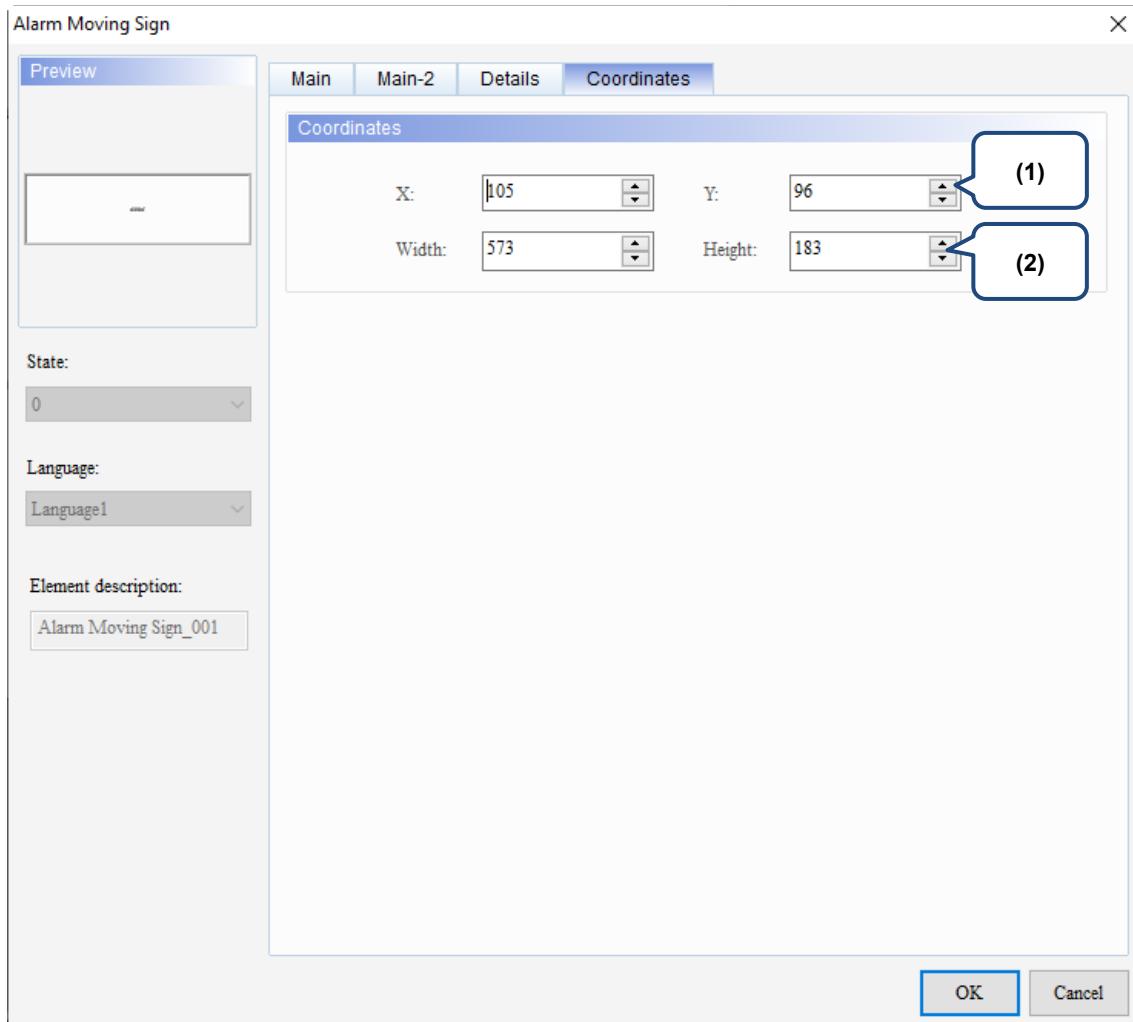
**■ Coordinates**

Figure 16.5.5 Coordinates property page for the Alarm Moving Sign element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

(This page is intentionally left blank.)

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## Keypad

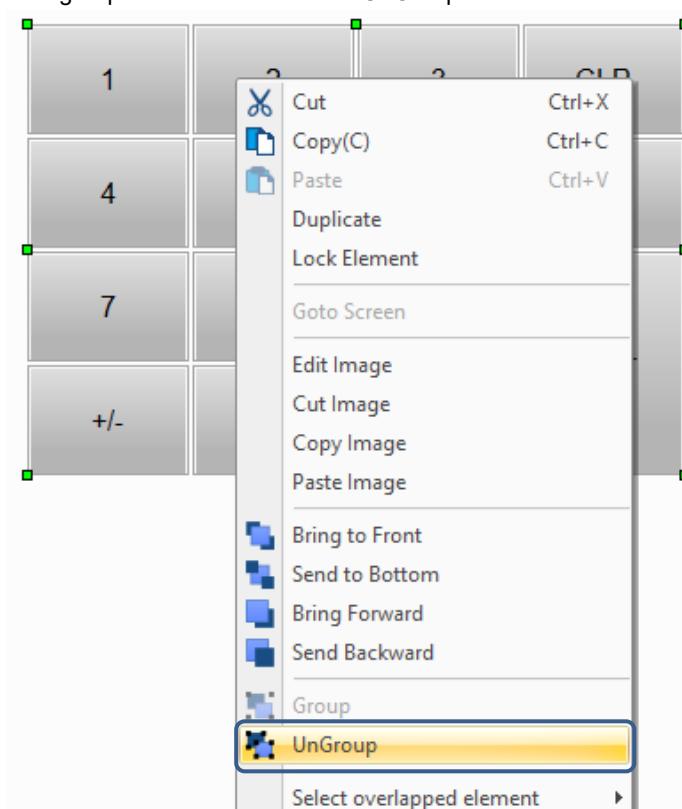
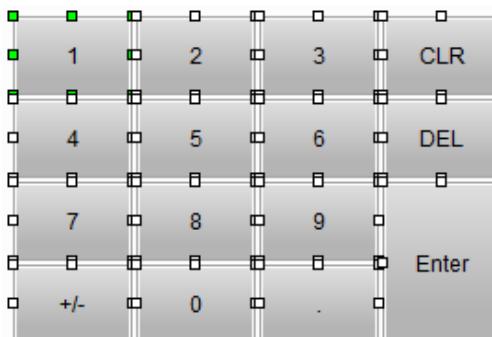
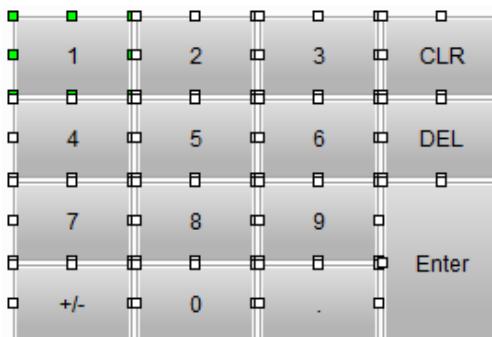
This chapter provides the usage and setting details for the Keypad elements.

17.1 Keypad(1) .....	17-2
17.2 Keypad(2) .....	17-13
17.3 Keypad(3) .....	17-24

## 17.1 Keypad(1)

Three types of Keypad elements are provided to use with the Numeric Entry element, Character Entry element, and Barcode Input element. For Numeric Entry and Character Entry elements, the Input Mode must be set as Active Non-Popup or Touch Non-Popup; while the Input Mode for the Barcode Input element must be set as Active. The Interlock Addresses for these three elements must be set up at the same time, but if the Input Mode is set as Touch Non-Popup, the Interlock Address setting is not required. Refer to Chapter 13 Input for more setting details.

Keypad(1) is a decimal keypad, for which you can customize the font, size, color, and alignment. It also provides a variety of modes for selection, including ESC, ENT, CLR, DEL, and ASCII. Keypad(1) is a grouped element, but you can right-click on the element and select Ungroup to separate the buttons on the keypad. You can also double-click the buttons for editing and making changes.

	
	<p>Right-click on the grouped element and select UnGroup.</p>  <p>The context menu options include:</p> <ul style="list-style-type: none"><li>Cut (Ctrl+X)</li><li>Copy(C) (Ctrl+C)</li><li>Paste (Ctrl+V)</li><li>Duplicate</li><li>Lock Element</li><li>Goto Screen</li><li>Edit Image</li><li>Cut Image</li><li>Copy Image</li><li>Paste Image</li><li>Bring to Front</li><li>Send to Bottom</li><li>Bring Forward</li><li>Send Backward</li><li>Group</li><li><b>UnGroup</b> (highlighted)</li></ul>
Grouped	
Not grouped	

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When you double-click the Keypad(1), the property page is shown as follows.

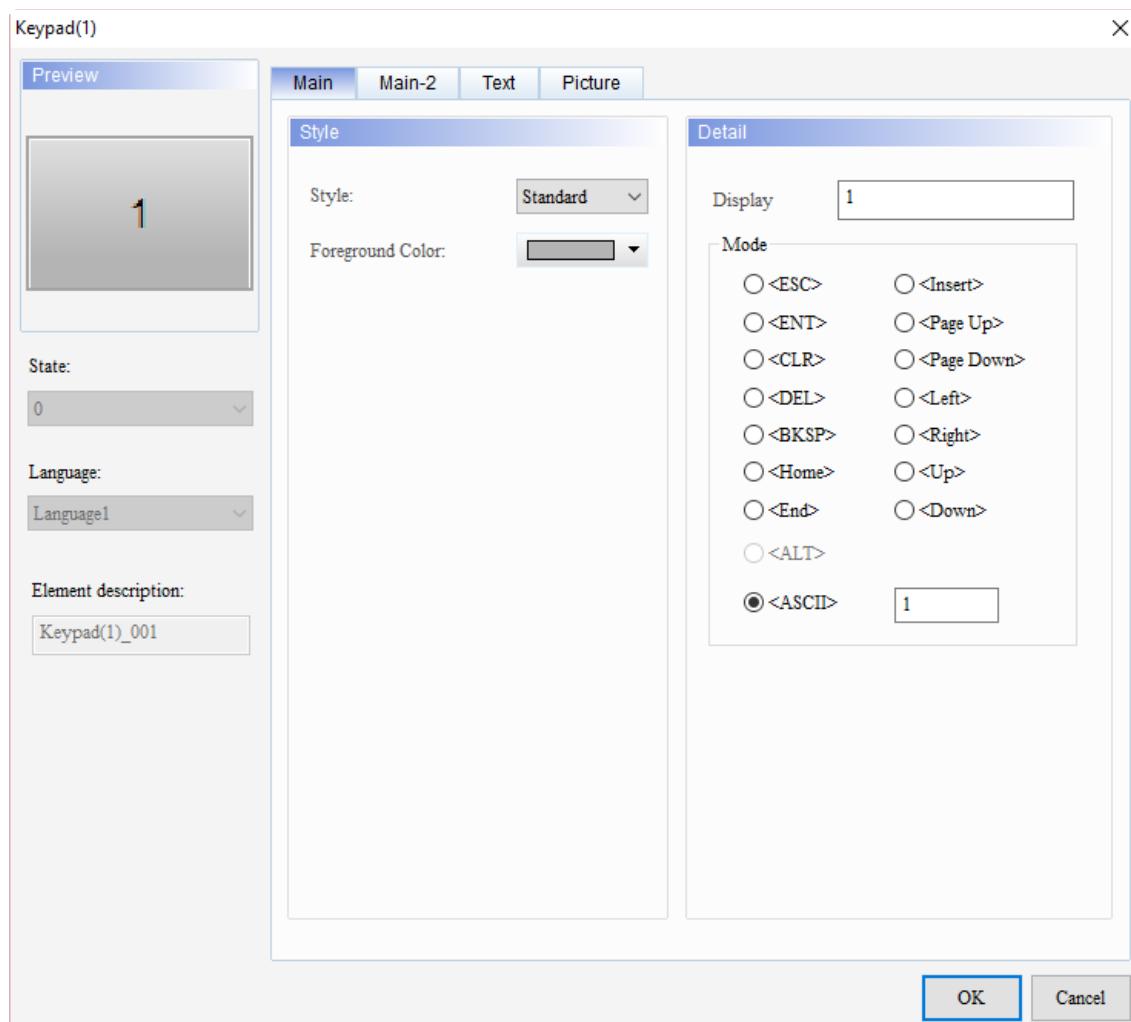
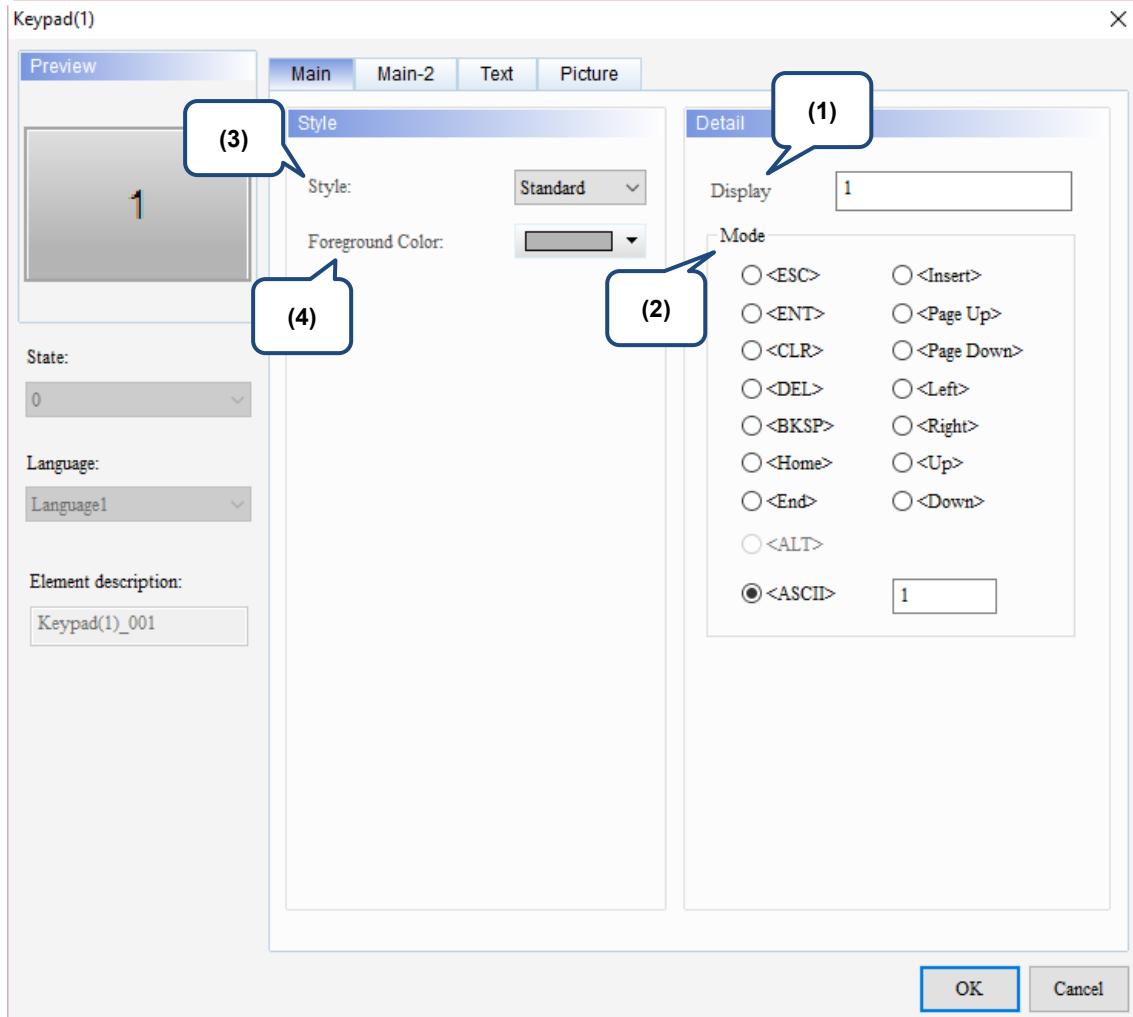


Figure 17.1.1 Properties of Keypad(1)

Table 17.1.1 Function page of Keypad(1)

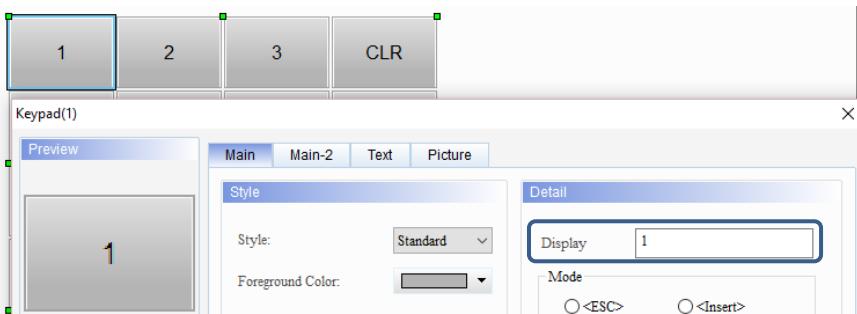
Keypad(1)	
Function page	Description
Preview	Keypad(1) elements do not support multiple state values, but can edit multi-language data display.
Main	Set the Style, Foreground Color, Display, and Mode.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.

## ■ Main



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Figure 17.1.2 Main property page for the Keypad(1) element

No.	Property	Function description
(1)	Display	<p>When you press a button on Keypad(1), this will be the displaying value of that button.</p> 

No.	Property	Function description				
(2)	Mode	<p>You can select a mode to define the action of a button. The 15 available modes include &lt;ESC&gt;, &lt;ENT&gt;, &lt;CLR&gt;, &lt;DEL&gt;, &lt;BKSP&gt;, &lt;Home&gt;, &lt;End&gt;, &lt;Insert&gt;, &lt;Page Up&gt;, &lt;Page Down&gt;, &lt;Left&gt;, &lt;Right&gt;, &lt;Up&gt;, &lt;Down&gt;, and &lt;ASCII&gt;.</p> <ul style="list-style-type: none"> <li>■ &lt;ESC&gt;: cancel the entry. If the Keypad element is on a sub-screen, executing ESC will also close the sub-screen.</li> <li>■ &lt;ENT&gt;: input the entry.</li> <li>■ &lt;CLR&gt;: clear a string of characters.</li> <li>■ &lt;DEL&gt;: delete a single character.</li> <li>■ &lt;BKSP&gt;: delete a single character.</li> <li>■ &lt;Home&gt;: move the input cursor to the beginning of that line.</li> <li>■ &lt;End&gt;: move the input cursor to the end of that line.</li> <li>■ &lt;Insert&gt;: switch between insert and replace.</li> <li>■ &lt;Page Up&gt;: switch the current page to the previous page.</li> <li>■ &lt;Page Down&gt;: switch the current page to the next page.</li> <li>■ &lt;Left&gt;: move the input cursor to the left by one character.</li> <li>■ &lt;Right&gt;: move the input cursor to the right by one character.</li> <li>■ &lt;Up&gt;: move the input cursor up a line.</li> <li>■ &lt;Down&gt;: move the input cursor down a line.</li> <li>■ &lt;ASCII&gt;: you can specify the input code.</li> </ul>				
(3)	Style	<p>The available styles are Standard and Raised. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Standard</td> <td style="text-align: center;">Raised</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Standard	Raised		
Standard	Raised					
(4)	Foreground Color	<p>Set the foreground color of the element.</p>				

## ■ Main-2

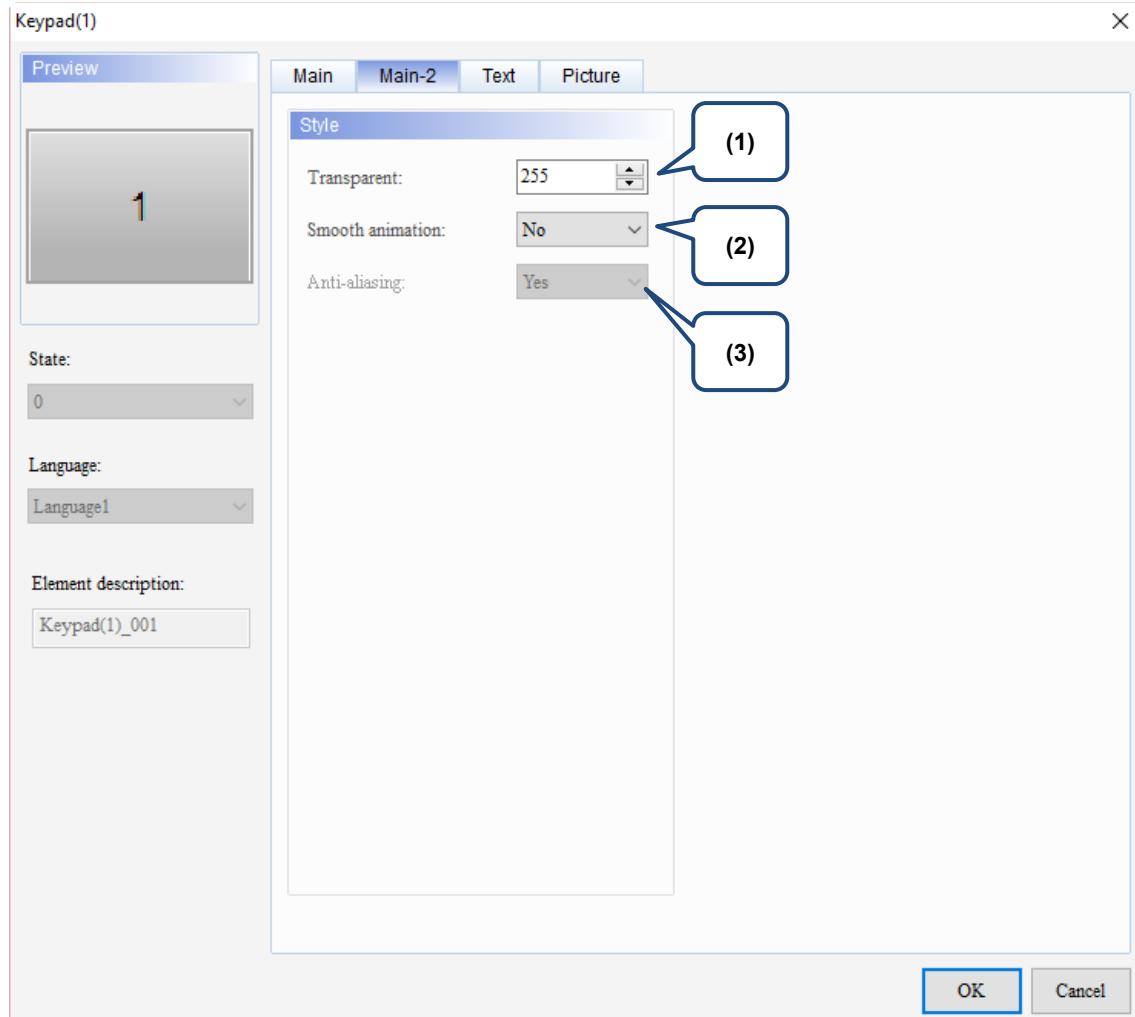
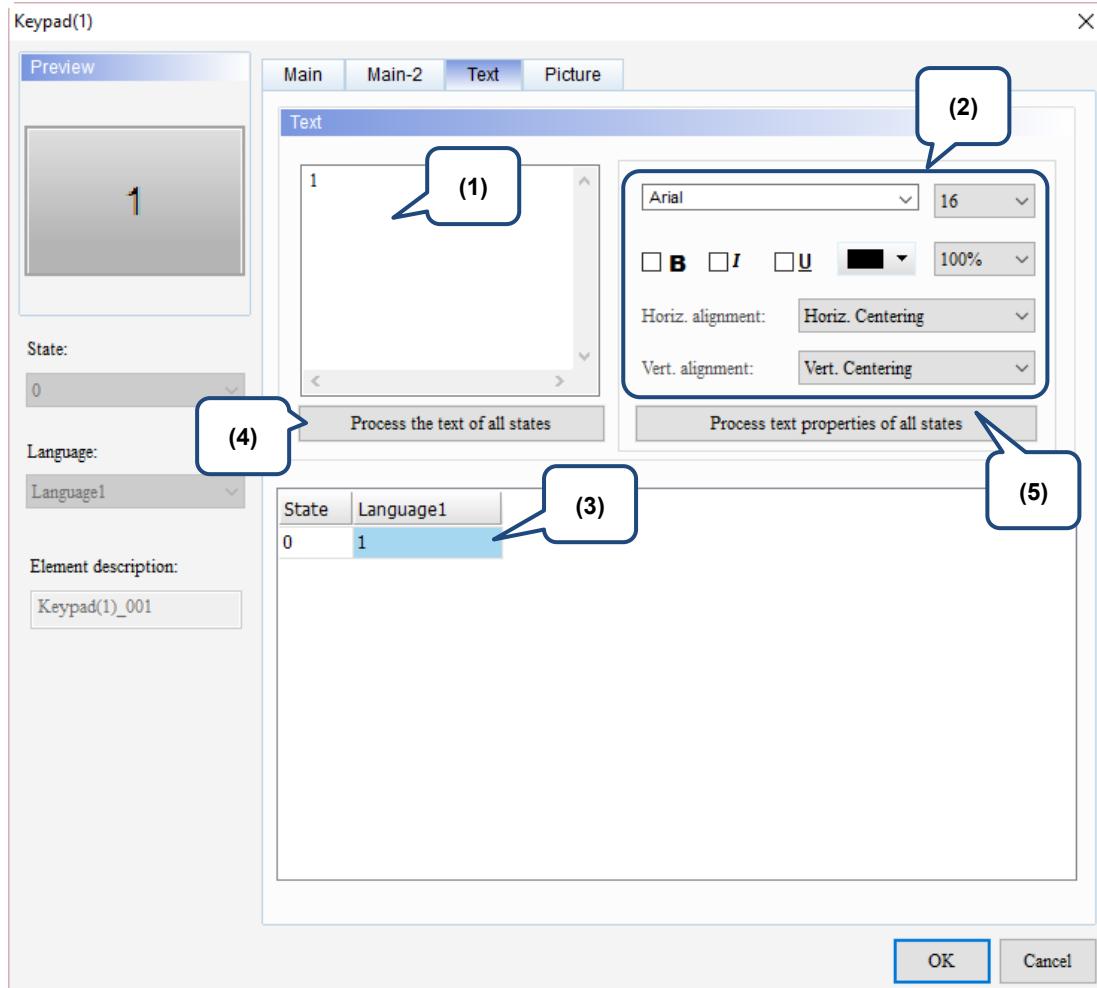


Figure 17.1.3 Main-2 property page for the Keypad(1) element

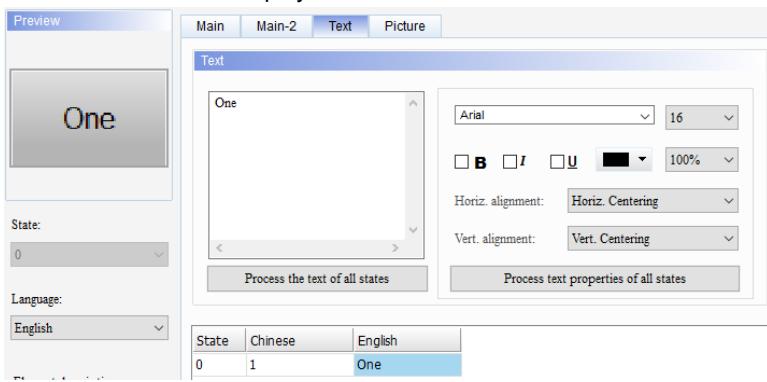
No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	<ul style="list-style-type: none"> <li>■ The Smooth animation function is available for this element.</li> <li>■ After ungrouping the button elements for the Keypad element, you can activate the Smooth animation function per button. When you activate the Smooth animation function, the button with this setting will enlarge when you press it.</li> </ul> 
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text



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Figure 17.1.4 Text property page for the Keypad(1) element

No.	Property	Function description
(1)	Text	You can enter the text to display in this box. 
(2)	Text	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	This function is not supported as the Keypad element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as the Keypad element does not have multiple states.

## ■ Picture

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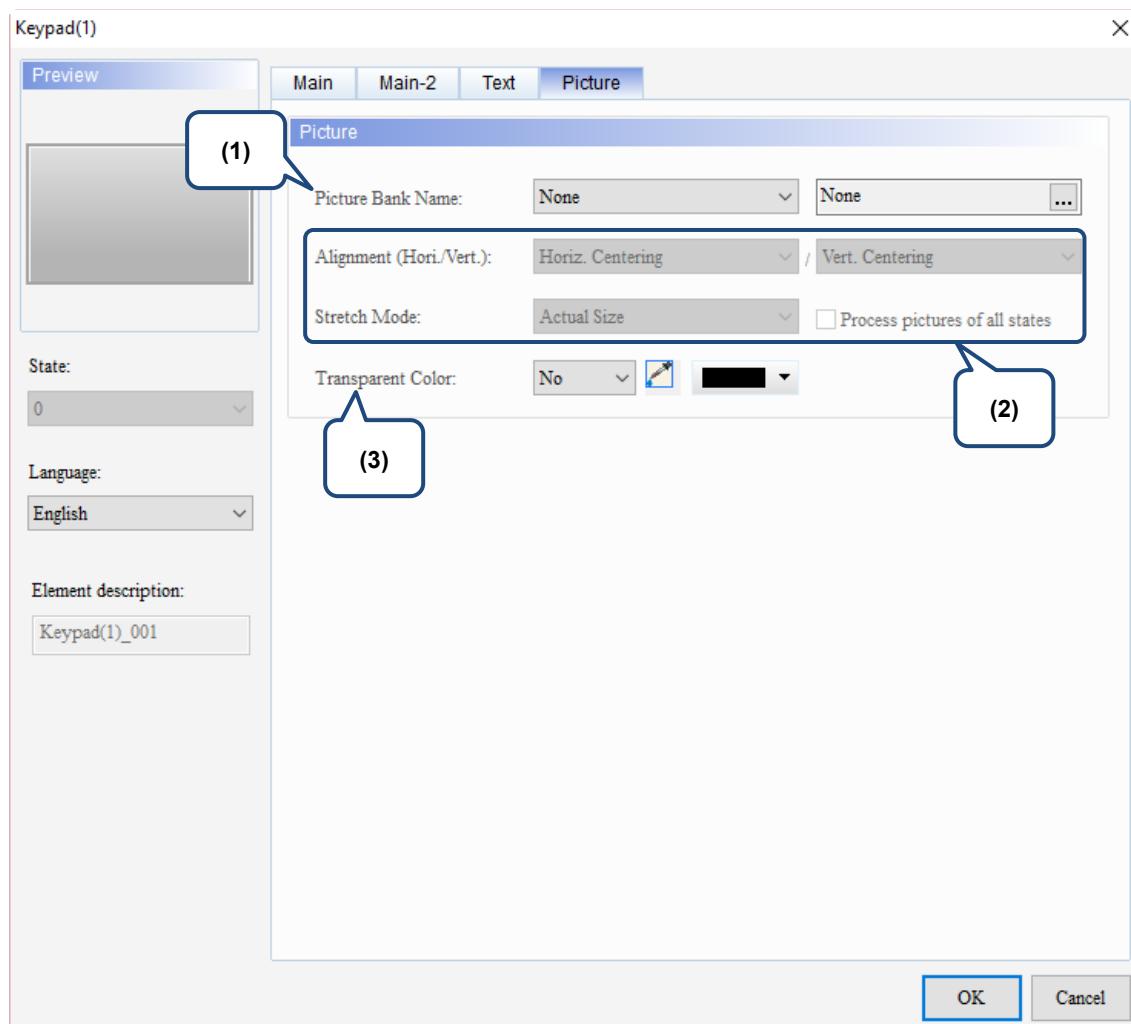
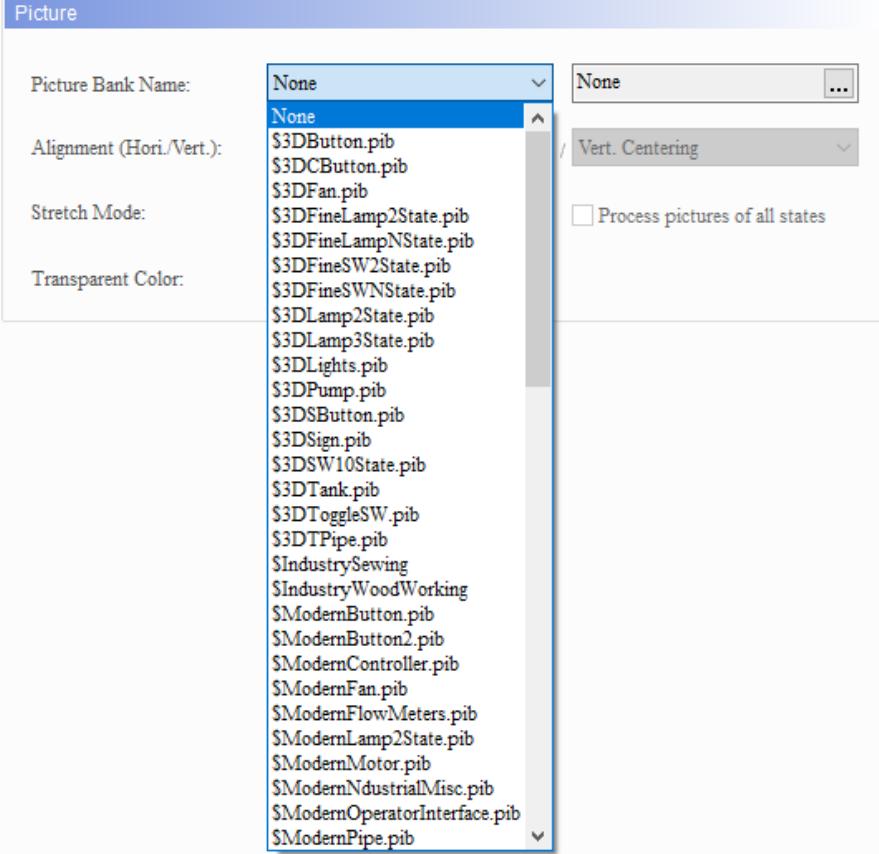
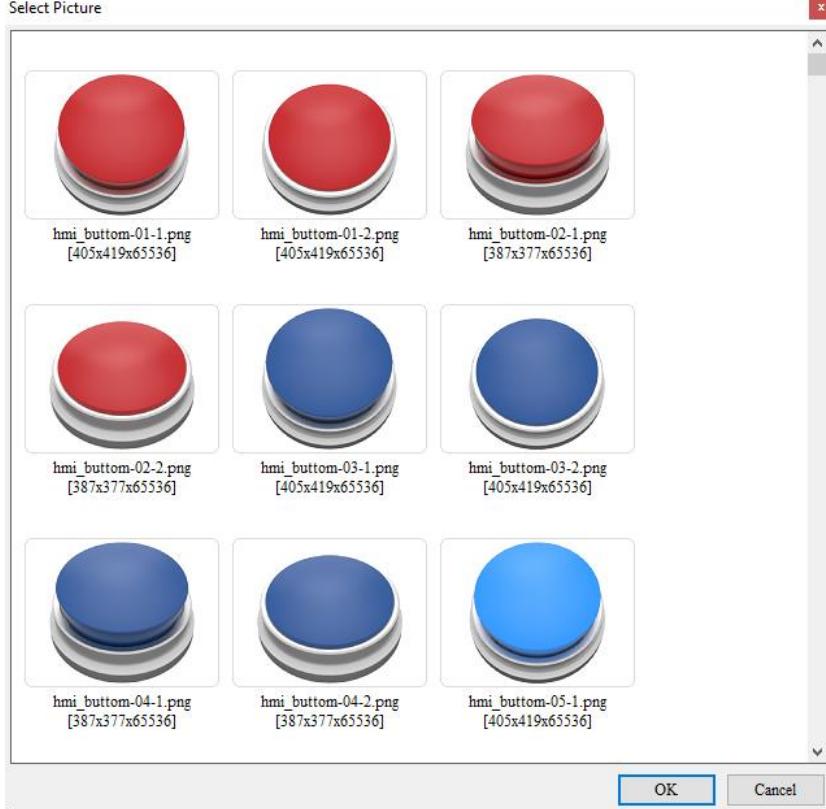
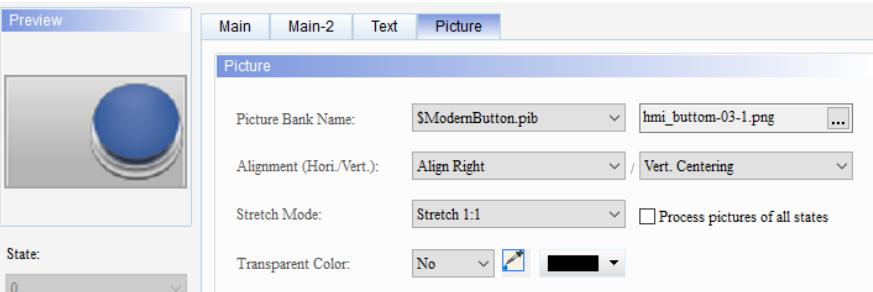


Figure 17.1.5 Picture property page for the Keypad(1) element

No.	Property	Function description									
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list box to select the picture bank provided by the software and then select the picture you need.</p>  <p>Picture</p> <p>Picture Bank Name: <input type="button" value="None"/></p> <p>Alignment (Hori./Vert.): <input type="button" value="None"/></p> <p>Stretch Mode: <input type="button" value="Vert. Centering"/></p> <p>Transparent Color: <input type="checkbox"/> Process pictures of all states</p>  <p>Select Picture</p> <table border="1"> <tbody> <tr> <td> hmi_button-01-1.png [405x419x65536]</td> <td> hmi_button-01-2.png [405x419x65536]</td> <td> hmi_button-02-1.png [387x377x65536]</td> </tr> <tr> <td> hmi_button-02-2.png [387x377x65536]</td> <td> hmi_button-03-1.png [405x419x65536]</td> <td> hmi_button-03-2.png [405x419x65536]</td> </tr> <tr> <td> hmi_button-04-1.png [387x377x65536]</td> <td> hmi_button-04-2.png [387x377x65536]</td> <td> hmi_button-05-1.png [405x419x65536]</td> </tr> </tbody> </table> <p>OK Cancel</p>	 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]	 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]	 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]
 hmi_button-01-1.png [405x419x65536]	 hmi_button-01-2.png [405x419x65536]	 hmi_button-02-1.png [387x377x65536]									
 hmi_button-02-2.png [387x377x65536]	 hmi_button-03-1.png [405x419x65536]	 hmi_button-03-2.png [405x419x65536]									
 hmi_button-04-1.png [387x377x65536]	 hmi_button-04-2.png [387x377x65536]	 hmi_button-05-1.png [405x419x65536]									

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No.	Property	Function description					
(2)	Alignment	<p>■ You can use the alignment options to set how pictures are aligned.</p> 					
	Stretch Mode	<p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Stretch All</th> <th style="text-align: center;">Stretch 1:1</th> <th style="text-align: center;">Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table> 	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.
Stretch All	Stretch 1:1	Actual Size					
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.					
<p>■ Assuming that the elements have multiple states and some pictures do not fill the full element display area, if you select the <b>Process pictures of all states</b> check box, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>							
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 					

## 17.2 Keypad(2)

Keypad(2) is a hexadecimal keypad, for which you can customize the font, size, color, and alignment. It also provides a variety of modes for selection, including ESC, ENT, CLR, DEL, and ASCII. Keypad(2) is a grouped element, but you can right-click on the element to ungroup the element and separate the buttons on the keypad. You can also double-click the buttons for editing and making changes.

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	0	1	2	3	CLR
	4	5	6	7	DEL
	8	9	A	B	
	C	D	E	F	Enter

Right-click on the grouped element and select UnGroup.

Grouped

Not grouped

When you double-click the Keypad(2), the property page is shown as follows.

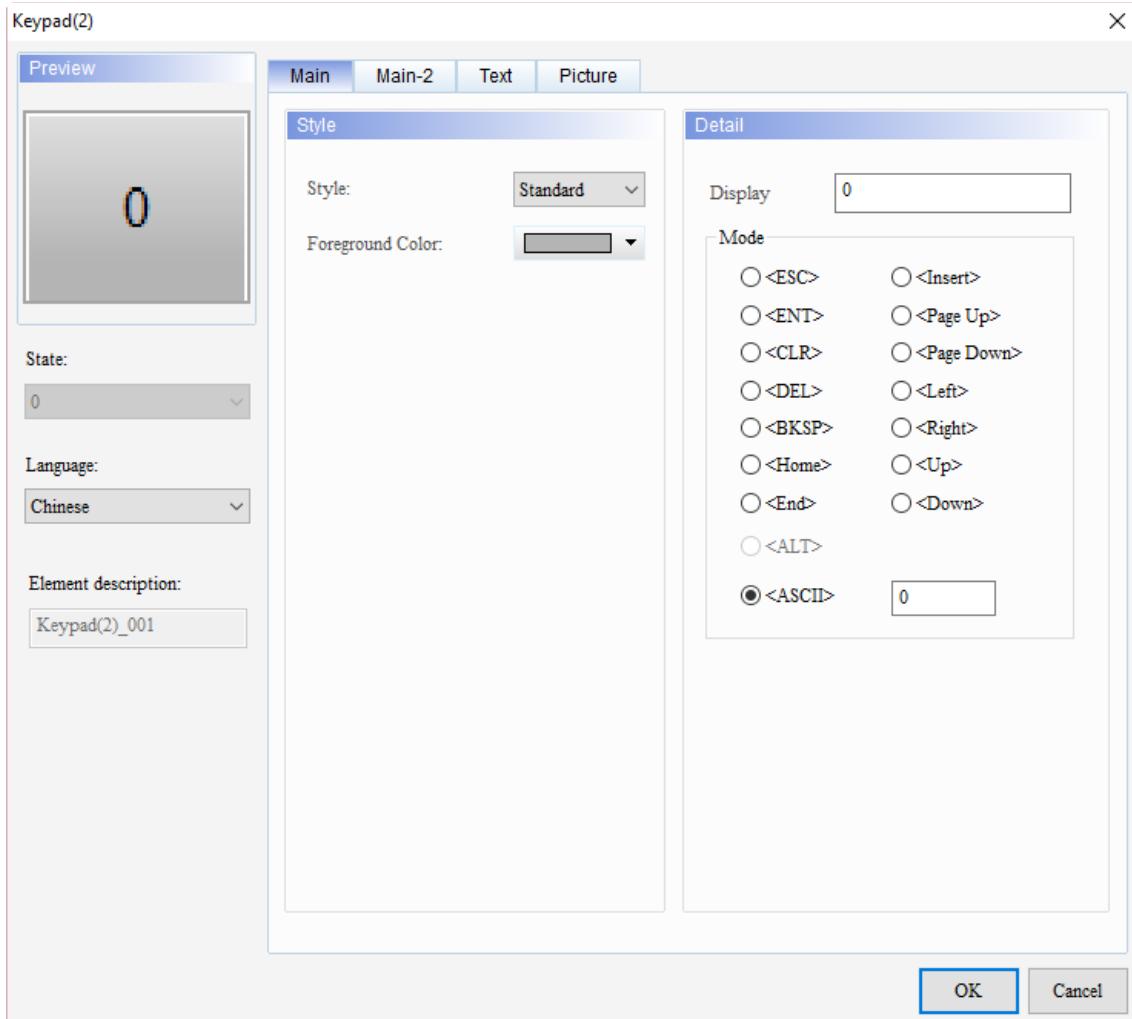


Figure 17.2.1 Properties of Keypad(2)

Table 17.2.1 Function page of Keypad(2)

Keypad(2)	
Function page	Description
Preview	Keypad(2) elements do not support multiple state values, but can edit multi-language data display.
Main	Set the Style, Foreground Color, Display, and Mode.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.

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## ■ Main

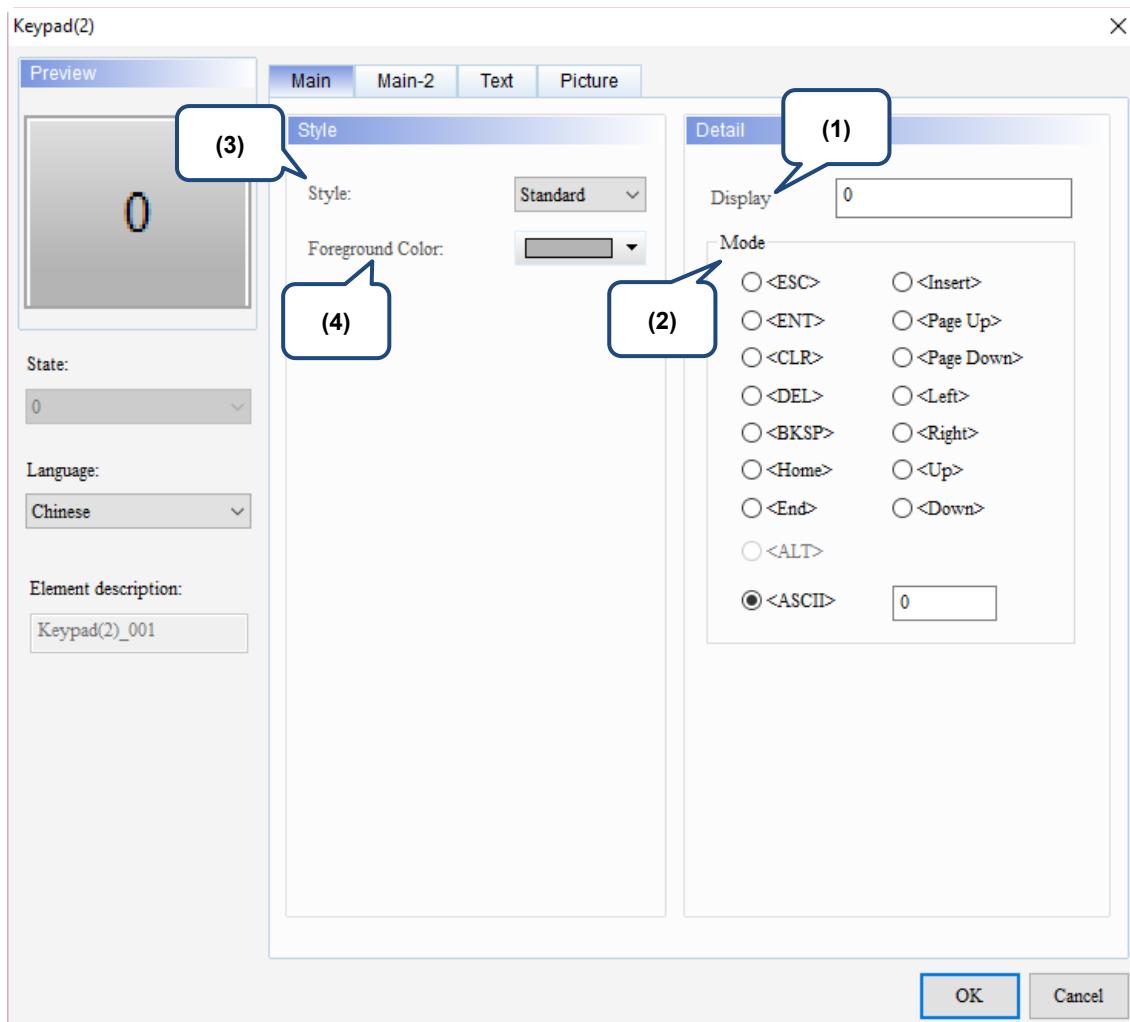


Figure 17.2.2 Main property page for the Keypad(2) element

No.	Property	Function description
(1)	Display	<p>When you press a button on Keypad(2), this will be the displaying value of that button.</p>

No.	Property	Function description				
(2)	Mode	<p>You can select a mode to define the action of a button. The 15 available modes include &lt;ESC&gt;, &lt;ENT&gt;, &lt;CLR&gt;, &lt;DEL&gt;, &lt;BKSP&gt;, &lt;Home&gt;, &lt;End&gt;, &lt;Insert&gt;, &lt;Page Up&gt;, &lt;Page Down&gt;, &lt;Left&gt;, &lt;Right&gt;, &lt;Up&gt;, &lt;Down&gt;, and &lt;ASCII&gt;.</p> <ul style="list-style-type: none"> <li>■ &lt;ESC&gt;: cancel the entry. If the Keypad element is on a sub-screen, executing ESC will also close the sub-screen.</li> <li>■ &lt;ENT&gt;: input the entry.</li> <li>■ &lt;CLR&gt;: clear a string of characters.</li> <li>■ &lt;DEL&gt;: delete a single character.</li> <li>■ &lt;BKSP&gt;: delete a single character.</li> <li>■ &lt;Home&gt;: move the input cursor to the beginning of that line.</li> <li>■ &lt;End&gt;: move the input cursor to the end of that line.</li> <li>■ &lt;Insert&gt;: switch between insert and replace.</li> <li>■ &lt;Page Up&gt;: switch the current page to the previous page.</li> <li>■ &lt;Page Down&gt;: switch the current page to the next page.</li> <li>■ &lt;Left&gt;: move the input cursor to the left by one character.</li> <li>■ &lt;Right&gt;: move the input cursor to the right by one character.</li> <li>■ &lt;Up&gt;: move the input cursor up a line.</li> <li>■ &lt;Down&gt;: move the input cursor down a line.</li> <li>■ &lt;ASCII&gt;: you can specify the input code.</li> </ul>				
(3)	Style	<p>The available element styles are Standard and Raised. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Standard</td> <td style="text-align: center;">Raised</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Standard	Raised		
Standard	Raised					
(4)	Foreground Color	<p>Set the foreground color of the element.</p>				

## ■ Main-2

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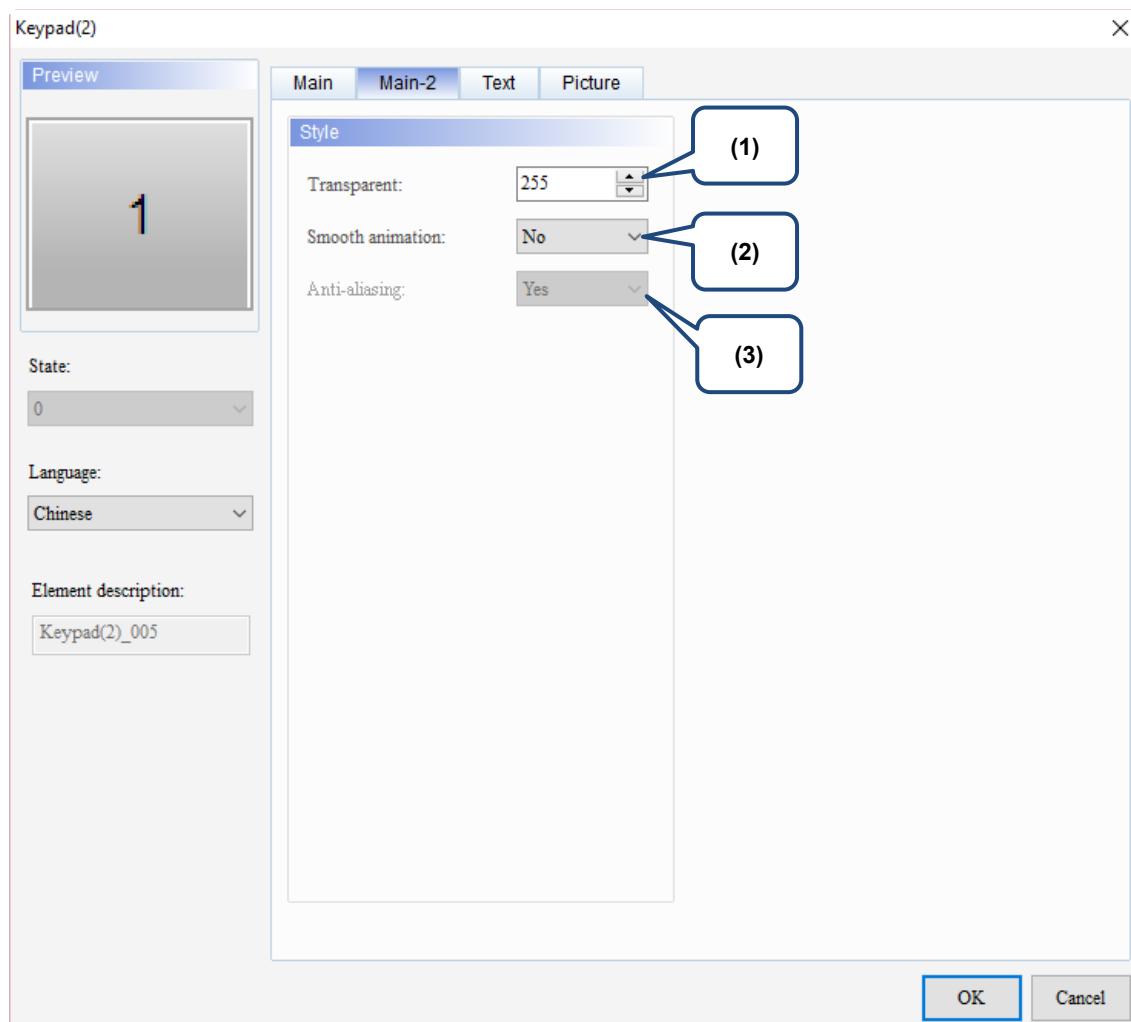
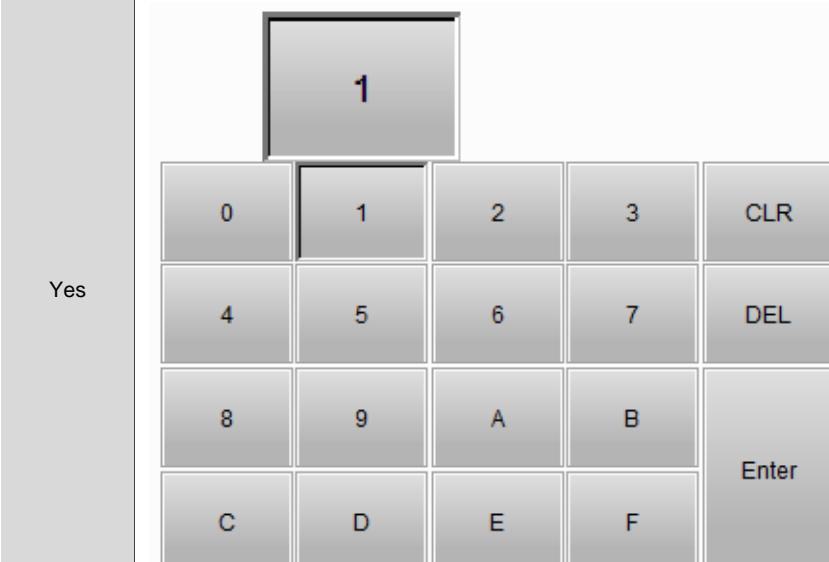


Figure 17.2.3 Main-2 property page for the Keypad(2) element

No.	Property	Function description					
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.					
		<ul style="list-style-type: none"> <li>■ The Smooth animation function is available for this element.</li> <li>■ After ungrouping the button elements for the Keypad element, you can activate the Smooth animation function per button. When you activate the Smooth animation function, the button with this setting will enlarge when you press it.</li> </ul>					
(2)	Smooth animation	Yes					
		No					
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.					

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## ■ Text

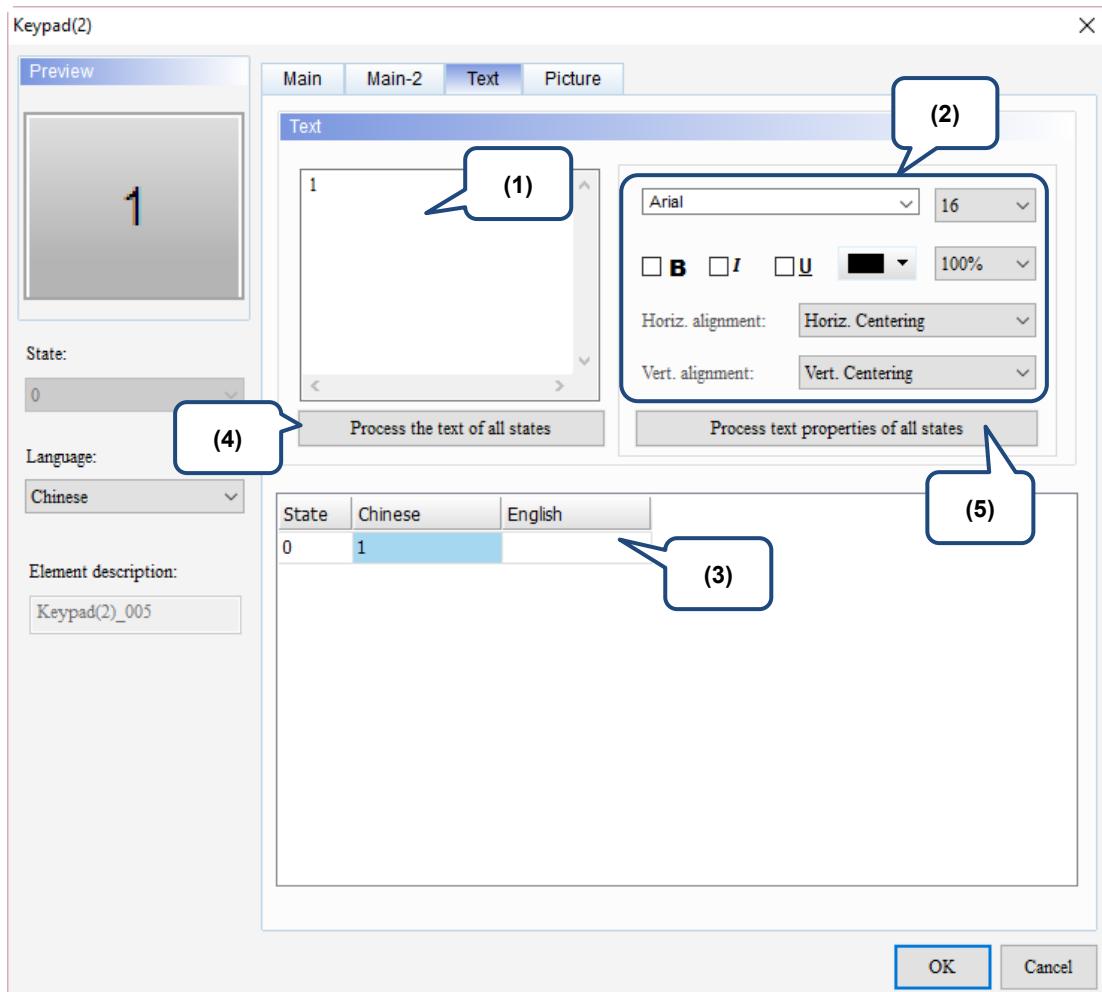


Figure 17.2.4 Text property page for the Keypad(2) element

No.	Property	Function description
(1)	Text	You can enter the text to display in this box. 
(2)	Text Property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	This function is not supported as the Keypad element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as the Keypad element does not have multiple states.

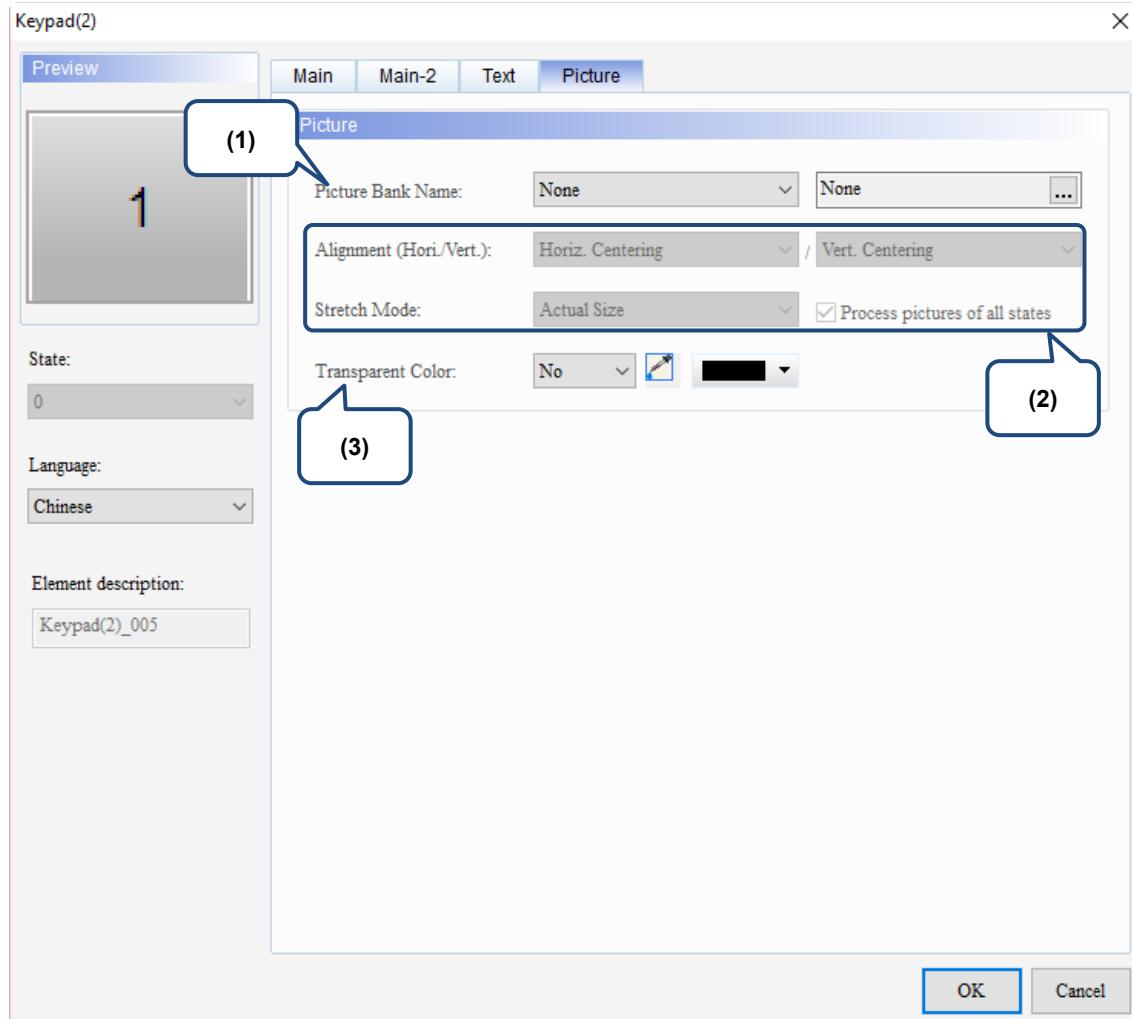
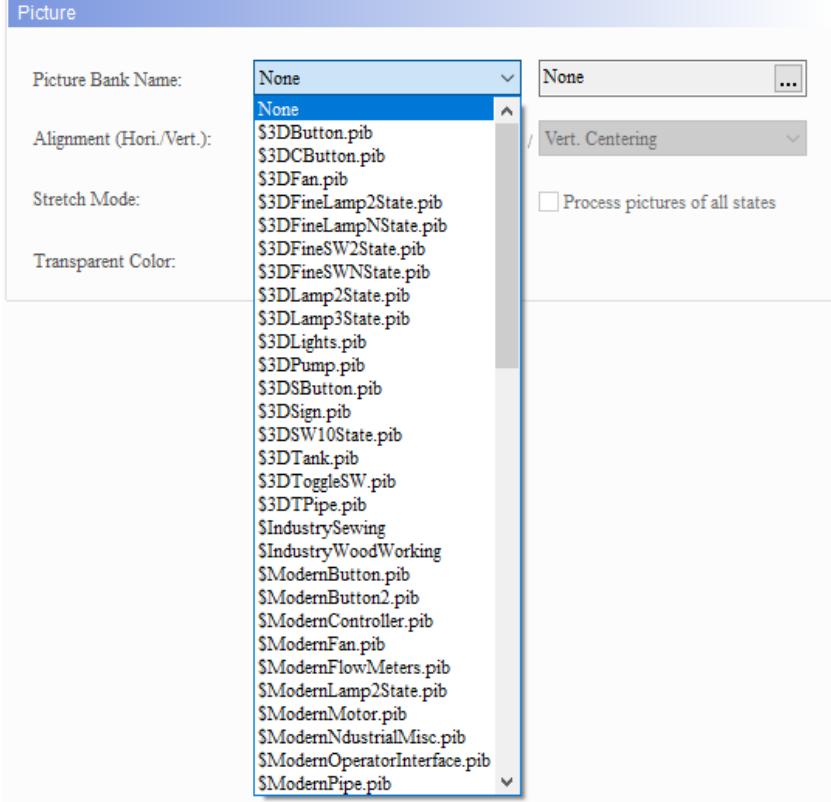
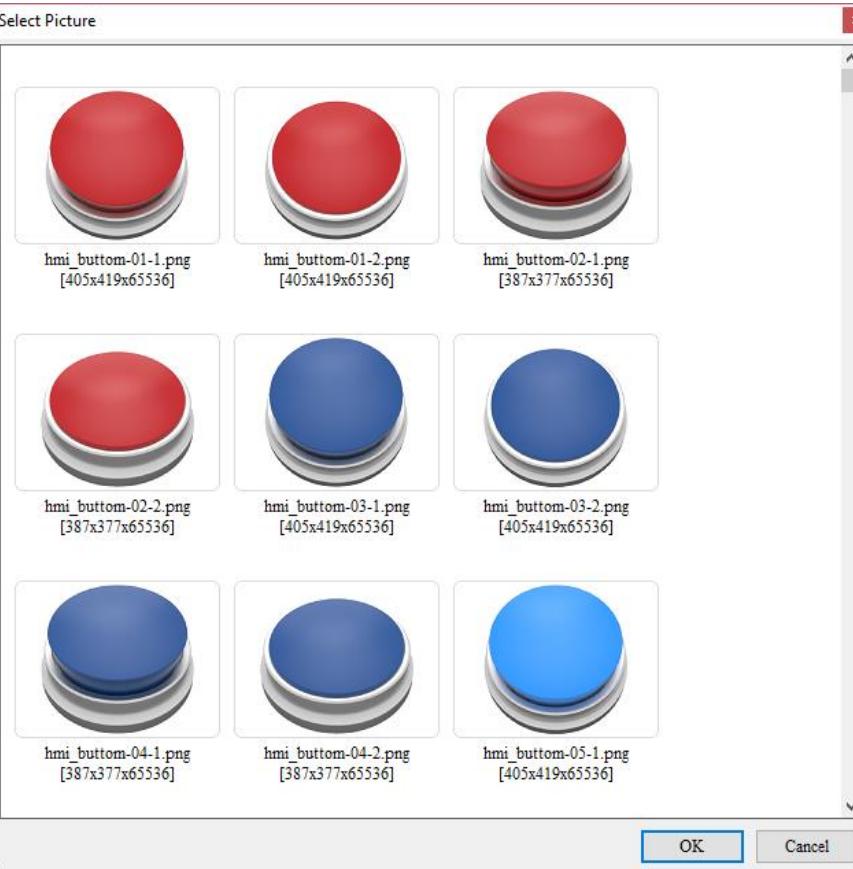
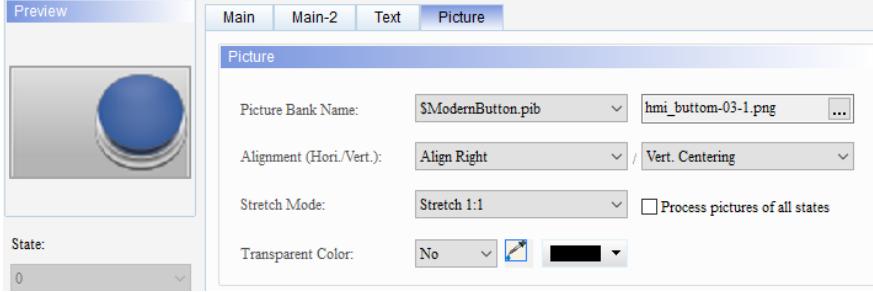
**■ Picture**

Figure 17.2.5 Picture property page for the Keypad(2) element

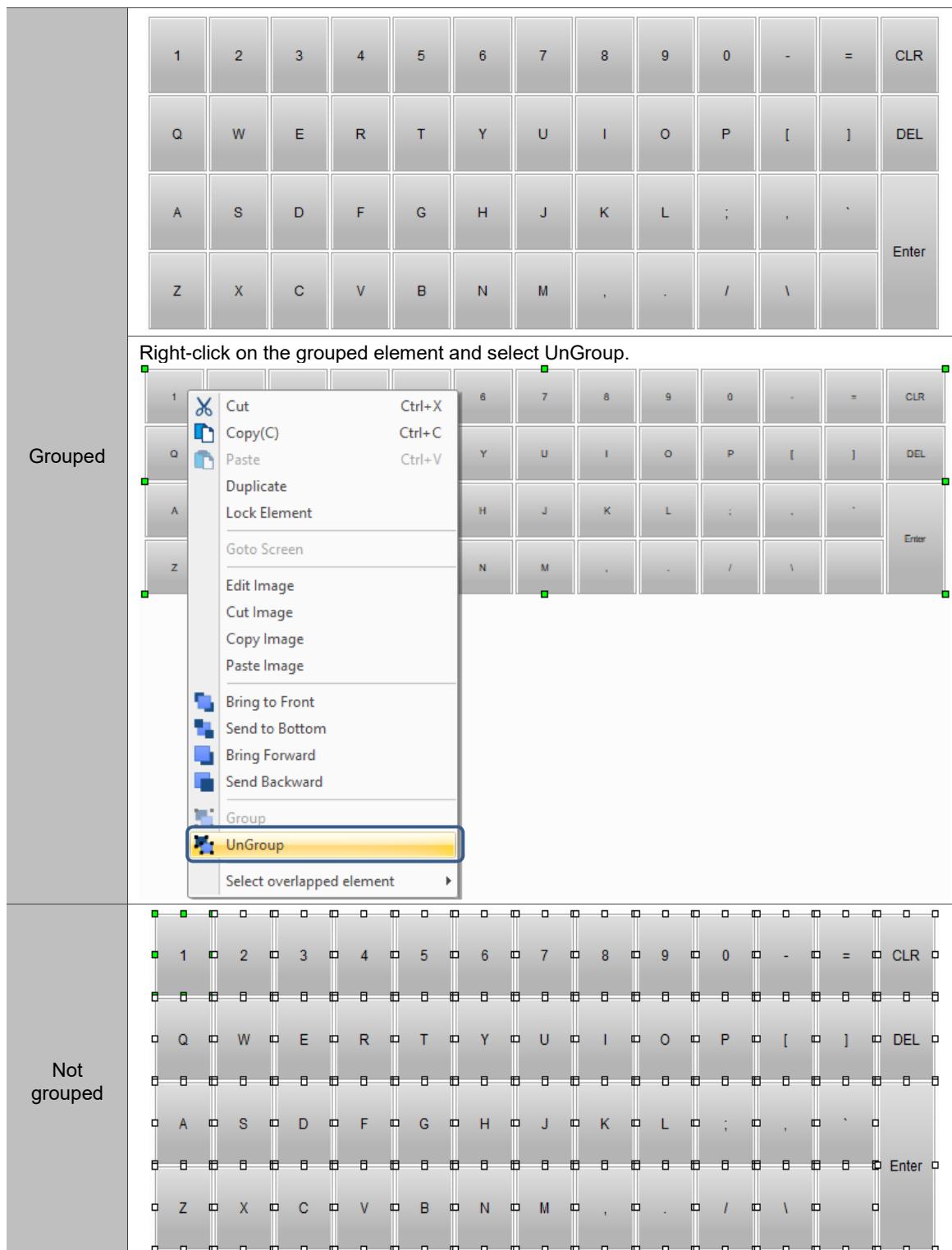
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No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list box to select the picture bank provided by the software and then select the picture you need.</p>  <p>Picture</p> <p>Picture Bank Name: None</p> <p>Alignment (Hori./Vert.): Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p>None</p> <p>\$3DButton.pib</p> <p>\$3DCButton.pib</p> <p>\$3DFan.pib</p> <p>\$3DFineLamp2State.pib</p> <p>\$3DFineLampNState.pib</p> <p>\$3DFineSW2State.pib</p> <p>\$3DFineSWNState.pib</p> <p>\$3DLamp2State.pib</p> <p>\$3DLamp3State.pib</p> <p>\$3DLights.pib</p> <p>\$3DPump.pib</p> <p>\$3DSButton.pib</p> <p>\$3DSign.pib</p> <p>\$3DSW10State.pib</p> <p>\$3DTank.pib</p> <p>\$3DToggleSW.pib</p> <p>\$3DTPipe.pib</p> <p>\$IndustrySewing</p> <p>\$IndustryWoodWorking</p> <p>\$ModernButton.pib</p> <p>\$ModernButton2.pib</p> <p>\$ModernController.pib</p> <p>\$ModernFan.pib</p> <p>\$ModernFlowMeters.pib</p> <p>\$ModernLamp2State.pib</p> <p>\$ModernMotor.pib</p> <p>\$ModernIndustrialMisc.pib</p> <p>\$ModernOperatorInterface.pib</p> <p>\$ModemPipe.pib</p>  <p>Select Picture</p> <p>hmi_button-01-1.png [405x419x65536]</p> <p>hmi_button-01-2.png [405x419x65536]</p> <p>hmi_button-02-1.png [387x377x65536]</p> <p>hmi_button-02-2.png [387x377x65536]</p> <p>hmi_button-03-1.png [405x419x65536]</p> <p>hmi_button-03-2.png [405x419x65536]</p> <p>hmi_button-04-1.png [387x377x65536]</p> <p>hmi_button-04-2.png [387x377x65536]</p> <p>hmi_button-05-1.png [405x419x65536]</p> <p>OK Cancel</p>

No.	Property	Function description					
(2)	Alignment	<p>■ You can use the alignment options to set how pictures are aligned.</p> 					
	Stretch Mode	<p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Stretch All</th> <th style="text-align: center;">Stretch 1:1</th> <th style="text-align: center;">Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table>  <p>■ Assuming that the elements have multiple states and some pictures do not fill the full element display area, if you select the <b>Process pictures of all states</b> check box, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.
Stretch All	Stretch 1:1	Actual Size					
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.					
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> 					

## 17.3 Keypad(3)

Keypad(3) is an alphanumeric input keypad, for which you can customize the font, size, color, and alignment. It also provides a variety of modes for selection, including ESC, ENT, CLR, DEL, and ASCII. Keypad(3) is a grouped element, but you can right-click on the element to ungroup the element and separate the buttons on the keypad. You can also double-click the buttons for editing and making changes.



When you double-click the Keypad(3), the property page is shown as follows.

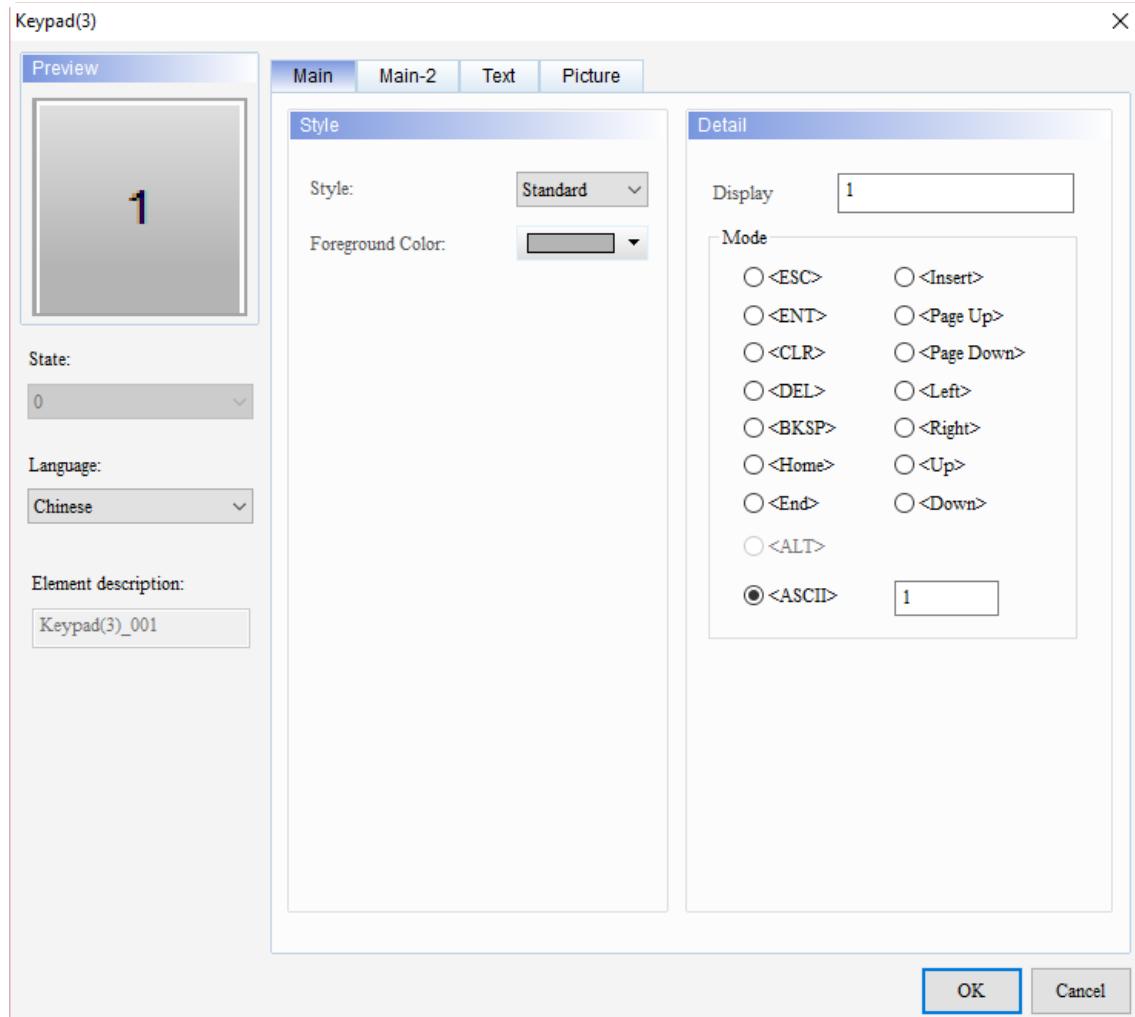


Figure 17.3.1 Properties of Keypad(3)

Table 17.3.1 Function page of Keypad(3)

Keypad(3)	
Function page	Description
Preview	Keypad(3) elements do not support multiple state values, but can edit multi-language data display.
Main	Set the Style, Foreground Color, Display, and Mode.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.

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## ■ Main

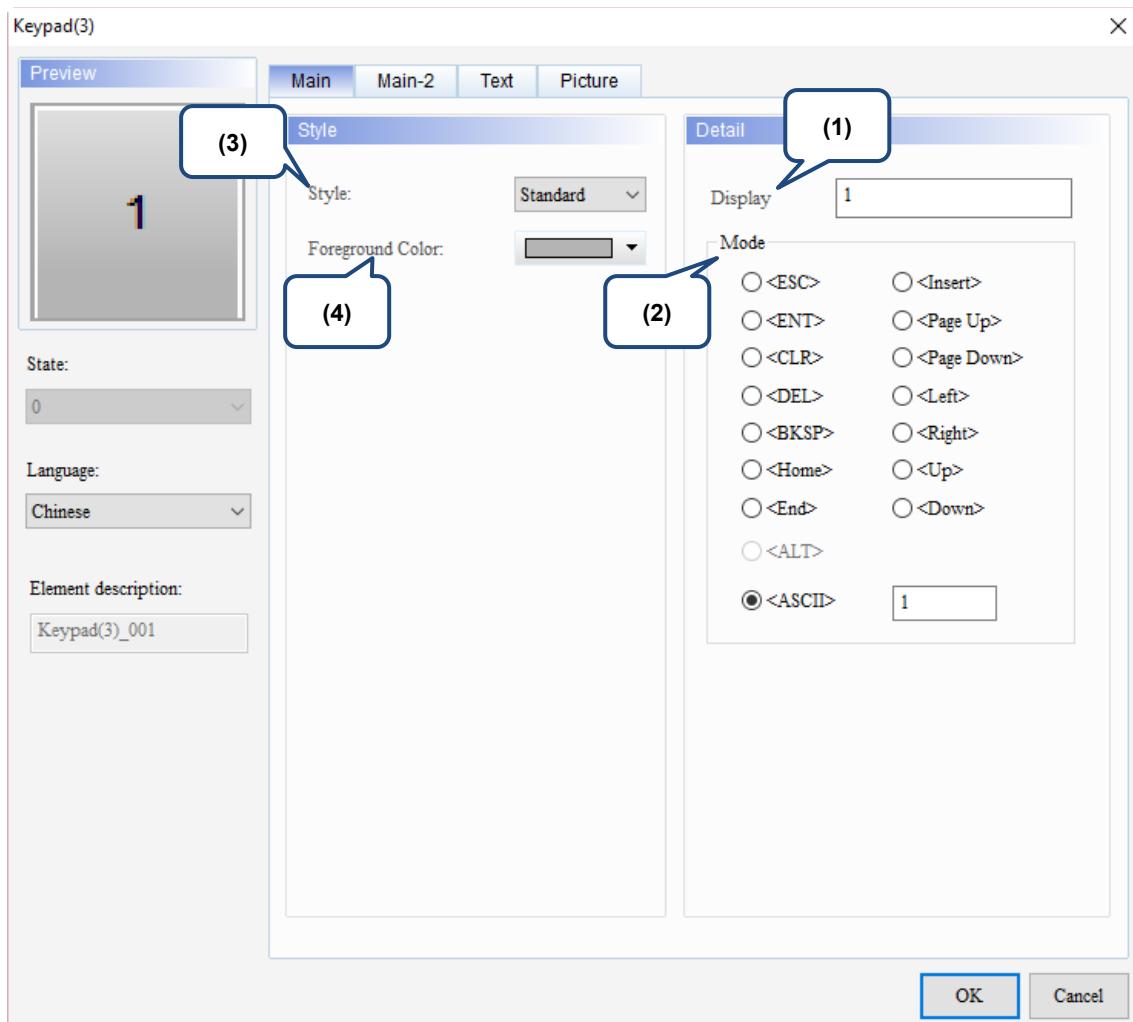


Figure 17.3.2 Main property page for the Keypad(3) element

No.	Property	Function description
(1)	Display	<p>When you press a button on Keypad(3), this will be the displaying value of that button.</p>

No.	Property	Function description				
(2)	Mode	<p>You can select a mode to define the action of a button. The 15 available modes include &lt;ESC&gt;, &lt;ENT&gt;, &lt;CLR&gt;, &lt;DEL&gt;, &lt;BKSP&gt;, &lt;Home&gt;, &lt;End&gt;, &lt;Insert&gt;, &lt;Page Up&gt;, &lt;Page Down&gt;, &lt;Left&gt;, &lt;Right&gt;, &lt;Up&gt;, &lt;Down&gt;, and &lt;ASCII&gt;.</p> <ul style="list-style-type: none"> <li>■ &lt;ESC&gt;: cancel the entry. If the Keypad element is on a sub-screen, executing ESC will also close the sub-screen.</li> <li>■ &lt;ENT&gt;: input the entry.</li> <li>■ &lt;CLR&gt;: clear a string of characters.</li> <li>■ &lt;DEL&gt;: delete a single character.</li> <li>■ &lt;BKSP&gt;: delete a single character.</li> <li>■ &lt;Home&gt;: move the input cursor to the beginning of that line.</li> <li>■ &lt;End&gt;: move the input cursor to the end of that line.</li> <li>■ &lt;Insert&gt;: switch between insert and replace.</li> <li>■ &lt;Page Up&gt;: switch the current page to the previous page.</li> <li>■ &lt;Page Down&gt;: switch the current page to the next page.</li> <li>■ &lt;Left&gt;: move the input cursor to the left by one character.</li> <li>■ &lt;Right&gt;: move the input cursor to the right by one character.</li> <li>■ &lt;Up&gt;: move the input cursor up a line.</li> <li>■ &lt;Down&gt;: move the input cursor down a line.</li> <li>■ &lt;ASCII&gt;: you can specify the input code.</li> </ul>				
(3)	Style	<p>The available element styles are Standard and Raised. You can change the appearance of the element with this setting.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Standard</td> <td style="text-align: center;">Raised</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Standard	Raised		
Standard	Raised					
(4)	Foreground Color	<p>Set the foreground color of the element.</p>				

## ■ Main-2

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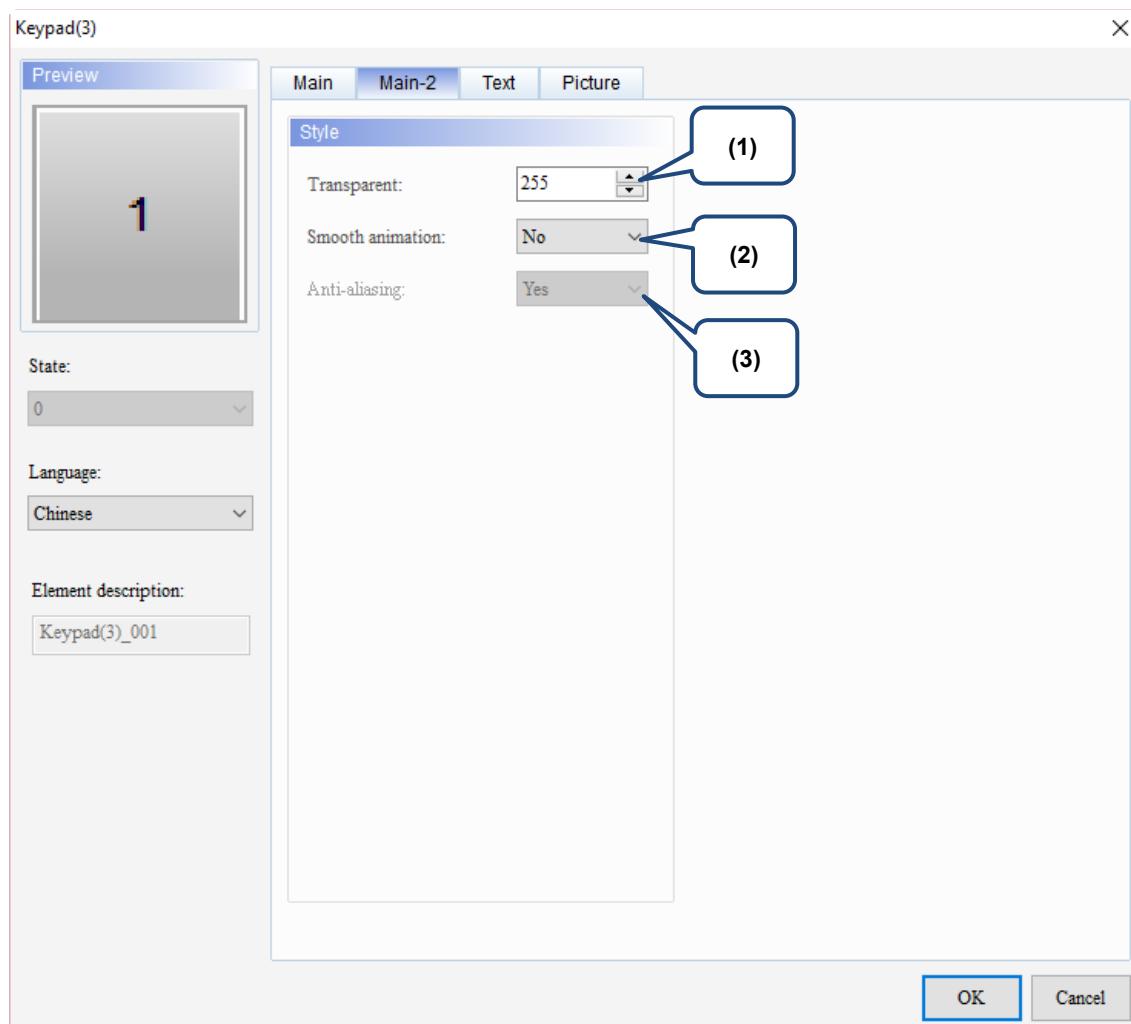
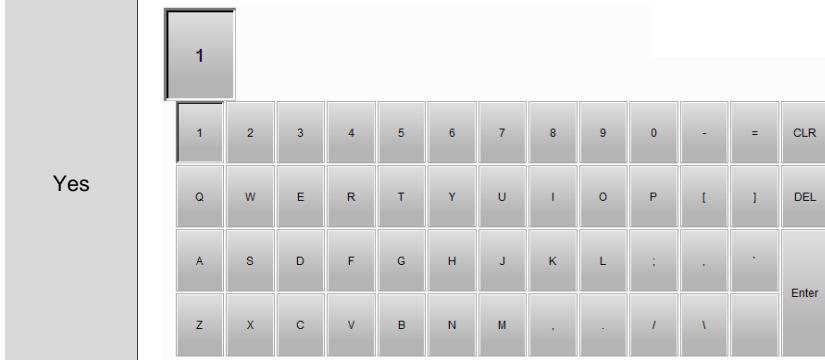
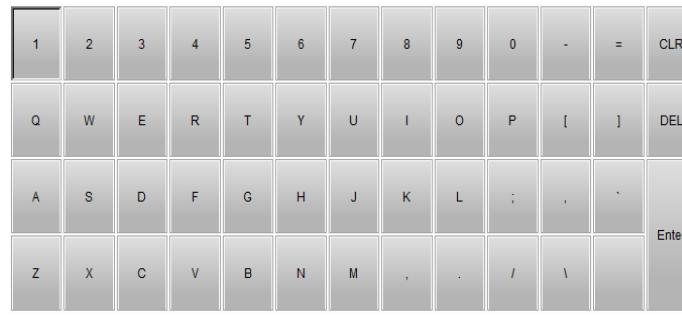


Figure 17.3.3 Main-2 property page for the Keypad(3) element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	<ul style="list-style-type: none"> <li>■ The Smooth animation function is available for this element.</li> <li>■ After ungrouping the button elements for the Keypad element, you can activate the Smooth animation function per button. When you activate the Smooth animation function, the button with this setting will enlarge when you press it.</li> </ul>  <p>Yes</p>  <p>No</p>
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Text

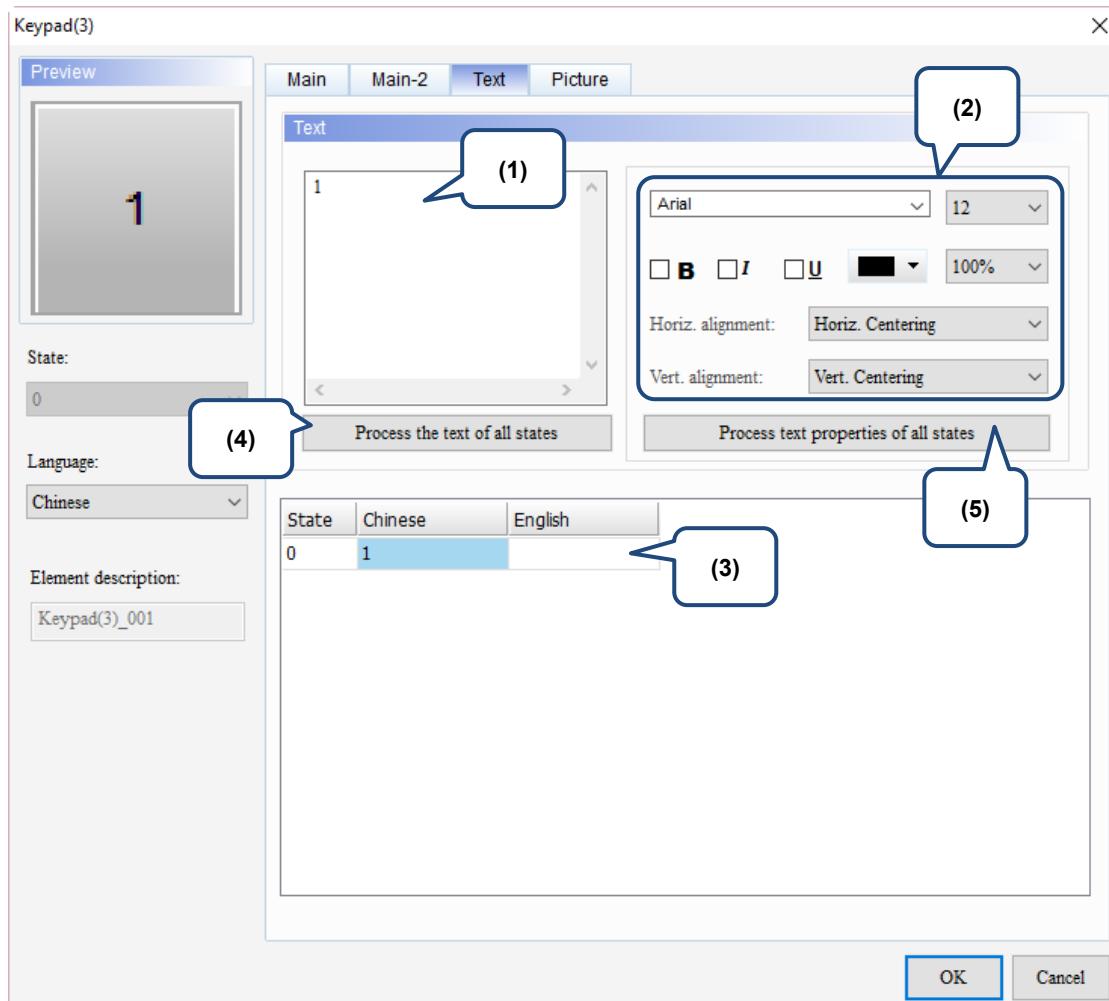


Figure 17.3.4 Text property page for the Keypad(3) element

No.	Property	Function description
(1)	Text	You can enter the text to display in this box. A preview window shows the text 'One'. The main panel includes font settings (Arial, size 16), text properties (bold/italic/underline), and alignment (Horiz. Centering, Vert. Centering). A language dropdown shows 'English'. A table below lists state 0 as Chinese ('Keypad(3)_001') and state 1 as English ('One').
(2)	Text Property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	This function is not supported as the Keypad element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as the Keypad element does not have multiple states.

## ■ Picture

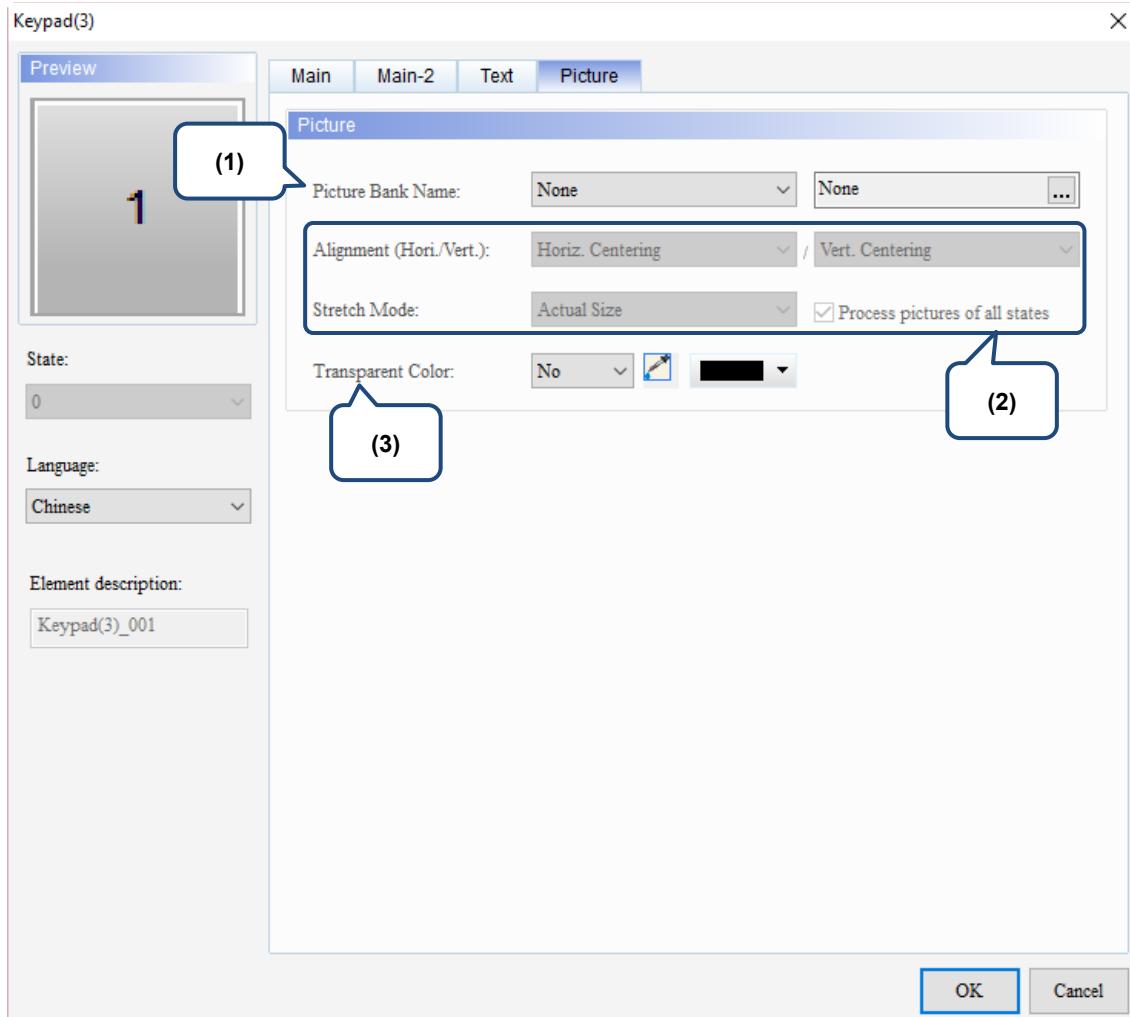
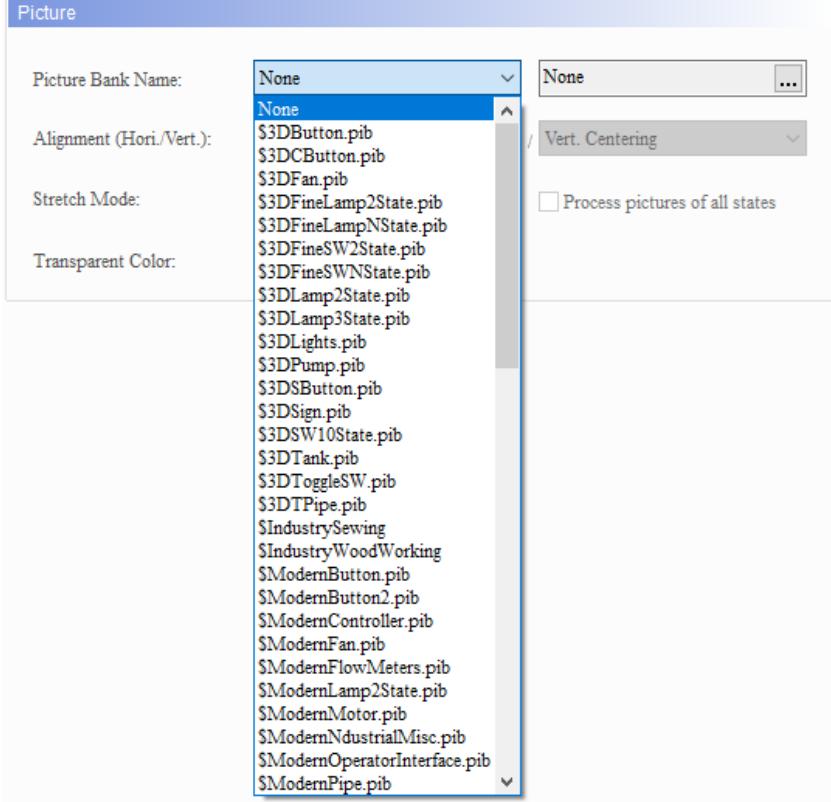
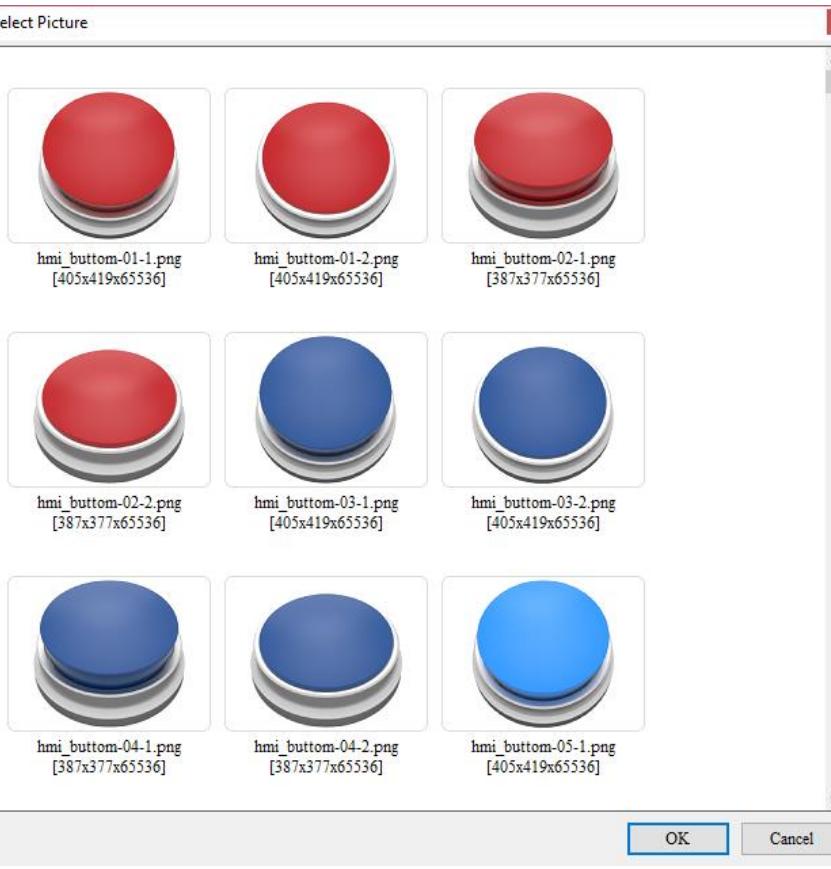
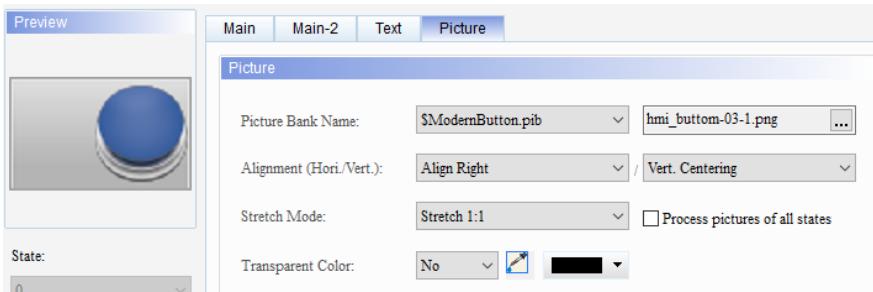


Figure 17.3.5 Picture property page for the Keypad(3) element

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No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list box to select the picture bank provided by the software and then select the picture you need.</p>  <p>Picture</p> <p>Picture Bank Name: None</p> <p>Alignment (Hori./Vert.): Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p>None</p> <p>\$3DButton.pib</p> <p>\$3DCButton.pib</p> <p>\$3DFan.pib</p> <p>\$3DFineLamp2State.pib</p> <p>\$3DFineLampNState.pib</p> <p>\$3DFineSW2State.pib</p> <p>\$3DFineSWNState.pib</p> <p>\$3DLamp2State.pib</p> <p>\$3DLamp3State.pib</p> <p>\$3DLights.pib</p> <p>\$3DPump.pib</p> <p>\$3DSButton.pib</p> <p>\$3DSign.pib</p> <p>\$3DSW10State.pib</p> <p>\$3DTank.pib</p> <p>\$3DToggleSW.pib</p> <p>\$3DTPipe.pib</p> <p>\$IndustrySewing</p> <p>\$IndustryWoodWorking</p> <p>\$ModernButton.pib</p> <p>\$ModernButton2.pib</p> <p>\$ModernController.pib</p> <p>\$ModernFan.pib</p> <p>\$ModernFlowMeters.pib</p> <p>\$ModernLamp2State.pib</p> <p>\$ModernMotor.pib</p> <p>\$ModernIndustrialMisc.pib</p> <p>\$ModernOperatorInterface.pib</p> <p>\$ModemPipe.pib</p> <p>Select Picture</p>  <p>hmi_button-01-1.png [405x419x65536]</p> <p>hmi_button-01-2.png [405x419x65536]</p> <p>hmi_button-02-1.png [387x377x65536]</p> <p>hmi_button-02-2.png [387x377x65536]</p> <p>hmi_button-03-1.png [405x419x65536]</p> <p>hmi_button-03-2.png [405x419x65536]</p> <p>hmi_button-04-1.png [387x377x65536]</p> <p>hmi_button-04-2.png [387x377x65536]</p> <p>hmi_button-05-1.png [405x419x65536]</p> <p>OK</p> <p>Cancel</p>

No.	Property	Function description						
(2)	Alignment	<p>■ You can use the alignment options to set how pictures are aligned.</p>  <p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 2px;">Stretch All</th> <th style="text-align: center; padding: 2px;">Stretch 1:1</th> <th style="text-align: center; padding: 2px;">Actual Size</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 10px;">If you select Stretch All, the picture fills the full element display area.</td> <td style="text-align: center; padding: 10px;">If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td style="text-align: center; padding: 10px;">If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> </tbody> </table> <p>■ Assuming that the elements have multiple states and some pictures do not fill the full element display area, if you select the <b>Process pictures of all states</b> check box, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p style="text-align: center;"><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.
Stretch All	Stretch 1:1	Actual Size						
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.						
Stretch Mode								
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 						

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# 18

## Analog

This chapter provides the usage and setting details for the Slider elements.



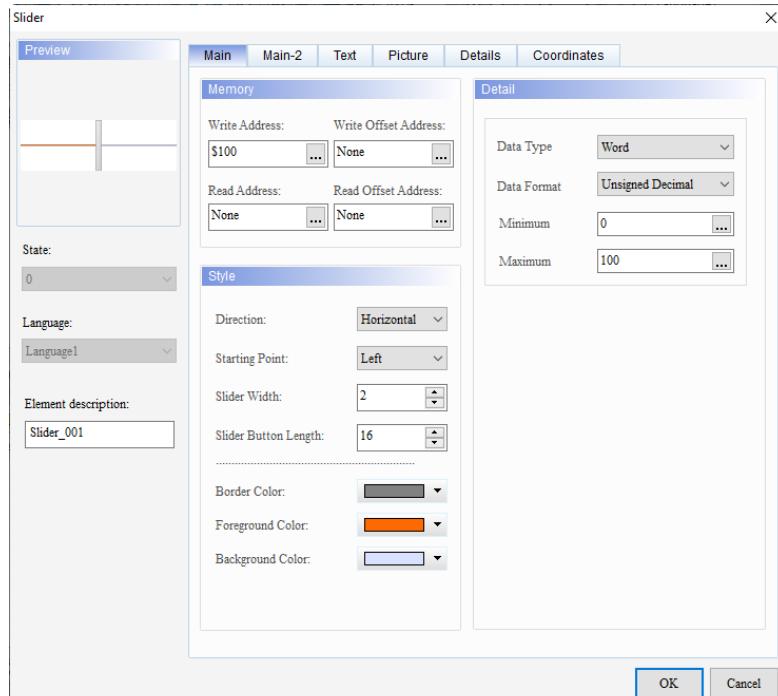
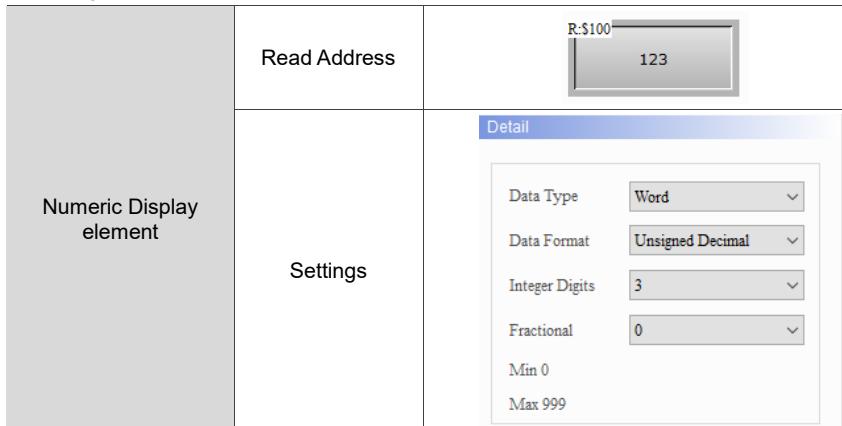
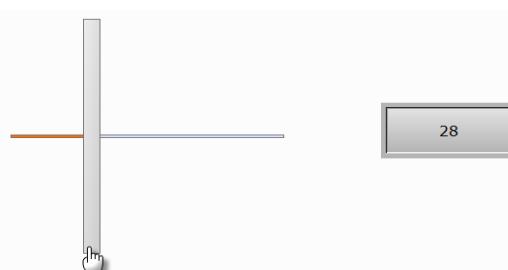
18.1 Slider .....	18-2
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# 18

## 18.1 Slider

You can use the Slider element to drag and adjust the value easily. Refer to Table 18.1.1 for the Slider element example.

Table 18.1.1 Slider element example

Slider	
<p><b>Create Slider element</b></p>  <p>Step 1: create a Slider element with its Write Address as \$100, and then set the Minimum and Maximum as 0 and 100 respectively.</p>	<p>Step 1: create a Slider element with its Write Address as \$100, and then set the Minimum and Maximum as 0 and 100 respectively.</p>
<p><b>Create Numeric Display element</b></p>  <p>Step 2: create a Numeric Display element with its Read Address as \$100 and complete the Detail settings.</p>	<p>Step 2: create a Numeric Display element with its Read Address as \$100 and complete the Detail settings.</p>
<p><b>Execution results</b></p>  <p>After creating the elements, compile and download the elements to the HMI. When you move the Slider element, the Numeric Display element will show the value corresponding to the movement of the Slider element.</p>	<p>After creating the elements, compile and download the elements to the HMI. When you move the Slider element, the Numeric Display element will show the value corresponding to the movement of the Slider element.</p>

When you double-click the Slider element, the property page is shown as follows.

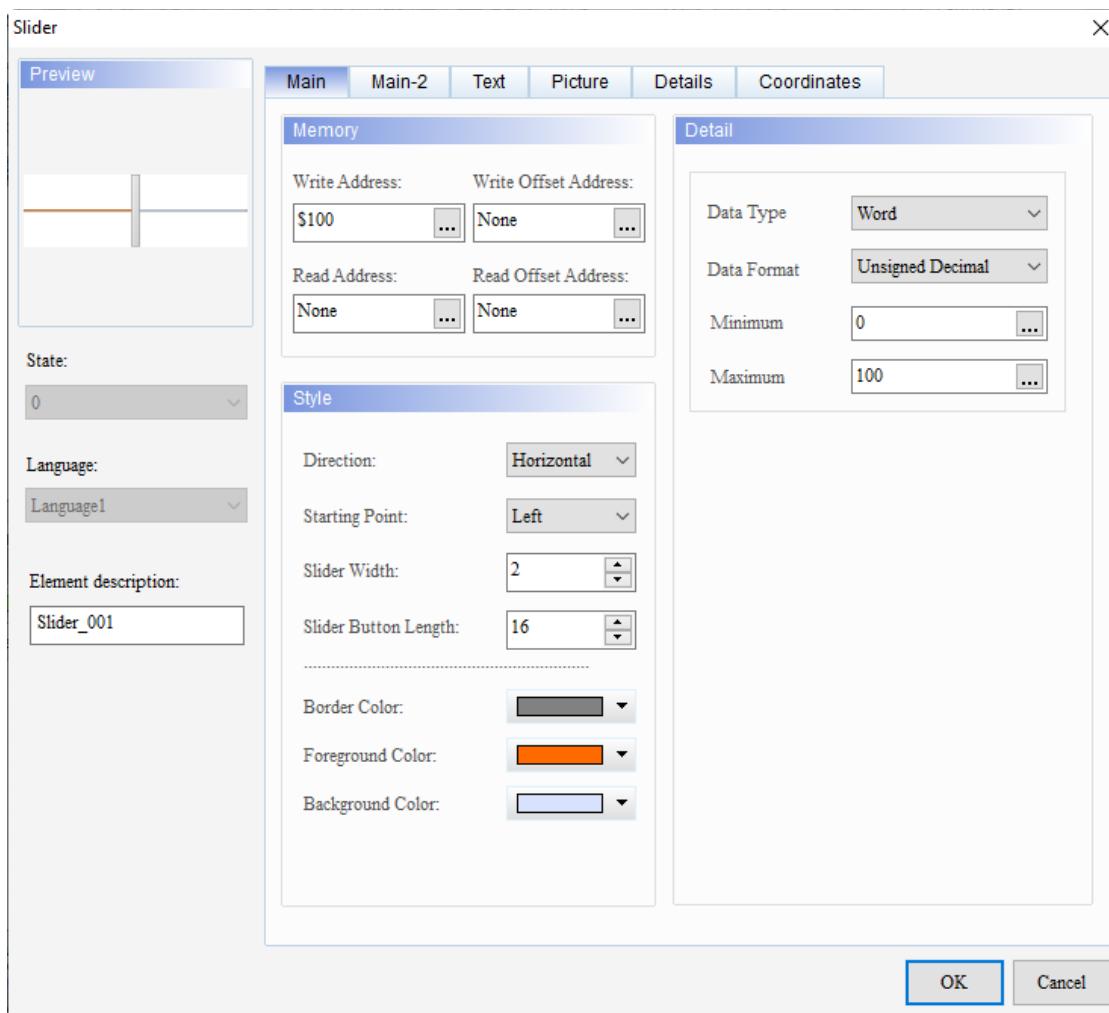


Figure 18.1.1 Properties of the Slider element

Table 18.1.2 Function page of the Slider element

Slider	
Function page	Description
Preview	Slider elements do not support multiple state values, but can edit multi-language data display.
Main	Set the Write Address, Read Address, Write Offset Address, Read Offset Address, Data Type, Data Format, Minimum, and Maximum. Set the Direction, Starting Point, Slider Width, Slider Button Length, Border Color, Foreground Color, and Background Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Interlock State, Interlock Display Mode, and Interlock Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

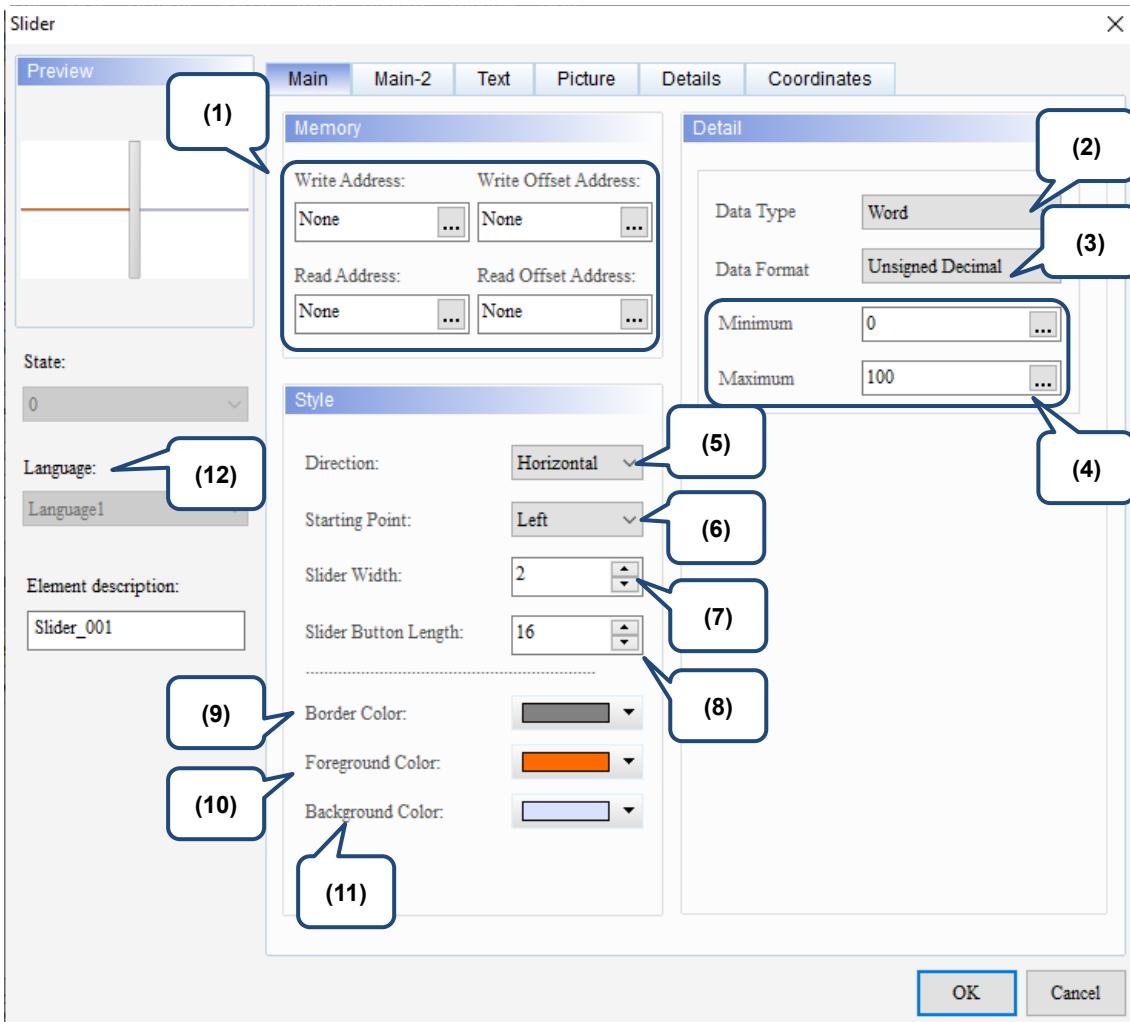
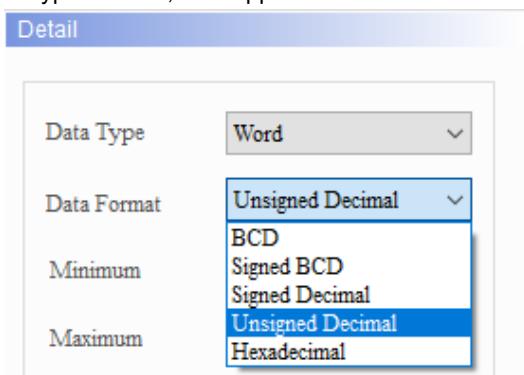
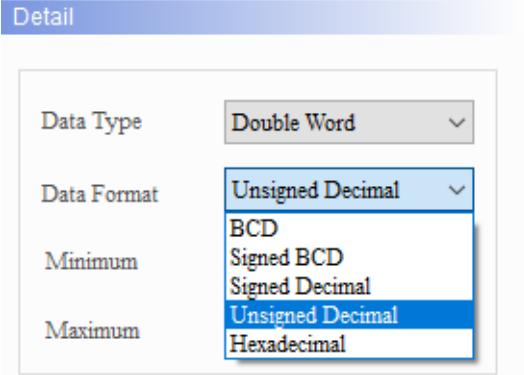


Figure 18.1.2 Main property page for the Slider element

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address. The input memory type has to be Word.</li> </ul>
	Read Address	<ul style="list-style-type: none"> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Write Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
	Read Offset Address	
(2)	Data Type	<p>Data Type includes Word and Double Word.</p>

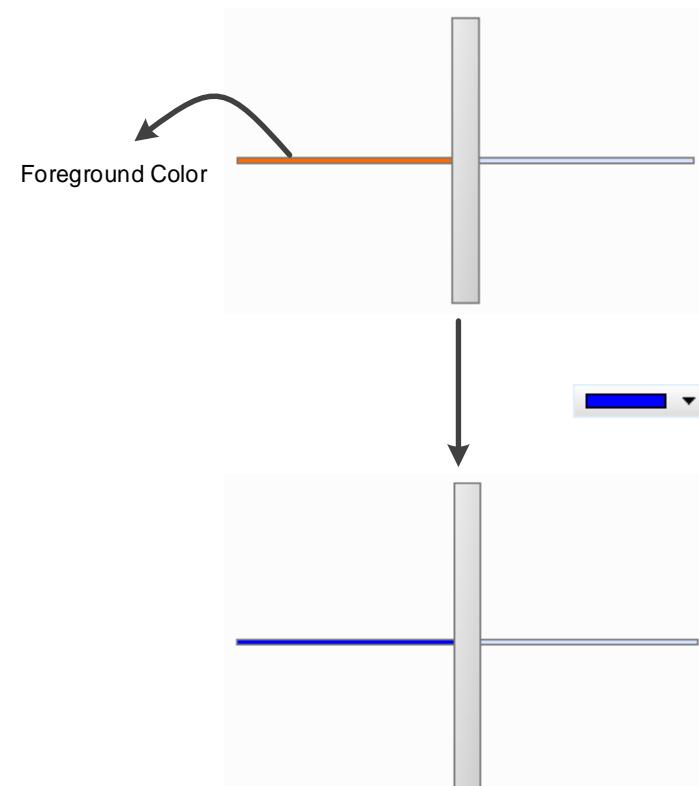
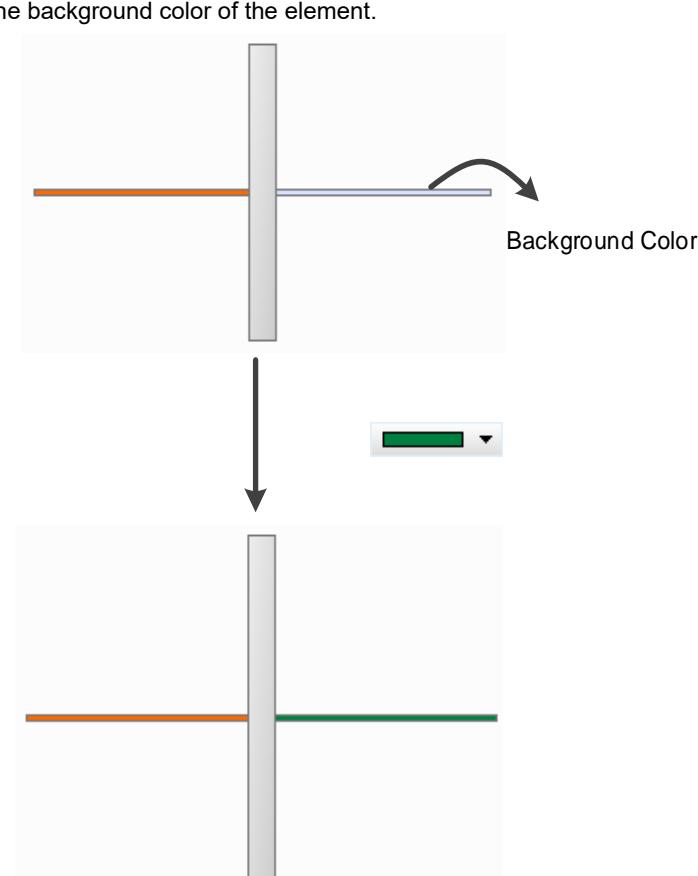
No.	Property	Function description																									
(3)	Data Format	<ul style="list-style-type: none"> <li>When the Data Type is Word, the supported data formats are as follows:</li> </ul> 																									
		<ul style="list-style-type: none"> <li>When the Data Type is Double Word, the supported data formats are as follows:</li> </ul> 																									
(4)	Minimum / Maximum	<p>The allowable ranges for the minimum and maximum values vary based on the selected data type, integer digits, and fractional digits. In the following example, no fractional digit is set.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0 to 9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 to +9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768 to +32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFF</td> </tr> <tr> <td rowspan="5">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 to +9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294967295</td> </tr> <tr> <td>Hex</td> <td>0 to 0xFFFFFFFF</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Word	BCD	0 to 9999	Signed BCD	-999 to +9999	Signed Decimal	-32768 to +32767	Unsigned Decimal	0 to 65535	Hex	0 to 0xFFFF	Double Word	BCD	0 to 99999999	Signed BCD	-9999999 to +9999999	Signed Decimal	-2147483648 to +2147483647	Unsigned Decimal	0 to 4294967295	Hex	0 to 0xFFFFFFFF
Data Type	Data Format	Allowable range																									
Word	BCD	0 to 9999																									
	Signed BCD	-999 to +9999																									
	Signed Decimal	-32768 to +32767																									
	Unsigned Decimal	0 to 65535																									
	Hex	0 to 0xFFFF																									
Double Word	BCD	0 to 99999999																									
	Signed BCD	-9999999 to +9999999																									
	Signed Decimal	-2147483648 to +2147483647																									
	Unsigned Decimal	0 to 4294967295																									
	Hex	0 to 0xFFFFFFFF																									

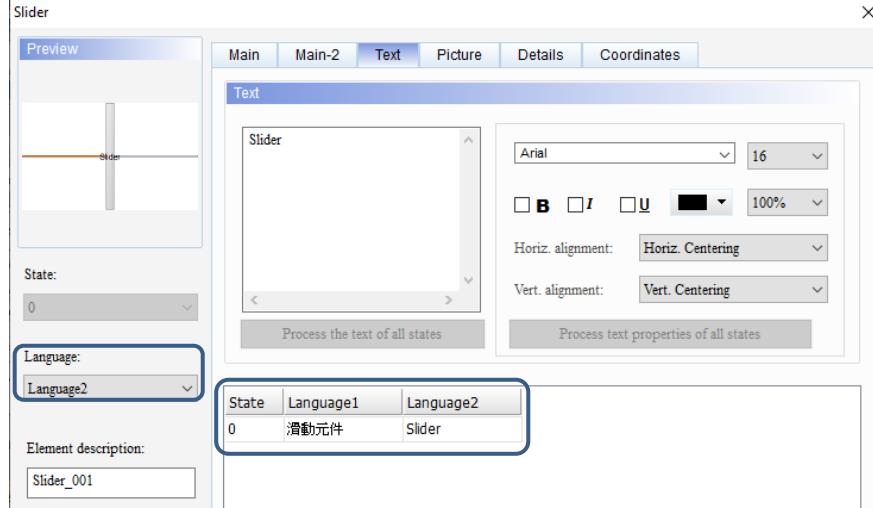
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No.	Property	Function description
(5)	Direction	<p>The options for Direction include Horizontal and Vertical. Horizontal means the Slider button moves horizontally (left and right); Vertical means the Slider button moves vertically (up and down).</p>
(6)	Starting Point	<ul style="list-style-type: none"> <li>Starting Point varies depending on the selected Direction. This is the starting point position of the Slider button after the Slider element is loaded.</li> <li>The Starting Point is Left or Right when the Direction is Horizontal; the Starting Point is Bottom or Top when the Direction is Vertical.</li> </ul> 

No.	Property	Function description
(7)	Slider Width	<p>The height of the Slider element determines the maximum value of the Slider Width.</p>
(8)	Slider Button Length	<p>The width of the Slider element determines the maximum value of the Slider Button Length.</p>
(9)	Border Color	<p>Set the border color of the element.</p>

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No.	Property	Function description
(10)	Foreground Color	<p>Set the foreground color of the element.</p> 
(11)	Background Color	<p>Set the background color of the element.</p> 

No.	Property	Function description						
(12)	Language	If you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.  <table border="1"><thead><tr><th>State</th><th>Language1</th><th>Language2</th></tr></thead><tbody><tr><td>0</td><td>滑動元件</td><td>Slider</td></tr></tbody></table>	State	Language1	Language2	0	滑動元件	Slider
State	Language1	Language2						
0	滑動元件	Slider						

18

18

## ■ Main-2

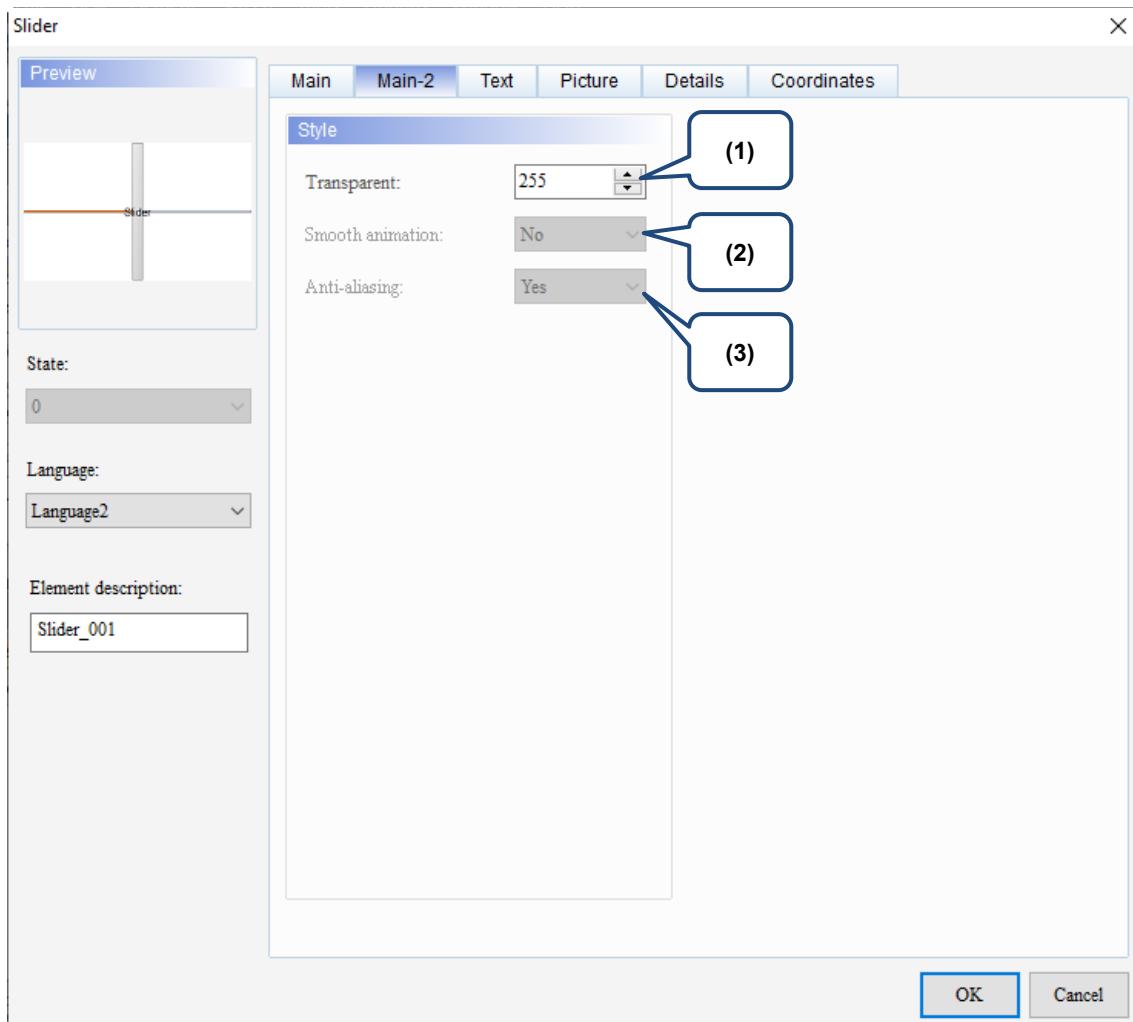


Figure 18.1.3 Main-2 property page for the Slider element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

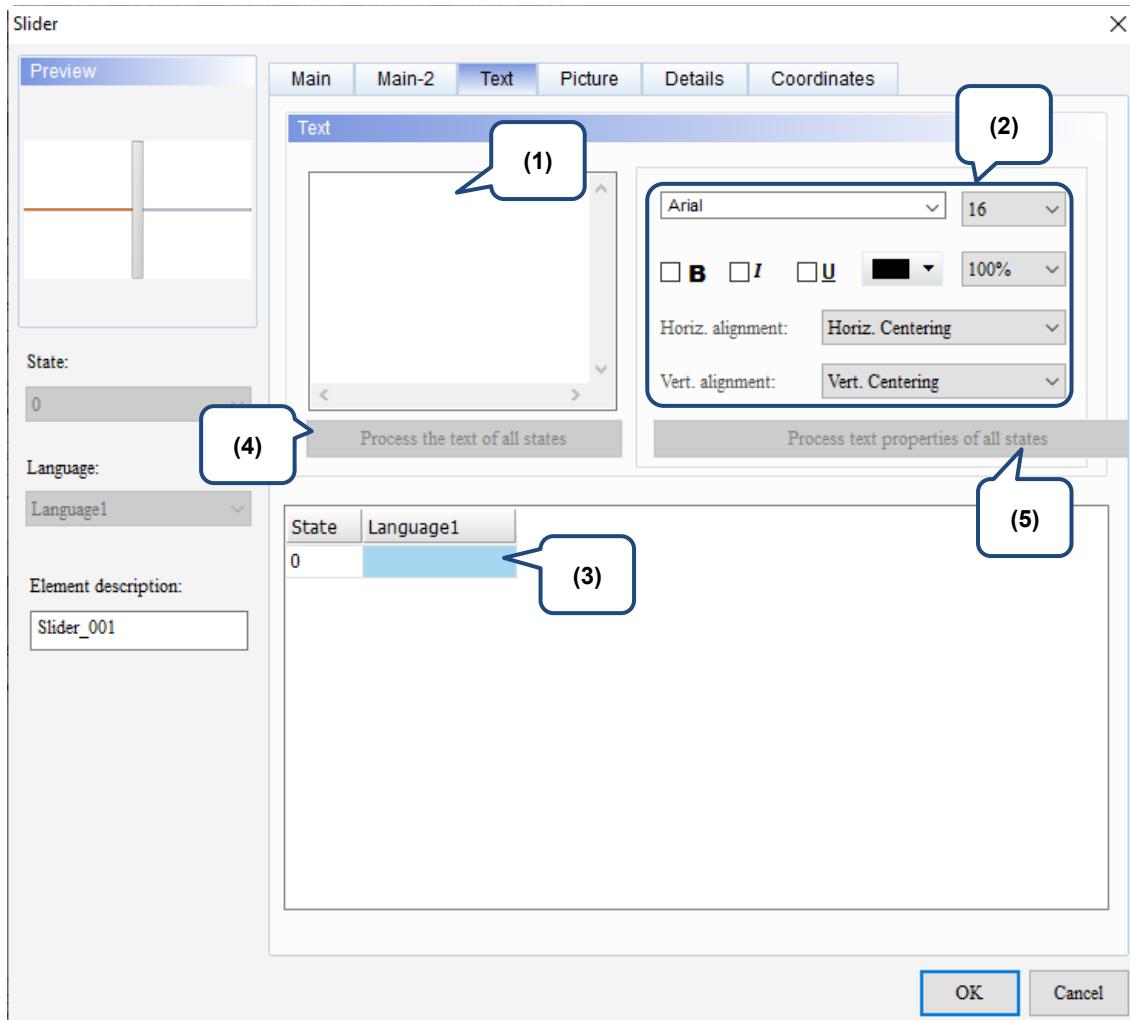


Figure 18.1.4 Text property page for the Slider element

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No.	Property	Function description
(1)	Text	<p>■ You can enter the text to display in this box.</p>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text.
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.
(4)	Process the text of all states	This function is not supported as the Slider element does not have multiple states.
(5)	Process text properties of all states	This function is not supported as the Slider element does not have multiple states.

## ■ Picture

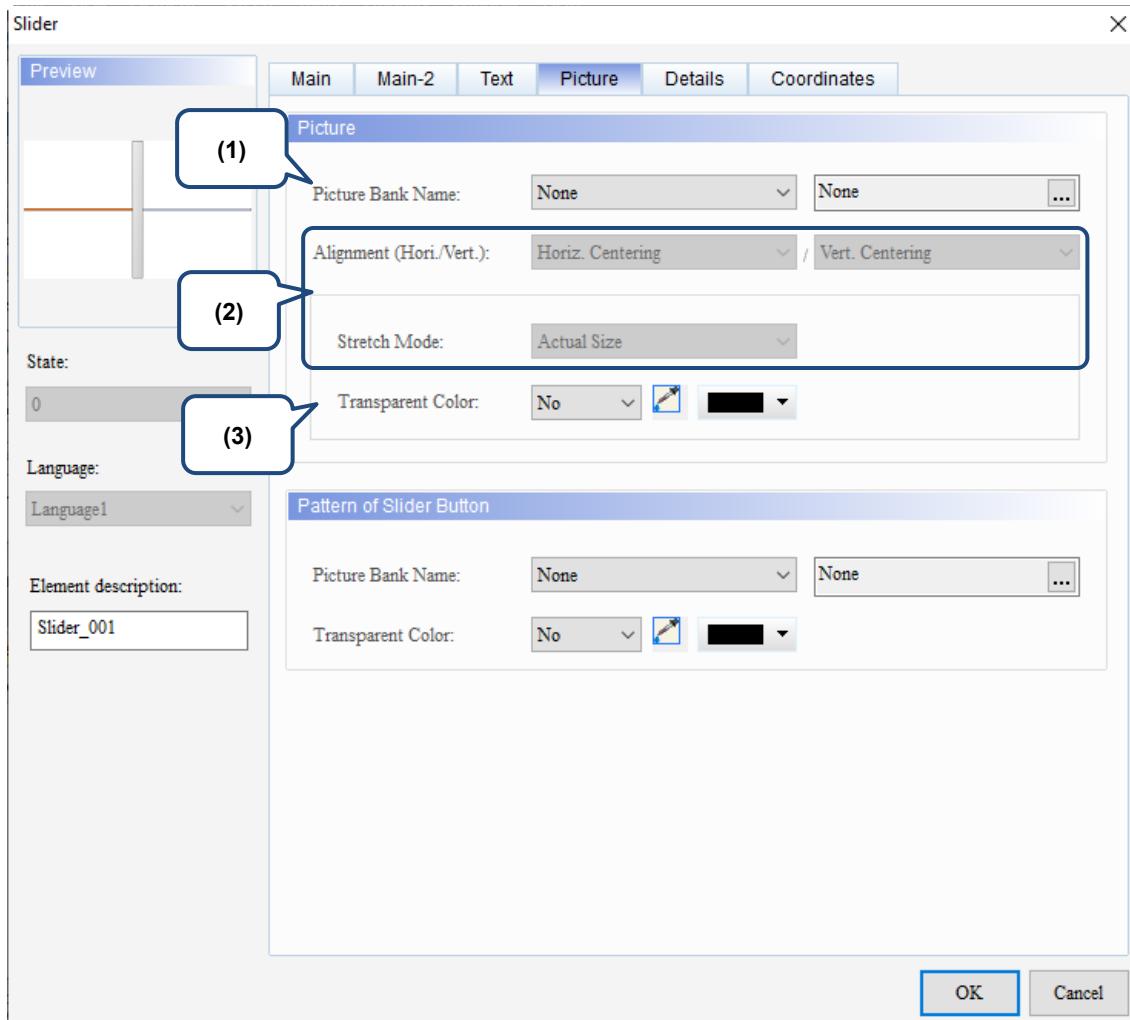
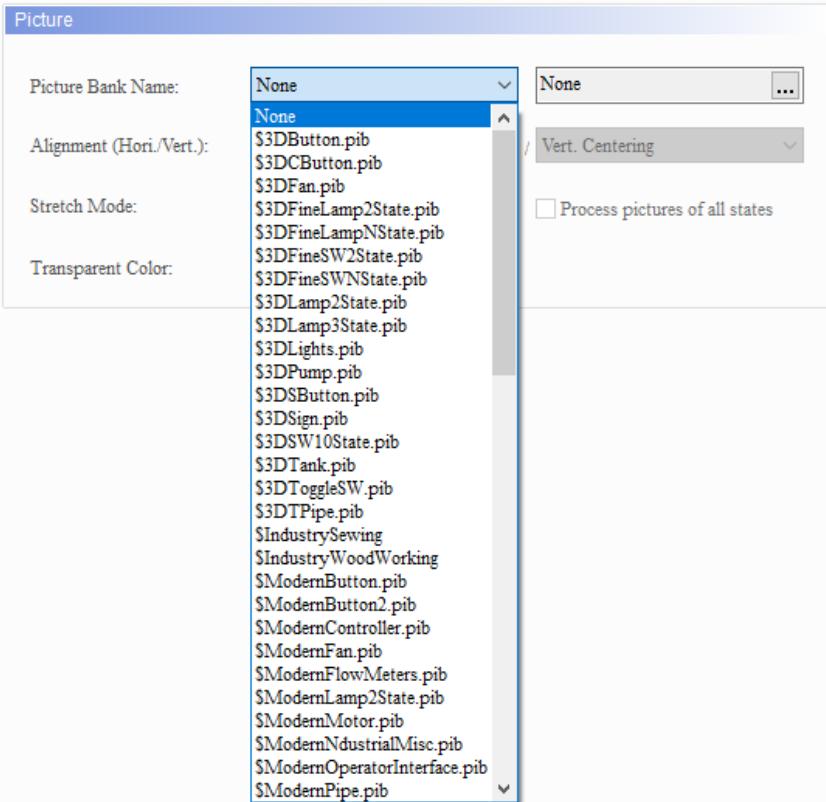
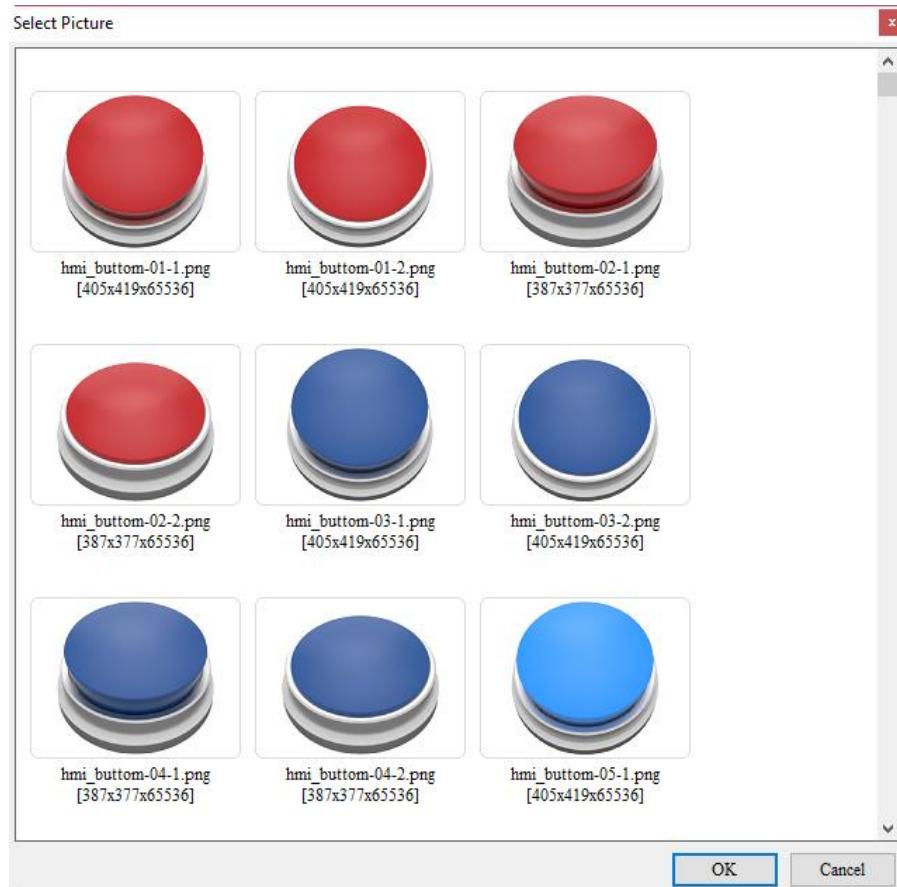
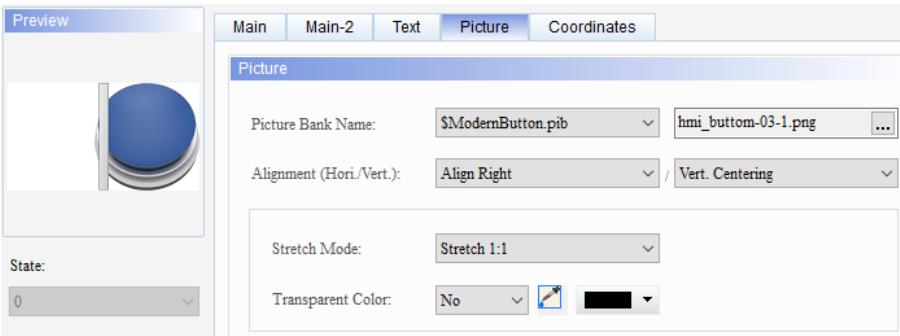


Figure 18.1.5 Picture property page for the Slider element

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No.	Property	Function description									
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list box to select the picture bank provided by the software and then select the picture you need.</p>  <p>Picture</p> <p>Picture Bank Name: None</p> <p>Alignment (Hori./Vert.): Vert. Centering</p> <p>Stretch Mode:</p> <p>Transparent Color:</p> <p>None</p> <p>\$3DButton.pib</p> <p>\$3DCButton.pib</p> <p>\$3DFan.pib</p> <p>\$3DFineLamp2State.pib</p> <p>\$3DFineLampNState.pib</p> <p>\$3DFineSW2State.pib</p> <p>\$3DFineSWNState.pib</p> <p>\$3DLamp2State.pib</p> <p>\$3DLamp3State.pib</p> <p>\$3DLights.pib</p> <p>\$3DPump.pib</p> <p>\$3DSButton.pib</p> <p>\$3DSign.pib</p> <p>\$3DSW10State.pib</p> <p>\$3DTank.pib</p> <p>\$3DToggleSW.pib</p> <p>\$3DTPipe.pib</p> <p>\$IndustrySewing</p> <p>\$IndustryWoodWorking</p> <p>\$ModernButton.pib</p> <p>\$ModernButton2.pib</p> <p>\$ModernController.pib</p> <p>\$ModernFan.pib</p> <p>\$ModernFlowMeters.pib</p> <p>\$ModernLamp2State.pib</p> <p>\$ModernMotor.pib</p> <p>\$ModernIndustrialMisc.pib</p> <p>\$ModernOperatorInterface.pib</p> <p>\$ModernPipe.pib</p>  <p>Select Picture</p> <table border="1"> <tbody> <tr> <td> hmi_button-01-1.png [405x419x65536]</td> <td> hmi_button-01-2.png [405x419x65536]</td> <td> hmi_button-02-1.png [387x377x65536]</td> </tr> <tr> <td> hmi_button-02-2.png [387x377x65536]</td> <td> hmi_button-03-1.png [405x419x65536]</td> <td> hmi_button-03-2.png [405x419x65536]</td> </tr> <tr> <td> hmi_button-04-1.png [387x377x65536]</td> <td> hmi_button-04-2.png [387x377x65536]</td> <td> hmi_button-05-1.png [405x419x65536]</td> </tr> </tbody> </table> <p>OK Cancel</p>	hmi_button-01-1.png [405x419x65536]	hmi_button-01-2.png [405x419x65536]	hmi_button-02-1.png [387x377x65536]	hmi_button-02-2.png [387x377x65536]	hmi_button-03-1.png [405x419x65536]	hmi_button-03-2.png [405x419x65536]	hmi_button-04-1.png [387x377x65536]	hmi_button-04-2.png [387x377x65536]	hmi_button-05-1.png [405x419x65536]
hmi_button-01-1.png [405x419x65536]	hmi_button-01-2.png [405x419x65536]	hmi_button-02-1.png [387x377x65536]									
hmi_button-02-2.png [387x377x65536]	hmi_button-03-1.png [405x419x65536]	hmi_button-03-2.png [405x419x65536]									
hmi_button-04-1.png [387x377x65536]	hmi_button-04-2.png [387x377x65536]	hmi_button-05-1.png [405x419x65536]									

No.	Property	Function description								
(2)	Alignment	<p>■ You can use the alignment options to set how pictures are aligned.</p>  <p>The screenshot shows the 'Picture' tab of the properties dialog. It includes a preview window showing a blue button, a 'Main' tab, a 'Coordinates' tab, and dropdown menus for 'Picture Bank Name' (set to '\$ModernButton.pib' with file 'hmi_button-03-1.png'), 'Alignment (Hori./Vert.)' (set to 'Align Right' and 'Vert. Centering'), 'Stretch Mode' (set to 'Stretch 1:1'), and 'Transparent Color' (set to 'No'). A 'State:' dropdown is also visible.</p>								
	Stretch Mode	<p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>■ Assuming that the elements have multiple states and some pictures do not fill the full element display area, if you select the <b>Process pictures of all states</b> check box, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 								

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## ■ Details

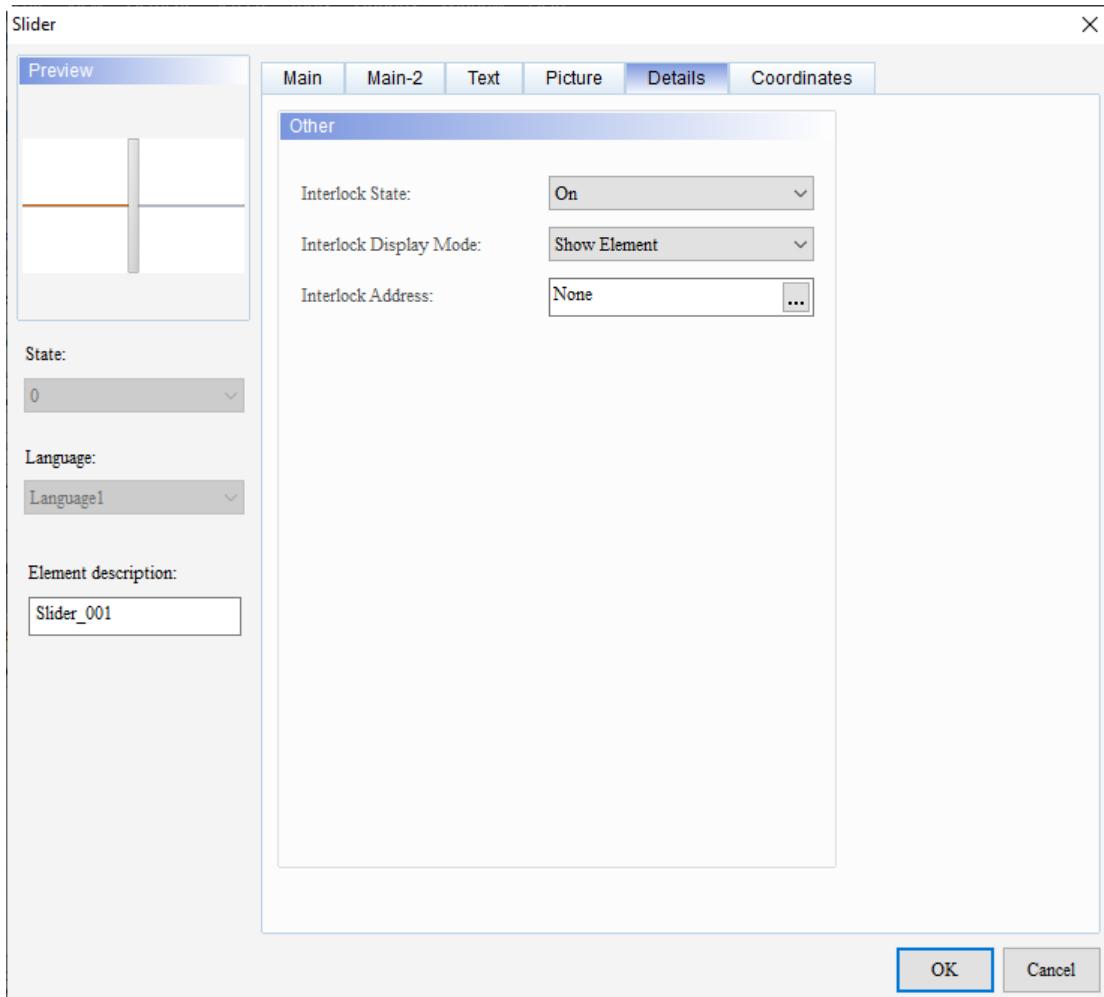


Figure 18.1.6 Details property page for the Slider element

No.	Property	Function description
(1)	Interlock State	<p>■ The Interlock Address enables you to operate a certain element from this particular address, which must be operated along with the Interlock State. If the Interlock State is set to Off, it means that Interlock Address is operable when the Interlock State is Off; on the other hand, if the Interlock State is set to On, the Interlock Address is operable when the Interlock State is On.</p> <p>The Interlock Address usage example is as follows:</p> <ol style="list-style-type: none"> <li>1. Create a Slider element and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the Slider element which address is \$100.</li> <li>2. Before activating the element which address is \$100, you have to execute the element which address is \$8.0.</li> </ol> <p>Slider</p>

No.	Property	Function description
(1)	Interlock State	<p>■ The options for the Interlock Display Mode are Show Element and Show Prohibition Symbol.</p> <p>Interlock Display Mode:</p> <p>Interlock Address:</p> <p>Show Element</p> <p>Show Element</p> <p>Show Prohibition Symbol</p>

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## ■ Coordinates

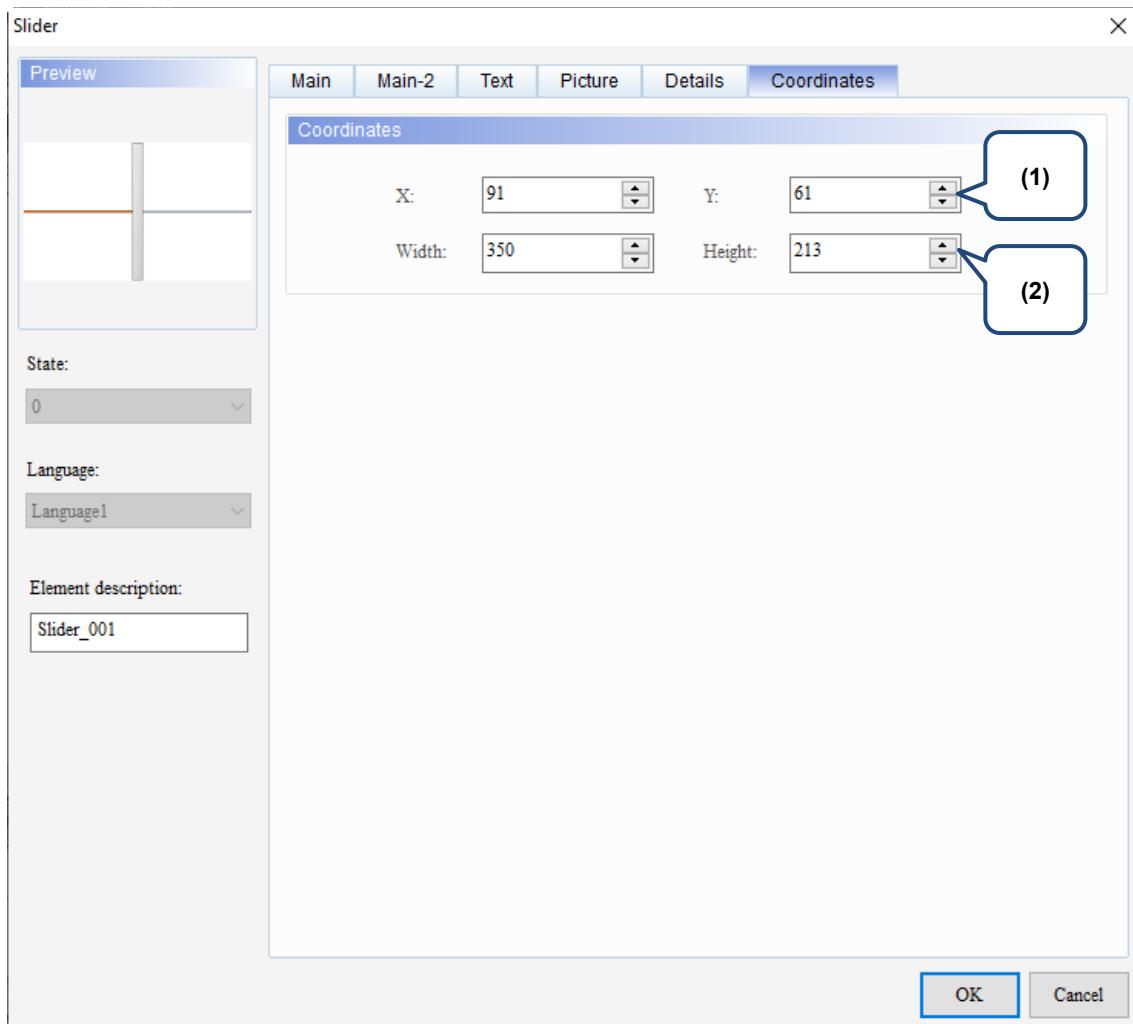


Figure 18.1.7 Coordinates property page for the Slider element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

# 19

## List

This chapter provides the usage and setting details for the list elements.

19.1 ComboBox .....	19-2
19.2 Drop-down Menu .....	19-24
19.3 ListBox .....	19-45
19.4 GridBox .....	19-65
19.5 PDF Viewer .....	19-106
19.6 Text Viewer.....	19-119
19.7 ENRCP Viewer.....	19-137
19.8 FTP file list.....	19-146
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19.10 Text List.....	19-168

# 19

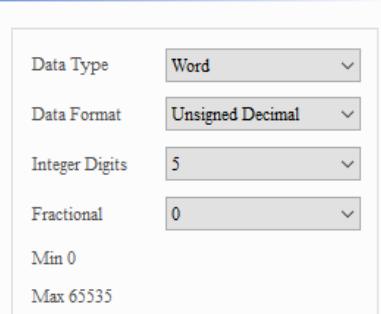
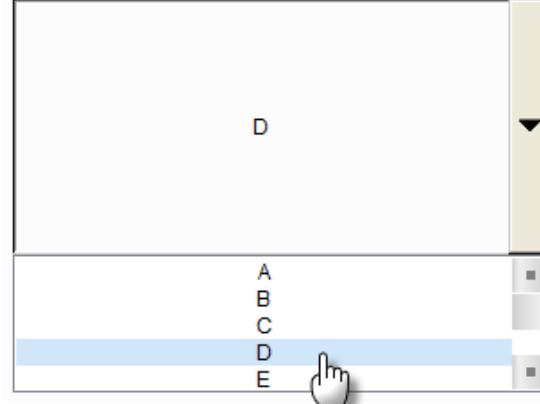
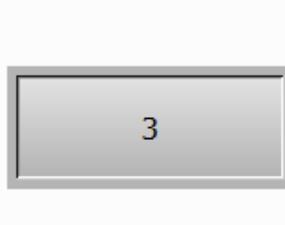
## 19.1 ComboBox

ComboBox provides display messages of multiple states allowing users to select the options for execution with the drop-down function. The functions of the same type are grouped in the same drop-down list, and only the currently selected item is displayed in the combo box.

Refer to Table 19.1.1 for the ComboBox example.

Table 19.1.1 ComboBox example

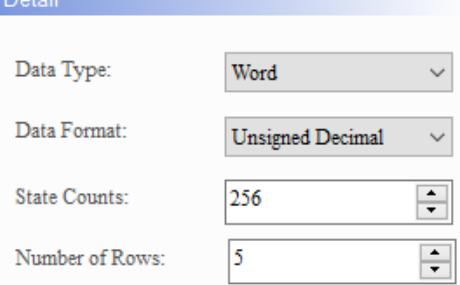
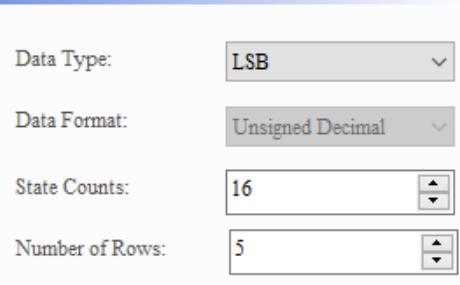
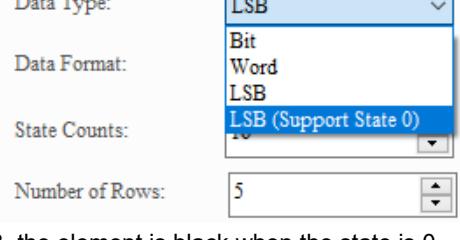
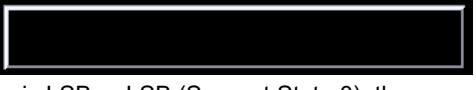
ComboBox																																																													
<p>Create ComboBox element</p>	<ul style="list-style-type: none"> <li>■ Create a ComboBox with its Write Address as \$10, select Word for the Data Type, and then set the State Counts to 16 and Number of Rows to 5.</li> </ul> <p>ComboBox</p> <p>Main Main-2 Text Details Macro Coordinates</p> <p><b>Memory</b></p> <p>Write Address: \$10</p> <p>Read Address: None</p> <p>Write Offset Address: None</p> <p>Read Offset Address: None</p> <p><b>Detail</b></p> <p>Data Type: Word</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 16</p> <p>Number of Rows: 5</p>																																																												
	<ul style="list-style-type: none"> <li>■ On the Text page, edit the text messages to be displayed for the 16 states which are the characters of A to P respectively.</li> </ul> <p>ComboBox</p> <p>Main Main-2 Text Details Macro Coordinates</p> <p><b>Text</b></p> <p>Arial 16</p> <p>B I U 100%</p> <p>Horiz. alignment: Horiz. Centering</p> <p>Vert. alignment: Vert. Centering</p> <p>Process the text of all states Process text properties of all states</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>None</td><td>1</td><td>A</td></tr> <tr><td>1</td><td>1</td><td>None</td><td>2</td><td>B</td></tr> <tr><td>2</td><td>2</td><td>None</td><td>3</td><td>C</td></tr> <tr><td>3</td><td>3</td><td>None</td><td>4</td><td>D</td></tr> <tr><td>4</td><td>4</td><td>None</td><td>5</td><td>E</td></tr> <tr><td>5</td><td>5</td><td>None</td><td>6</td><td>F</td></tr> <tr><td>6</td><td>6</td><td>None</td><td>7</td><td>G</td></tr> <tr><td>7</td><td>7</td><td>None</td><td>8</td><td>H</td></tr> <tr><td>8</td><td>8</td><td>None</td><td>9</td><td>I</td></tr> <tr><td>9</td><td>9</td><td>None</td><td>10</td><td>J</td></tr> <tr><td>10</td><td>10</td><td>None</td><td>11</td><td>K</td></tr> </tbody> </table> <p>OK Cancel</p>	State	State Index	State invisible address	Chinese	English	0	0	None	1	A	1	1	None	2	B	2	2	None	3	C	3	3	None	4	D	4	4	None	5	E	5	5	None	6	F	6	6	None	7	G	7	7	None	8	H	8	8	None	9	I	9	9	None	10	J	10	10	None	11	K
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2	2	None	3	C																																																									
3	3	None	4	D																																																									
4	4	None	5	E																																																									
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6	6	None	7	G																																																									
7	7	None	8	H																																																									
8	8	None	9	I																																																									
9	9	None	10	J																																																									
10	10	None	11	K																																																									

<b>ComboBox</b>		
	Create a Numeric Display element and set its Read Address as \$10 and complete the Detail settings.	
Create Numeric Display element	Numeric Display	<p>Read Address</p> 
	<p>Detail</p> 	
Execution results	<p>After creating the elements, compile and download the elements to the HMI. When you press the ComboBox, as the displaying number of rows is set to 5 in this example, five rows, A, B, C, D, and E are displayed accordingly. And the Numeric Display element will show the state value corresponding to the item you selected in the ComboBox.</p>  	

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# 19

Table 19.1.2 Data Type of ComboBox

ComboBox	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 for the State Counts.</p> <p><b>Detail</b></p>  <p>Data Type: Word Data Format: Unsigned Decimal State Counts: 256 Number of Rows: 5</p>
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>■ LSB is to first convert the data in the register to binary data, and then use the lowest non-zero bit to determine the current state of the object.</li> <li>■ If the Data Type is LSB, you can set 1 to 16 states except for State 0.</li> </ul> <p><b>Detail</b></p>  <p>Data Type: LSB Data Format: Unsigned Decimal State Counts: 16 Number of Rows: 5</p> <ul style="list-style-type: none"> <li>■ To display State 0, select LSB (Support State 0) for the Data Type.</li> </ul> <p><b>Detail</b></p>  <p>Data Type: LSB Data Format: Unsigned Decimal State Counts: 16 Number of Rows: 5</p> <ul style="list-style-type: none"> <li>■ If you selected LSB, the element is black when the state is 0.</li> </ul>  <ul style="list-style-type: none"> <li>■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in units of Word.</li> </ul>

ComboBox																																																														
Data Type	State Counts																																																													
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>The examples in the following table show how the state value is determined with the lowest non-zero bit of the binary value converted from a decimal value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.</li> </ul> <table border="1"> <thead> <tr> <th>Decimal</th> <th>Binary</th> <th>State value</th> </tr> </thead> <tbody> <tr> <td><u>0</u></td> <td><u>0000000000000000</u></td> <td><b>State = 0 when all bits are 0.</b> <u>Note: LSB (Support State 0) must be selected.</u></td> </tr> <tr> <td>1</td> <td>0000000000000001</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>2</td> <td>0000000000000010</td> <td>The lowest non-zero bit is bit 1, State = 2.</td> </tr> <tr> <td><u>3</u></td> <td><u>0000000000000011</u></td> <td><b>The lowest non-zero bit is bit 0, State = 1.</b></td> </tr> <tr> <td>4</td> <td>00000000000000100</td> <td>The lowest non-zero bit is bit 2, State = 3.</td> </tr> <tr> <td><u>7</u></td> <td><u>00000000000000111</u></td> <td><b>The lowest non-zero bit is bit 0, State = 1.</b></td> </tr> <tr> <td>8</td> <td>000000000000001000</td> <td>The lowest non-zero bit is bit 3, State = 4.</td> </tr> <tr> <td>16</td> <td>0000000000000010000</td> <td>The lowest non-zero bit is bit 4, State = 5.</td> </tr> <tr> <td>32</td> <td>00000000000000100000</td> <td>The lowest non-zero bit is bit 5, State = 6.</td> </tr> <tr> <td>64</td> <td>000000000000001000000</td> <td>The lowest non-zero bit is bit 6, State = 7.</td> </tr> <tr> <td>128</td> <td>0000000000000010000000</td> <td>The lowest non-zero bit is bit 7, State = 8.</td> </tr> <tr> <td>256</td> <td>00000000000000100000000</td> <td>The lowest non-zero bit is bit 8, State = 9.</td> </tr> <tr> <td>512</td> <td>000000000000001000000000</td> <td>The lowest non-zero bit is bit 9, State = 10.</td> </tr> <tr> <td>1024</td> <td>0000000000000010000000000</td> <td>The lowest non-zero bit is bit 10, State = 11.</td> </tr> <tr> <td>2048</td> <td>00000000000000100000000000</td> <td>The lowest non-zero bit is bit 11, State = 12.</td> </tr> <tr> <td>4096</td> <td>000000000000001000000000000</td> <td>The lowest non-zero bit is bit 12, State = 13.</td> </tr> <tr> <td>8192</td> <td>0000000000000010000000000000</td> <td>The lowest non-zero bit is bit 13, State = 14.</td> </tr> <tr> <td>16384</td> <td>00000000000000100000000000000</td> <td>The lowest non-zero bit is bit 14, State = 15.</td> </tr> <tr> <td>32768</td> <td>000000000000001000000000000000</td> <td>The lowest non-zero bit is bit 15, State = 16.</td> </tr> </tbody> </table>		Decimal	Binary	State value	<u>0</u>	<u>0000000000000000</u>	<b>State = 0 when all bits are 0.</b> <u>Note: LSB (Support State 0) must be selected.</u>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<u>3</u>	<u>0000000000000011</u>	<b>The lowest non-zero bit is bit 0, State = 1.</b>	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.	<u>7</u>	<u>00000000000000111</u>	<b>The lowest non-zero bit is bit 0, State = 1.</b>	8	000000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	0000000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	00000000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	000000000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	0000000000000010000000	The lowest non-zero bit is bit 7, State = 8.	256	00000000000000100000000	The lowest non-zero bit is bit 8, State = 9.	512	000000000000001000000000	The lowest non-zero bit is bit 9, State = 10.	1024	0000000000000010000000000	The lowest non-zero bit is bit 10, State = 11.	2048	00000000000000100000000000	The lowest non-zero bit is bit 11, State = 12.	4096	000000000000001000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	0000000000000010000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	00000000000000100000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	000000000000001000000000000000	The lowest non-zero bit is bit 15, State = 16.
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128	0000000000000010000000	The lowest non-zero bit is bit 7, State = 8.																																																												
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Bit	<p>If the Data Type is Bit, you can set only 2 states.</p> <p><b>Detail</b></p> <table> <tr> <td>Data Type:</td> <td>Bit</td> </tr> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td>State Counts:</td> <td>2</td> </tr> <tr> <td>Number of Rows:</td> <td>5</td> </tr> </table>		Data Type:	Bit	Data Format:	Unsigned Decimal	State Counts:	2	Number of Rows:	5																																																				
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Data Format:	Unsigned Decimal																																																													
State Counts:	2																																																													
Number of Rows:	5																																																													

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When you double-click the ComboBox, the property page is shown as follows.

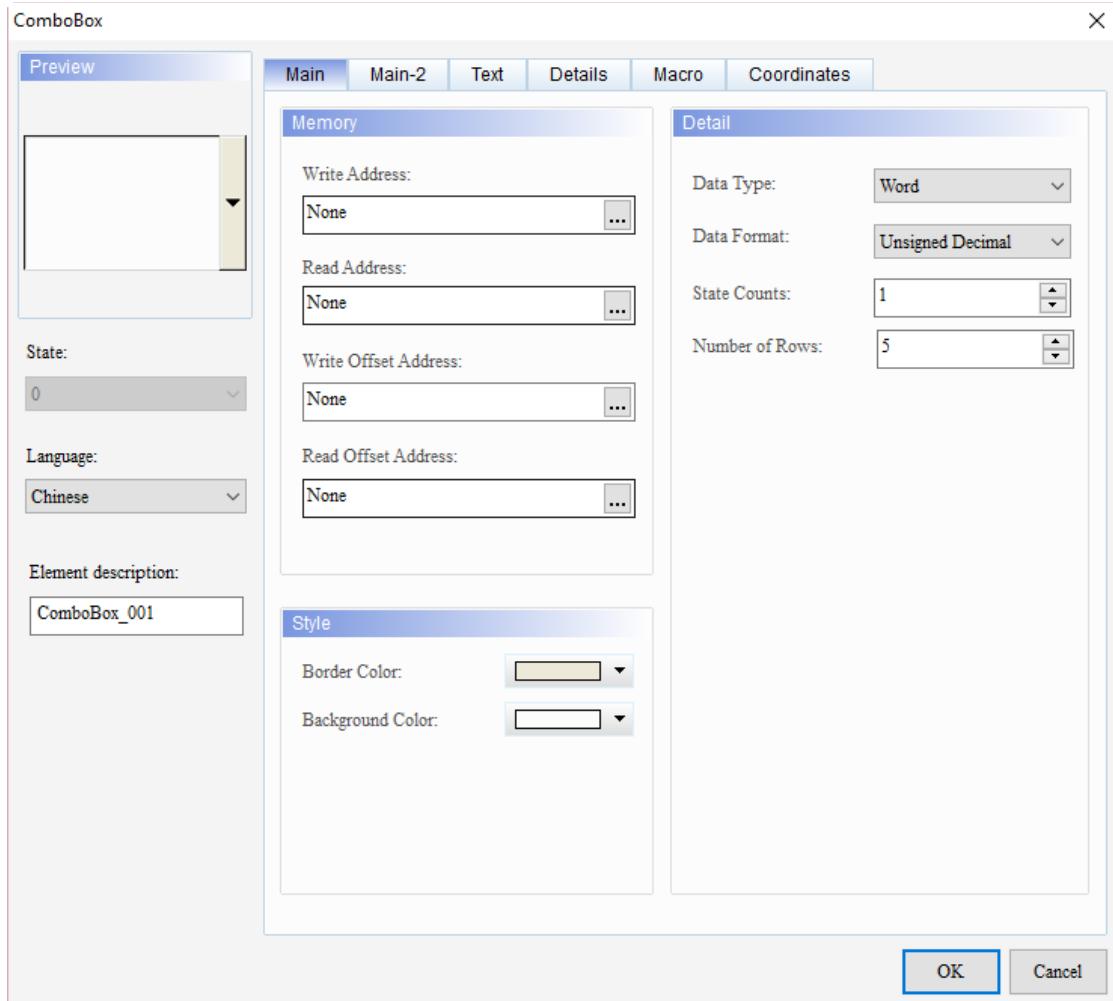


Figure 19.1.1 Properties of ComboBox

Table 19.1.3 Function page of the ComboBox element

ComboBox	
Function page	Description
Preview	ComboBox supports multiple state values and multi-language data display.
Main	Set the Write Address, Read Address, Write Offset Address, Read Offset Address, Data Type, Data Format, State Counts, Number of Rows, Border Color, and Background Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Details	Set the options of Interlock State, Interlock Display Mode, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, and Confirm Window.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

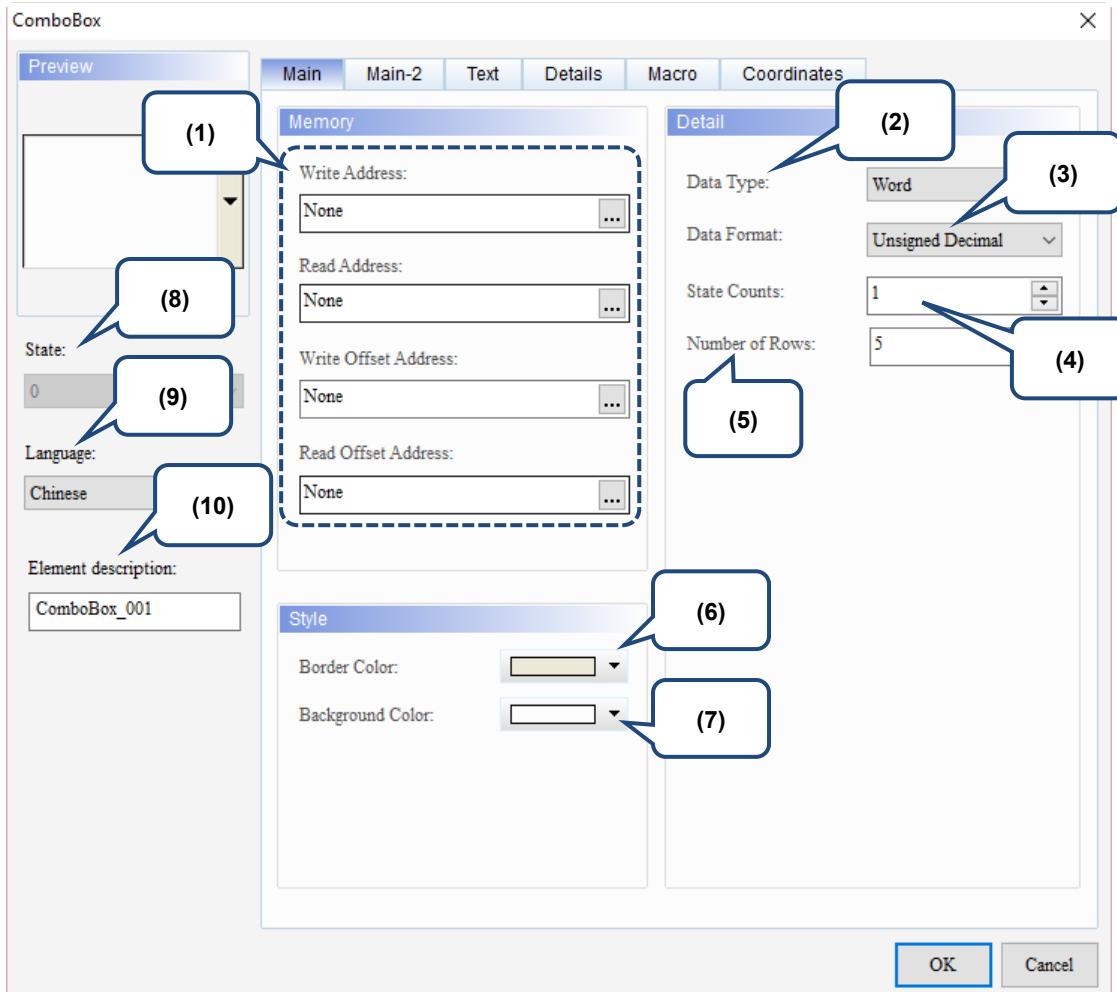
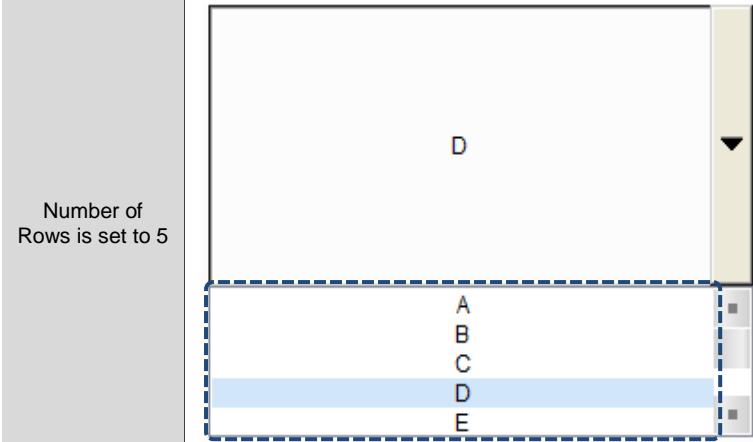
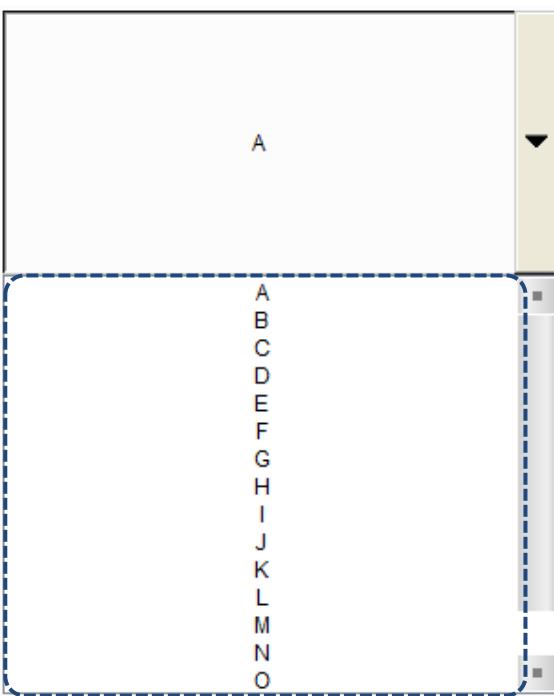
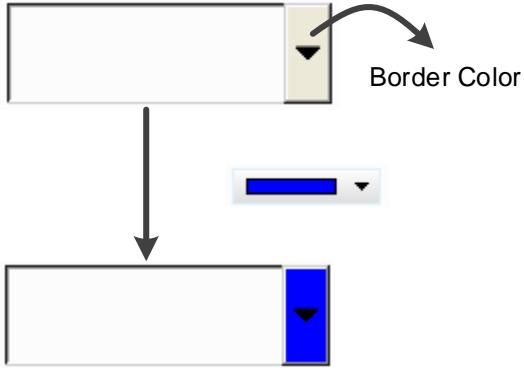


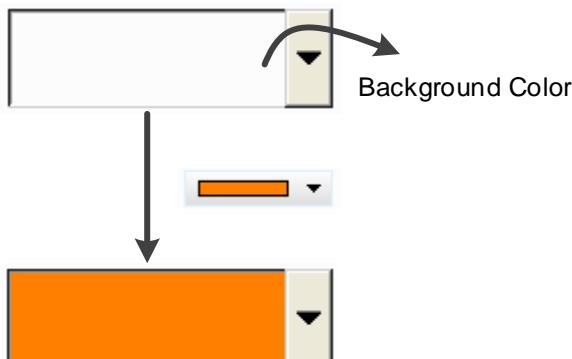
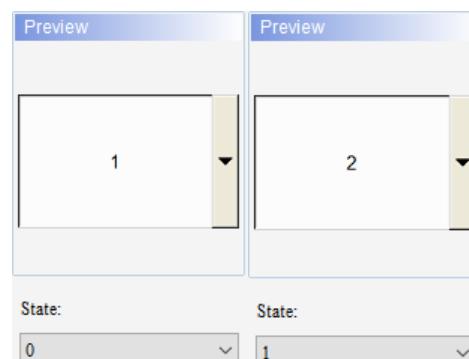
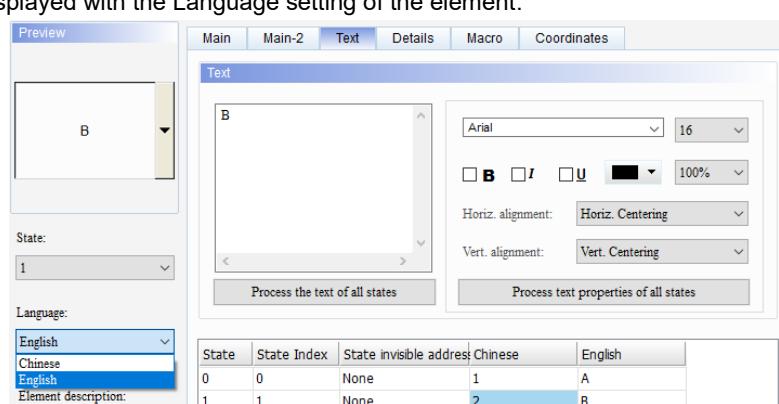
Figure 19.1.2 Main property page for the ComboBox element

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No.	Property	Function description						
(1)	Write Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 19.1.2.</li> </ul>						
	Read Address	<ul style="list-style-type: none"> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>						
	Write Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.						
	Read Offset Address							
(2)	Data Type	There are four types, Bit, Word, LSB, and LSB (Support State 0). Refer to Table 19.1.2 for more details.						
(3)	Data Format	<ul style="list-style-type: none"> <li>You can select the Data Format only when the Data Type is Word.</li> <li>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</li> </ul>						
		<p style="text-align: center;"><b>Detail</b></p> <table> <tr> <td style="vertical-align: top;">Data Type:</td> <td style="border: 1px solid #ccc; padding: 2px; width: 100px;">Word</td> </tr> <tr> <td style="vertical-align: top;">Data Format:</td> <td style="border: 1px solid #ccc; padding: 2px; width: 100px;">           Unsigned Decimal            BCD            Signed Decimal  <b>Unsigned Decimal</b>            Hexadecimal         </td> </tr> <tr> <td style="vertical-align: top;">State Counts:</td> <td></td> </tr> <tr> <td style="vertical-align: top;">Number of Rows:</td> <td></td> </tr> </table>	Data Type:	Word	Data Format:	Unsigned Decimal BCD Signed Decimal <b>Unsigned Decimal</b> Hexadecimal	State Counts:	
Data Type:	Word							
Data Format:	Unsigned Decimal BCD Signed Decimal <b>Unsigned Decimal</b> Hexadecimal							
State Counts:								
Number of Rows:								
(4)	State Counts	Set the state counts for the ComboBox element. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), you can set 17 states; and if the Data Type is Bit, you can set only 2 states. Refer to Table 19.1.2 for details.						

No.	Property	Function description
	(5) Number of Rows	<ul style="list-style-type: none"> <li>■ Set the displaying number of rows when you press the ComboBox.</li> <li>■ The default is 5 and the maximum is 15.</li> </ul>  
	(6) Border Color	<p>Set the border color of the element.</p> 

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No.	Property	Function description															
(7)	Background Color	<p>Set the background color of the element.</p> 															
(8)	State	<p>By switching the State, you can preview or change the settings of each state of the element.</p> 															
(9)	Language	<p>If you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>1</td> <td>None</td> <td>2</td> <td>B</td> </tr> </tbody> </table>	State	State Index	State invisible address	Chinese	English	0	0	None	1	A	1	1	None	2	B
State	State Index	State invisible address	Chinese	English													
0	0	None	1	A													
1	1	None	2	B													

No.	Property	Function description																																																																																
(10)	Element description	<p>Record the button actions to be executed. The record is also written in the CSV file of the Operation Log Table so users can know what actions have been done.</p> <table border="1"> <thead> <tr> <th>Time</th><th>Date</th><th>Level</th><th>Screen</th><th>Desc</th><th>Action</th><th>Pre Value</th><th>Change Value</th></tr> </thead> <tbody> <tr><td>1</td><td>13:37:54</td><td>5/5/2016</td><td>8 Screen_21</td><td>Level 1 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>2</td><td>13:37:56</td><td>5/5/2016</td><td>8 Screen_21</td><td>Level 1 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>3</td><td>13:38:19</td><td>5/5/2016</td><td>8 Screen_21</td><td></td><td>Level Switch</td><td>8</td><td>4</td></tr> <tr><td>4</td><td>13:38:21</td><td>5/5/2016</td><td>4 Screen_21</td><td>Level 2 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>5</td><td>13:38:21</td><td>5/5/2016</td><td>4 Screen_21</td><td>Level 2 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>6</td><td>13:38:22</td><td>5/5/2016</td><td>4 Screen_21</td><td>Level 4 Btn</td><td>Set Val</td><td>0</td><td>1</td></tr> <tr><td>7</td><td>13:38:23</td><td>5/5/2016</td><td>4 Screen_21</td><td>Level 4 Btn</td><td>Set Val</td><td>1</td><td>0</td></tr> <tr><td>8</td><td>13:38:31</td><td>5/5/2016</td><td>4 Screen_21</td><td></td><td>Level Switch</td><td>4</td><td>8</td></tr> <tr><td>9</td><td>13:38:35</td><td>5/5/2016</td><td>8 Screen_21</td><td>\$100 Value</td><td>Set Val</td><td>85</td><td>25</td></tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8 Screen_21	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8 Screen_21	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8 Screen_21		Level Switch	8	4	4	13:38:21	5/5/2016	4 Screen_21	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4 Screen_21	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4 Screen_21	Level 4 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4 Screen_21	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4 Screen_21		Level Switch	4	8	9	13:38:35	5/5/2016	8 Screen_21	\$100 Value	Set Val	85	25
Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value																																																																											
1	13:37:54	5/5/2016	8 Screen_21	Level 1 Btn	Set Val	1	0																																																																											
2	13:37:56	5/5/2016	8 Screen_21	Level 1 Btn	Set Val	0	1																																																																											
3	13:38:19	5/5/2016	8 Screen_21		Level Switch	8	4																																																																											
4	13:38:21	5/5/2016	4 Screen_21	Level 2 Btn	Set Val	0	1																																																																											
5	13:38:21	5/5/2016	4 Screen_21	Level 2 Btn	Set Val	1	0																																																																											
6	13:38:22	5/5/2016	4 Screen_21	Level 4 Btn	Set Val	0	1																																																																											
7	13:38:23	5/5/2016	4 Screen_21	Level 4 Btn	Set Val	1	0																																																																											
8	13:38:31	5/5/2016	4 Screen_21		Level Switch	4	8																																																																											
9	13:38:35	5/5/2016	8 Screen_21	\$100 Value	Set Val	85	25																																																																											

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## ■ Main-2

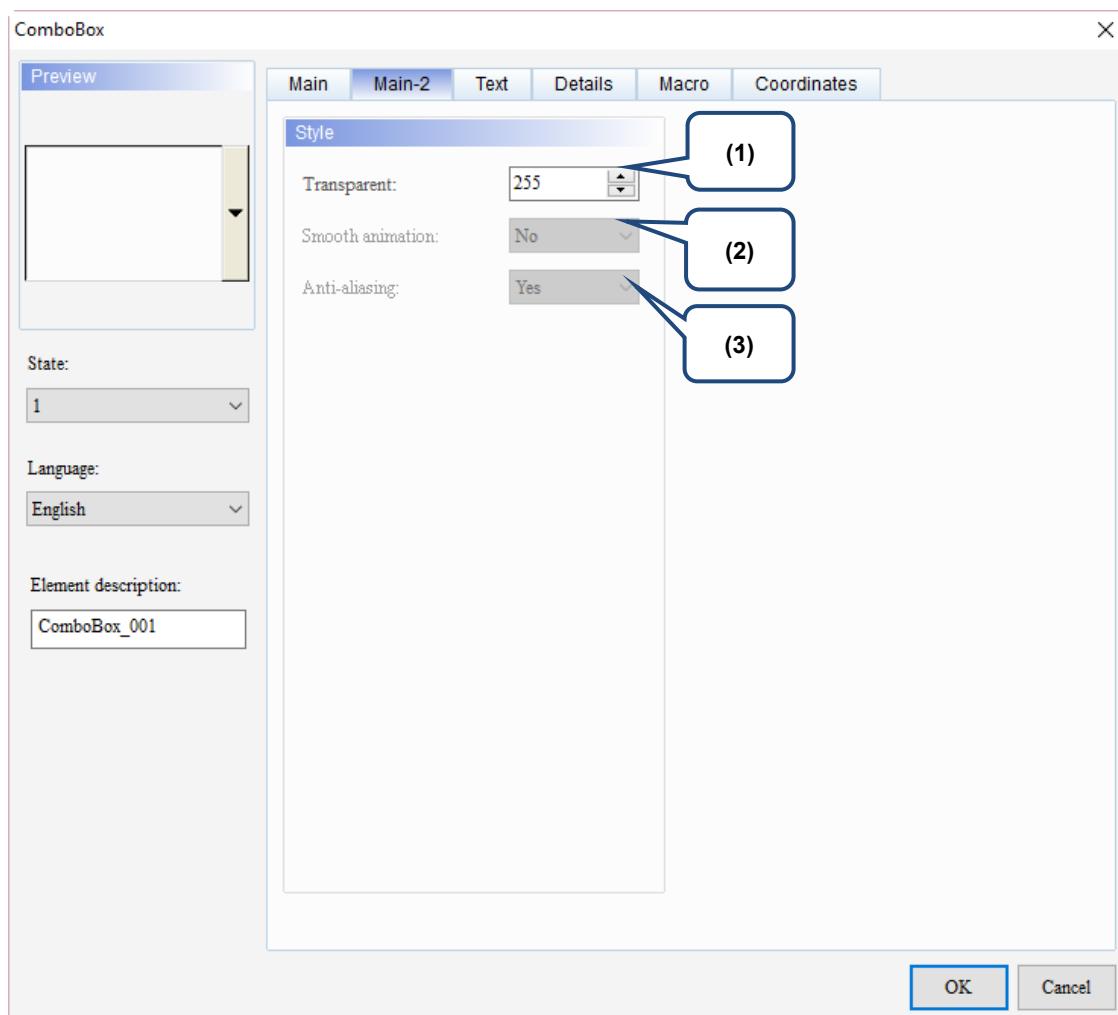


Figure 19.1.3 Main-2 property page for the ComboBox element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

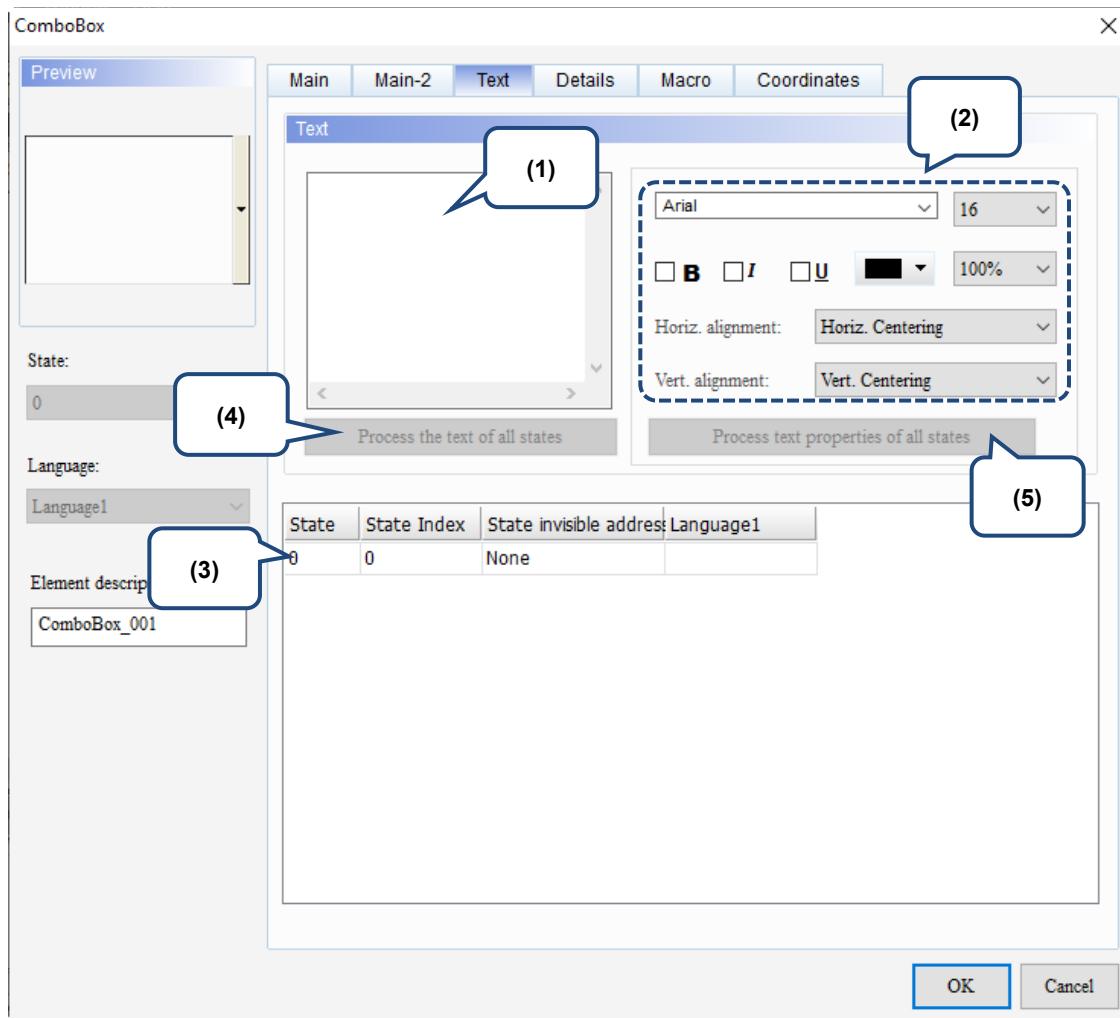
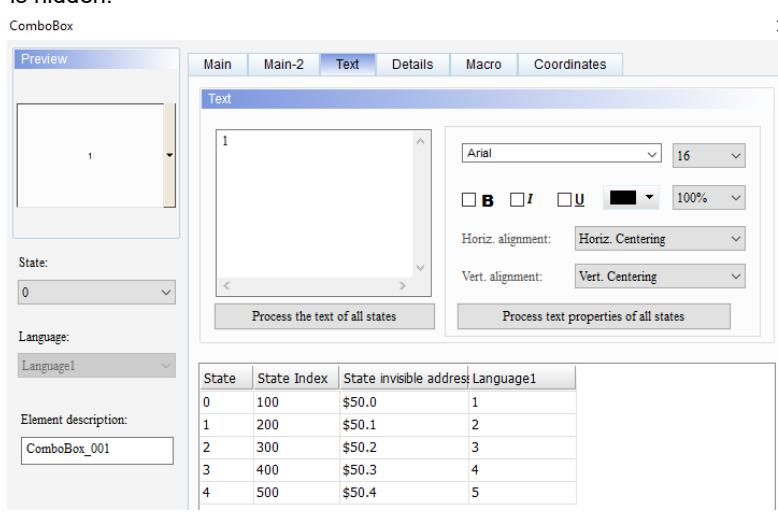
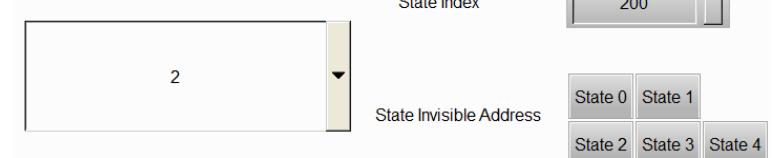
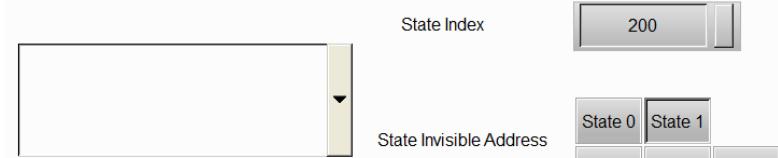


Figure 19.1.4 Text property page for the ComboBox element

No.	Property	Function description																								
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul> <p>ComboBox</p> <p>Preview</p> <p>State: 0</p> <p>Language: Chinese</p> <p>Element description: ComboBox_001</p> <p>Main Main-2 Text Details Macro Coordinates</p> <p>Text</p> <p>Arial 16</p> <p><input type="checkbox"/> B <input type="checkbox"/> I <input type="checkbox"/> U <input type="checkbox"/> <span style="color: black;">#000000</span> 100%</p> <p>Horiz. alignment: Horiz. Centering</p> <p>Vert. alignment: Vert. Centering</p> <p>Process the text of all states Process text properties of all states</p> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> <th>Language</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>Chinese</td> </tr> <tr> <td>1</td> <td>1</td> <td>None</td> <td>Chinese</td> </tr> <tr> <td></td> <td></td> <td></td> <td>English</td> </tr> <tr> <td></td> <td></td> <td></td> <td>A</td> </tr> <tr> <td></td> <td></td> <td></td> <td>B</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element and press the space key to start editing the text.</li> </ul>	State	State Index	State invisible address	Language	0	0	None	Chinese	1	1	None	Chinese				English				A				B
State	State Index	State invisible address	Language																							
0	0	None	Chinese																							
1	1	None	Chinese																							
			English																							
			A																							
			B																							
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.																								

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No.	Property	Function description																								
(3)	Edit multi-language text	<p>■ If you have added multi-language texts, the Text page allows you to edit multi-language data.</p> <p>■ State Index: define the index value for displaying the corresponding state.</p> <p>■ State invisible address: when the Invisible Address is On, the specified state is hidden.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> <th>Language1</th> </tr> </thead> <tbody> <tr><td>0</td><td>100</td><td>\$50.0</td><td>1</td></tr> <tr><td>1</td><td>200</td><td>\$50.1</td><td>2</td></tr> <tr><td>2</td><td>300</td><td>\$50.2</td><td>3</td></tr> <tr><td>3</td><td>400</td><td>\$50.3</td><td>4</td></tr> <tr><td>4</td><td>500</td><td>\$50.4</td><td>5</td></tr> </tbody> </table> <p>■ Enter 200 to the State Index, and then the ComboBox element displays the text “2” of State 1.</p>  <p>■ When the State 1 button (\$50.1) is triggered to On, the text “2” of State 1 is hidden.</p> 	State	State Index	State invisible address	Language1	0	100	\$50.0	1	1	200	\$50.1	2	2	300	\$50.2	3	3	400	\$50.3	4	4	500	\$50.4	5
State	State Index	State invisible address	Language1																							
0	100	\$50.0	1																							
1	200	\$50.1	2																							
2	300	\$50.2	3																							
3	400	\$50.3	4																							
4	500	\$50.4	5																							

No.	Property	Function description																					
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. Refer to the following example:</p> <ol style="list-style-type: none"> <li>1. Enter the text “123” for State 0 and “234” for State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process the text of all states</b> and the text of State 1 is changed to “123”.</li> </ol> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Chinese</td> </tr> <tr> <td>1</td> <td>1</td> <td>None</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Chinese</td> <td>123</td> </tr> <tr> <td>1</td> <td>1</td> <td>None</td> <td>123</td> </tr> </tbody> </table>	State	State Index	State invisible address	0	0	Chinese	1	1	None	State	State Index	State invisible address	English	0	0	Chinese	123	1	1	None	123
State	State Index	State invisible address																					
0	0	Chinese																					
1	1	None																					
State	State Index	State invisible address	English																				
0	0	Chinese	123																				
1	1	None	123																				
(5)	Process text properties of all states	<ul style="list-style-type: none"> <li>■ This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</li> </ul> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>State invisible address</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Chinese</td> <td>123</td> </tr> <tr> <td>1</td> <td>1</td> <td>None</td> <td>123</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>■ Refer to the following example:</li> </ul> <ol style="list-style-type: none"> <li>1. Enter the text “123” for State 0 and “234” for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process text properties of all states</b> and the text font of State 1 is changed to Segoe Script.</li> </ol>	State	State Index	State invisible address	English	0	0	Chinese	123	1	1	None	123									
State	State Index	State invisible address	English																				
0	0	Chinese	123																				
1	1	None	123																				

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No.	Property	Function description
(5)	Process text properties of all states	<p>Before</p> <p>After</p>

## ■ Details

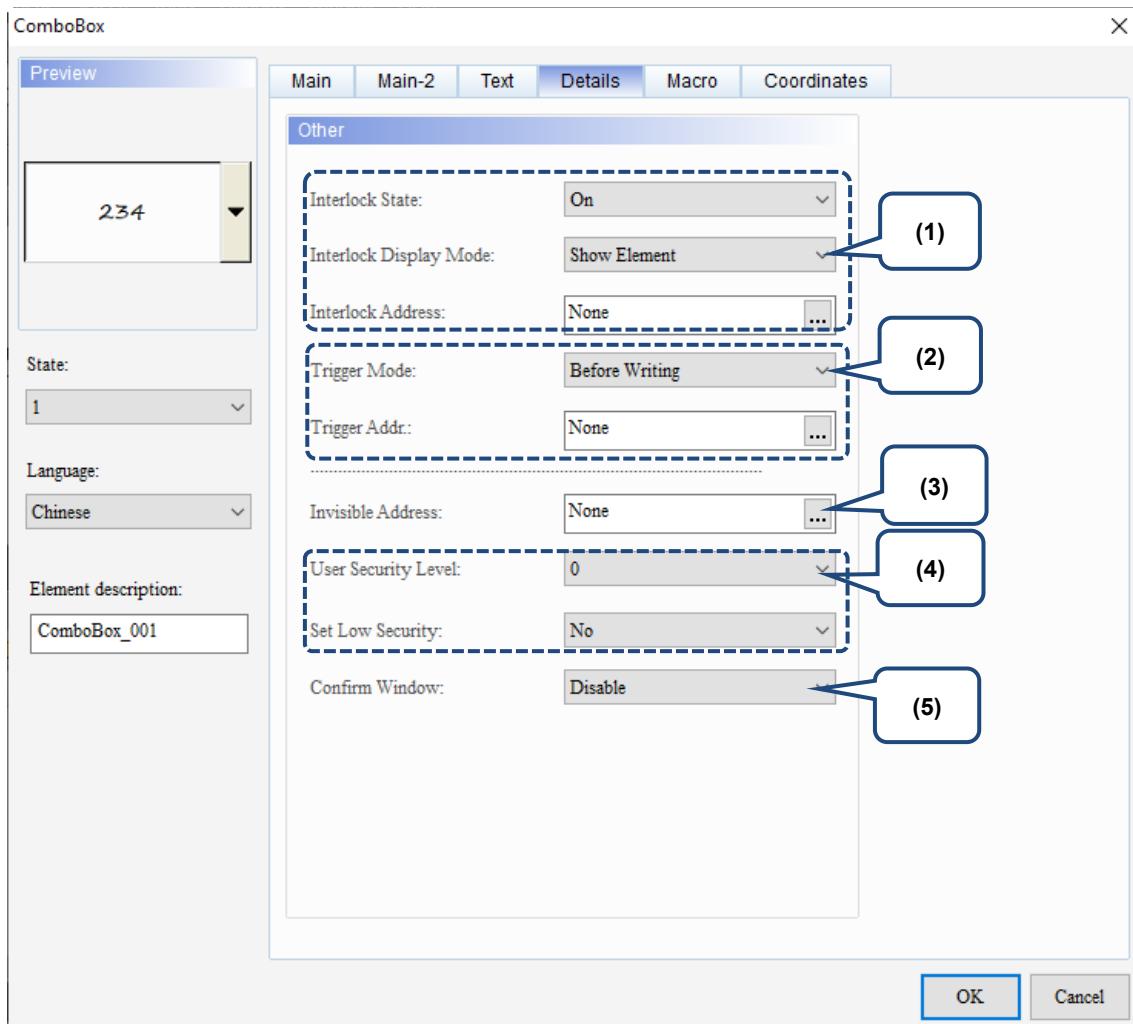


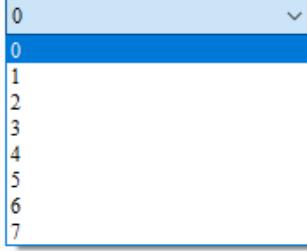
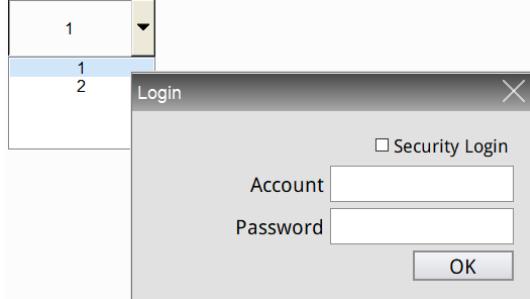
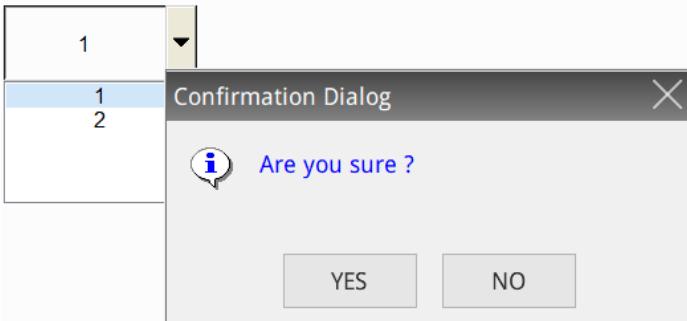
Figure 19.1.5 Details property page for the ComboBox element

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No.	Property	Function description				
	Interlock State	<p>The Interlock Address is for enabling the operation of another element and has to be used with the Interlock State. If the Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is Off. On the other hand, if the Interlock State is set to On, the Interlock Address is operable when this Interlock State is On.</p> <ul style="list-style-type: none"> <li>■ Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the ComboBox which address is \$100.</li> <li>■ In order for the ComboBox to obtain the correct state value after you press it, you must first press the \$8.0 button to validate the action of the ComboBox.</li> </ul> <p>ComboBox</p>				
(1)	Interlock Address					
	Interlock Display Mode	<p>The options for Interlock Display Mode are Show Element and Show Prohibition Symbol.</p> <table border="1"> <tr> <td style="text-align: right;">Interlock Display Mode:</td> <td>Show Element</td> </tr> <tr> <td style="text-align: right;">Interlock Address:</td> <td>Show Element Show Prohibition Symbol</td> </tr> </table>	Interlock Display Mode:	Show Element	Interlock Address:	Show Element Show Prohibition Symbol
Interlock Display Mode:	Show Element					
Interlock Address:	Show Element Show Prohibition Symbol					

No.	Property	Function description								
(2)	Trigger Mode	<ul style="list-style-type: none"> <li>Trigger Modes include Before Writing and After Writing.</li> </ul> <table border="1"> <tr> <td>Triggering action</td><td>Before Writing</td><td>After Writing</td></tr> <tr> <td></td><td>Trigger Addr. must be set to On before the value changes.</td><td>Value is changed before the Trigger Addr. is set to On.</td></tr> </table>	Triggering action	Before Writing	After Writing		Trigger Addr. must be set to On before the value changes.	Value is changed before the Trigger Addr. is set to On.		
Triggering action	Before Writing	After Writing								
	Trigger Addr. must be set to On before the value changes.	Value is changed before the Trigger Addr. is set to On.								
Trigger Addr.	<ul style="list-style-type: none"> <li>The triggering function only switches the set Trigger Addr. to On, so if triggering again is required, you need to set the Trigger Addr. to Off.</li> </ul> <p>Flowchart of Before Writing:</p> <p>Flowchart of After Writing:</p>									
(3)	Invisible Address	<p>When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</p> <p>ComboBox</p> <p>Element is invisible</p> <p>Main Main-2 Text Details Macro Coordinates</p> <p>Other</p> <p>Interlock State: On</p> <p>Interlock Address: \$8.0</p> <p>Trigger Mode: Before Writing</p> <p>Trigger Addr.: None</p> <p>Invisible Address: \$9.0</p> <p>User Security Level: 0</p>								

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No.	Property	Function description
(4)	User Security Level	<p>User Security Level:</p>  <p>Set Low Security:</p> <p>Confirm Window:</p> <ul style="list-style-type: none"> <li>■ You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>■ After you set the User Security Level, when you press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password with the Password Table element. Refer to Section 5.7.2 Password Table Setup).</li> </ul>
	Set Low Security	 <ul style="list-style-type: none"> <li>■ If you set the Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.</li> </ul>
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the action after you press the element.</p> 

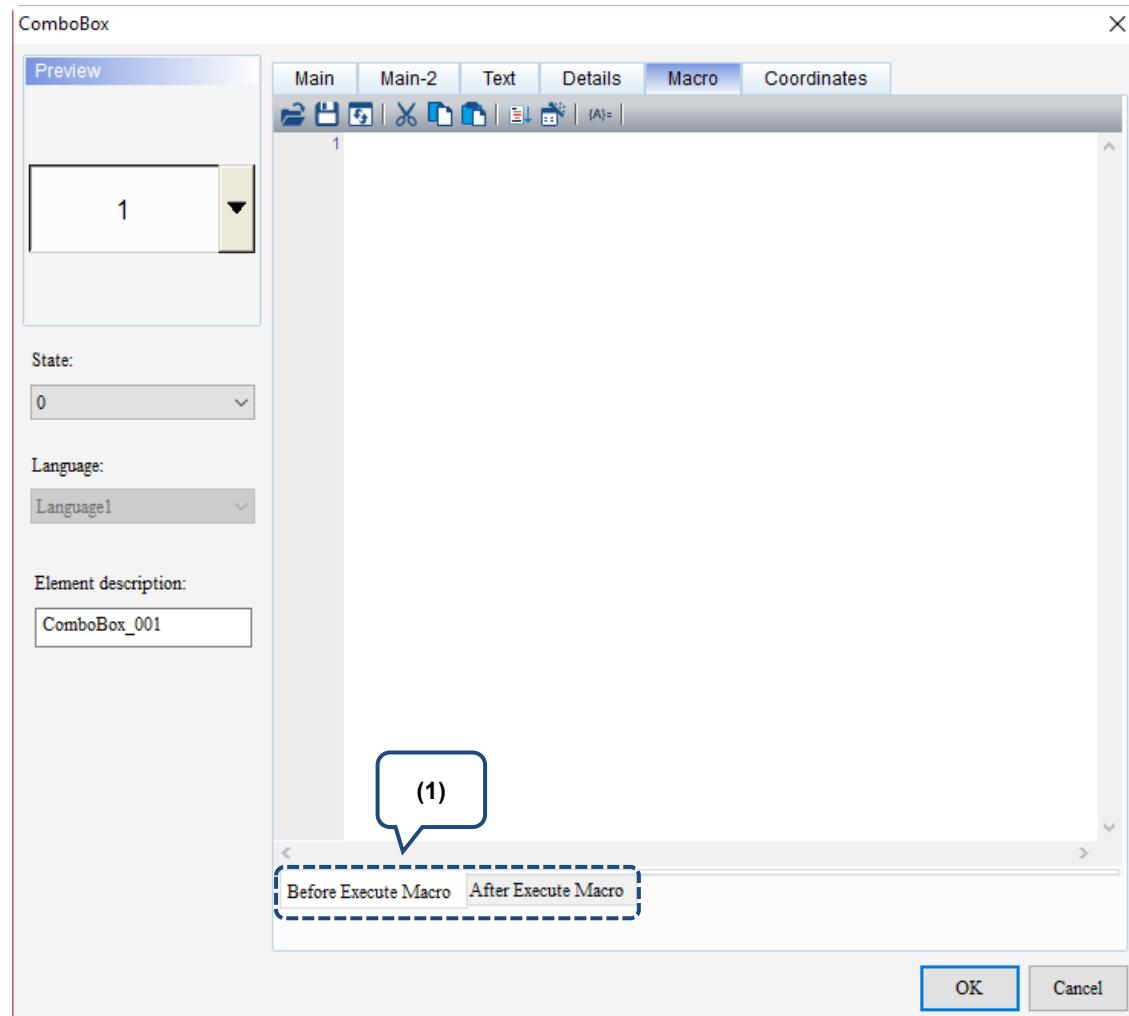
**■ Macro**

Figure 19.1.6 Macro property page for the ComboBox element

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No.	Property	Function description
	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands and then execute the action of the button. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button and then execute the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.

Flowchart of Before Execute Macro:

```

graph TD
    A[Maintained Button] -- "Trigger to On / Enter the value" --> B[Before Execute Macro]
    B -- "Button is On and the value is written" --> C[Maintained Button]
    C -- "Trigger to Off / Enter the value" --> D[Before Execute Macro]
    D -- "Button is Off and the value is written" --> E[Maintained Button]
    E -- "Next trigger" --> A
  
```

(1)

Flowchart of After Execute Macro:

```

graph TD
    A[Maintained Button] -- "Trigger to On / Enter the value" --> B[After Execute Macro]
    B -- "Button is On and the value is written" --> C[Maintained Button]
    C -- "Trigger to Off / Enter the value" --> D[After Execute Macro]
    D -- "Button is Off and the value is written" --> E[Maintained Button]
    E -- "Next trigger" --> A
  
```

## ■ Coordinates

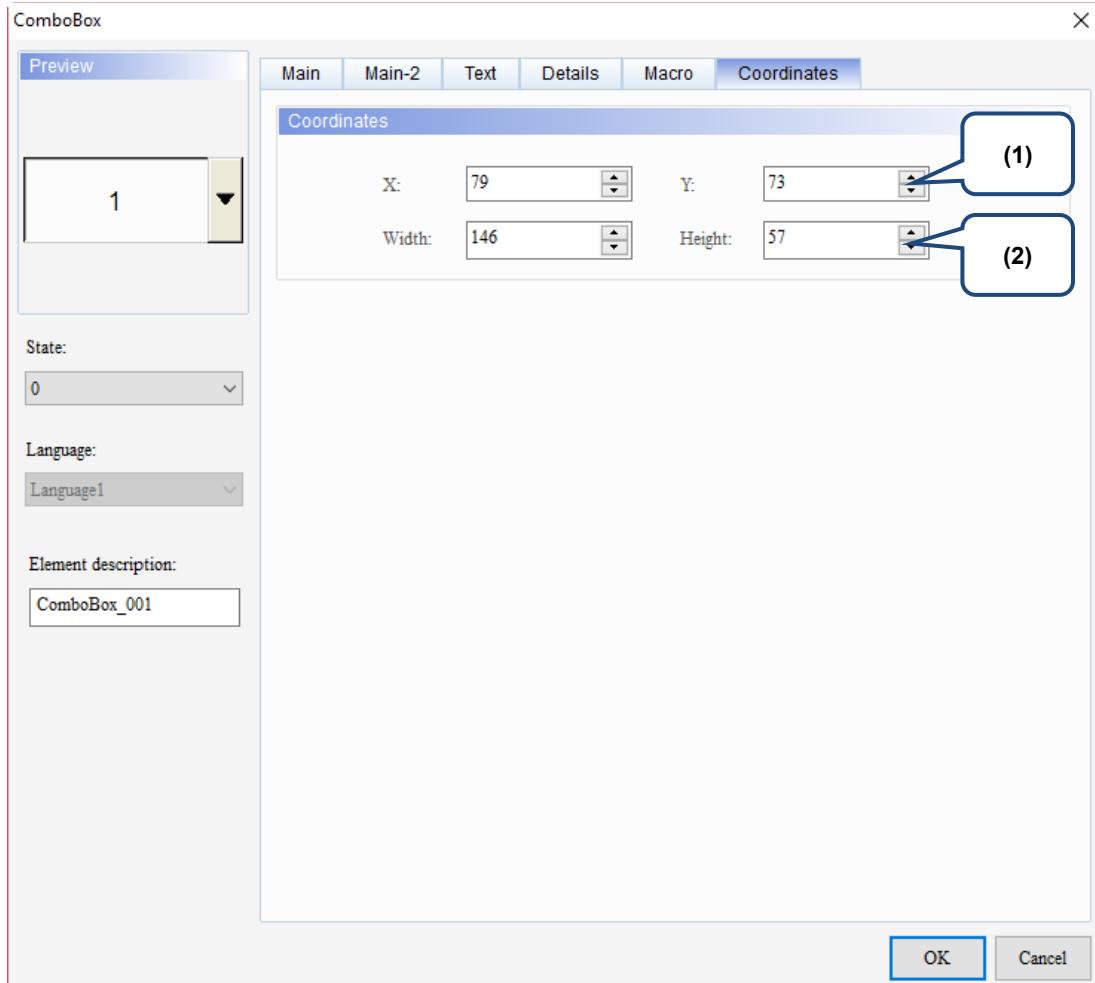


Figure 19.1.7 Coordinates property page for the ComboBox element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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# 19

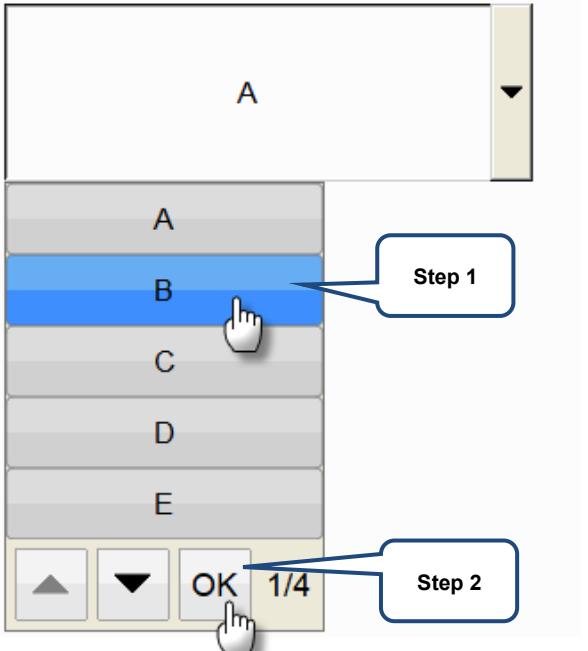
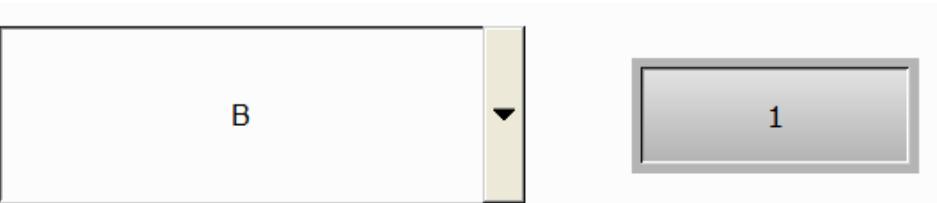
## 19.2 Drop-down Menu

Drop-down Menu provides display messages of multiple states allowing users to select the options for execution. Different from ComboBox, after selecting the item to execute in the Drop-down Menu, you need to press **OK** to complete the selection.

Refer to Table 19.2.1 for the Drop-down Menu example.

Table 19.2.1 Drop-down Menu example

Drop-down Menu																																									
Create Drop-down Menu element	<ul style="list-style-type: none"> <li>■ Create a Drop-down Menu with its Write Address as \$10, select Word for the Data Type, and then set 16 for the State Counts and 5 for The number of menus that can be displayed on a single page.</li> </ul> <p style="margin-top: 5px;">Drop-down Menu</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Preview</td> <td style="width: 80%;"> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <span>Main</span> <span>Text</span> <span>Details</span> <span>Macro</span> <span>Coordinates</span> </div> <div style="border-bottom: 1px solid #ccc; padding-top: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p><b>Memory</b></p> <p>Write Address: <input type="text" value="\$10"/></p> <p>Read Address: <input type="text" value="None"/></p> <p>State: <input type="text" value="15"/></p> <p>Language: <input type="text" value="Chinese"/></p> <p>Element description: <input type="text" value="Drop-down Menu_001"/></p> </div> <div style="flex: 1;"> <p><b>Detail</b></p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>State Counts: <input type="text" value="16"/></p> <p>Menu background color: <input type="color" value="#f0f0f0"/></p> <p>Menu height: <input type="text" value="40"/></p> <p>Menu width: <input type="text" value="180"/></p> <p>The number of menus that can be displayed on a single page: <input type="text" value="5"/></p> </div> </div> </td> </tr> </table> <ul style="list-style-type: none"> <li>■ On the Text page, edit the text messages to be displayed for the 16 states which are the characters of A to P respectively.</li> </ul> <p style="margin-top: 5px;">Drop-down Menu</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Preview</td> <td style="width: 80%;"> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <span>Main</span> <span>Text</span> <span>Details</span> <span>Macro</span> <span>Coordinates</span> </div> <div style="border-bottom: 1px solid #ccc; padding-top: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p><b>Text</b></p> <p>A</p> <p>Process the text of all states</p> </div> <div style="flex: 1;"> <p>Arial 16</p> <p><input type="checkbox"/> B <input type="checkbox"/> I <input type="checkbox"/> U <input type="color" value="#0000ff"/> 100%</p> <p>Horiz. alignment: Horiz. Centering</p> <p>Vert. alignment: Vert. Centering</p> <p>Process text properties of all states</p> </div> </div> </td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Language1</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>A</td></tr> <tr><td>1</td><td>1</td><td>B</td></tr> <tr><td>2</td><td>2</td><td>C</td></tr> <tr><td>3</td><td>3</td><td>D</td></tr> <tr><td>4</td><td>4</td><td>E</td></tr> <tr><td>5</td><td>5</td><td>F</td></tr> <tr><td>6</td><td>6</td><td>G</td></tr> <tr><td>7</td><td>7</td><td>H</td></tr> <tr><td>8</td><td>8</td><td>I</td></tr> <tr><td>9</td><td>9</td><td>J</td></tr> <tr><td>10</td><td>10</td><td>K</td></tr> </tbody> </table> <p style="text-align: right; margin-top: 10px;"> <input type="button" value="OK"/> <input type="button" value="Cancel"/> </p>	Preview	<div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <span>Main</span> <span>Text</span> <span>Details</span> <span>Macro</span> <span>Coordinates</span> </div> <div style="border-bottom: 1px solid #ccc; padding-top: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p><b>Memory</b></p> <p>Write Address: <input type="text" value="\$10"/></p> <p>Read Address: <input type="text" value="None"/></p> <p>State: <input type="text" value="15"/></p> <p>Language: <input type="text" value="Chinese"/></p> <p>Element description: <input type="text" value="Drop-down Menu_001"/></p> </div> <div style="flex: 1;"> <p><b>Detail</b></p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>State Counts: <input type="text" value="16"/></p> <p>Menu background color: <input type="color" value="#f0f0f0"/></p> <p>Menu height: <input type="text" value="40"/></p> <p>Menu width: <input type="text" value="180"/></p> <p>The number of menus that can be displayed on a single page: <input type="text" value="5"/></p> </div> </div>	Preview	<div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <span>Main</span> <span>Text</span> <span>Details</span> <span>Macro</span> <span>Coordinates</span> </div> <div style="border-bottom: 1px solid #ccc; padding-top: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p><b>Text</b></p> <p>A</p> <p>Process the text of all states</p> </div> <div style="flex: 1;"> <p>Arial 16</p> <p><input type="checkbox"/> B <input type="checkbox"/> I <input type="checkbox"/> U <input type="color" value="#0000ff"/> 100%</p> <p>Horiz. alignment: Horiz. Centering</p> <p>Vert. alignment: Vert. Centering</p> <p>Process text properties of all states</p> </div> </div>	State	State Index	Language1	0	0	A	1	1	B	2	2	C	3	3	D	4	4	E	5	5	F	6	6	G	7	7	H	8	8	I	9	9	J	10	10	K
Preview	<div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <span>Main</span> <span>Text</span> <span>Details</span> <span>Macro</span> <span>Coordinates</span> </div> <div style="border-bottom: 1px solid #ccc; padding-top: 5px;"></div> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p><b>Memory</b></p> <p>Write Address: <input type="text" value="\$10"/></p> <p>Read Address: <input type="text" value="None"/></p> <p>State: <input type="text" value="15"/></p> <p>Language: <input type="text" value="Chinese"/></p> <p>Element description: <input type="text" value="Drop-down Menu_001"/></p> </div> <div style="flex: 1;"> <p><b>Detail</b></p> <p>Data Type: <input type="text" value="Word"/></p> <p>Data Format: <input type="text" value="Unsigned Decimal"/></p> <p>State Counts: <input type="text" value="16"/></p> <p>Menu background color: <input type="color" value="#f0f0f0"/></p> <p>Menu height: <input type="text" value="40"/></p> <p>Menu width: <input type="text" value="180"/></p> <p>The number of menus that can be displayed on a single page: <input type="text" value="5"/></p> </div> </div>																																								
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0	0	A																																							
1	1	B																																							
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4	4	E																																							
5	5	F																																							
6	6	G																																							
7	7	H																																							
8	8	I																																							
9	9	J																																							
10	10	K																																							

Drop-down Menu											
	Create a Numeric Display element and set its Read Address as \$10 and complete the Detail settings.										
Create Numeric Display element	Numeric Display	Read Address	R:\$10 12345								
	<p>Detail</p> <table border="1"> <tr> <td>Data Type</td> <td>Word</td> </tr> <tr> <td>Data Format</td> <td>Unsigned Decimal</td> </tr> <tr> <td>Integer Digits</td> <td>5</td> </tr> <tr> <td>Fractional</td> <td>0</td> </tr> </table>			Data Type	Word	Data Format	Unsigned Decimal	Integer Digits	5	Fractional	0
Data Type	Word										
Data Format	Unsigned Decimal										
Integer Digits	5										
Fractional	0										
Execution results	<p>After creating the elements, compile and download the elements to the HMI. Select the content in the Drop-down Menu then press <b>OK</b> to complete the selection. As the number of menus that can be displayed on a single page is set to 5 in this example, five rows, A, B, C, D, and E are displayed accordingly.</p> <p>And the Numeric Display element will show the state value corresponding to the item you selected in the Drop-down Menu.</p>  										

# 19

The Drop-down Menu supports four Data Types as shown in Table 19.2.2. To add or reduce the total number of states, you can simply increase or decrease the number of State Counts in the Properties window.

Table 19.2.2 Data Type of Drop-down Menu

Drop-down Menu	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 for the State Counts.</p> <p><b>Detail</b></p> <p>Data Type: Word</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 256</p>
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>■ LSB is to first convert the data in the register to binary data, then use the lowest non-zero bit to determine the current state of the object.</li> <li>■ If the Data Type is LSB, you can set 1 to 16 states except for State 0.</li> </ul> <p><b>Detail</b></p> <p>Data Type: LSB</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 16</p> <ul style="list-style-type: none"> <li>■ To display State 0, select LSB (Support State 0) for the Data Type.</li> </ul> <p><b>Detail</b></p> <p>Data Type: LSB (Support State 0)</p> <p>Data Format: Bit Word LSB LSB (Support State 0)</p> <p>State Counts:</p> <ul style="list-style-type: none"> <li>■ If you selected LSB, the element is black when the state is 0.</li> <li>■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in units of Word.</li> </ul>

Drop-down Menu																																																														
Data Type	State Counts																																																													
		■ The examples in the following table show how the state value is determined with the lowest non-zero bit of the binary value converted from a decimal value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.																																																												
		<table border="1"> <thead> <tr> <th>Decimal</th> <th>Binary</th> <th>State value</th> </tr> </thead> <tbody> <tr> <td><u>0</u></td> <td><u>0000000000000000</u></td> <td><u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u></td> </tr> <tr> <td>1</td> <td>0000000000000001</td> <td>The lowest non-zero bit is bit 0, State = 1.</td> </tr> <tr> <td>2</td> <td>0000000000000010</td> <td>The lowest non-zero bit is bit 1, State = 2.</td> </tr> <tr> <td><u>3</u></td> <td><u>0000000000000011</u></td> <td><u>The lowest non-zero bit is bit 0, State = 1.</u></td> </tr> <tr> <td>4</td> <td>00000000000000100</td> <td>The lowest non-zero bit is bit 2, State = 3.</td> </tr> <tr> <td><u>7</u></td> <td><u>00000000000000111</u></td> <td><u>The lowest non-zero bit is bit 0, State = 1.</u></td> </tr> <tr> <td>8</td> <td>000000000000001000</td> <td>The lowest non-zero bit is bit 3, State = 4.</td> </tr> <tr> <td>16</td> <td>0000000000000010000</td> <td>The lowest non-zero bit is bit 4, State = 5.</td> </tr> <tr> <td>32</td> <td>00000000000000100000</td> <td>The lowest non-zero bit is bit 5, State = 6.</td> </tr> <tr> <td>64</td> <td>000000000000001000000</td> <td>The lowest non-zero bit is bit 6, State = 7.</td> </tr> <tr> <td>128</td> <td>0000000000000010000000</td> <td>The lowest non-zero bit is bit 7, State = 8.</td> </tr> <tr> <td>256</td> <td>00000000000000100000000</td> <td>The lowest non-zero bit is bit 8, State = 9.</td> </tr> <tr> <td>512</td> <td>000000000000001000000000</td> <td>The lowest non-zero bit is bit 9, State = 10.</td> </tr> <tr> <td>1024</td> <td>0000000000000010000000000</td> <td>The lowest non-zero bit is bit 10, State = 11.</td> </tr> <tr> <td>2048</td> <td>0000000000000000000000000</td> <td>The lowest non-zero bit is bit 11, State = 12.</td> </tr> <tr> <td>4096</td> <td>00000000000000000000000000</td> <td>The lowest non-zero bit is bit 12, State = 13.</td> </tr> <tr> <td>8192</td> <td>000000000000000000000000000</td> <td>The lowest non-zero bit is bit 13, State = 14.</td> </tr> <tr> <td>16384</td> <td>0000000000000000000000000000</td> <td>The lowest non-zero bit is bit 14, State = 15.</td> </tr> <tr> <td>32768</td> <td>00000000000000000000000000000</td> <td>The lowest non-zero bit is bit 15, State = 16.</td> </tr> </tbody> </table>	Decimal	Binary	State value	<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.	<u>7</u>	<u>00000000000000111</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>	8	000000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	0000000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	00000000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	000000000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	0000000000000010000000	The lowest non-zero bit is bit 7, State = 8.	256	00000000000000100000000	The lowest non-zero bit is bit 8, State = 9.	512	000000000000001000000000	The lowest non-zero bit is bit 9, State = 10.	1024	0000000000000010000000000	The lowest non-zero bit is bit 10, State = 11.	2048	0000000000000000000000000	The lowest non-zero bit is bit 11, State = 12.	4096	00000000000000000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	000000000000000000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	0000000000000000000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	00000000000000000000000000000	The lowest non-zero bit is bit 15, State = 16.
Decimal	Binary	State value																																																												
<u>0</u>	<u>0000000000000000</u>	<u>State = 0 when all bits are 0.</u> <u>Note: LSB (Support State 0) must be selected.</u>																																																												
1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.																																																												
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<u>3</u>	<u>0000000000000011</u>	<u>The lowest non-zero bit is bit 0, State = 1.</u>																																																												
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16	0000000000000010000	The lowest non-zero bit is bit 4, State = 5.																																																												
32	00000000000000100000	The lowest non-zero bit is bit 5, State = 6.																																																												
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32768	00000000000000000000000000000	The lowest non-zero bit is bit 15, State = 16.																																																												
If the Data Type is Bit, you can set only 2 states.		<p style="text-align: center;"><a href="#">Detail</a></p> <table> <tr> <td style="vertical-align: top;">Data Type:</td> <td style="border: 1px solid #ccc; padding: 2px;">Bit</td> </tr> <tr> <td style="vertical-align: top;">Data Format:</td> <td style="border: 1px solid #ccc; padding: 2px;">Unsigned Decimal</td> </tr> <tr> <td style="vertical-align: top;">State Counts:</td> <td style="border: 1px solid #ccc; padding: 2px; text-align: center;">2</td> </tr> </table>	Data Type:	Bit	Data Format:	Unsigned Decimal	State Counts:	2																																																						
Data Type:	Bit																																																													
Data Format:	Unsigned Decimal																																																													
State Counts:	2																																																													
Bit																																																														

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When you double-click the Drop-down Menu, the property page is shown as follows.

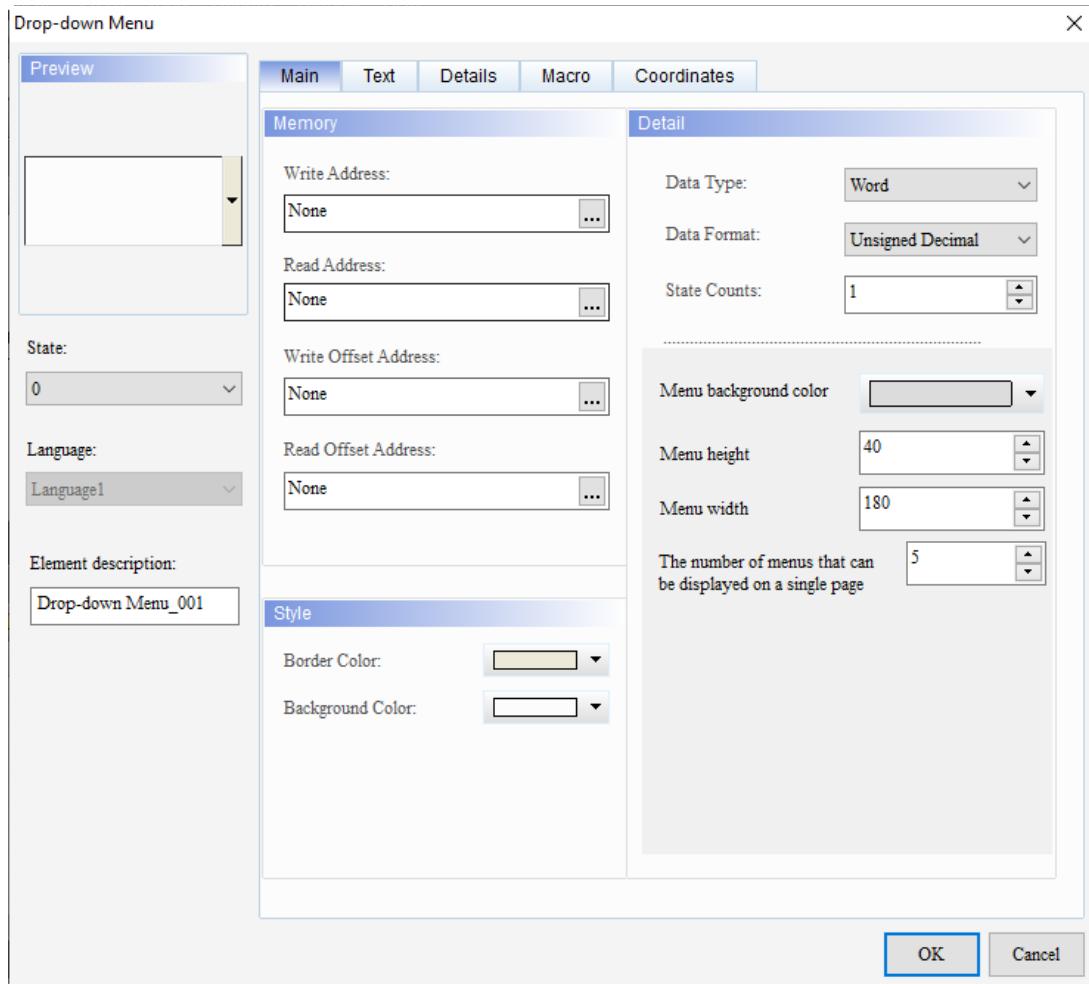


Figure 19.2.1 Properties of Drop-down Menu

Table 19.2.3 Function page of the Drop-down Menu element

Drop-down Menu	
Function page	Description
Preview	Drop-down Menu supports multiple state values and multi-language data display.
Main	Set the Write Address, Read Address, Write Offset Address, Read Offset Address, Data Type, Data Format, and State Counts. Set the Border Color and Background Color. Set the Menu background color, Menu height, Menu width, and The number of menus that can be displayed on a single page.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Details	Set the options of Interlock State, Interlock Display Mode, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, and Confirm Window.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

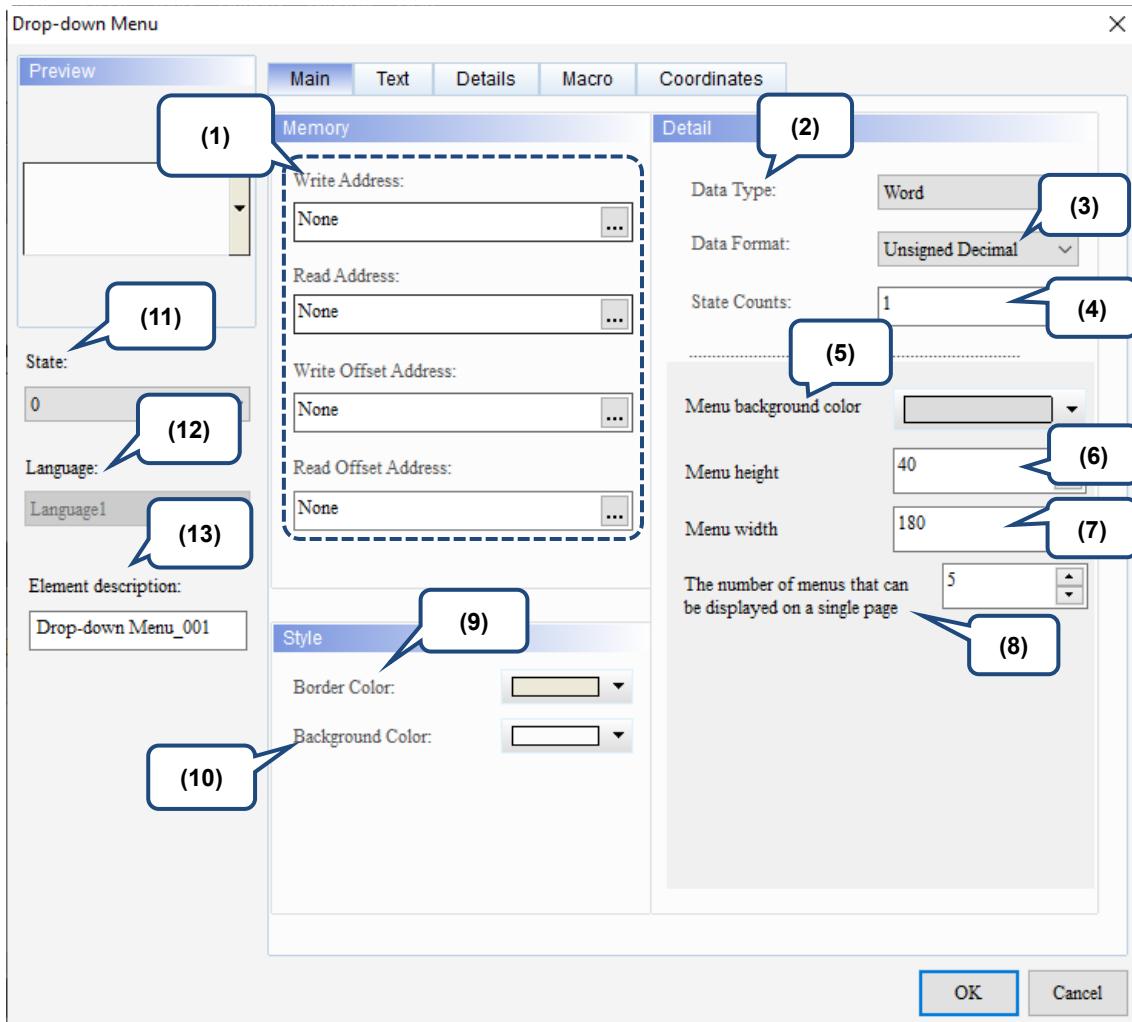
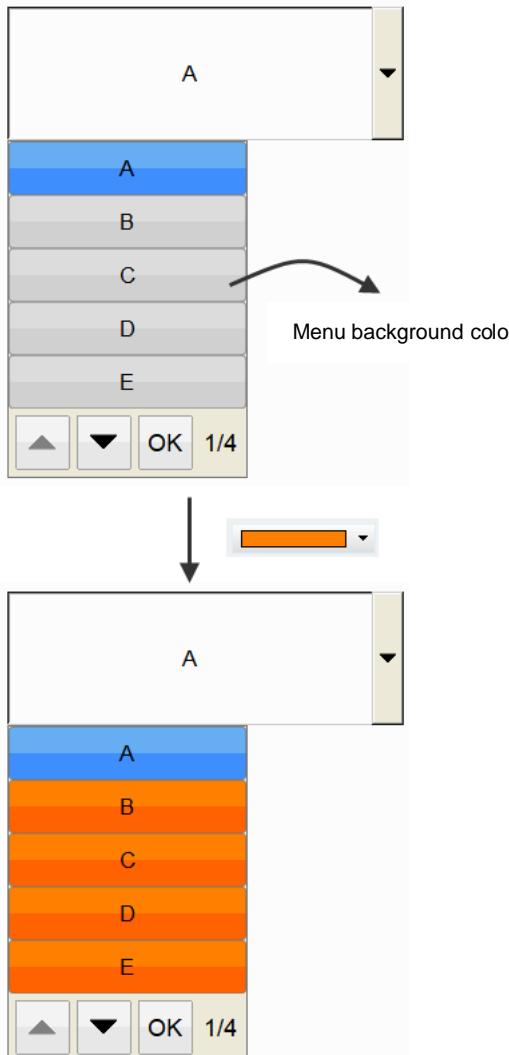
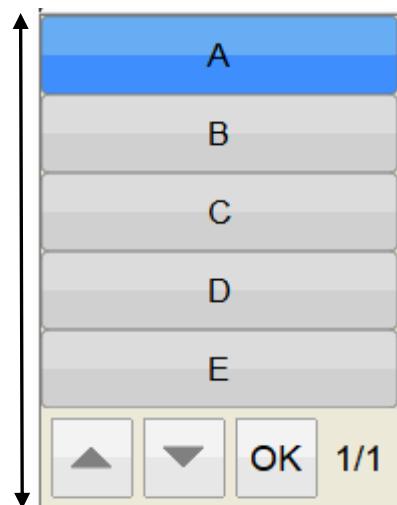
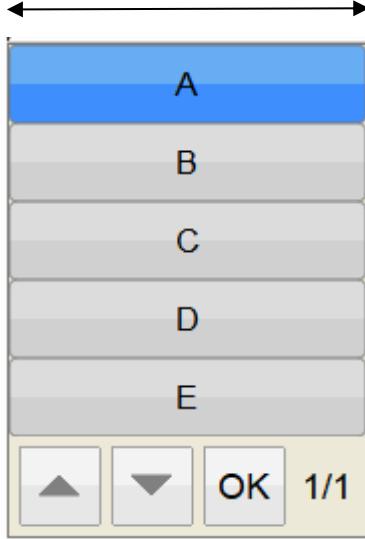
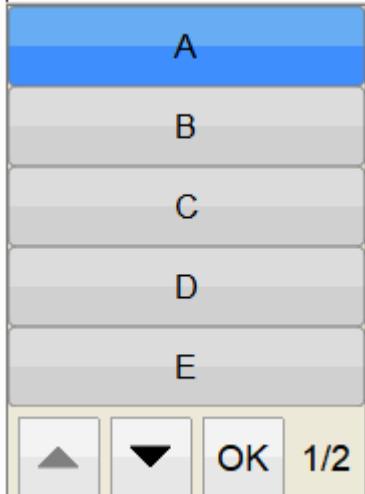
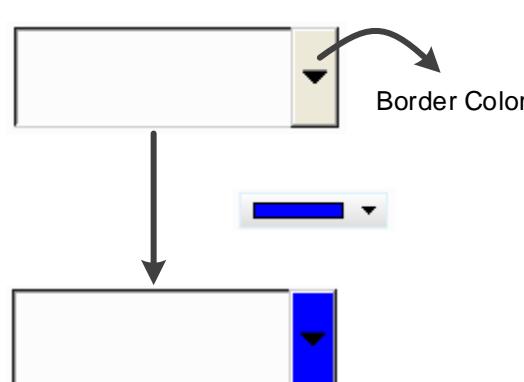


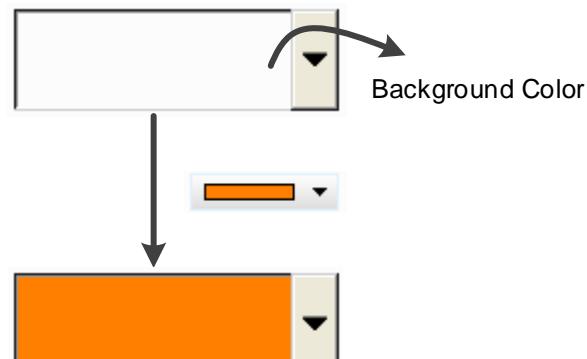
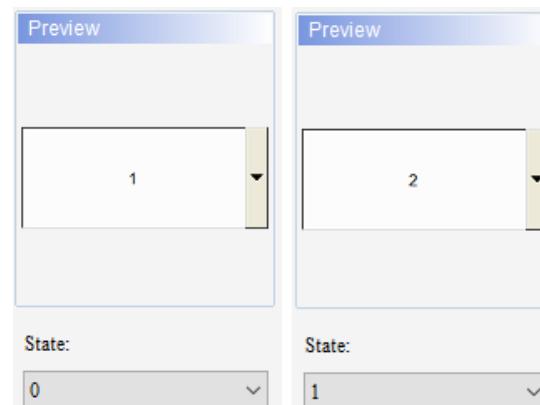
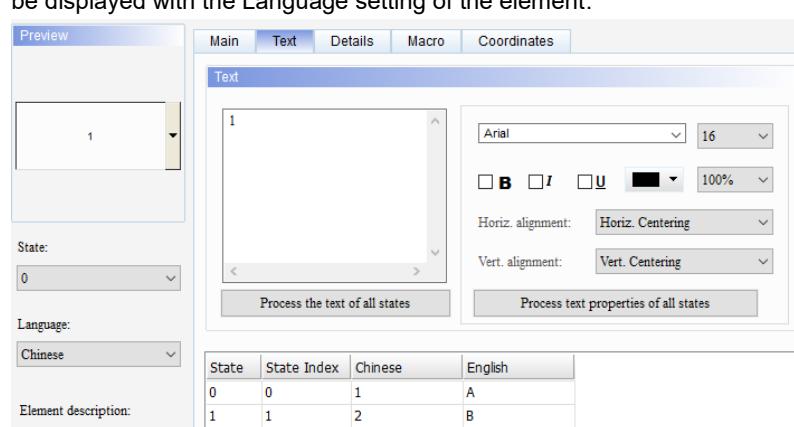
Figure 19.2.2 Main property page for the Drop-down Menu element

No.	Property	Function description										
(1)	Write Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 19.2.2.</li> </ul>										
	Read Address	<ul style="list-style-type: none"> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>										
	Write Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.										
	Read Offset Address											
(2)	Data Type	There are four types, Bit, Word, LSB, and LSB (Support State 0). Refer to Table 19.2.2 for more details.										
(3)	Data Format	<ul style="list-style-type: none"> <li>You can select the Data Format only when the Data Type is Word.</li> <li>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</li> </ul>										
		<b>Detail</b>										
		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Data Type:</td> <td style="width: 80%;"> <input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Word"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div> </td> </tr> <tr> <td>Data Format:</td> <td> <input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Unsigned Decimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div> </td> </tr> <tr> <td>State Counts:</td> <td> <input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="BCD"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div> </td> </tr> <tr> <td></td> <td> <input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Signed Decimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div> </td> </tr> <tr> <td></td> <td> <input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px; background-color: #0070C0; color: white;" type="button" value="Unsigned Decimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div> </td> </tr> <tr> <td></td> <td> <input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Hexadecimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div> </td> </tr> </table>	Data Type:	<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Word"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>	Data Format:	<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Unsigned Decimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>	State Counts:	<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="BCD"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>		<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Signed Decimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>		<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px; background-color: #0070C0; color: white;" type="button" value="Unsigned Decimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>
Data Type:	<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Word"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>											
Data Format:	<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Unsigned Decimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>											
State Counts:	<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="BCD"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>											
	<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Signed Decimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>											
	<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px; background-color: #0070C0; color: white;" type="button" value="Unsigned Decimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>											
	<input style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;" type="button" value="Hexadecimal"/> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block; width: 150px; height: 150px; vertical-align: middle;"></div>											
(4)	State Counts	Set the state counts for the Drop-down Menu element. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), you can set 17 states; and if the Data Type is Bit, you can set only 2 states. Refer to Table 19.2.2 for details.										

No.	Property	Function description
(5)	Menu background color	<p>Set the background color of the menu.</p>  <p>Menu background color</p>
(6)	Menu height	<p>Set the height of the menu.</p> 

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No.	Property	Function description
(7)	Menu width	<p>Set the width of the menu.</p> 
(8)	The number of menus that can be displayed on a single page	<ul style="list-style-type: none"> <li>Set the number of items that can be displayed on a single page of the menu. The default setting is 5.</li> <li>If there are more than 5 items, press the  and  buttons to turn pages.</li> </ul> 
(9)	Border Color	<p>Set the border color of the element.</p> 

No.	Property	Function description												
(10)	Background Color	<p>Set the background color of the element.</p> 												
(11)	State	<p>By switching the State, you can preview or change the settings of each state of the element.</p> 												
(12)	Language	<p>If you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.</p>  <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>1</td> <td>2</td> <td>B</td> </tr> </tbody> </table>	State	State Index	Chinese	English	0	0	1	A	1	1	2	B
State	State Index	Chinese	English											
0	0	1	A											
1	1	2	B											

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## ■ Text

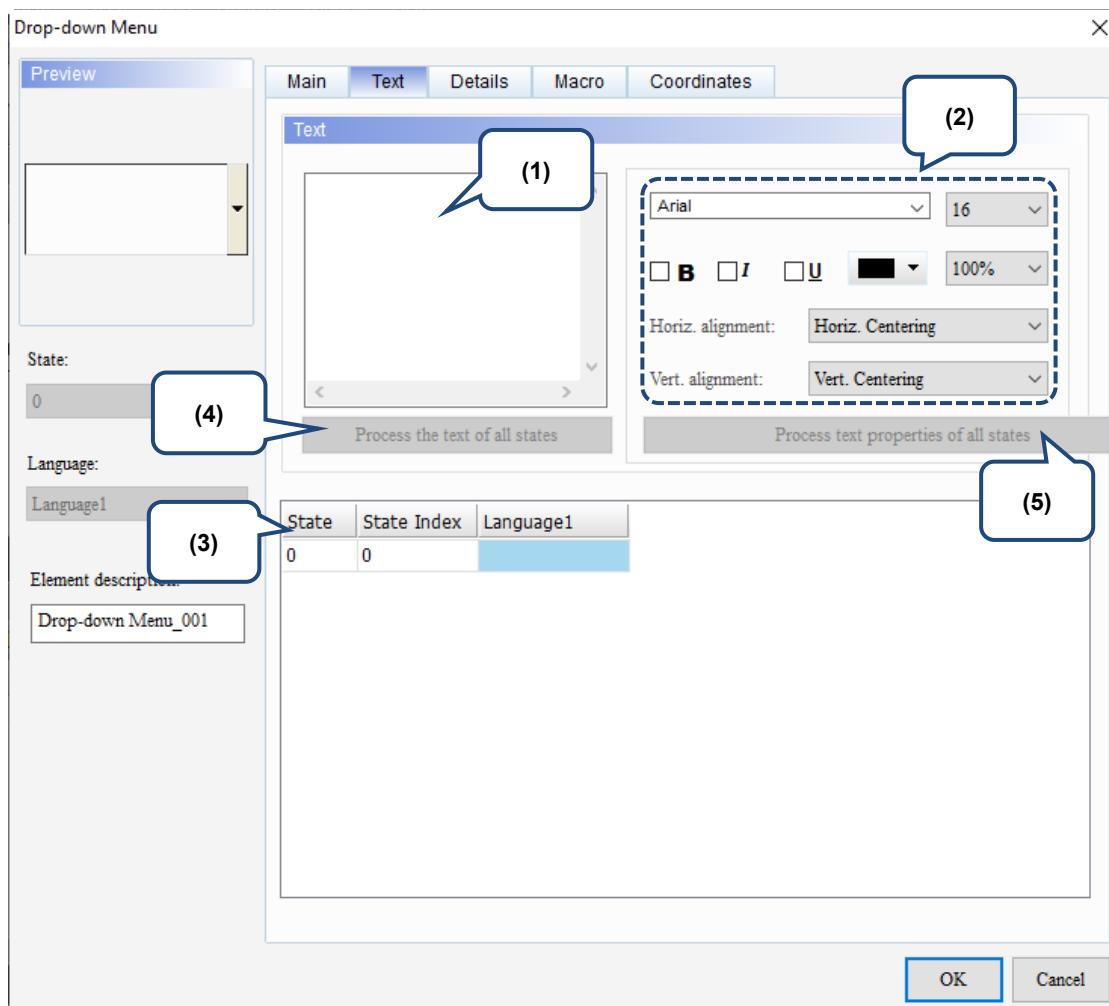
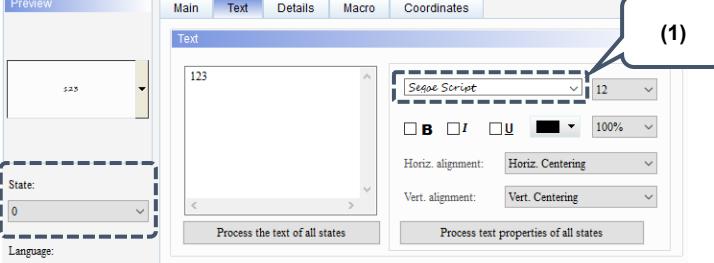
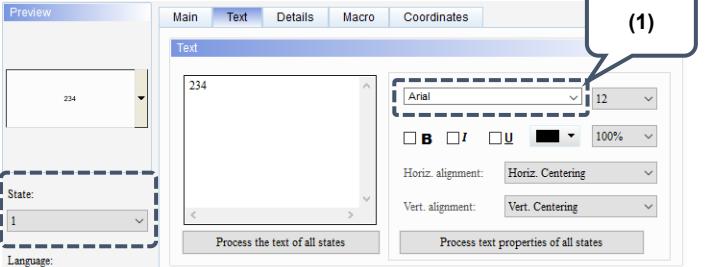
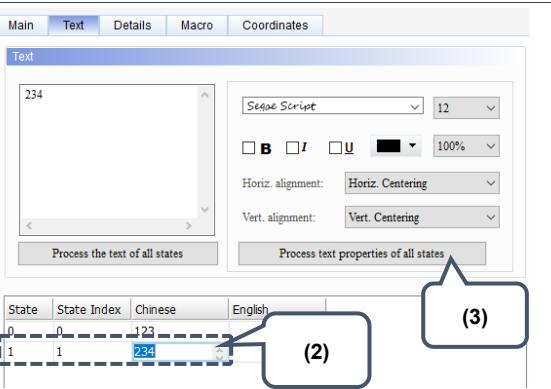


Figure 19.2.3 Text property page for the Drop-down Menu element

No.	Property	Function description												
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>1</td> <td>2</td> <td>B</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element and press the space key to start editing the text.</li> </ul>	State	State Index	Chinese	English	0	0	1	A	1	1	2	B
State	State Index	Chinese	English											
0	0	1	A											
1	1	2	B											
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.												
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.												

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No.	Property	Function description												
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. Refer to the following example:</p> <ol style="list-style-type: none"> <li>1. Enter the text “123” for State 0 and “234” for State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process the text of all states</b> and the text of State 1 is changed to “123”.</li> </ol> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>123</td> <td>234</td> </tr> <tr> <td>1</td> <td>1</td> <td>234</td> <td>123</td> </tr> </tbody> </table>	State	State Index	Chinese	English	0	0	123	234	1	1	234	123
State	State Index	Chinese	English											
0	0	123	234											
1	1	234	123											
(5)	Process text properties of all states	<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure:</p> <p>Refer to the following example:</p> <ol style="list-style-type: none"> <li>1. Enter the text “123” for State 0 and “234” for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process text properties of all states</b> and the text font of State 1 is changed to Segoe Script.</li> </ol>												

No.	Property	Function description												
(5)	Process text properties of all states	 <p>Before</p> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>123</td> <td></td> </tr> <tr> <td>1</td> <td>1</td> <td>234</td> <td></td> </tr> </tbody> </table>	State	State Index	Chinese	English	0	0	123		1	1	234	
State	State Index	Chinese	English											
0	0	123												
1	1	234												
	After	 <p>After</p> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>123</td> <td></td> </tr> <tr> <td>1</td> <td>1</td> <td>234</td> <td></td> </tr> </tbody> </table> <p> <span>(2)</span> <span>(3)</span> </p> 	State	State Index	Chinese	English	0	0	123		1	1	234	
State	State Index	Chinese	English											
0	0	123												
1	1	234												

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## ■ Details

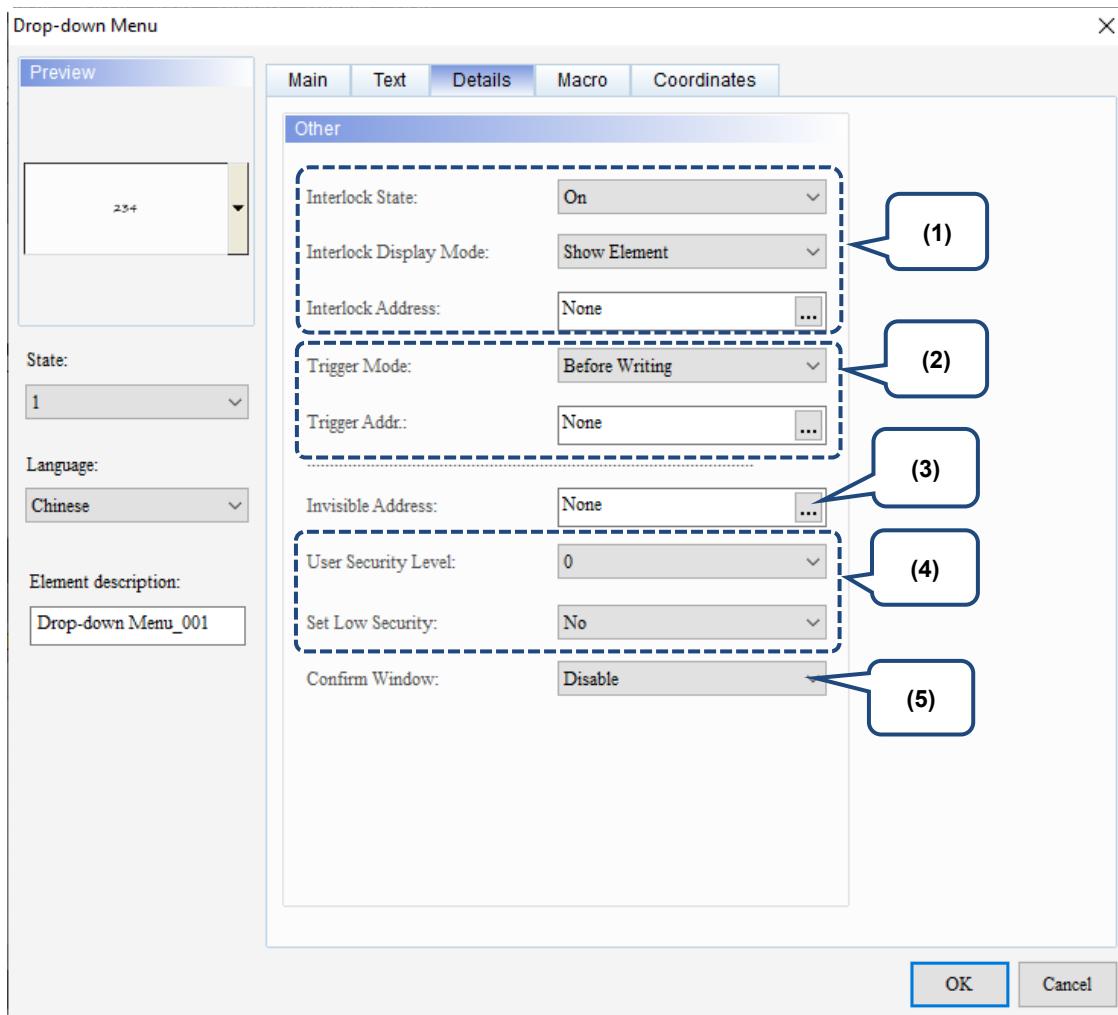
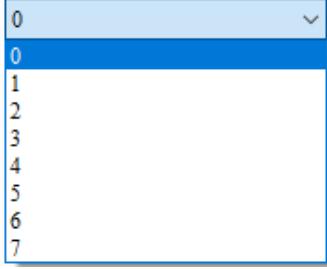
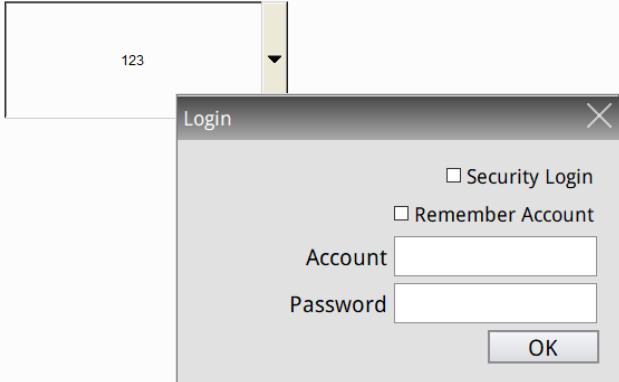
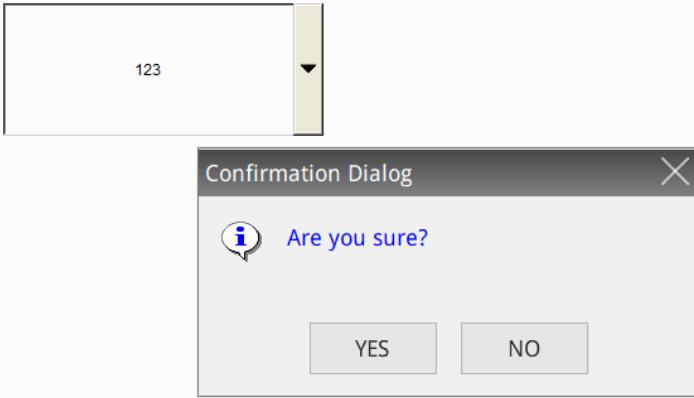


Figure 19.2.4 Details property page for the Drop-down Menu element

No.	Property	Function description
(1)	Interlock State	<p>The Interlock Address is for enabling the operation of another element and has to be used with the Interlock State. If the Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is Off. On the other hand, if the Interlock State is set to On, the Interlock Address is operable when this Interlock State is On.</p> <ul style="list-style-type: none"> <li>■ Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the Drop-down Menu which address is \$100.</li> <li>■ In order for the Drop-down Menu to obtain the correct state value after you press it, you must first press the \$8.0 button to validate the action of the Drop-down Menu.</li> </ul> <p>Drop-down Menu</p>
	Interlock Address	<p>The options for Interlock Display Mode are Show Element and Show Prohibition Symbol.</p>
	Interlock Display Mode	<p>Show Element</p> <p>Show Prohibition Symbol</p>

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No.	Property	Function description														
(2)	Trigger Mode	<ul style="list-style-type: none"> <li>Trigger Modes include Before Writing and After Writing.</li> </ul> <table border="1"> <tr> <td>Triggering action</td> <td>Before Writing</td> <td>After Writing</td> </tr> <tr> <td></td> <td>Trigger Addr. must be set to On before the value changes.</td> <td>Value is changed before the Trigger Addr. is set to On.</td> </tr> </table>	Triggering action	Before Writing	After Writing		Trigger Addr. must be set to On before the value changes.	Value is changed before the Trigger Addr. is set to On.								
Triggering action	Before Writing	After Writing														
	Trigger Addr. must be set to On before the value changes.	Value is changed before the Trigger Addr. is set to On.														
Trigger Addr.	<ul style="list-style-type: none"> <li>The triggering function only switches the set Trigger Addr. to On, so if triggering again is required, you need to set the Trigger Addr. to Off.</li> </ul> <p>Flowchart of Before Writing:</p> <p>Flowchart of After Writing:</p>															
(3)	Invisible Address	<p>When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</p> <p>Drop-down Menu</p> <table border="1"> <tr> <td>Preview</td> <td>Main</td> <td>Text</td> <td>Details</td> <td>Macro</td> <td>Coordinates</td> </tr> <tr> <td>123</td> <td>Invisible Address: \$9.0 ON</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Preview	Main	Text	Details	Macro	Coordinates	123	Invisible Address: \$9.0 ON						
Preview	Main	Text	Details	Macro	Coordinates											
123	Invisible Address: \$9.0 ON															

No.	Property	Function description
(4)	User Security Level	<p>User Security Level:</p>  <p>Set Low Security:</p> <p>Confirm Window:</p> <ul style="list-style-type: none"> <li>■ You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>■ After you set the User Security Level, when you press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password with the Password Table element. Refer to Section 5.7.2 Password Table Setup).</li> </ul>
	Set Low Security	 <ul style="list-style-type: none"> <li>■ If you set the Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.</li> </ul>
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the action after you press the element.</p> 

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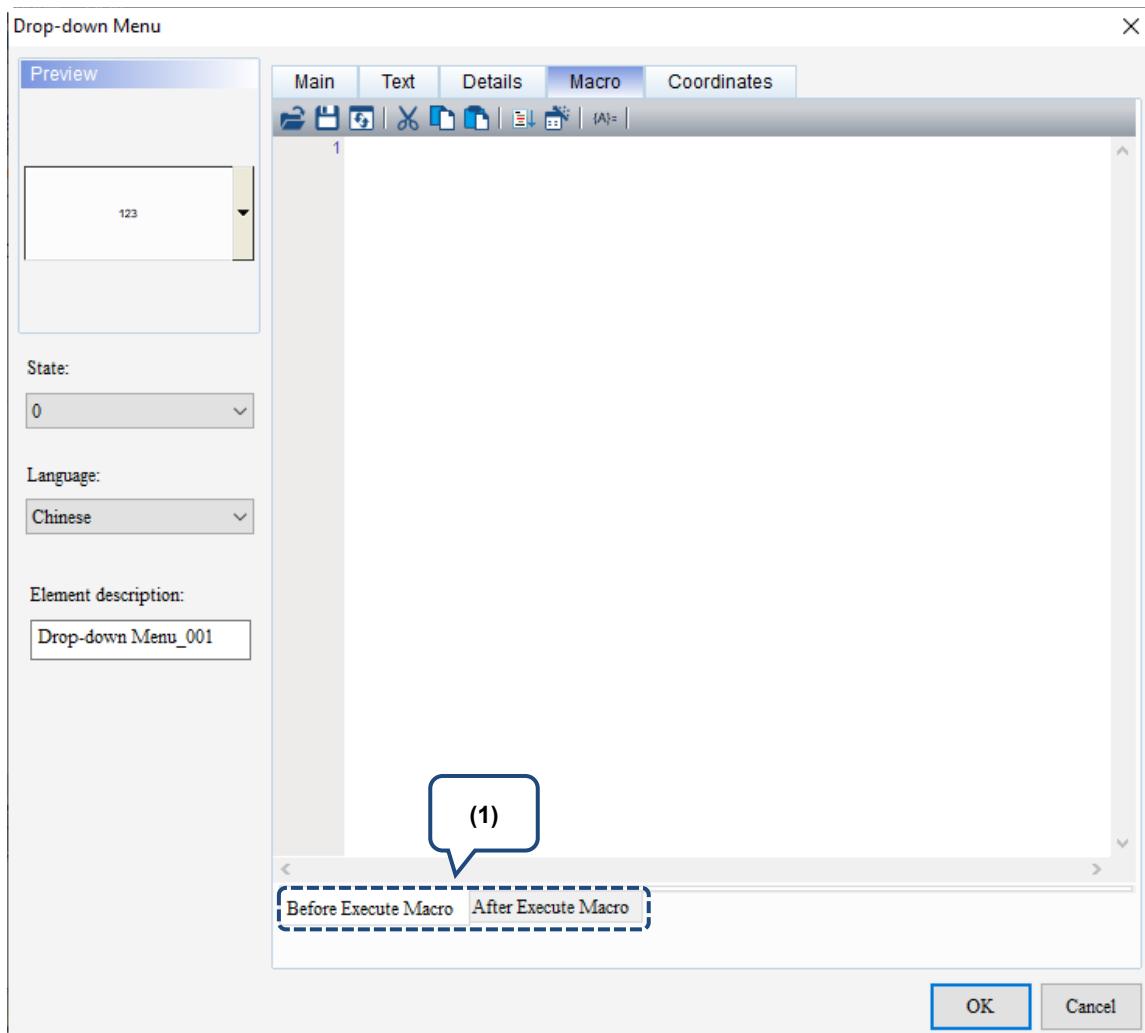
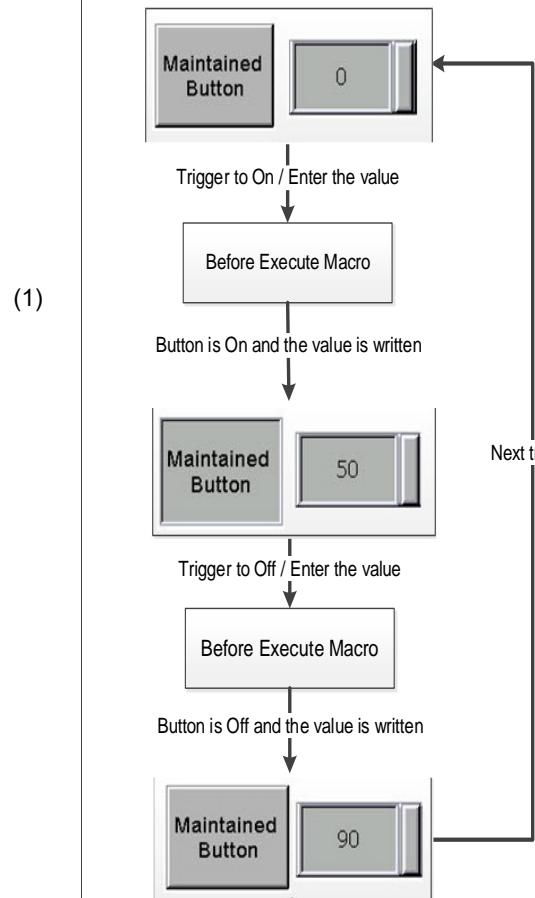
**■ Macro**

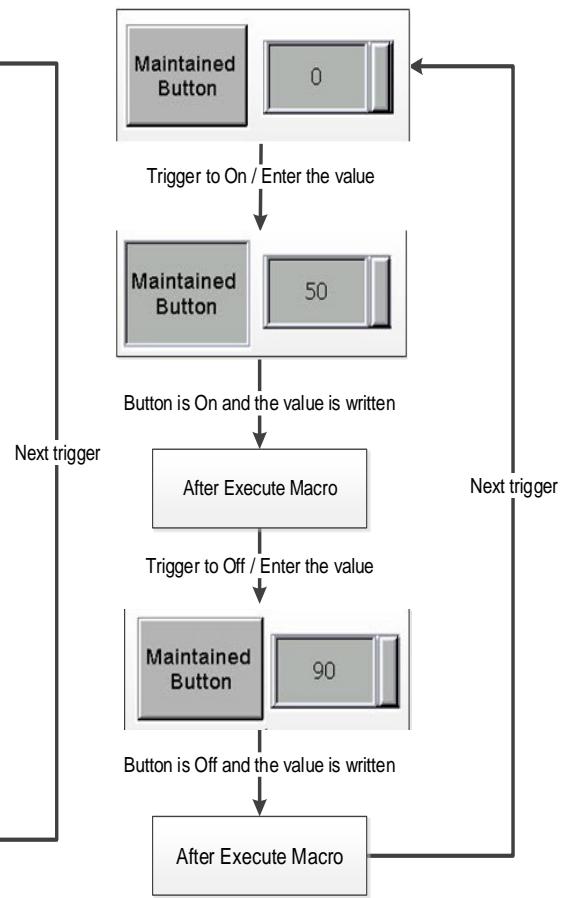
Figure 19.2.5 Macro property page for the Drop-down Menu element

No.	Property	Function description
	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands and then execute the action of the button. However, if the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button and then execute the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.

Flowchart of Before Execute Macro:



Flowchart of After Execute Macro:



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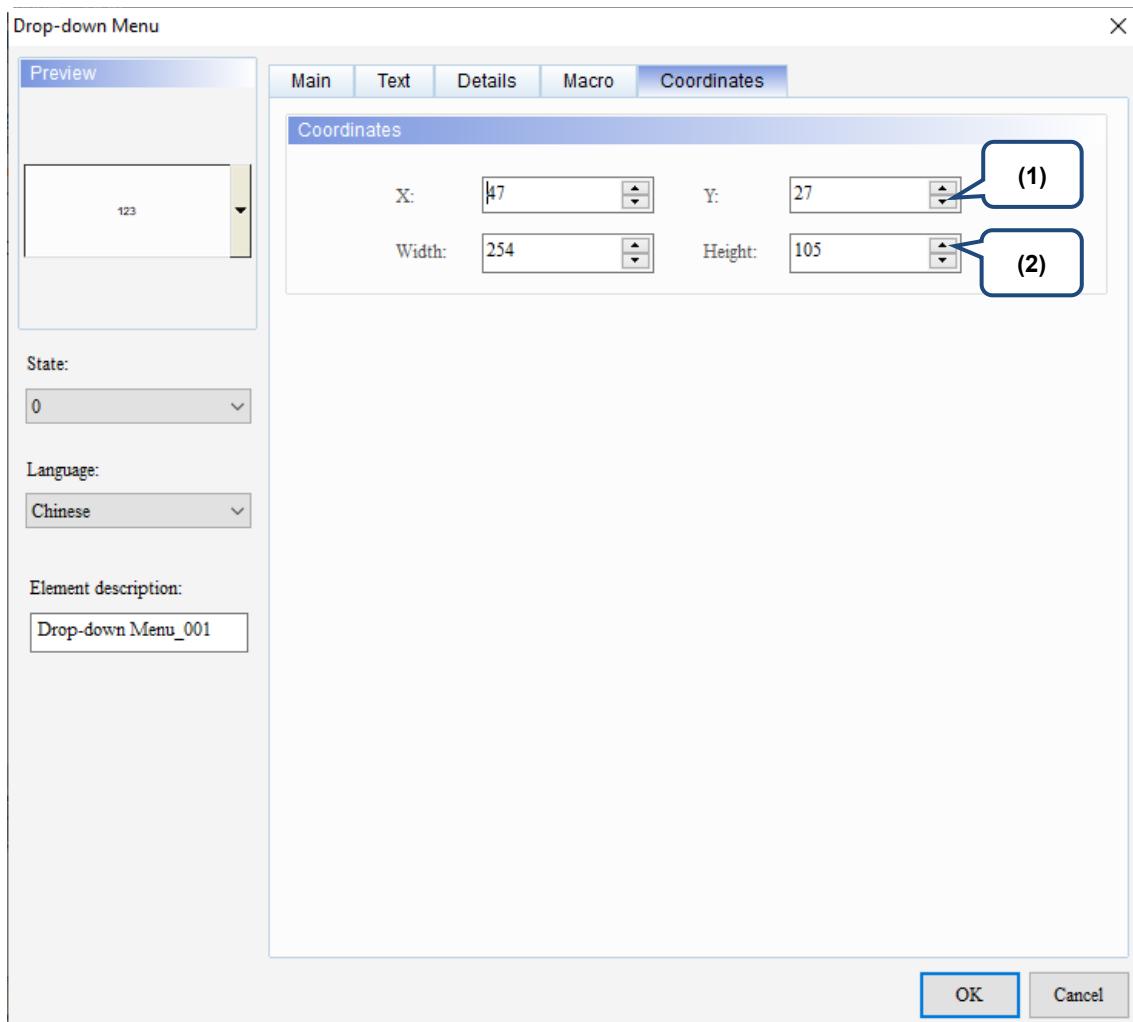
**■ Coordinates**

Figure 19.2.6 Coordinates property page for the Drop-down Menu element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 19.3 ListBox

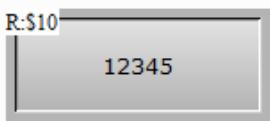
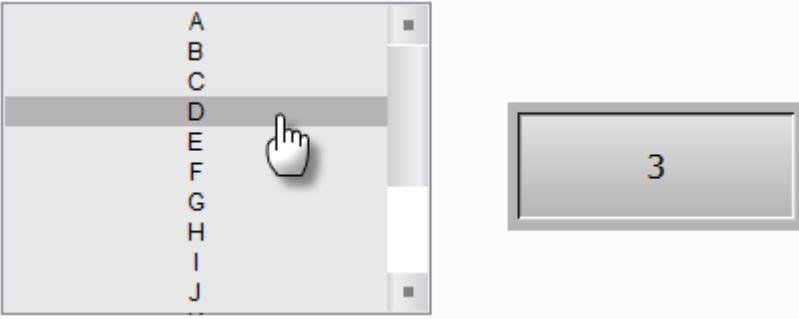
Same as the ComboBox, the ListBox provides display messages of multiple states, but the ListBox allows users to view and select the options in a more intuitive way. Refer to Table 19.3.1 for the ListBox example.

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Table 19.3.1 ListBox example

ListBox																																																	
<p><b>Create ListBox element</b></p>	<ul style="list-style-type: none"> <li>■ Create a ListBox element with its Write Address as \$10 Select Word for the Data Type and then set the State Counts to 16.</li> </ul> <ul style="list-style-type: none"> <li>■ On the Text page, edit the text messages to be displayed for the 16 states which are the characters of A to P respectively.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">State</th> <th style="text-align: left;">State Index</th> <th style="text-align: left;">Chinese</th> <th style="text-align: left;">English</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>1</td><td>A</td></tr> <tr><td>1</td><td>1</td><td>2</td><td>B</td></tr> <tr><td>2</td><td>2</td><td>3</td><td>C</td></tr> <tr><td>3</td><td>3</td><td>4</td><td>D</td></tr> <tr><td>4</td><td>4</td><td>5</td><td>E</td></tr> <tr><td>5</td><td>5</td><td>6</td><td>F</td></tr> <tr><td>6</td><td>6</td><td>7</td><td>G</td></tr> <tr><td>7</td><td>7</td><td>8</td><td>H</td></tr> <tr><td>8</td><td>8</td><td>9</td><td>I</td></tr> <tr><td>9</td><td>9</td><td>10</td><td>J</td></tr> <tr><td>10</td><td>10</td><td>11</td><td>K</td></tr> </tbody> </table>	State	State Index	Chinese	English	0	0	1	A	1	1	2	B	2	2	3	C	3	3	4	D	4	4	5	E	5	5	6	F	6	6	7	G	7	7	8	H	8	8	9	I	9	9	10	J	10	10	11	K
State	State Index	Chinese	English																																														
0	0	1	A																																														
1	1	2	B																																														
2	2	3	C																																														
3	3	4	D																																														
4	4	5	E																																														
5	5	6	F																																														
6	6	7	G																																														
7	7	8	H																																														
8	8	9	I																																														
9	9	10	J																																														
10	10	11	K																																														

## 19

<b>ListBox</b>														
Create Numeric Display element		Create a Numeric Display element and set its Read Address as \$10 and complete the Detail settings.												
Numeric Display element	Read Address													
Detail		<table border="1"> <tr><td>Data Type</td><td>Word</td></tr> <tr><td>Data Format</td><td>Unsigned Decimal</td></tr> <tr><td>Integer Digits</td><td>5</td></tr> <tr><td>Fractional</td><td>0</td></tr> <tr><td>Min 0</td><td></td></tr> <tr><td>Max 65535</td><td></td></tr> </table>	Data Type	Word	Data Format	Unsigned Decimal	Integer Digits	5	Fractional	0	Min 0		Max 65535	
Data Type	Word													
Data Format	Unsigned Decimal													
Integer Digits	5													
Fractional	0													
Min 0														
Max 65535														
Execution results	After creating the elements, compile and download the elements to the HMI. The Numeric Display element will show the state value corresponding to the item you selected in the ListBox element.													
														

ListBox supports four data types as shown in Table 19.3.2. If you need to add or reduce the total number of states, simply increase or decrease the number of State Counts in the Properties window.

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Table 19.3.2 Data Type of ListBox

ListBox	
Data Type	State Counts
Word	<p>If the Data Type is Word, you can set 1 to 256 for the State Counts.</p> <p><b>Detail</b></p> <p>Data Type: Word</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 256</p>
LSB / LSB (Support State 0)	<ul style="list-style-type: none"> <li>■ LSB is to first convert the data in the register to binary data and then use the lowest non-zero bit to determine the current state of the object.</li> <li>■ If the Data Type is LSB, you can set 1 to 16 states except for State 0.</li> </ul> <p><b>Detail</b></p> <p>Data Type: LSB</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 16</p> <ul style="list-style-type: none"> <li>■ To display State 0, select LSB (Support State 0) for the Data Type.</li> </ul> <p><b>Detail</b></p> <p>Data Type: LSB</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 16</p> <ul style="list-style-type: none"> <li>■ If you selected LSB, the element is black when the state is 0.</li> <li>■ When the Data Type is LSB or LSB (Support State 0), the memory address is also in units of Word.</li> </ul>

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ListBox																																																														
Data Type	State Counts																																																													
		■ The examples in the following table show how the state value is determined with the lowest non-zero bit of the binary value converted from a decimal value. There are also examples demonstrating how the software determines the displaying state value with the lowest bit when the decimal values are 3 and 7.																																																												
		<table border="1"> <thead> <tr> <th>Decimal</th><th>Binary</th><th>State value</th></tr> </thead> <tbody> <tr> <td><b>0</b></td><td><b>0000000000000000</b></td><td><b>State = 0 when all bits are 0.</b> <small>Note: LSB (Support State 0) must be selected.</small></td></tr> <tr> <td>1</td><td>0000000000000001</td><td>The lowest non-zero bit is bit 0, State = 1.</td></tr> <tr> <td>2</td><td>0000000000000010</td><td>The lowest non-zero bit is bit 1, State = 2.</td></tr> <tr> <td><b>3</b></td><td><b>0000000000000011</b></td><td><b>The lowest non-zero bit is bit 0, State = 1.</b></td></tr> <tr> <td>4</td><td>00000000000000100</td><td>The lowest non-zero bit is bit 2, State = 3.</td></tr> <tr> <td><b>7</b></td><td><b>00000000000000111</b></td><td><b>The lowest non-zero bit is bit 0, State = 1.</b></td></tr> <tr> <td>8</td><td>0000000000001000</td><td>The lowest non-zero bit is bit 3, State = 4.</td></tr> <tr> <td>16</td><td>0000000000010000</td><td>The lowest non-zero bit is bit 4, State = 5.</td></tr> <tr> <td>32</td><td>0000000000100000</td><td>The lowest non-zero bit is bit 5, State = 6.</td></tr> <tr> <td>64</td><td>0000000001000000</td><td>The lowest non-zero bit is bit 6, State = 7.</td></tr> <tr> <td>128</td><td>0000000010000000</td><td>The lowest non-zero bit is bit 7, State = 8.</td></tr> <tr> <td>256</td><td>0000000100000000</td><td>The lowest non-zero bit is bit 8, State = 9.</td></tr> <tr> <td>512</td><td>0000001000000000</td><td>The lowest non-zero bit is bit 9, State = 10.</td></tr> <tr> <td>1024</td><td>0000010000000000</td><td>The lowest non-zero bit is bit 10, State = 11.</td></tr> <tr> <td>2048</td><td>0000100000000000</td><td>The lowest non-zero bit is bit 11, State = 12.</td></tr> <tr> <td>4096</td><td>0001000000000000</td><td>The lowest non-zero bit is bit 12, State = 13.</td></tr> <tr> <td>8192</td><td>0010000000000000</td><td>The lowest non-zero bit is bit 13, State = 14.</td></tr> <tr> <td>16384</td><td>0100000000000000</td><td>The lowest non-zero bit is bit 14, State = 15.</td></tr> <tr> <td>32768</td><td>1000000000000000</td><td>The lowest non-zero bit is bit 15, State = 16.</td></tr> </tbody> </table>	Decimal	Binary	State value	<b>0</b>	<b>0000000000000000</b>	<b>State = 0 when all bits are 0.</b> <small>Note: LSB (Support State 0) must be selected.</small>	1	0000000000000001	The lowest non-zero bit is bit 0, State = 1.	2	0000000000000010	The lowest non-zero bit is bit 1, State = 2.	<b>3</b>	<b>0000000000000011</b>	<b>The lowest non-zero bit is bit 0, State = 1.</b>	4	00000000000000100	The lowest non-zero bit is bit 2, State = 3.	<b>7</b>	<b>00000000000000111</b>	<b>The lowest non-zero bit is bit 0, State = 1.</b>	8	0000000000001000	The lowest non-zero bit is bit 3, State = 4.	16	0000000000010000	The lowest non-zero bit is bit 4, State = 5.	32	0000000000100000	The lowest non-zero bit is bit 5, State = 6.	64	0000000001000000	The lowest non-zero bit is bit 6, State = 7.	128	0000000010000000	The lowest non-zero bit is bit 7, State = 8.	256	0000000100000000	The lowest non-zero bit is bit 8, State = 9.	512	0000001000000000	The lowest non-zero bit is bit 9, State = 10.	1024	0000010000000000	The lowest non-zero bit is bit 10, State = 11.	2048	0000100000000000	The lowest non-zero bit is bit 11, State = 12.	4096	0001000000000000	The lowest non-zero bit is bit 12, State = 13.	8192	0010000000000000	The lowest non-zero bit is bit 13, State = 14.	16384	0100000000000000	The lowest non-zero bit is bit 14, State = 15.	32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.
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32768	1000000000000000	The lowest non-zero bit is bit 15, State = 16.																																																												
If the Data Type is Bit, you can set only 2 states.		<p><b>Detail</b></p> <table> <tr> <td>Data Type:</td> <td><input type="text" value="Bit"/></td> </tr> <tr> <td>Data Format:</td> <td><input type="text" value="Unsigned Decimal"/></td> </tr> <tr> <td>State Counts:</td> <td><input type="text" value="2"/></td> </tr> </table>	Data Type:	<input type="text" value="Bit"/>	Data Format:	<input type="text" value="Unsigned Decimal"/>	State Counts:	<input type="text" value="2"/>																																																						
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When you double-click the ListBox, the property page is shown as follows.

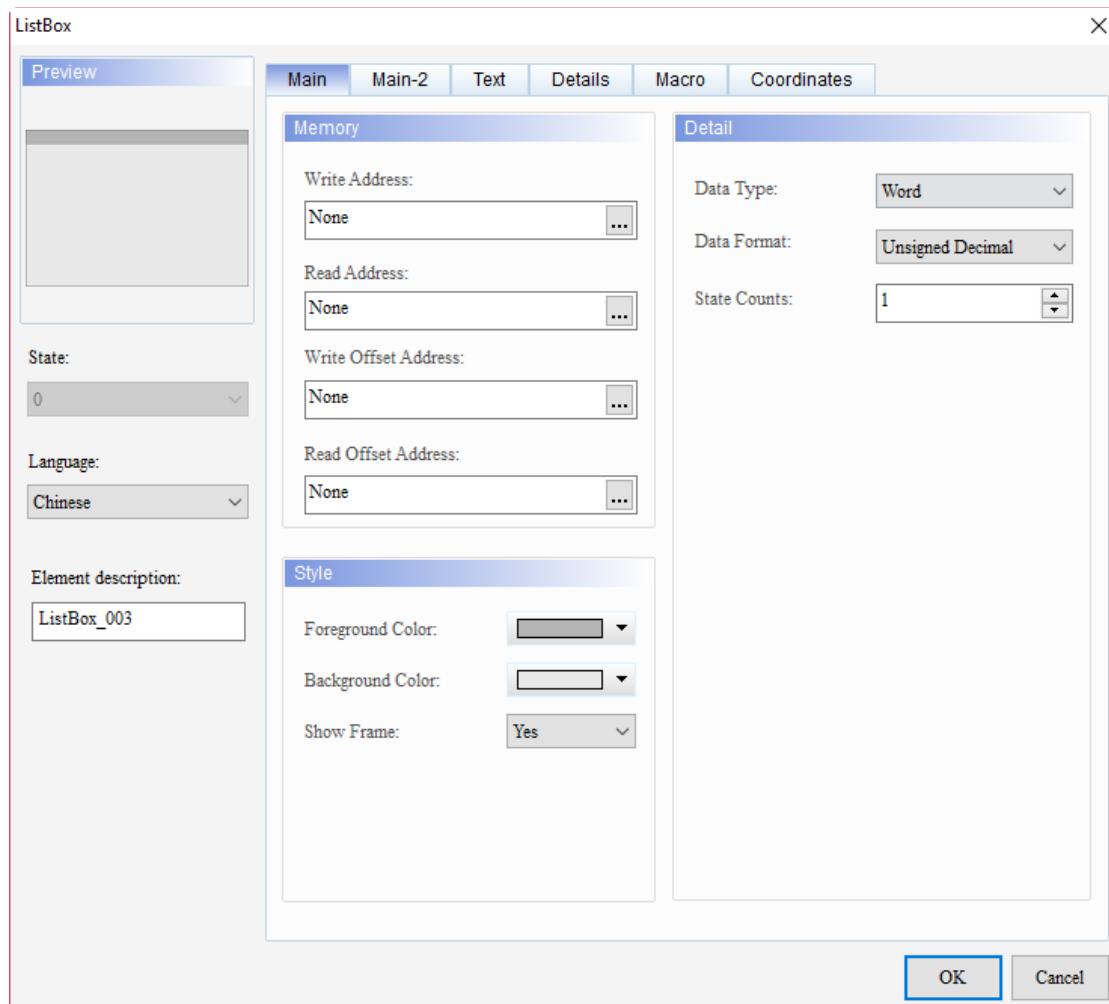


Figure 19.3.1 Properties of ListBox

Table 19.3.3 Function page of the ListBox element

ListBox	
Function page	Description
Preview	ListBox supports multiple state values and multi-language data display.
Main	Set the Write Address, Read Address, Write Offset Address, Read Offset Address, Data Type, Data Format, and State Counts. Set the Background Color, Foreground Color, and Show Frame.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Details	Set the options of Interlock State, Interlock Display Mode, Interlock Address, Trigger Mode, Trigger Addr., Invisible Address, User Security Level, Set Low Security, and Confirm Window.
Macro	Set the Before Execute Macro and After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

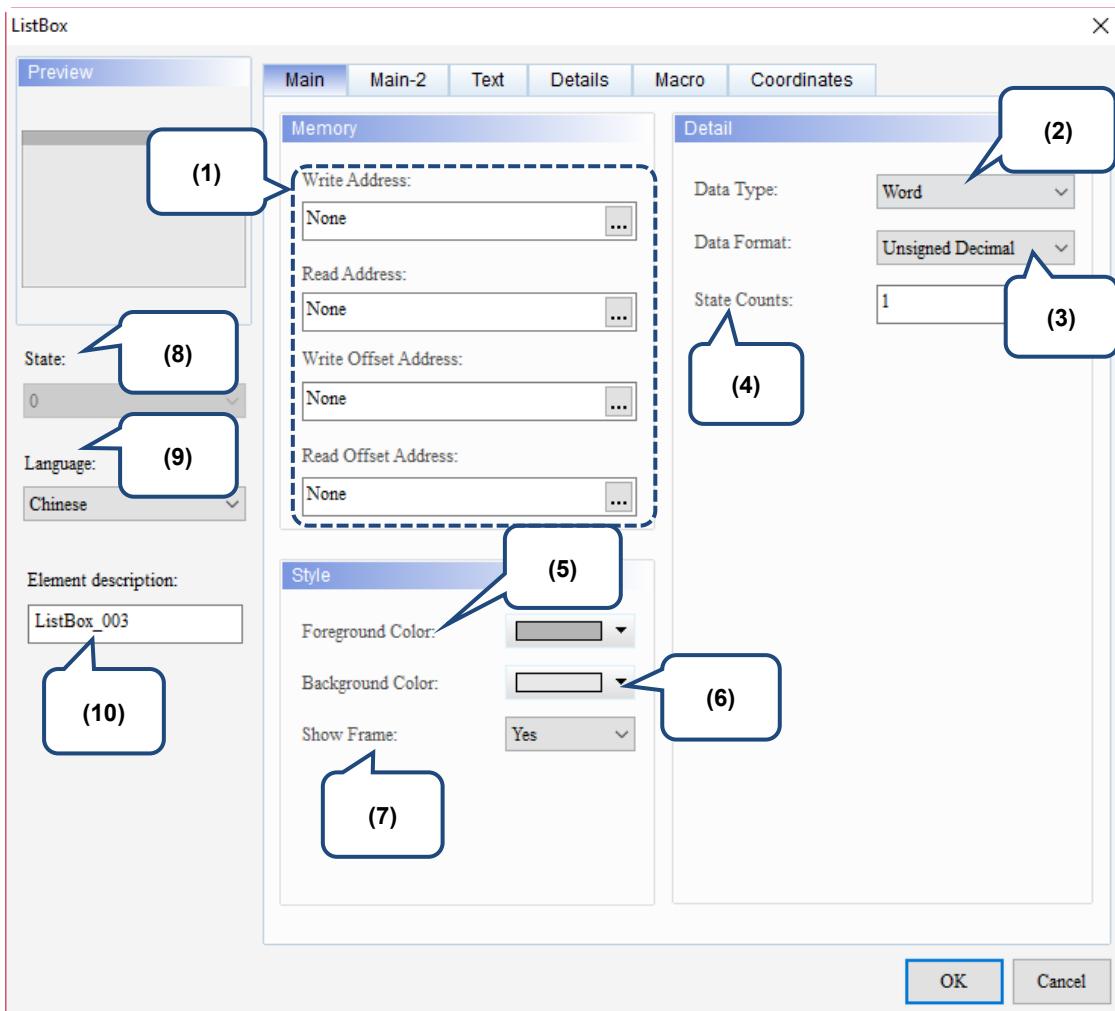
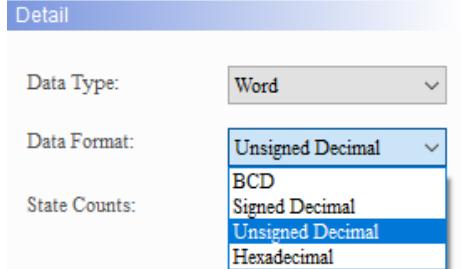
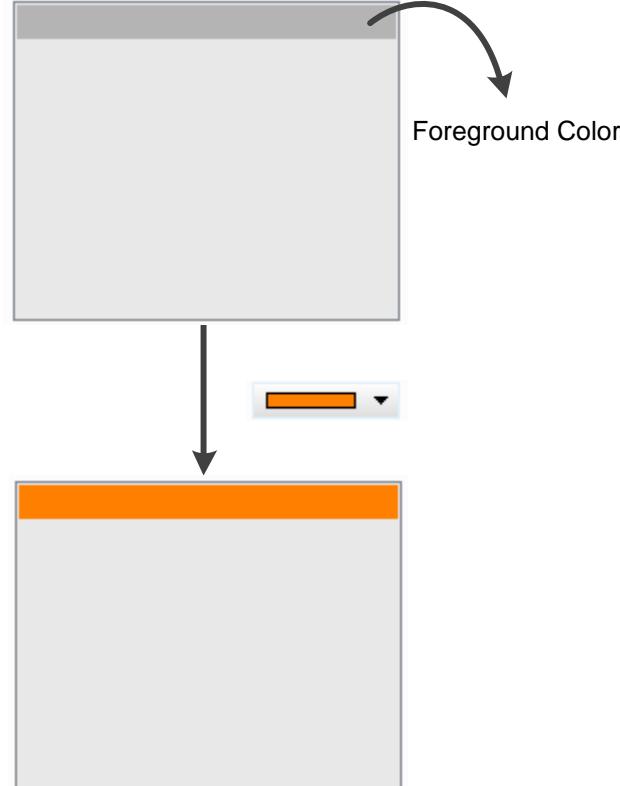
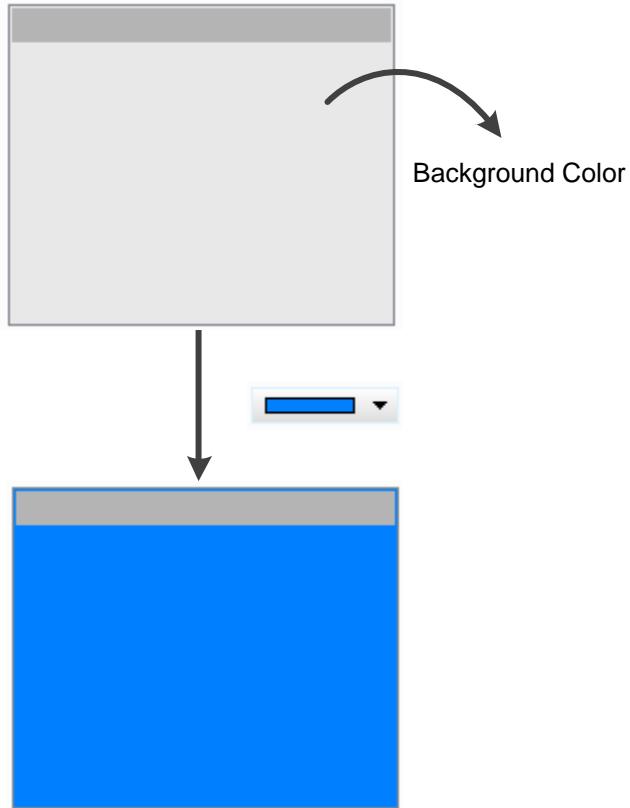
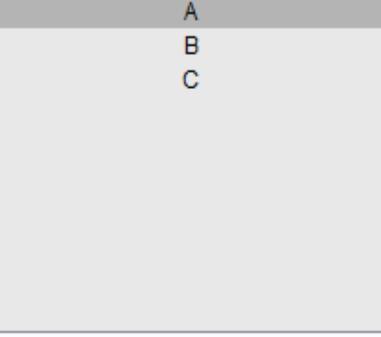
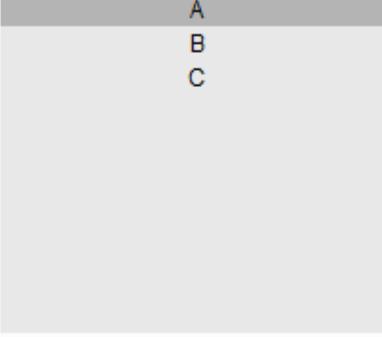
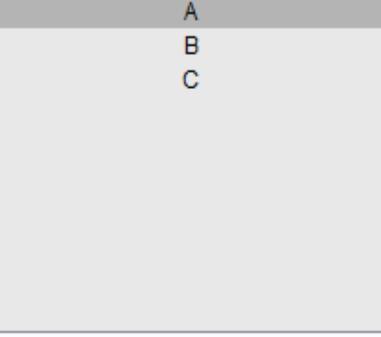
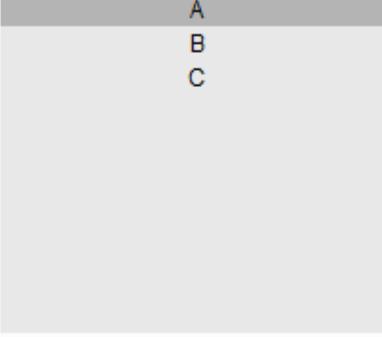
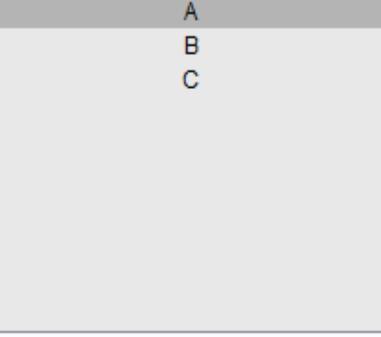
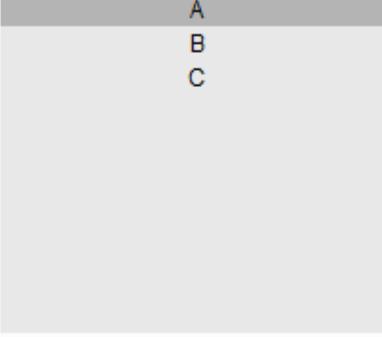
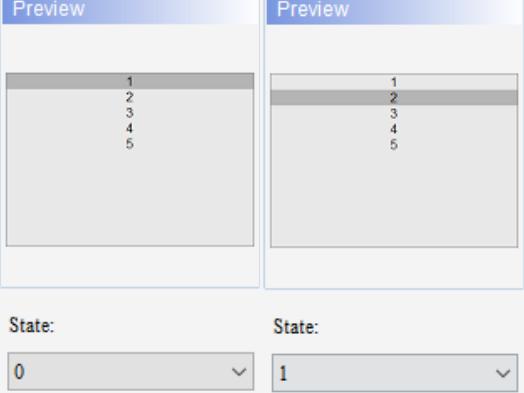


Figure 19.3.2 Main property page for the ListBox element

No.	Property	Function description
(1)	Write Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address. The input memory type varies depending on the selected data type, including Word, LSB, or Bit, as shown in Table 19.3.2.</li> </ul>
	Read Address	<ul style="list-style-type: none"> <li>Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> </ul>
	Write Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
	Read Offset Address	
(2)	Data Type	There are four types, Bit, Word, LSB, and LS (Support State 0). Refer to Table 19.3.2 for more details.

No.	Property	Function description
(3)	Data Format	<ul style="list-style-type: none"> <li>■ You can select the Data Format only when the Data Type is Word.</li> <li>■ There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</li> </ul> 
(4)	State Counts	Set the state counts for the ListBox element. If the Data Type is Word, you can set 1 - 256 states; if the Data Type is LSB, you can set 16 states; if the Data Type is LSB (Support State 0), you can set 17 states; and if the Data Type is Bit, you can set only 2 states. Refer to Table 19.3.2 for details.
(5)	Foreground Color	<p>Set the foreground color of the element.</p> 

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No.	Property	Function description					
(6)	Background Color	<p>Set the background color of the element.</p> 					
(7)	Show Frame	<p>Set whether or not to display the border of the ListBox.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">Show Frame is set to Yes</td> <td style="text-align: center; padding: 5px;">Show Frame is set to No</td> </tr> <tr> <td style="text-align: center; padding: 10px;">  </td> <td style="text-align: center; padding: 10px;">  </td> </tr> </table>		Show Frame is set to Yes	Show Frame is set to No		
Show Frame is set to Yes	Show Frame is set to No						
							
(8)	State	<p>By switching the State, you can preview or change the settings of each state of the element.</p> 					

No.	Property	Function description																																																																																
(9)	Language	<p>If you have set the language data, you can edit the properties of the text to be displayed with the Language setting of the element.</p> <p>ListBox</p> <p>Main Main-2 Text Details Macro Coordinates</p> <p>Text</p> <p>E</p> <p>Arial 16</p> <p>B I U 100%</p> <p>Horiz. alignment: Horiz. Centering</p> <p>Vert. alignment: Vert. Centering</p> <p>Process the text of all states Process text properties of all states</p> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>1</td> <td>A</td> </tr> <tr> <td>1</td> <td>1</td> <td>2</td> <td>B</td> </tr> <tr> <td>2</td> <td>2</td> <td>3</td> <td>C</td> </tr> <tr> <td>3</td> <td>3</td> <td>4</td> <td>D</td> </tr> <tr> <td>4</td> <td>4</td> <td>5</td> <td>E</td> </tr> </tbody> </table>	State	State Index	Chinese	English	0	0	1	A	1	1	2	B	2	2	3	C	3	3	4	D	4	4	5	E																																																								
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(10)	Element description	<p>Record the button actions to be executed. The record is also written in the CSV file of the Operation Log Table so users can know what actions have been done.</p> <table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> <th>Level</th> <th>Screen</th> <th>Desc</th> <th>Action</th> <th>Pre Value</th> <th>Change Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>13:37:54</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>13:37:56</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>Level 1 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>3</td> <td>13:38:19</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td></td> <td>Level Switch</td> <td>8</td> <td>4</td> </tr> <tr> <td>4</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>5</td> <td>13:38:21</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>13:38:22</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 2 Btn</td> <td>Set Val</td> <td>0</td> <td>1</td> </tr> <tr> <td>7</td> <td>13:38:23</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td>Level 4 Btn</td> <td>Set Val</td> <td>1</td> <td>0</td> </tr> <tr> <td>8</td> <td>13:38:31</td> <td>5/5/2016</td> <td>4 Screen_22</td> <td></td> <td>Level Switch</td> <td>4</td> <td>8</td> </tr> <tr> <td>9</td> <td>13:38:35</td> <td>5/5/2016</td> <td>8 Screen_22</td> <td>\$100 Value</td> <td>Set Val</td> <td>85</td> <td>25</td> </tr> </tbody> </table>	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value	1	13:37:54	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	1	0	2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1	3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4	4	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1	5	13:38:21	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	1	0	6	13:38:22	5/5/2016	4 Screen_22	Level 2 Btn	Set Val	0	1	7	13:38:23	5/5/2016	4 Screen_22	Level 4 Btn	Set Val	1	0	8	13:38:31	5/5/2016	4 Screen_22		Level Switch	4	8	9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25
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2	13:37:56	5/5/2016	8 Screen_22	Level 1 Btn	Set Val	0	1																																																																											
3	13:38:19	5/5/2016	8 Screen_22		Level Switch	8	4																																																																											
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9	13:38:35	5/5/2016	8 Screen_22	\$100 Value	Set Val	85	25																																																																											

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## ■ Main-2

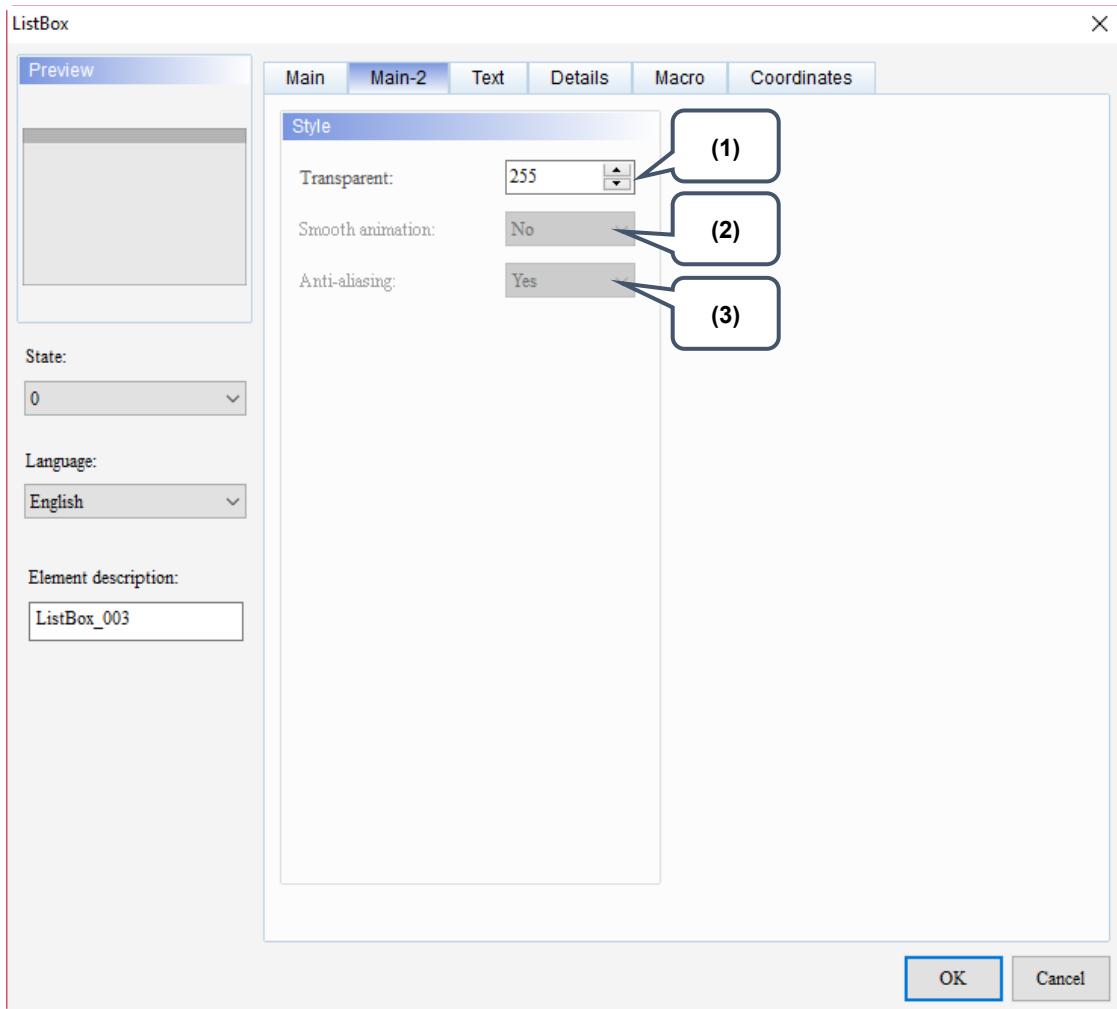
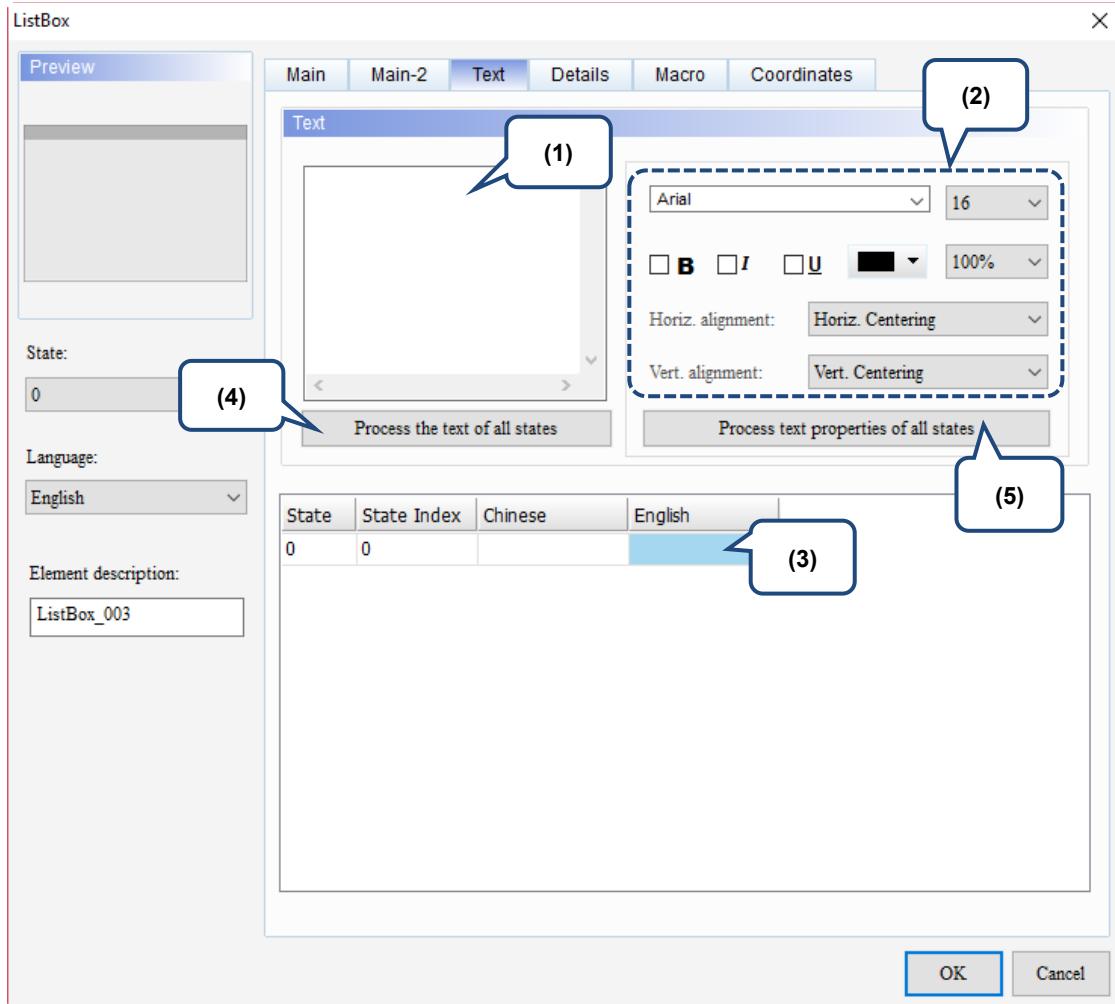


Figure 19.3.3 Main-2 property page for the ListBox element

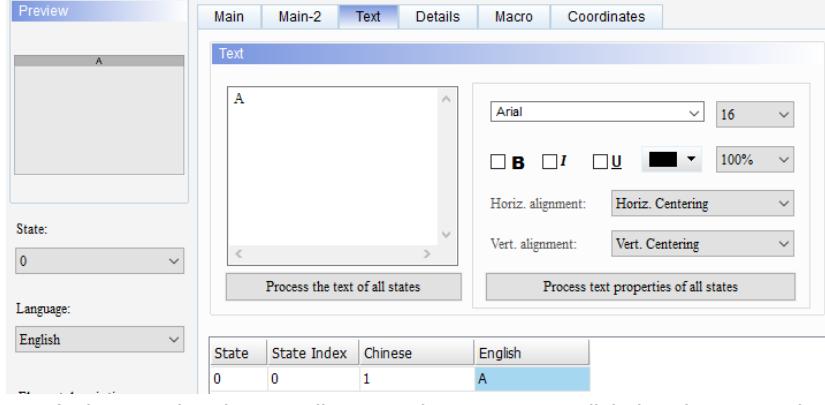
No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text



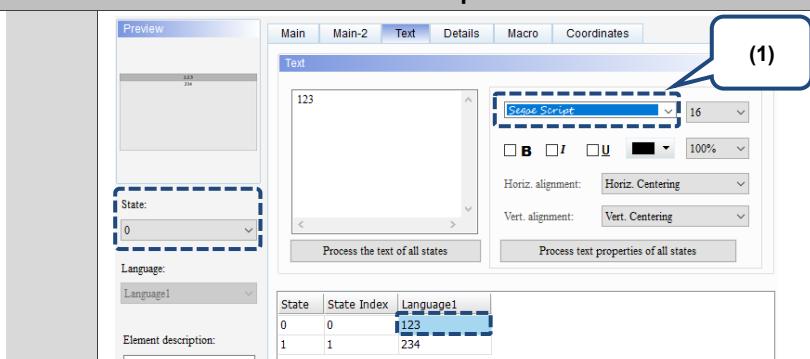
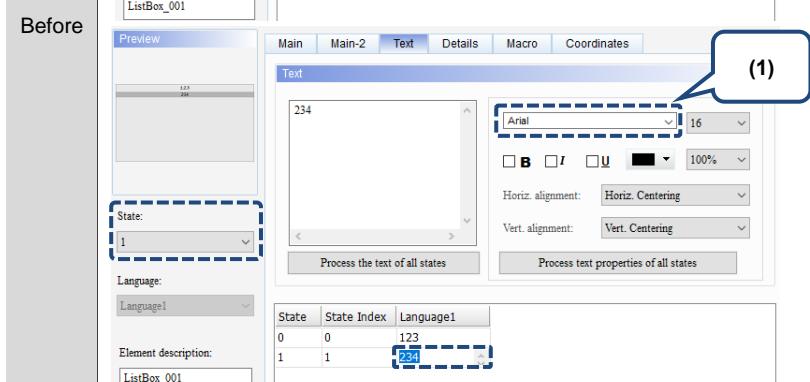
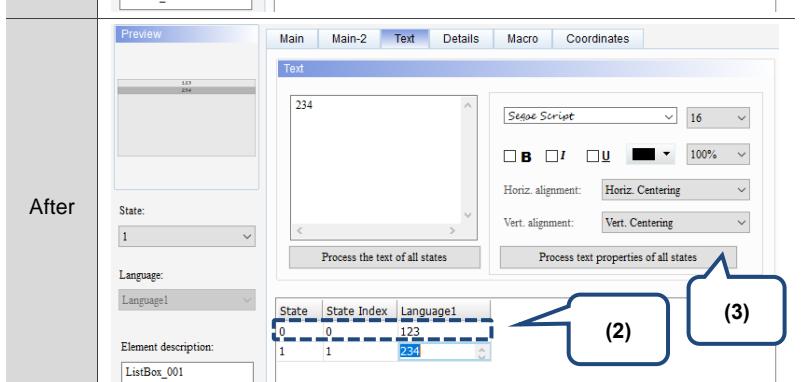
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Figure 19.3.4 Text property page for the ListBox element

No.	Property	Function description
(1)	Text	<ul style="list-style-type: none"> <li>You can enter the text to display in this box.</li> </ul>  <ul style="list-style-type: none"> <li>As long as the element allows text input, you can click the element and press the space key to start editing the text.</li> </ul>
(2)	Text property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the texts.

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No.	Property	Function description												
(3)	Edit multi-language text	If you have added multi-language texts, the Text page allows you to edit multi-language data.												
(4)	Process the text of all states	<p>This function batch changes all the texts into the text contents of the state you selected. Refer to the following example:</p> <ol style="list-style-type: none"> <li>1. Enter the text "123" for State 0 and "234" for State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process the text of all states</b> and the text of State 1 is changed to "123".</li> </ol> <table border="1"> <thead> <tr> <th>State</th> <th>State Index</th> <th>Chinese</th> <th>English</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td></td> <td>123</td> </tr> <tr> <td>1</td> <td>1</td> <td></td> <td>234</td> </tr> </tbody> </table>	State	State Index	Chinese	English	0	0		123	1	1		234
State	State Index	Chinese	English											
0	0		123											
1	1		234											
(5)	Process text properties of all states	<p>This function batch changes all the text properties based on the state you selected. Items included in the text property are shown in the following figure.</p> <p>Refer to the following example:</p> <ol style="list-style-type: none"> <li>1. Enter the text "123" for State 0 and "234" for State 1. Select Segoe Script for the text font of State 0 and Arial for the text font of State 1.</li> <li>2. Select State 0.</li> <li>3. Execute <b>Process text properties of all states</b> and the text font of State 1 is changed to Segoe Script.</li> </ol>												

No.	Property	Function description
(5)	Process text properties of all states	<p>Before</p>  
	After	

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## ■ Details

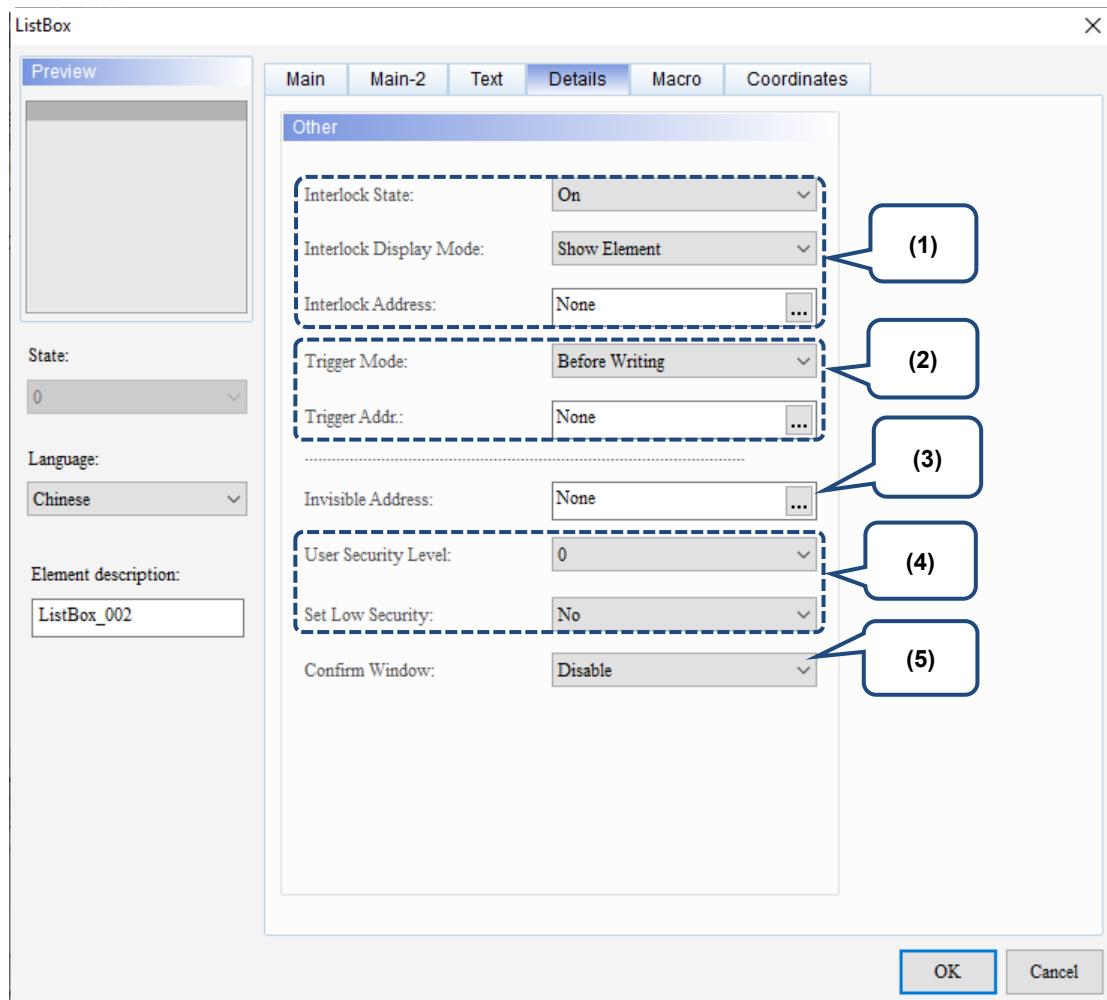
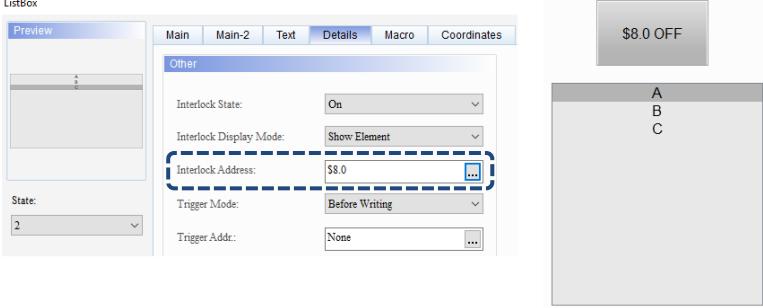
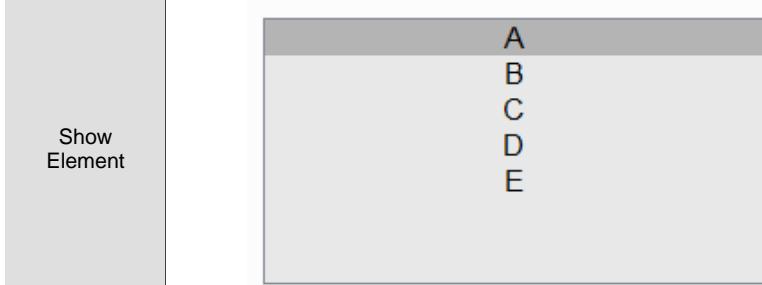
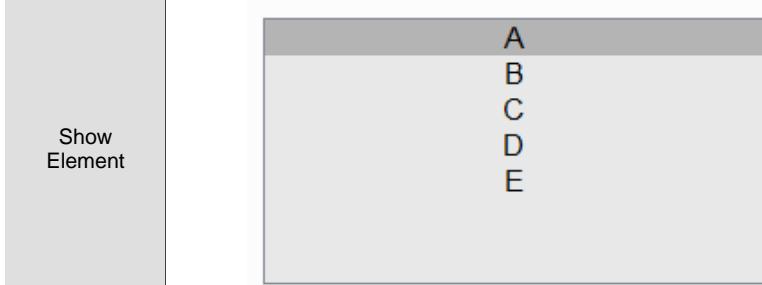
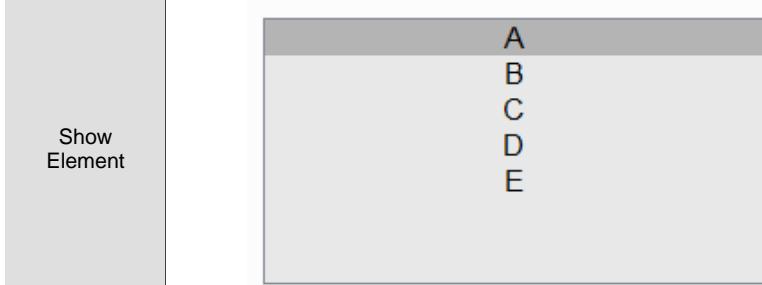
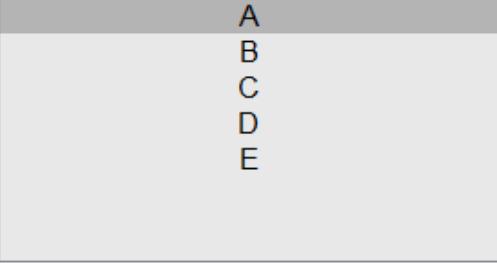
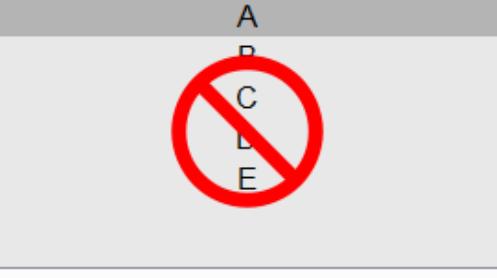
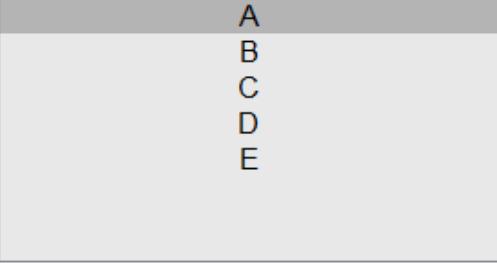
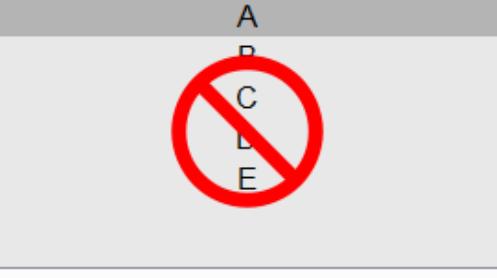
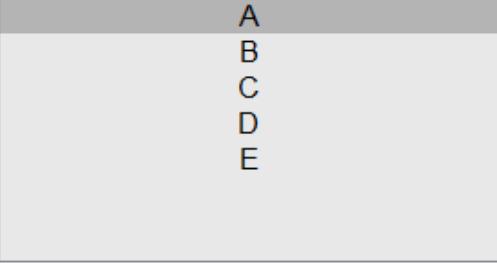
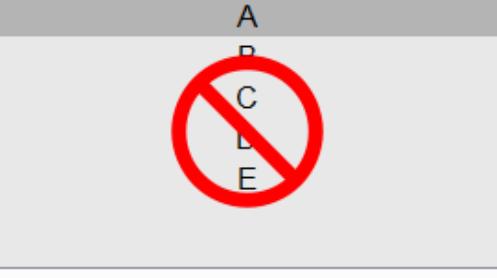
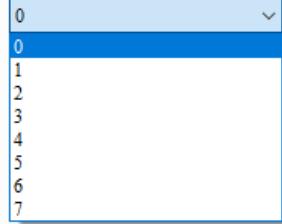
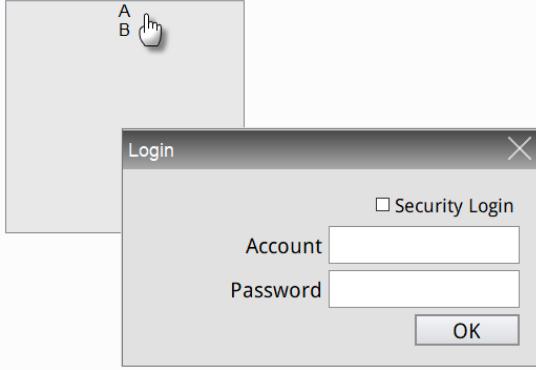
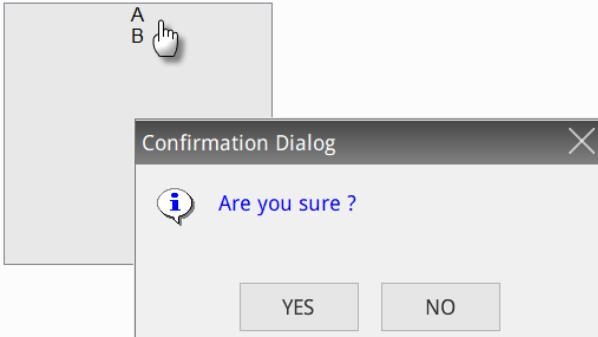


Figure 19.3.5 Details property page for the ListBox element

No.	Property	Function description				
	Interlock State	<p>The Interlock Address is for enabling the operation of another element and has to be used with the Interlock State. If the Interlock State is set to Off, it means the Interlock Address is operable when this Interlock State is Off. On the other hand, if the Interlock State is set to On, the Interlock Address is operable when this Interlock State is On.</p> <ul style="list-style-type: none"> <li>■ Create a button and set its address to \$8.0. Then, set the Interlock Address to \$8.0 for the ListBox which address is \$100.</li> <li>■ In order for the ListBox to obtain the correct state value after you press it, you must first press the \$8.0 button to validate the action of the ListBox.</li> </ul> 				
(1)	Interlock Address	<p>The options for Interlock Display Mode are Show Element and Show Prohibition Symbol.</p> <table border="1"> <tr> <td style="padding: 5px;">Interlock Display Mode:</td> <td style="padding: 5px; vertical-align: top;"> <div style="border: 1px solid #ccc; padding: 2px; display: inline-block;"> <span>Show Element</span>   <span>Show Element</span> <span style="color: #0070C0;">(selected)</span>   <span>Show Prohibition Symbol</span> </div> </td> </tr> <tr> <td style="padding: 5px;">Interlock Address:</td> <td style="padding: 5px; vertical-align: top;">  </td> </tr> </table>	Interlock Display Mode:	<div style="border: 1px solid #ccc; padding: 2px; display: inline-block;"> <span>Show Element</span>   <span>Show Element</span> <span style="color: #0070C0;">(selected)</span>   <span>Show Prohibition Symbol</span> </div>	Interlock Address:	
Interlock Display Mode:	<div style="border: 1px solid #ccc; padding: 2px; display: inline-block;"> <span>Show Element</span>   <span>Show Element</span> <span style="color: #0070C0;">(selected)</span>   <span>Show Prohibition Symbol</span> </div>					
Interlock Address:						
	Interlock Display Mode	<table border="1"> <tr> <td style="padding: 5px; text-align: center;">Show Element</td> <td style="padding: 5px; text-align: center;">  </td> </tr> <tr> <td style="padding: 5px; text-align: center;">Show Prohibition Symbol</td> <td style="padding: 5px; text-align: center;">  </td> </tr> </table>	Show Element		Show Prohibition Symbol	
Show Element						
Show Prohibition Symbol						

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No.	Property	Function description						
(2)	Trigger Mode	<ul style="list-style-type: none"> <li>Trigger Modes include Before Writing and After Writing.</li> </ul> <table border="1"> <thead> <tr> <th>Triggering action</th> <th>Before Writing</th> <th>After Writing</th> </tr> </thead> <tbody> <tr> <td>Trigger Addr. must be set to On before the value changes.</td> <td>Value is changed before the Trigger Addr. is set to On.</td> <td></td> </tr> </tbody> </table> <p>Flowchart of Before Writing:</p> <p>Flowchart of After Writing:</p>	Triggering action	Before Writing	After Writing	Trigger Addr. must be set to On before the value changes.	Value is changed before the Trigger Addr. is set to On.	
Triggering action	Before Writing	After Writing						
Trigger Addr. must be set to On before the value changes.	Value is changed before the Trigger Addr. is set to On.							
Trigger Addr.	<p>The button is on and the value is written.</p>							
(3)	Invisible Address	<p>When the Invisible Address is set to On, the button element is invisible and you cannot execute its set functions.</p> <p>Element is invisible</p> <p>\$9.0 OFF</p> <p>\$9.0 ON</p> <p>Preview Main Main-2 Text Details Macro Coordinates</p> <p>Other</p> <p>Interlock State: On Interlock Display Mode: Show Element Interlock Address: None Trigger Mode: Before Writing Trigger Addr: None Invisible Address: \$9.0</p>						

No.	Property	Function description
(4)	User Security Level	<p>User Security Level:</p>  <p>Set Low Security:</p> <p>Confirm Window:</p> <ul style="list-style-type: none"> <li>■ You can use this function to set the permissions for the pressing action of the element. Users can execute the element action only when their account level is equivalent to or higher than the set User Security Level.</li> <li>■ After you set the User Security Level, when you press the element, a password input window appears to confirm whether the security level password is correct (you can modify this password with the Password Table element. Refer to Section 5.7.2 Password Table Setup).</li> </ul>
	Set Low Security	 <ul style="list-style-type: none"> <li>■ If you set the Set Low Security to Yes, the HMI automatically sets the security level to the lowest each time you enter the password. Next time you press the element, you will be asked again to enter the password for the corresponding security level.</li> </ul>
(5)	Confirm Window	<p>If you set the Confirm Window to Yes, the following Confirmation Dialog appears for you to confirm the action after you press the element.</p> 

## ■ Macro

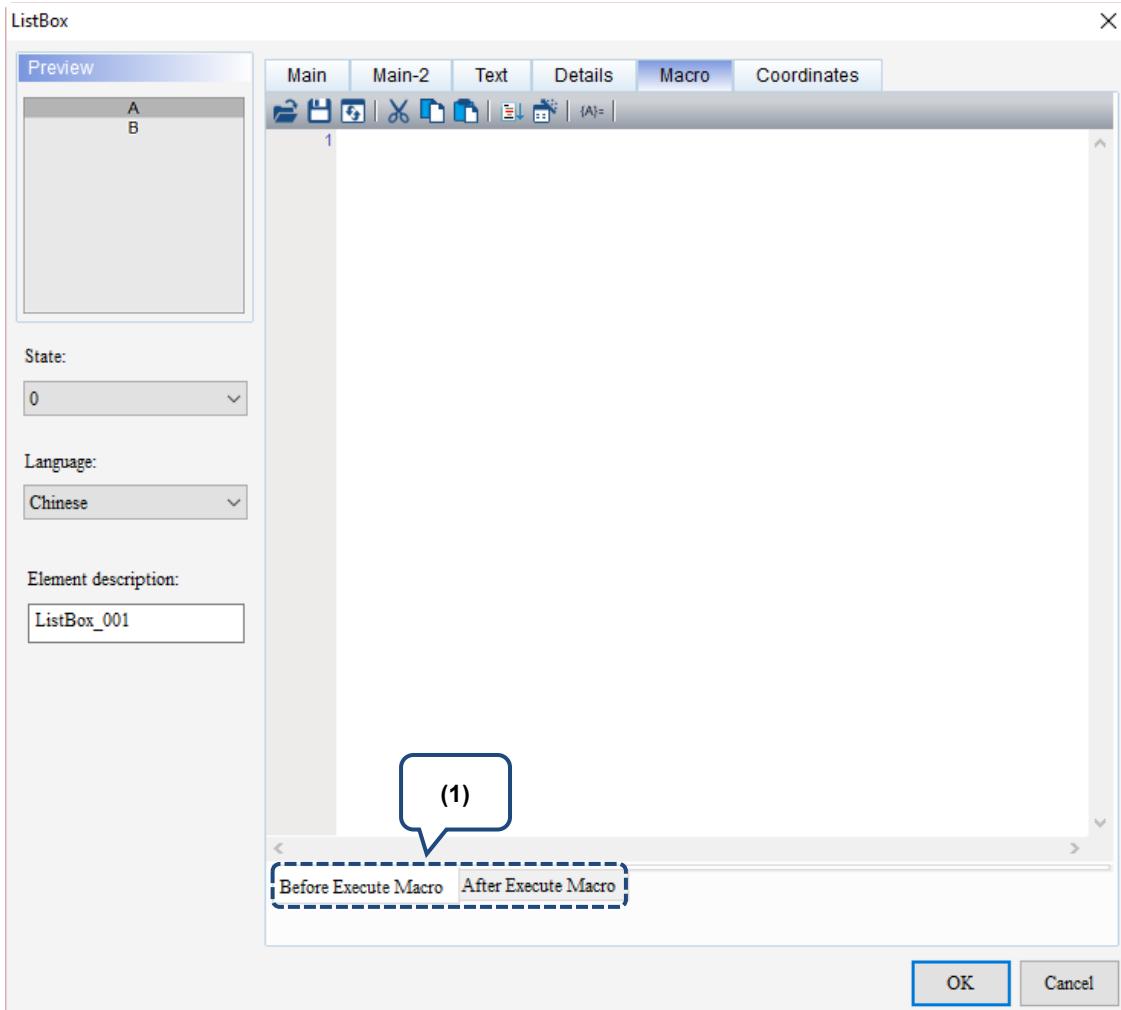
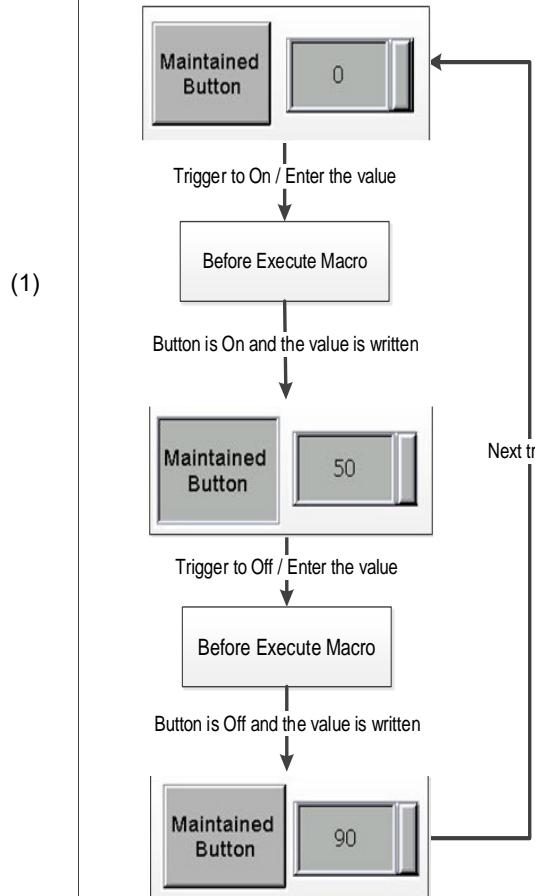


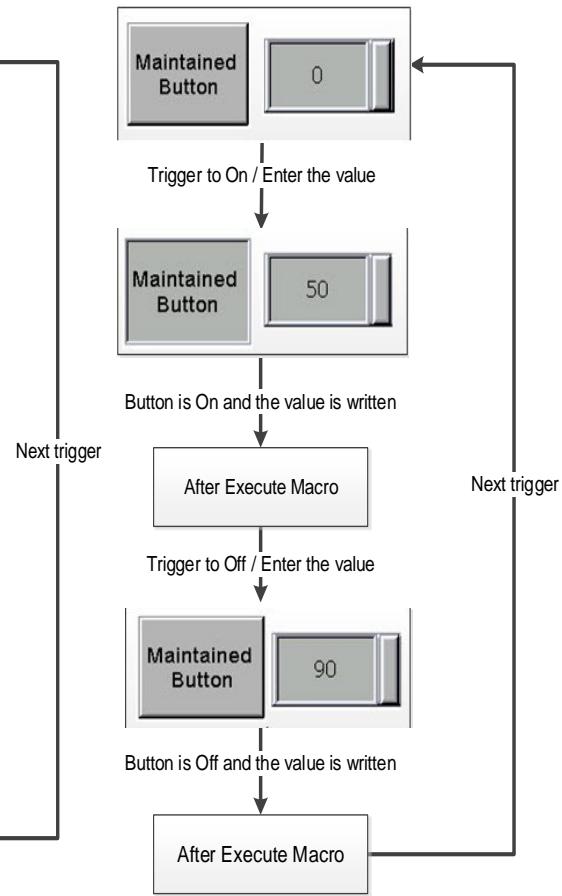
Figure 19.3.6 Macro property page for the ListBox element

No.	Property	Function description
	Before Execute Macro	When you press the button element, the HMI will first execute the macro commands and then execute the action of the button. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.
	After Execute Macro	When you press the button element, the HMI will first execute the action of the button and then execute the macro commands. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.

Flowchart of Before Execute Macro:



Flowchart of After Execute Macro:



## ■ Coordinates

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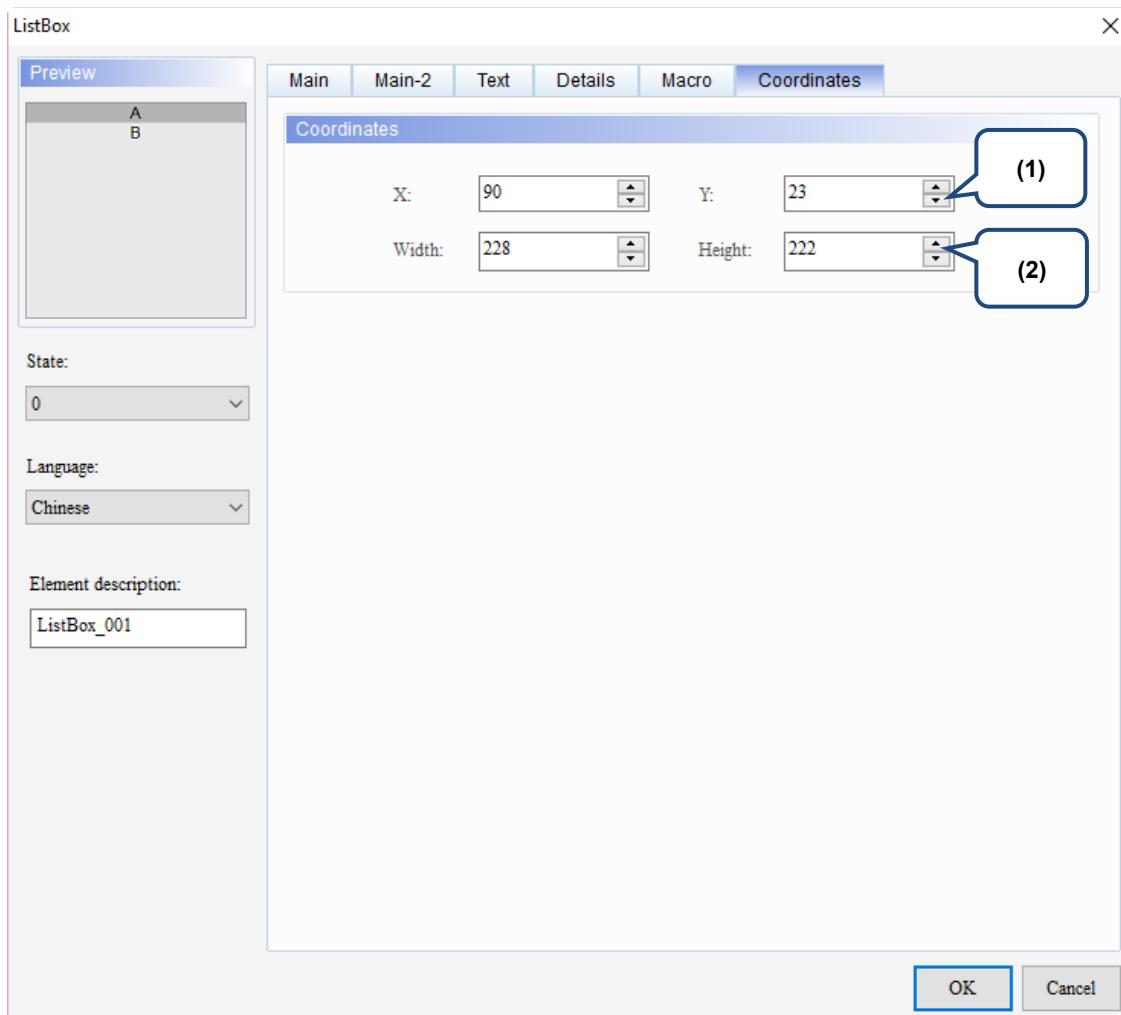


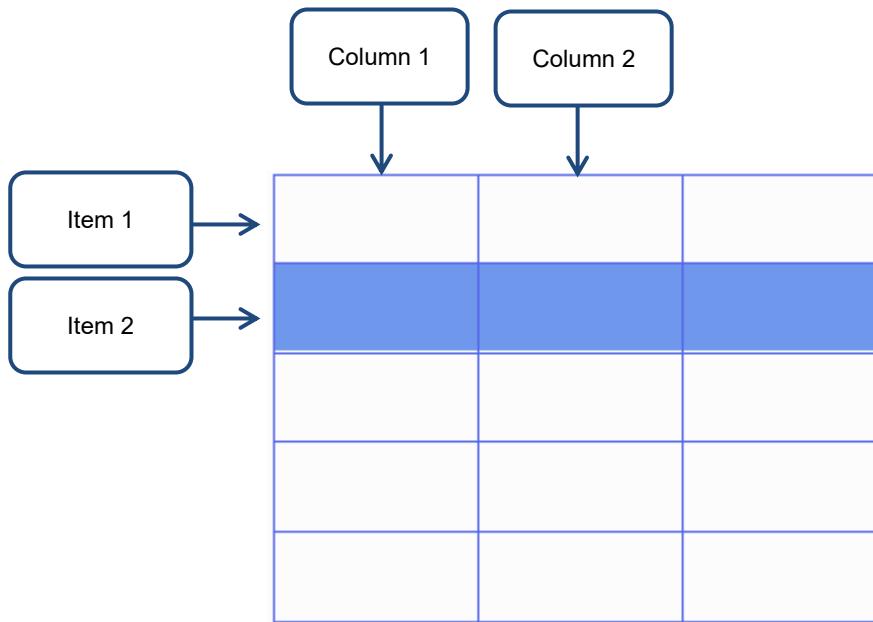
Figure 19.3.7 Coordinates property page for the ListBox element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 19.4 GridBox

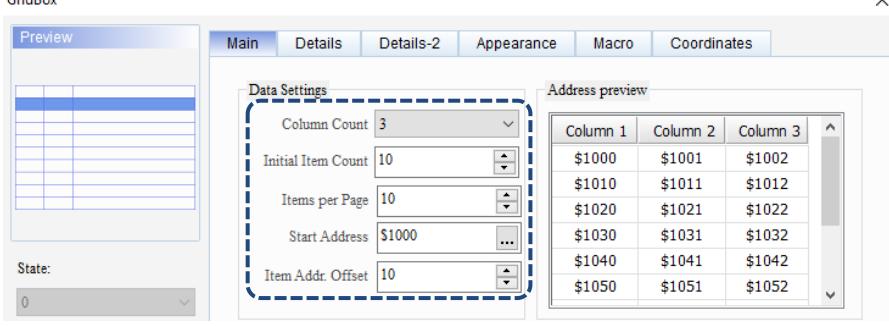
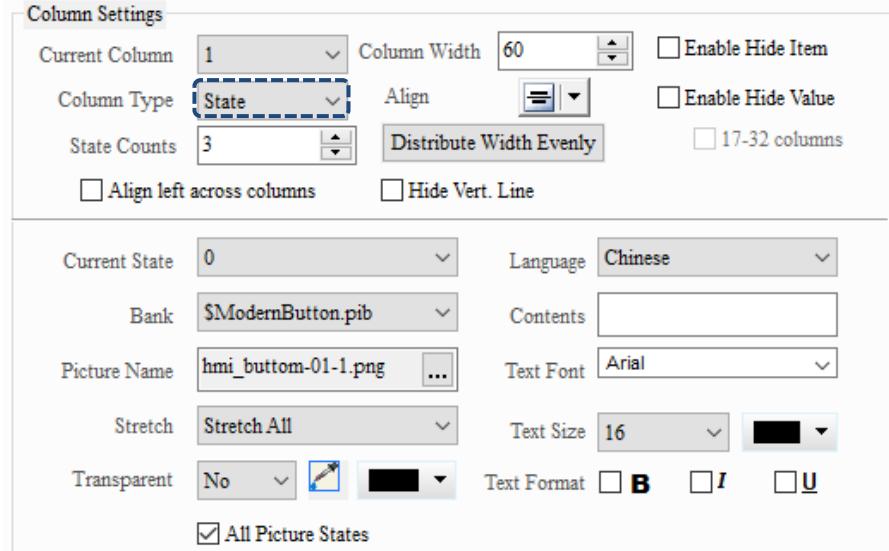
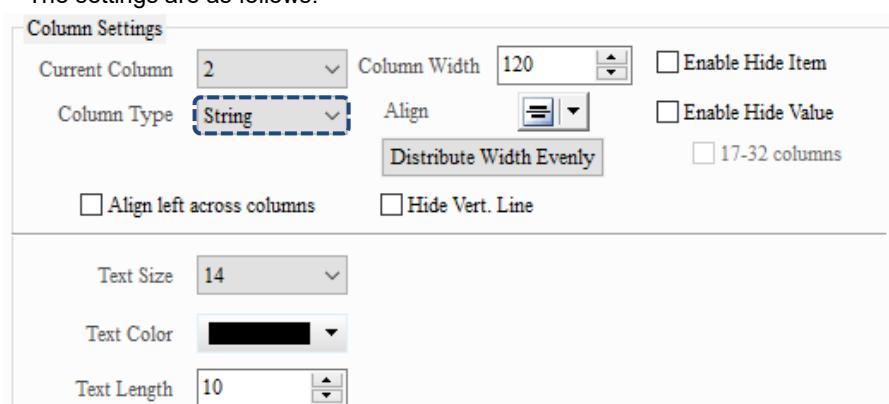
This element displays the data set by users in a gridbox format providing an interface for easier selection and operation. Its functions include automatic page change, insert, delete, copy, and paste.

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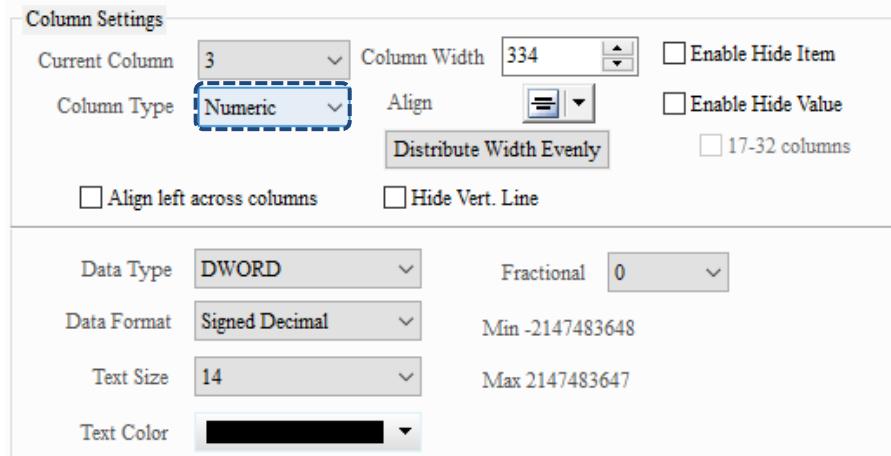
Refer to Table 19.4.1 for the GridBox example.

Table 19.4.1 GridBox example

GridBox	
<p><b>Create GridBox element</b></p>	<ol style="list-style-type: none"> <li>1. Select [List] &gt; [GridBox] in the element tool of the editing screen and create the GridBox element on Screen 1. Set the Column Count as 3, Start Address as \$1000, and Item Addr. Offset as 10.</li> </ol>  <ol style="list-style-type: none"> <li>2. Set the Column Type of Column 1 to State as follows.</li> </ol>  <ol style="list-style-type: none"> <li>3. Set the Column Type of Column 2 to String and you can set the string length. The settings are as follows.</li> </ol> 

**GridBox**

4. Set the Column Type of Column 3 to Numeric and you can set the Data Type to WORD or DWORD. The settings are as follows.



5. The settings for the control addresses on the Details page are as follows.

Create  
GridBox  
element

Main	Details	Details-2	Appearance	Macro	Coordinates																																																																																	
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><b>State</b></p> <table> <tr><td>Selected Item</td><td>\$100</td><td>[...]</td></tr> <tr><td>Actual Item Count</td><td>\$101</td><td>[...]</td></tr> <tr><td>Visible Item Count</td><td>\$102</td><td>[...]</td></tr> <tr><td>Current Page</td><td>\$103</td><td>[...]</td></tr> <tr><td>Total Page</td><td>\$104</td><td>[...]</td></tr> <tr><td>Auto Update Data</td><td>Yes</td><td>[...]</td></tr> <tr><td>Update Data</td><td>\$110.0</td><td>[...]</td></tr> </table> <p><b>Custom Data</b></p> <table> <tr><td>Data Start Addr.</td><td>\$3000</td><td>[...]</td></tr> <tr><td>Data Offset</td><td>15</td><td>[...]</td></tr> <tr><td>Data Length</td><td>5</td><td>[...]</td></tr> </table> <p><b>Others</b></p> <table> <tr><td>Max item count</td><td>1000</td><td>[...]</td></tr> </table> </div> <div style="width: 45%;"> <p><b>Operation</b></p> <table> <tr><td>Invisible Address:</td><td>\$110.1</td><td>[...]</td></tr> <tr><td>Invisible level:</td><td>On</td><td>[...]</td></tr> <tr><td>Page Up Trigger Addr.</td><td>\$110.2</td><td>[...]</td></tr> <tr><td>Page Down Trigger</td><td>\$110.3</td><td>[...]</td></tr> <tr><td>Previous Item Addr.</td><td>\$110.4</td><td>[...]</td></tr> <tr><td>Next Item Addr.</td><td>\$110.5</td><td>[...]</td></tr> <tr><td>Copy Trigger Addr.</td><td>\$110.6</td><td>[...]</td></tr> <tr><td>Paste Trigger Addr.</td><td>\$110.7</td><td>[...]</td></tr> <tr><td>Replace Trigger Addr.</td><td>None</td><td>[...]</td></tr> <tr><td>Insert Trigger Addr.</td><td>\$110.8</td><td>[...]</td></tr> <tr><td>Cut Trigger Addr.</td><td>\$110.9</td><td>[...]</td></tr> <tr><td>Touch Protect Addr.</td><td>\$110.10</td><td>[...]</td></tr> <tr><td>Select Item Addr.</td><td>\$105</td><td>[...]</td></tr> <tr><td>Trigger Selected Item</td><td>\$110.11</td><td>[...]</td></tr> <tr><td>Item Count Addr.</td><td>\$106</td><td>[...]</td></tr> <tr><td>Trigger Item Count</td><td>\$110.12</td><td>[...]</td></tr> </table> </div> </div>						Selected Item	\$100	[...]	Actual Item Count	\$101	[...]	Visible Item Count	\$102	[...]	Current Page	\$103	[...]	Total Page	\$104	[...]	Auto Update Data	Yes	[...]	Update Data	\$110.0	[...]	Data Start Addr.	\$3000	[...]	Data Offset	15	[...]	Data Length	5	[...]	Max item count	1000	[...]	Invisible Address:	\$110.1	[...]	Invisible level:	On	[...]	Page Up Trigger Addr.	\$110.2	[...]	Page Down Trigger	\$110.3	[...]	Previous Item Addr.	\$110.4	[...]	Next Item Addr.	\$110.5	[...]	Copy Trigger Addr.	\$110.6	[...]	Paste Trigger Addr.	\$110.7	[...]	Replace Trigger Addr.	None	[...]	Insert Trigger Addr.	\$110.8	[...]	Cut Trigger Addr.	\$110.9	[...]	Touch Protect Addr.	\$110.10	[...]	Select Item Addr.	\$105	[...]	Trigger Selected Item	\$110.11	[...]	Item Count Addr.	\$106	[...]	Trigger Item Count	\$110.12	[...]
Selected Item	\$100	[...]																																																																																				
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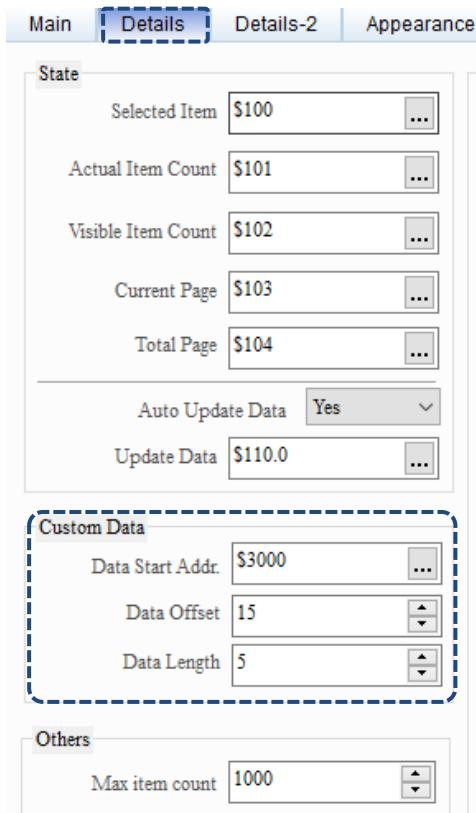
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Create GridBox element

6. The settings for the control addresses on the Details-2 page are as follows.



7. Set the Custom Data to start from \$3000 with the Data Offset as 15 Words and the Data Length for each data as 5 Words.



Create Numeric Entry and Character Entry elements

1. Create two Numeric Entry elements and set the addresses as \$500 and \$506. Create a Character Entry element and set its address as \$501. These three elements are registers. With the set control bit of the GridBox, the data in these registers can be written into the GridBox.
2. Create a Character Entry element and set the address as \$4000. This element is an editing area with a user-defined address. You can use a macro to write the data of this editing area to the user-defined data of the GridBox.



	<p><b>GridBox</b></p> <p>Create a Momentary button element and set its address as \$200.0. [On Macro] will copy the data from the editing area to the selected items in the GridBox element.</p> <pre> 1 ##偏移运算 (Calculate the offset) 2 #元件顯示資料區(element display offset) 3 \$210 = \$100 - 1 4 \$300 = \$210 * 10 5 #自訂資料區(custom data offset) 6 \$305 = \$210 * 15 7 8 #編輯位址\$500~ 搬到目標位址\$1000...(元件顯示區) 9 #move edit area to \$1000(element display) 10 \$201 = ArrayCopy(\$1000, \$300, \$500, 0, 10) 11 12 #編輯位址\$4000~ 搬到目標位址\$3000...(自訂資料區) 13 #move edit area to \$3000(custom data) 14 \$201 = ArrayCopy(\$3000, \$305, \$4000, 0, 5) </pre>																																														
Create Momentary button element	<p>Create the figure of the Details setting for the GridBox on the screen and place the corresponding elements and buttons on the figure for editing the element.</p> <table border="1"> <tr> <td><b>State</b></td> <td><b>Operation</b></td> </tr> <tr> <td>Selected Item \$100</td> <td>Invisible Address: \$110.1</td> </tr> <tr> <td>Actual Item Count \$101</td> <td>Page Up Trigger Addr: \$110.2</td> </tr> <tr> <td>Visible Item Count \$102</td> <td>Page Down Trigger \$110.3</td> </tr> <tr> <td>Current Page \$103</td> <td>Previous Item Addr: \$110.4</td> </tr> <tr> <td>Total Page \$104</td> <td>Next Item Addr: \$110.5</td> </tr> <tr> <td>Auto Update Data Yes</td> <td>Copy Trigger Addr: \$110.6</td> </tr> <tr> <td>Update Data \$110.0</td> <td>Paste Trigger Addr: \$110.7</td> </tr> <tr> <td><b>Custom Data</b></td> <td>Replace Trigger Addr: \$110.8</td> </tr> <tr> <td>Data Start Addr: \$3000</td> <td>Insert Trigger Addr: \$110.9</td> </tr> <tr> <td>Data Offset 15</td> <td>Cut Trigger Addr: \$110.10</td> </tr> <tr> <td>Data Length 5</td> <td>Touch Protect Addr: \$110.11</td> </tr> <tr> <td><b>Others</b></td> <td>Select Item Addr: \$105</td> </tr> <tr> <td>Max item count 1000</td> <td>Trigger Selected Item \$110.12</td> </tr> <tr> <td></td> <td>Item Count Addr: \$106</td> </tr> <tr> <td></td> <td>Trigger Item Count \$110.13</td> </tr> <tr> <td><b>Operation-Buffer selection</b></td> <td></td> </tr> <tr> <td>Buffer Start Addr: \$500</td> <td></td> </tr> <tr> <td>Insert Selected Item Addr: \$111.0</td> <td></td> </tr> <tr> <td>Add selected item Addr: \$111.1</td> <td></td> </tr> <tr> <td>Add to Last Addr: \$111.2</td> <td></td> </tr> <tr> <td>Read Address \$111.3</td> <td></td> </tr> <tr> <td>Write Address \$111.4</td> <td></td> </tr> </table>	<b>State</b>	<b>Operation</b>	Selected Item \$100	Invisible Address: \$110.1	Actual Item Count \$101	Page Up Trigger Addr: \$110.2	Visible Item Count \$102	Page Down Trigger \$110.3	Current Page \$103	Previous Item Addr: \$110.4	Total Page \$104	Next Item Addr: \$110.5	Auto Update Data Yes	Copy Trigger Addr: \$110.6	Update Data \$110.0	Paste Trigger Addr: \$110.7	<b>Custom Data</b>	Replace Trigger Addr: \$110.8	Data Start Addr: \$3000	Insert Trigger Addr: \$110.9	Data Offset 15	Cut Trigger Addr: \$110.10	Data Length 5	Touch Protect Addr: \$110.11	<b>Others</b>	Select Item Addr: \$105	Max item count 1000	Trigger Selected Item \$110.12		Item Count Addr: \$106		Trigger Item Count \$110.13	<b>Operation-Buffer selection</b>		Buffer Start Addr: \$500		Insert Selected Item Addr: \$111.0		Add selected item Addr: \$111.1		Add to Last Addr: \$111.2		Read Address \$111.3		Write Address \$111.4	
<b>State</b>	<b>Operation</b>																																														
Selected Item \$100	Invisible Address: \$110.1																																														
Actual Item Count \$101	Page Up Trigger Addr: \$110.2																																														
Visible Item Count \$102	Page Down Trigger \$110.3																																														
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Update Data \$110.0	Paste Trigger Addr: \$110.7																																														
<b>Custom Data</b>	Replace Trigger Addr: \$110.8																																														
Data Start Addr: \$3000	Insert Trigger Addr: \$110.9																																														
Data Offset 15	Cut Trigger Addr: \$110.10																																														
Data Length 5	Touch Protect Addr: \$110.11																																														
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	Item Count Addr: \$106																																														
	Trigger Item Count \$110.13																																														
<b>Operation-Buffer selection</b>																																															
Buffer Start Addr: \$500																																															
Insert Selected Item Addr: \$111.0																																															
Add selected item Addr: \$111.1																																															
Add to Last Addr: \$111.2																																															
Read Address \$111.3																																															
Write Address \$111.4																																															
Create Goto Screen button element	<p>Create two Goto Screen buttons and open Screen 2 and Screen 3 to view the actual data in the GridBox.</p>																																														

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Create  
Numeric  
Entry  
elements  
(\$1000 -  
\$1169)

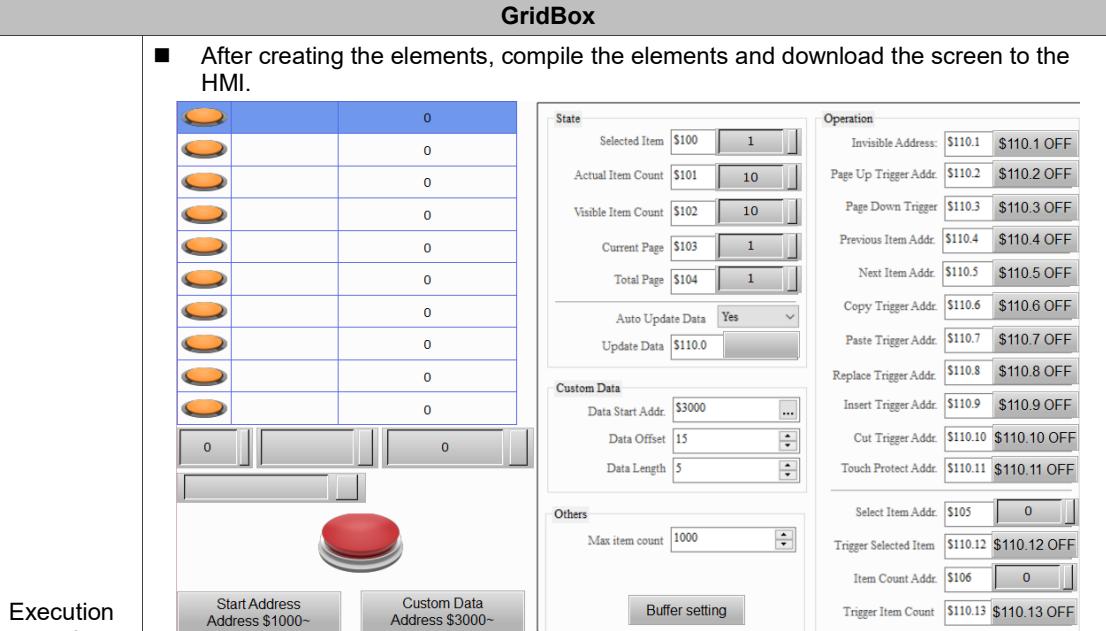
GridBox											
Create Screen 2 to display the contents shown in the GridBox (\$1000, \$1001...).											
W:\$1000	W:\$1001	W:\$1002	W:\$1003	W:\$1004	W:\$1005	W:\$1006	W:\$1007	W:\$1008	W:\$1009		
W:\$1010	W:\$1011	W:\$1012	W:\$1013	W:\$1014	W:\$1015	W:\$1016	W:\$1017	W:\$1018	W:\$1019		
W:\$1020	W:\$1021	W:\$1022	W:\$1023	W:\$1024	W:\$1025	W:\$1026	W:\$1027	W:\$1028	W:\$1029		
W:\$1030	W:\$1031	W:\$1032	W:\$1033	W:\$1034	W:\$1035	W:\$1036	W:\$1037	W:\$1038	W:\$1039		
W:\$1040	W:\$1041	W:\$1042	W:\$1043	W:\$1044	W:\$1045	W:\$1046	W:\$1047	W:\$1048	W:\$1049		
W:\$1050	W:\$1051	W:\$1052	W:\$1053	W:\$1054	W:\$1055	W:\$1056	W:\$1057	W:\$1058	W:\$1059		
W:\$1060	W:\$1061	W:\$1062	W:\$1063	W:\$1064	W:\$1065	W:\$1066	W:\$1067	W:\$1068	W:\$1069		
W:\$1070	W:\$1071	W:\$1072	W:\$1073	W:\$1074	W:\$1075	W:\$1076	W:\$1077	W:\$1078	W:\$1079		
W:\$1080	W:\$1081	W:\$1082	W:\$1083	W:\$1084	W:\$1085	W:\$1086	W:\$1087	W:\$1088	W:\$1089		
W:\$1090	W:\$1091	W:\$1092	W:\$1093	W:\$1094	W:\$1095	W:\$1096	W:\$1097	W:\$1098	W:\$1099		
W:\$1100	W:\$1101	W:\$1102	W:\$1103	W:\$1104	W:\$1105	W:\$1106	W:\$1107	W:\$1108	W:\$1109		
W:\$1110	W:\$1111	W:\$1112	W:\$1113	W:\$1114	W:\$1115	W:\$1116	W:\$1117	W:\$1118	W:\$1119		
W:\$1120	W:\$1121	W:\$1122	W:\$1123	W:\$1124	W:\$1125	W:\$1126	W:\$1127	W:\$1128	W:\$1129		
W:\$1130	W:\$1131	W:\$1132	W:\$1133	W:\$1134	W:\$1135	W:\$1136	W:\$1137	W:\$1138	W:\$1139		
W:\$1140	W:\$1141	W:\$1142	W:\$1143	W:\$1144	W:\$1145	W:\$1146	W:\$1147	W:\$1148	W:\$1149		
\$1000~											
<span style="float: right;">Back</span>											

Create  
Numeric  
Entry  
elements  
(\$3000 -  
\$3254)

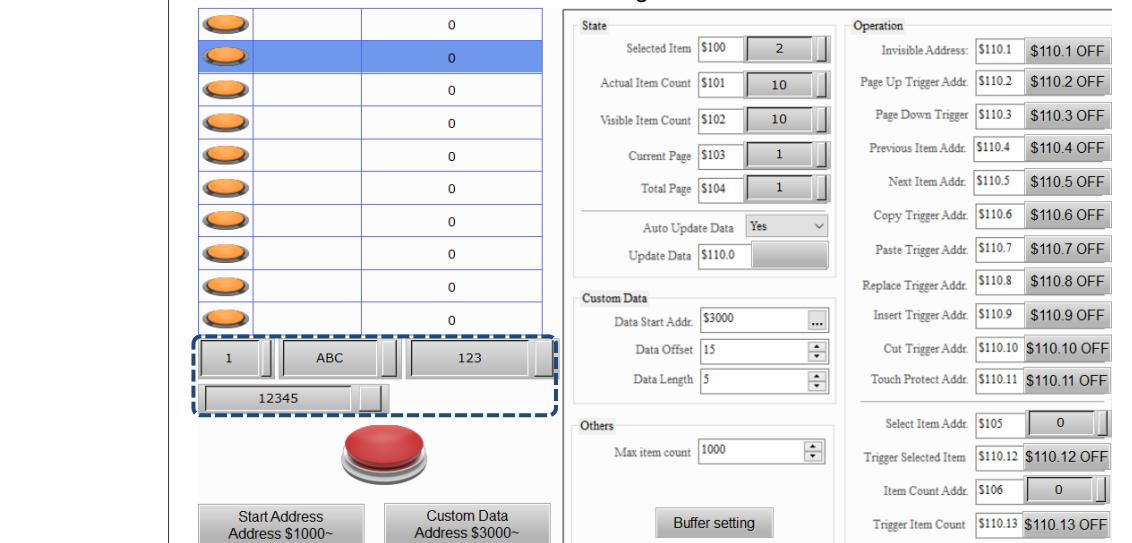
GridBox											
Create Screen 3 to display the user-defined data in the GridBox (\$3000, \$3001...).											
W:\$3000	W:\$3001	W:\$3002	W:\$3003	W:\$3004	W:\$3005	W:\$3006	W:\$3007	W:\$3008	W:\$3009		
W:\$3010	W:\$3011	W:\$3012	W:\$3013	W:\$3014	W:\$3015	W:\$3016	W:\$3017	W:\$3018	W:\$3019		
W:\$3020	W:\$3021	W:\$3022	W:\$3023	W:\$3024	W:\$3025	W:\$3026	W:\$3027	W:\$3028	W:\$3029		
W:\$3030	W:\$3031	W:\$3032	W:\$3033	W:\$3034	W:\$3035	W:\$3036	W:\$3037	W:\$3038	W:\$3039		
W:\$3040	W:\$3041	W:\$3042	W:\$3043	W:\$3044	W:\$3045	W:\$3046	W:\$3047	W:\$3048	W:\$3049		
W:\$3050	W:\$3051	W:\$3052	W:\$3053	W:\$3054	W:\$3055	W:\$3056	W:\$3057	W:\$3058	W:\$3059		
W:\$3060	W:\$3061	W:\$3062	W:\$3063	W:\$3064	W:\$3065	W:\$3066	W:\$3067	W:\$3068	W:\$3069		
W:\$3070	W:\$3071	W:\$3072	W:\$3073	W:\$3074	W:\$3075	W:\$3076	W:\$3077	W:\$3078	W:\$3079		
W:\$3080	W:\$3081	W:\$3082	W:\$3083	W:\$3084	W:\$3085	W:\$3086	W:\$3087	W:\$3088	W:\$3089		
W:\$3090	W:\$3091	W:\$3092	W:\$3093	W:\$3094	W:\$3095	W:\$3096	W:\$3097	W:\$3098	W:\$3099		
W:\$3100	W:\$3101	W:\$3102	W:\$3103	W:\$3104	W:\$3105	W:\$3106	W:\$3107	W:\$3108	W:\$3109		
W:\$3110	W:\$3111	W:\$3112	W:\$3113	W:\$3114	W:\$3115	W:\$3116	W:\$3117	W:\$3118	W:\$3119		
W:\$3120	W:\$3121	W:\$3122	W:\$3123	W:\$3124	W:\$3125	W:\$3126	W:\$3127	W:\$3128	W:\$3129		
W:\$3130	W:\$3131	W:\$3132	W:\$3133	W:\$3134	W:\$3135	W:\$3136	W:\$3137	W:\$3138	W:\$3139		
W:\$3140	W:\$3141	W:\$3142	W:\$3143	W:\$3144	W:\$3145	W:\$3146	W:\$3147	W:\$3148	W:\$3149		
\$3000~											
<span style="float: right;">Back</span>											

**GridBox**

- After creating the elements, compile the elements and download the screen to the HMI.



- Select the item and edit the data editing area.



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Execution results

**GridBox**

- Press the red button and the data displayed on the element changes.

0	0	0	0	0	0	0	0	0	0
ABC	123								
0	0	0	0	0	0	0	0	0	0

Start Address Address \$1000- Custom Data Address \$3000-

- Trigger the Write Address in the Buffer section and the data displayed on the element changes.

0	0	0	0	0	0	0	0	0	0
FFF	5555								
0	0	0	0	0	0	0	0	0	0

Start Address Address \$1000- Custom Data Address \$3000-

## Grid Box

- Press **Start Address Address \$1000~** to switch the screen to Screen 2, set the value of \$1019 (hidden value) to 1, and then the content in the first field in the second column will be hidden.

## Execution results

\$1000~		
		0
	ABC	123
		0
		0
	FFF	5555
		0
		0
		0
		0
		0
		0
2	FFF	5555
12345		
Start Address Address \$1000~		Custom Data Address \$3000~

**State**

Selected Item	\$100	5
Actual Item Count	\$101	10
Visible Item Count	\$102	10
Current Page	\$103	1
Total Page	\$104	1

---

Auto Update Data  Yes

Update Data  \$110.0

**Custom Data**

Data Start Addr:	\$3000	...
Data Offset	15	▼
Data Length	5	▼

---

**Others**

Max item count	<input type="text"/> 1000	▼
----------------	---------------------------	---

**Operation**

Invisible Address:	\$110.1	\$110.1 OFF
Page Up Trigger Addr:	\$110.2	\$110.2 OFF
Page Down Trigger	\$110.3	\$110.3 OFF
Previous Item Addr:	\$110.4	\$110.4 OFF
Next Item Addr:	\$110.5	\$110.5 OFF
Copy Trigger Addr:	\$110.6	\$110.6 OFF
Paste Trigger Addr:	\$110.7	\$110.7 OFF
Replace Trigger Addr:	\$110.8	\$110.8 OFF
Insert Trigger Addr:	\$110.9	\$110.9 OFF
Cut Trigger Addr:	\$110.10	\$110.10 OFF
Touch Protect Addr:	\$110.11	\$110.11 OFF

---

Select Item Addr:  \$105    0

Trigger Selected Item:  \$110.12    \$110.12 OFF

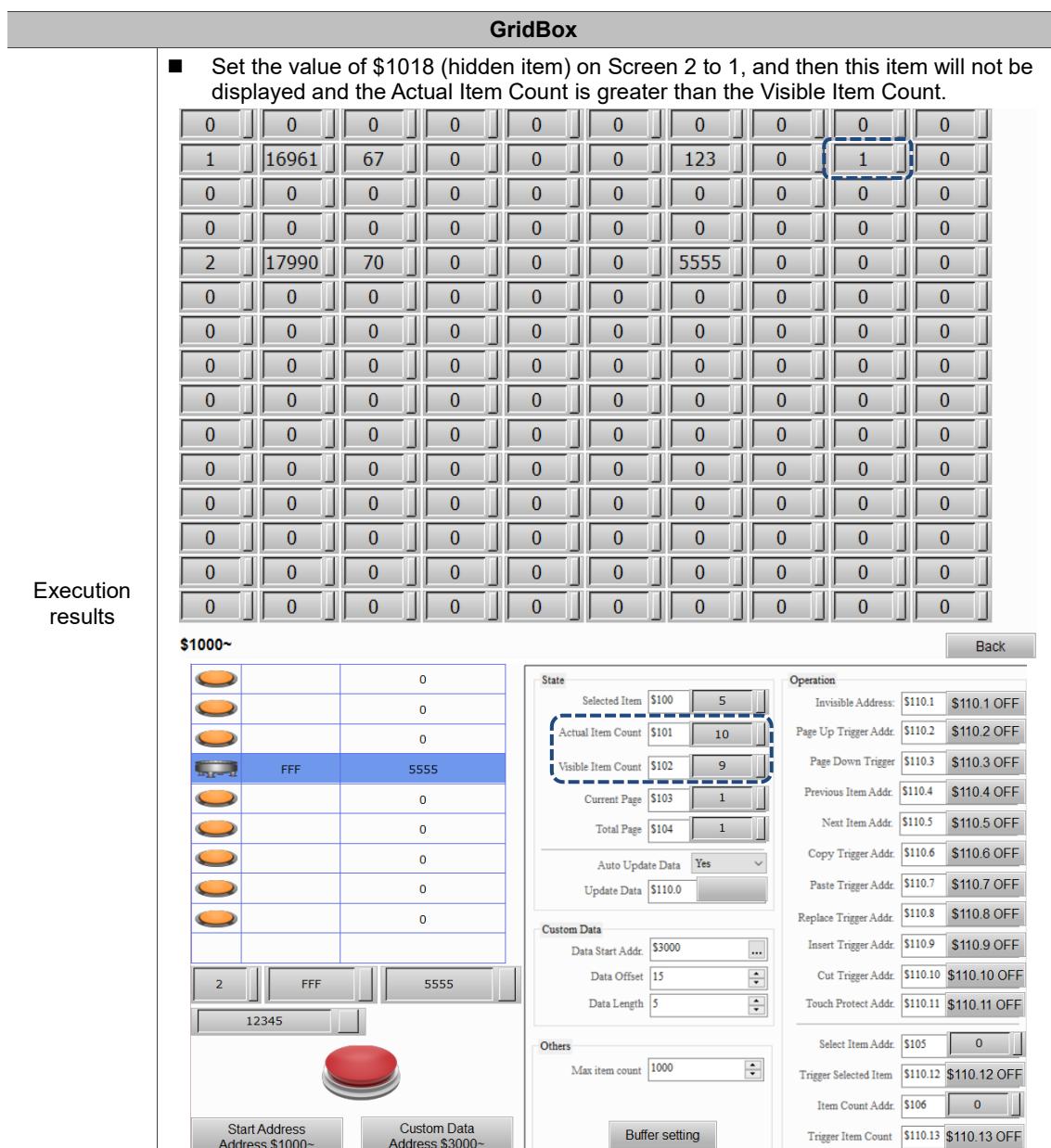
Item Count Addr:  \$106    0

Trigger Item Count:  \$110.13    \$110.13 OFF

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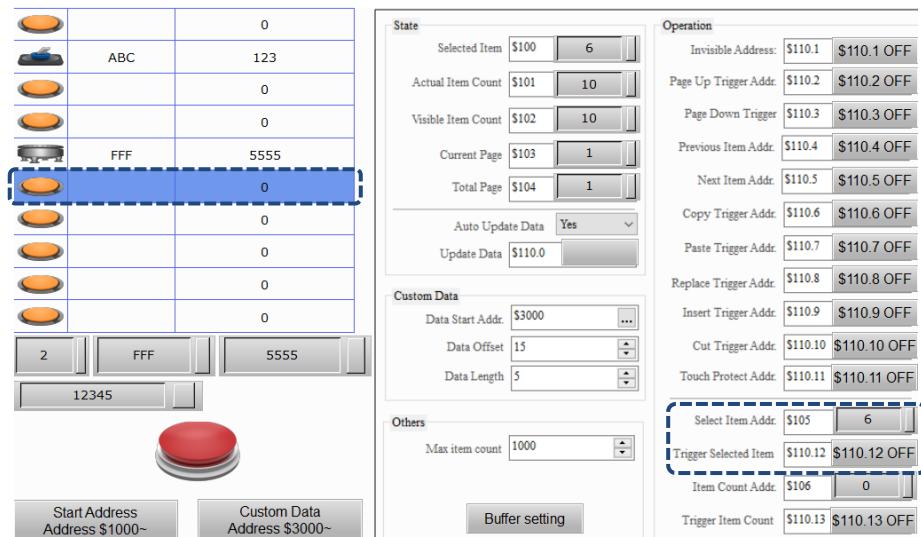
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## Execution results



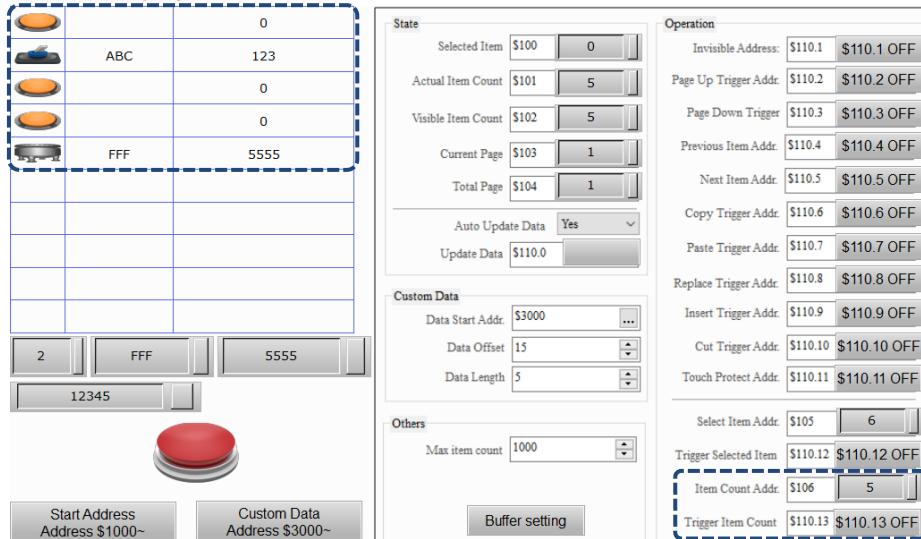
**GridBox**

- Set Select Item Addr. to 6 and press **Trigger Selected Item**, and then the 6<sup>th</sup> item is selected.



Execution results

- Set Item Count Addr. to 5 and press **Trigger Item Count**, and then the number of the displaying items becomes 5 and the other data will not be shown.





When you double-click the GridBox, the property page is shown as follows.

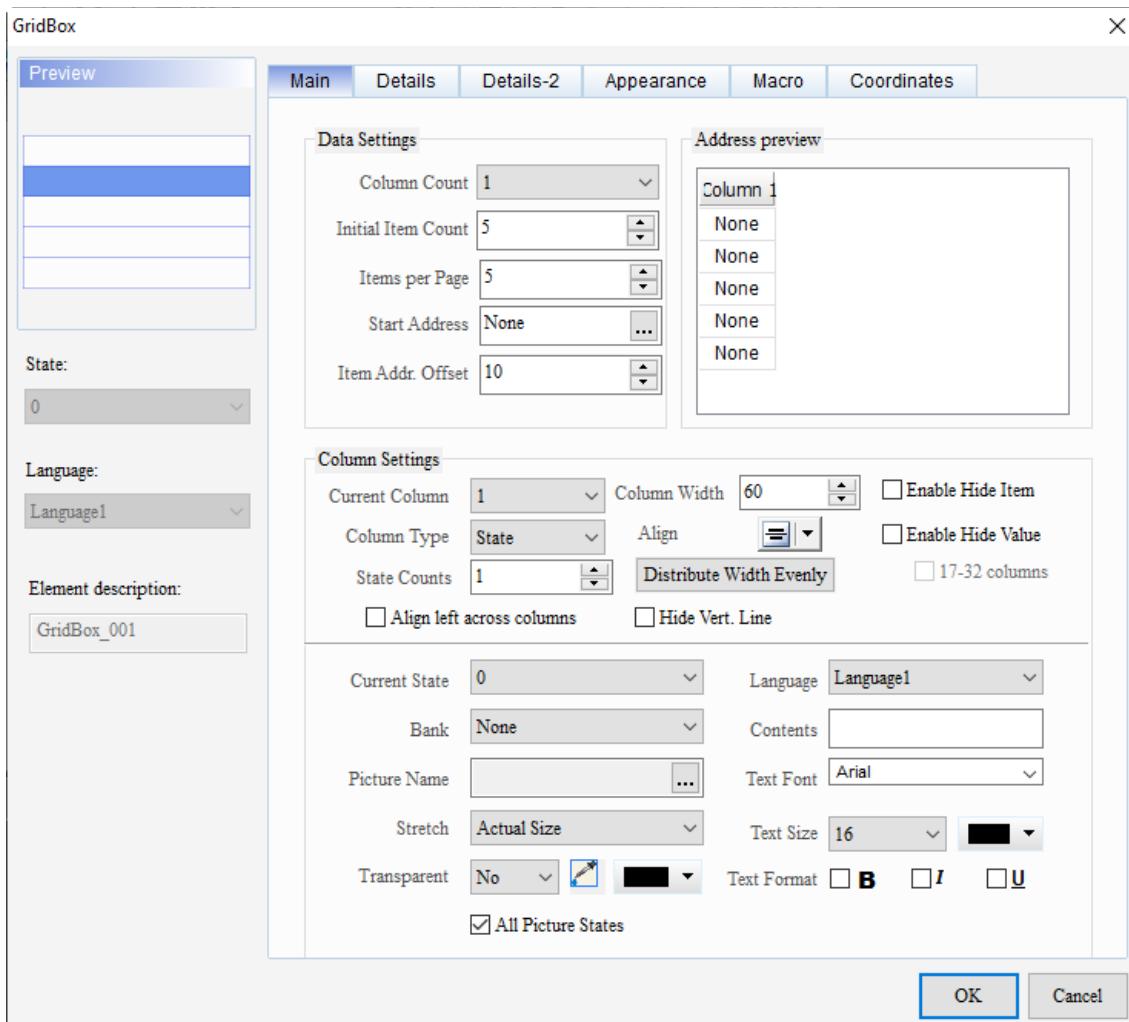
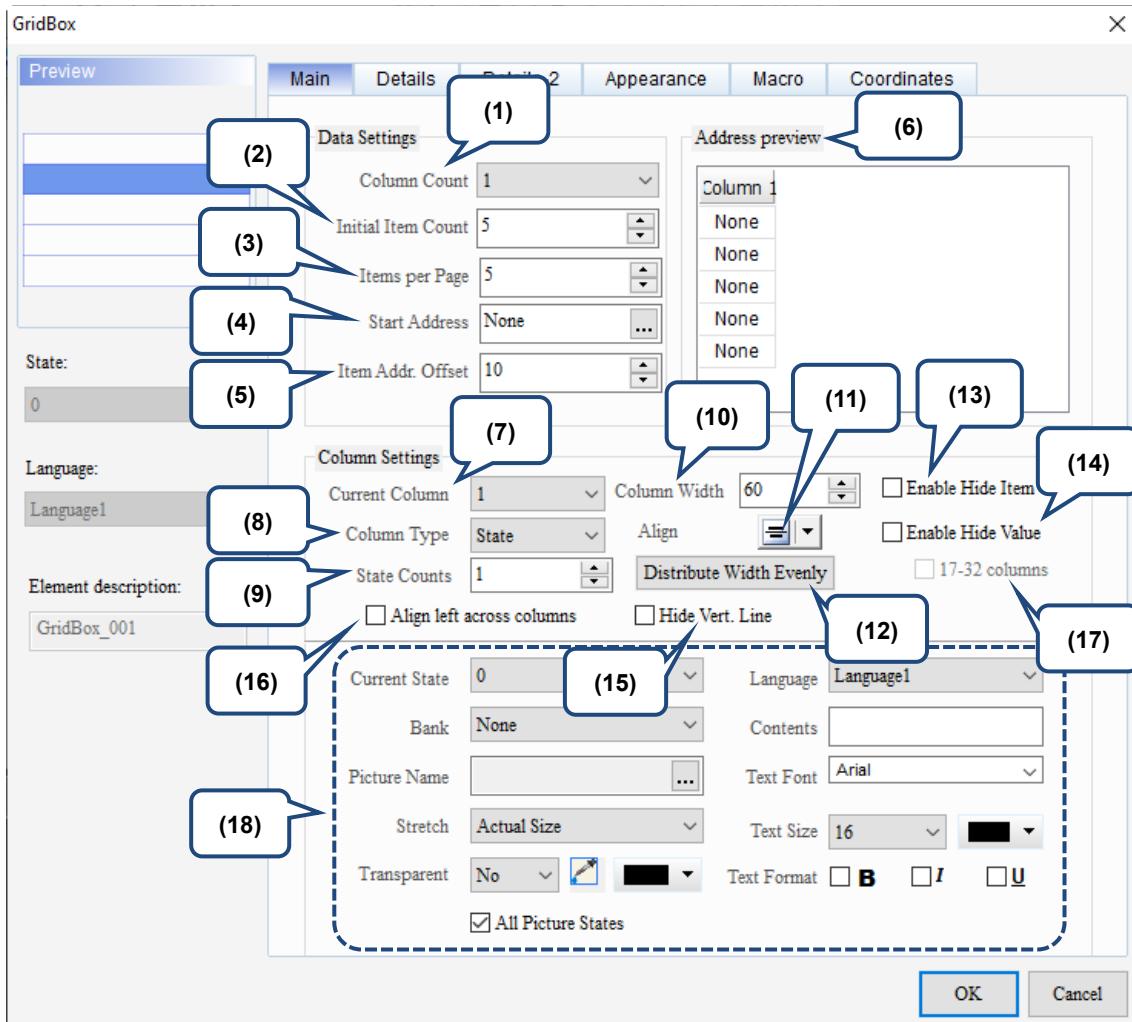


Figure 19.4.1 Properties of GridBox

Table 19.4.2 Function page of the GridBox element

GridBox	
Function page	Description
Main	<p>It includes Data Settings and Column Settings.</p> <ul style="list-style-type: none"> <li>■ Data Settings: set the Column Count, Initial Item Count, Items per Page, Start Address, and Item Addr. Offset.</li> <li>■ Column Settings: set the Current Column, Column Width, Column Type, Align, State Counts, press <b>Distribute Width Evenly</b>, and select the check boxes for <b>Enable Hide Item</b>, <b>Enable Hide Value</b>, <b>Hide Vert. Line</b>, <b>Align left across columns</b>, and <b>17-32 columns</b>.</li> <li>■ The required settings vary according to the setting of Column Type.</li> <li>■ Address preview can be used to preview the assigned addresses according to the set data.</li> </ul>
Details	<p>It includes State, Custom Data, Others, and Operation.</p> <ul style="list-style-type: none"> <li>■ State: set the Selected Item, Actual Item Count, Visible Item Count, Current Page, Total Page, Auto Update Data, and Update Data.</li> <li>■ Custom Data: set the Data Start Addr., Data Offset, and Data Length.</li> <li>■ Others: set the Max item count.</li> <li>■ Operation: set the Invisible Address, Page Up Trigger Addr., Page Down Trigger, Previous Item Addr., Next Item Addr., Copy Trigger Addr., Paste Trigger Addr., Replace Trigger Addr., Insert Trigger Addr., Cut Trigger Addr., Touch Protect Addr., Select Item Addr., Trigger Selected Item, Item Count Addr., and Trigger Item Count.</li> </ul>
Details-2	Set the Operation-Buffer selection, including Buffer Start Addr., Insert Selected Item Addr., Add selected item Addr., Add to Last Addr., Read Address, and Write Address.
Appearance	<p>It includes Column Settings and Style.</p> <ul style="list-style-type: none"> <li>■ Column Settings: select the check box for <b>Enable auto numbering</b> and set the Column Width, Font size, and Text Color.</li> <li>■ Style: set the Gridline Color, Background Color, Select Color, and Show Gridlines.</li> </ul>
Macro	Set the After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

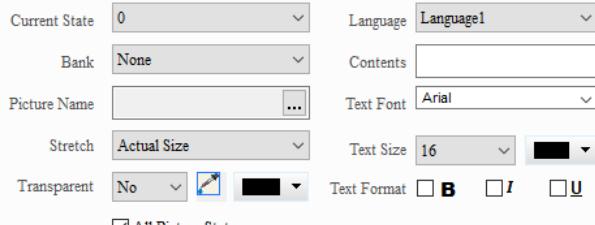
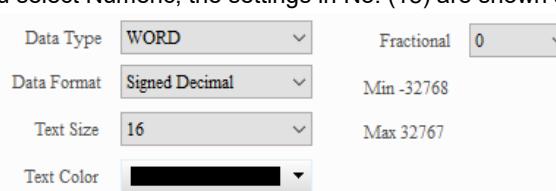
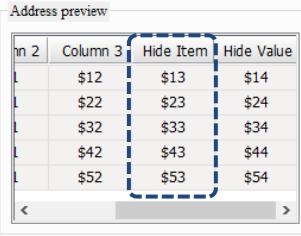


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Figure 19.4.2 Main property page for the GridBox element

No.	Property	Function description
(1)	Column Count	<ul style="list-style-type: none"> <li>Set the number of columns used by the GridBox element and the maximum setting is 32.</li> <li>If the Column Count is greater than the Item Addr. Offset, a warning message is displayed to remind you of the overlapping addresses.</li> </ul>
(2)	Initial Item Count	Set the Initial Item Count of the element and the maximum setting is 1,000.
(3)	Items per Page	Set the number of items that can be displayed on a single page of the element, and the maximum setting is 100.
(4)	Start Address	<ul style="list-style-type: none"> <li>Set the address that the element starts to read.</li> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul> 
(5)	Item Addr. Offset	Set the address offset for the items and the maximum setting is 10,000. If the Item Addr. Offset is greater than the Column Count, a warning message is displayed to remind you of the overlapping addresses.
(6)	Address preview	According to the current property settings of the element, it displays the start address of each field.

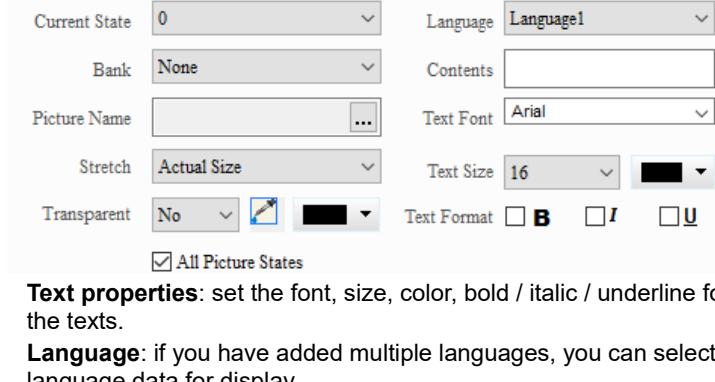
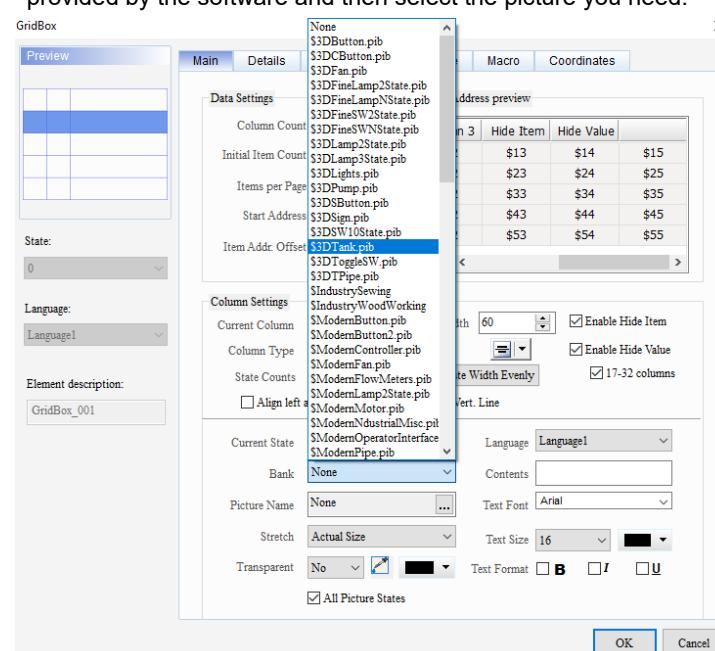
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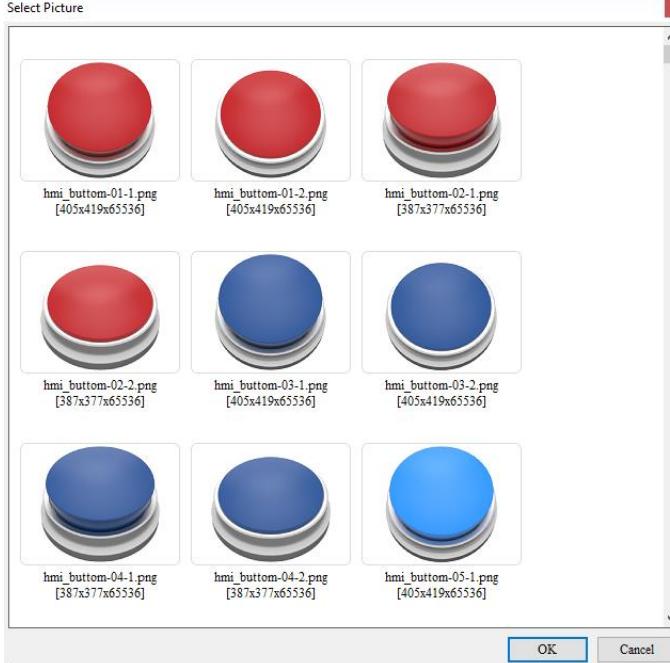
No.	Property	Function description
(7)	Current Column	Select the column for editing. The largest number does not exceed the setting of Column Count.  ■ The Column Types include State, String, and Numeric. ■ State: status display; String: string display; Numeric: numeric display. ■ If you select State, the settings in No. (18) are shown as follows. 
(8)	Column Type	■ If you select String, the settings in No. (18) are shown as follows.  ■ If you select Numeric, the settings in No. (18) are shown as follows. 
(9)	State Counts	■ The State Counts field is shown only when you select State for the Column Type. ■ The maximum setting is 256 states and mainly for indicating the number of state pictures. This setting will affect the displayed number of Current State. If the State Counts is set to 3, then the Current State includes States 0, 1, and 2.
(10)	Column Width	Set the width of the column and the maximum setting is 65535.
(11)	Align	Set the alignment style in the cell. 
(12)	Distribute Width Evenly	Press this button to distribute the width of the columns evenly.
(13)	Enable Hide Item	When you select the check box for this function, the corresponding addresses of the hidden items will be shown in the Address preview. When the Hide Item address value of an item is not 0, this item will not be displayed on the element. 

No.	Property	Function description																								
(14)	Enable Hide Value	<ul style="list-style-type: none"> <li>When you select the check box for <b>Enable Hide Value</b>, the corresponding addresses of the hidden values will be shown in the Address preview.</li> </ul> <thead> <tr> <th>In 2</th> <th>Column 3</th> <th>Hide Item</th> <th>Hide Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$12</td> <td>\$13</td> <td>\$14</td> </tr> <tr> <td>1</td> <td>\$22</td> <td>\$23</td> <td>\$24</td> </tr> <tr> <td>1</td> <td>\$32</td> <td>\$33</td> <td>\$34</td> </tr> <tr> <td>1</td> <td>\$42</td> <td>\$43</td> <td>\$44</td> </tr> <tr> <td>1</td> <td>\$52</td> <td>\$53</td> <td>\$54</td> </tr> </tbody>	In 2	Column 3	Hide Item	Hide Value	1	\$12	\$13	\$14	1	\$22	\$23	\$24	1	\$32	\$33	\$34	1	\$42	\$43	\$44	1	\$52	\$53	\$54
In 2	Column 3	Hide Item	Hide Value																							
1	\$12	\$13	\$14																							
1	\$22	\$23	\$24																							
1	\$32	\$33	\$34																							
1	\$42	\$43	\$44																							
1	\$52	\$53	\$54																							

(15)	Hide Vert. Line	If you enable this function, the right vertical line of the selected column in the table will be hidden.																																			
(16)	Align left across columns	- This function allows the data to merge left with the data in the left field. - If this function is enabled, you can combine the data in two fields. To merge data, you need to enable this function for the fields to be merged. For example, if you want to merge the data of Field 2 and Field 3, select the check box for **Align left across columns** for both Field 2 and Field 3.	Align left across columns not enabled		Align left across columns enabled for Fields 2 and 3			---------------------------------------	-----	--	--------			ABC		ABC123			123		0			0													
(17)	17-32 columns	- Previously the Enable Hide Value function of the GridBox element only supports hiding 1 - 16 fields, but now you can hide up to 32 fields. - When you select the check box for **17-32 columns**, there will be two addresses for each hidden value. The bits of the first address correspond to Columns 1 - 16; the bits of the second address correspond to Columns 17 - 32.	In 3	Hide Item	Hide Value			---	---	---	---		2	\$13	\$14	\$15		2	\$23	\$24	\$25		2	\$33	\$34	\$35		2	\$43	\$44	\$45		2	\$53	\$54	\$55	

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No.	Property	Function description
(18)	Column data settings	<p>■ Edit the detailed settings of the column selected in Current Column.</p> <p><b>Column Type of the Current State is State</b></p>  <p><b>Text properties:</b> set the font, size, color, bold / italic / underline for the texts.</p> <p><b>Language:</b> if you have added multiple languages, you can select the language data for display.</p> <p><b>Picture Bank:</b> the default for the Bank name is "None". To set the picture display, use the drop-down list box to select the picture bank provided by the software and then select the picture you need.</p> 

No.	Property	Function description									
(18)	Column data settings	<p><b>Select Picture</b></p>  <p>■ The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 2px;">Stretch All</th> <th style="text-align: center; padding: 2px;">Stretch 1:1</th> <th style="text-align: center; padding: 2px;">Actual Size</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 10px;">If you select Stretch All, the picture fills the full element display area.</td> <td style="text-align: center; padding: 10px;">If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td style="text-align: center; padding: 10px;">If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td style="text-align: center; padding: 10px;"></td> <td style="text-align: center; padding: 10px;"></td> <td style="text-align: center; padding: 10px;"></td> </tr> </tbody> </table> <p>■ If you select the check box for <b>Process pictures of all states</b>, assuming that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</p> <p style="text-align: center;"><input checked="" type="checkbox"/> All Picture States</p> <p>■ You can specify a color in the picture and turn this color into transparent with this function.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p style="text-align: center;">Foreground Color: </p> 	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.			
Stretch All	Stretch 1:1	Actual Size									
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.									

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No.	Property	Function description
(18)	Column data settings	<p><b><u>Column Type of the Current State is String</u></b></p> <p>■ Set the Text Size, Text Color, and Text Length.  ■ The maximum setting for Text Length is 60.</p> <p><b><u>Column Type of the Current State is Numeric</u></b></p> <p>■ The Data Type includes WORD and DWORD.</p> <p>■ The Data Format supports only Signed Decimal and Unsigned Decimal regardless of your selection of the Data Type as WORD or DWORD.</p> <p>■ If the Data Type is set to WORD, the setting range of the fractional digits is 0 - 5; if the Data Type is set to DWORD, the setting range of the fractional digits is 0 - 10.</p>

## ■ Details

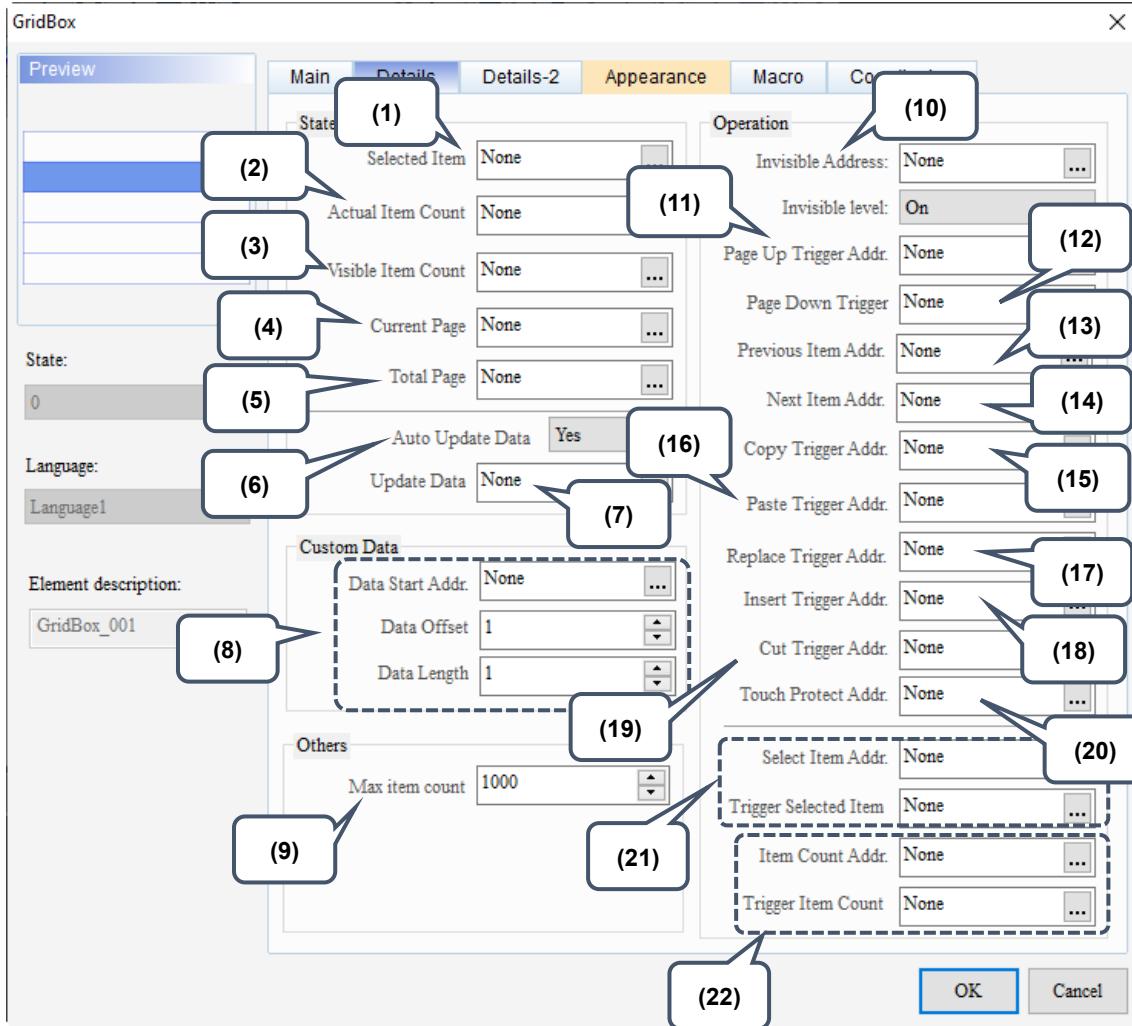
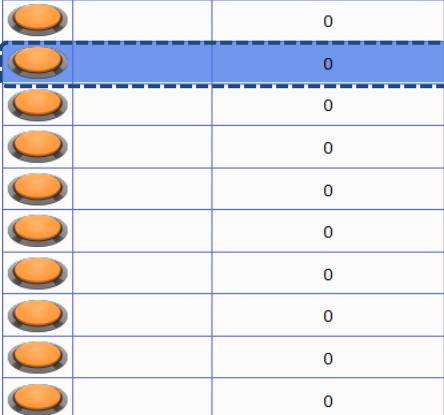
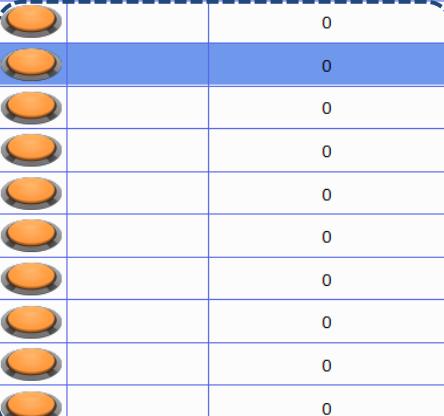
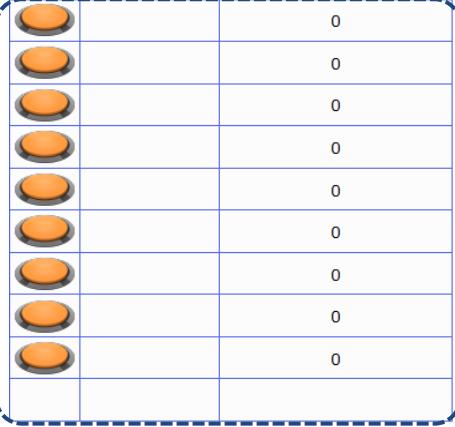


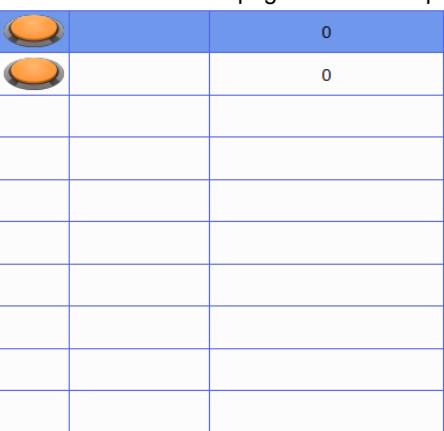
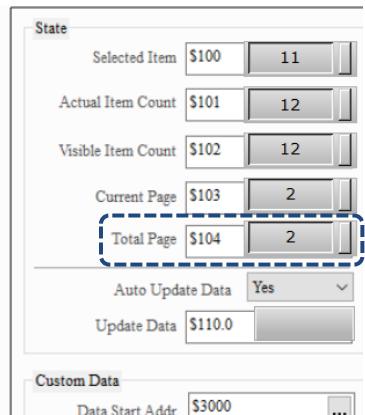
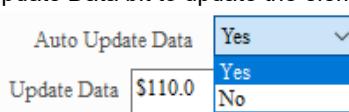
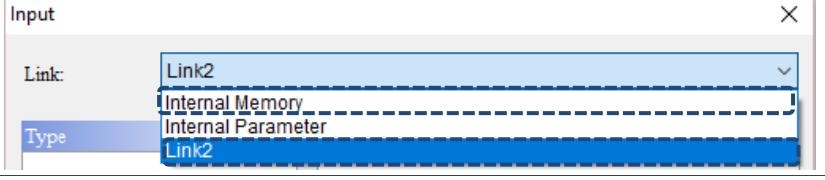
Figure 19.4.3 Details property page for the GridBox element

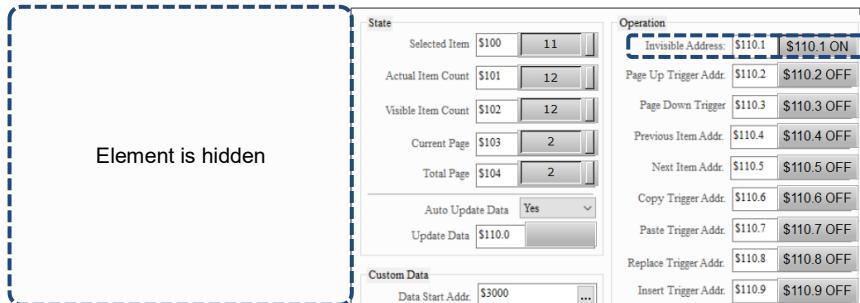
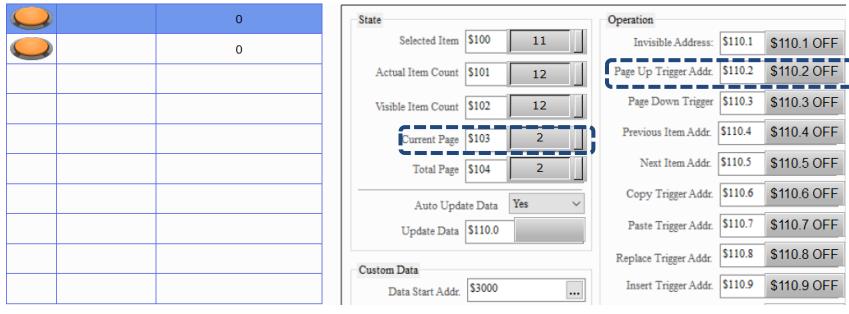
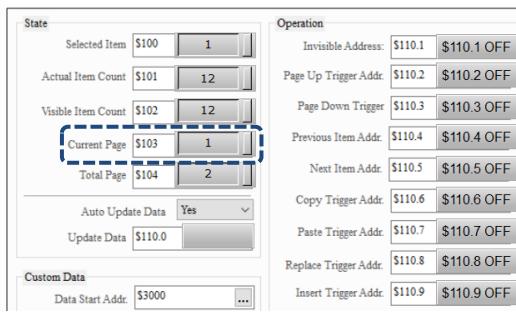
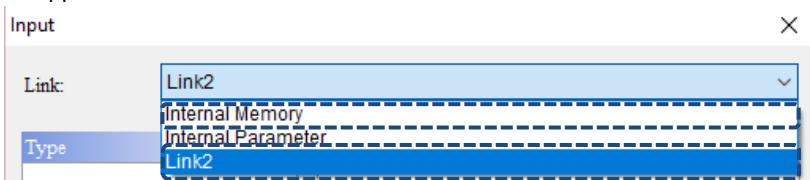
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No.	Property	Function description															
(1)	Selected Item	<ul style="list-style-type: none"> <li>The number of the selected item of the element.</li> <li>When you select the second item of the GridBox, the value shown in Selected Item is 2.</li> </ul>  <div style="border: 1px solid #ccc; padding: 5px;"> <p><b>State</b></p> <table> <tr> <td>Selected Item</td> <td>\$100</td> <td>2</td> </tr> <tr> <td>Actual Item Count</td> <td>\$101</td> <td>10</td> </tr> <tr> <td>Visible Item Count</td> <td>\$102</td> <td>10</td> </tr> <tr> <td>Current Page</td> <td>\$103</td> <td>1</td> </tr> <tr> <td>Total Page</td> <td>\$104</td> <td>1</td> </tr> </table> <p>Auto Update Data: Yes</p> <p>Update Data: \$110.0</p> <p><b>Custom Data</b></p> <p>Data Start Addr.: \$3000</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>Input</b></p> <p>Link: Link2</p> <p>Type: Internal Memory</p> <p>Internal Parameter</p> <p>Link2</p> </div>	Selected Item	\$100	2	Actual Item Count	\$101	10	Visible Item Count	\$102	10	Current Page	\$103	1	Total Page	\$104	1
Selected Item	\$100	2															
Actual Item Count	\$101	10															
Visible Item Count	\$102	10															
Current Page	\$103	1															
Total Page	\$104	1															
(2)	Actual Item Count	<ul style="list-style-type: none"> <li>The total number of items actually displayed on the element.</li> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul>  <div style="border: 1px solid #ccc; padding: 5px;"> <p><b>State</b></p> <table> <tr> <td>Selected Item</td> <td>\$100</td> <td>2</td> </tr> <tr> <td>Actual Item Count</td> <td>\$101</td> <td>10</td> </tr> <tr> <td>Visible Item Count</td> <td>\$102</td> <td>10</td> </tr> <tr> <td>Current Page</td> <td>\$103</td> <td>1</td> </tr> <tr> <td>Total Page</td> <td>\$104</td> <td>1</td> </tr> </table> <p>Auto Update Data: Yes</p> <p>Update Data: \$110.0</p> <p><b>Custom Data</b></p> <p>Data Start Addr.: \$3000</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>Input</b></p> <p>Link: Link2</p> <p>Type: Internal Memory</p> <p>Internal Parameter</p> <p>Link2</p> </div>	Selected Item	\$100	2	Actual Item Count	\$101	10	Visible Item Count	\$102	10	Current Page	\$103	1	Total Page	\$104	1
Selected Item	\$100	2															
Actual Item Count	\$101	10															
Visible Item Count	\$102	10															
Current Page	\$103	1															
Total Page	\$104	1															

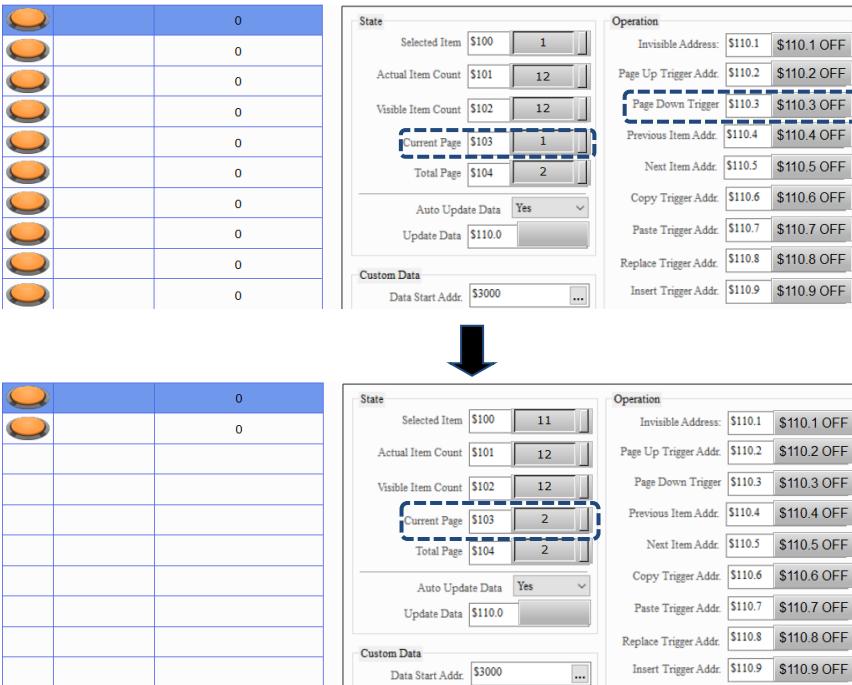
No.	Property	Function description															
(3)	Visible Item Count	<ul style="list-style-type: none"> <li>Visible Item Count is the value of the Actual Item Count minus the hidden item count.</li> </ul>  <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>State</b></p> <table> <tr><td>Selected Item</td><td>\$100</td><td>0</td></tr> <tr><td>Actual Item Count</td><td>\$101</td><td>10</td></tr> <tr><td>Visible Item Count</td><td>\$102</td><td>9</td></tr> <tr><td>Current Page</td><td>\$103</td><td>1</td></tr> <tr><td>Total Page</td><td>\$104</td><td>1</td></tr> </table> <p>Auto Update Data: Yes</p> <p>Update Data: \$110.0</p> <p>Custom Data: Data Start Addr: \$3000</p> </div> <ul style="list-style-type: none"> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>Input</b></p> <p>Link: Link2</p> <p>Type: Internal Memory Internal Parameter Link2</p> </div>	Selected Item	\$100	0	Actual Item Count	\$101	10	Visible Item Count	\$102	9	Current Page	\$103	1	Total Page	\$104	1
Selected Item	\$100	0															
Actual Item Count	\$101	10															
Visible Item Count	\$102	9															
Current Page	\$103	1															
Total Page	\$104	1															
(4)	Current Page	<ul style="list-style-type: none"> <li>When the value of Visible Item Count is greater than Items per Page, the data will be shown on different pages. And the value of Current Page is the currently displaying page of the element.</li> </ul>  <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>Items per Page</b> 10</p> <p><b>State</b></p> <table> <tr><td>Selected Item</td><td>\$100</td><td>11</td></tr> <tr><td>Actual Item Count</td><td>\$101</td><td>12</td></tr> <tr><td>Visible Item Count</td><td>\$102</td><td>12</td></tr> <tr><td>Current Page</td><td>\$103</td><td>2</td></tr> <tr><td>Total Page</td><td>\$104</td><td>2</td></tr> </table> <p>Auto Update Data: Yes</p> <p>Update Data: \$110.0</p> <p>Custom Data: Data Start Addr: \$3000</p> </div> <ul style="list-style-type: none"> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>Input</b></p> <p>Link: Link2</p> <p>Type: Internal Memory Internal Parameter Link2</p> </div>	Selected Item	\$100	11	Actual Item Count	\$101	12	Visible Item Count	\$102	12	Current Page	\$103	2	Total Page	\$104	2
Selected Item	\$100	11															
Actual Item Count	\$101	12															
Visible Item Count	\$102	12															
Current Page	\$103	2															
Total Page	\$104	2															

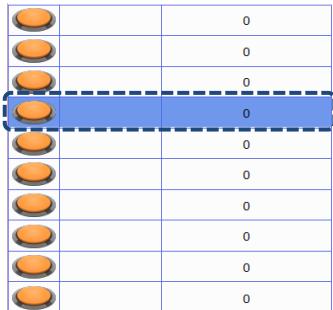
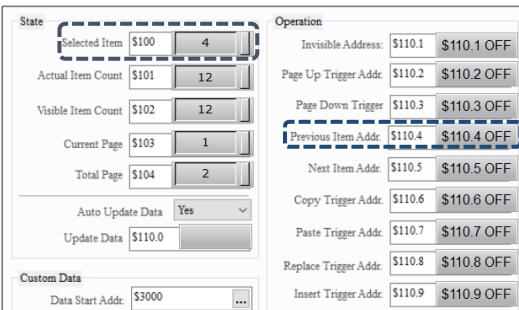
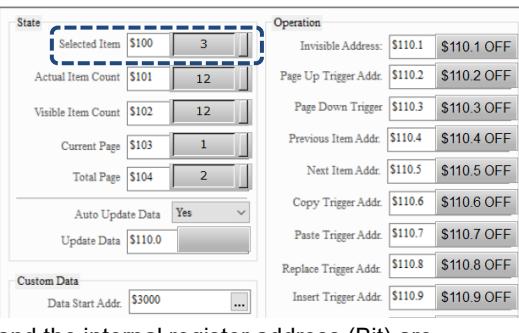
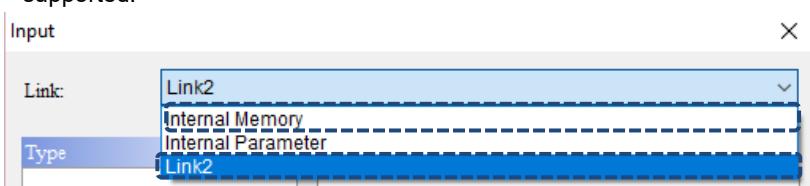
19

No.	Property	Function description
(5)	Total Page	<ul style="list-style-type: none"> <li>The total number of pages used to display the visible items on the element.</li> </ul>  
		<ul style="list-style-type: none"> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul> 
(6)	Auto Update Data	If you select Yes, the element automatically updates the data; if you select No, you need to trigger the Update Data bit to update the element display.
		
(7)	Update Data	When Auto Update Data is No, the currently displayed content of the element is updated only when you trigger the Update Data bit to On.
(8)	Custom Data	<ul style="list-style-type: none"> <li>Set the Data Start Addr., Data Offset, and Data Length.</li> <li>You can customize another data block and the data changes as you edit the element.</li> <li>Data Start Addr.: the controller address (Word) and the internal register address (Word) are supported.</li> </ul> 
(9)	Max item count	<ul style="list-style-type: none"> <li>Max item count is for setting the maximum number of items that can be added to the GridBox.</li> <li>The maximum setting for Max item count is 1000.</li> </ul> 

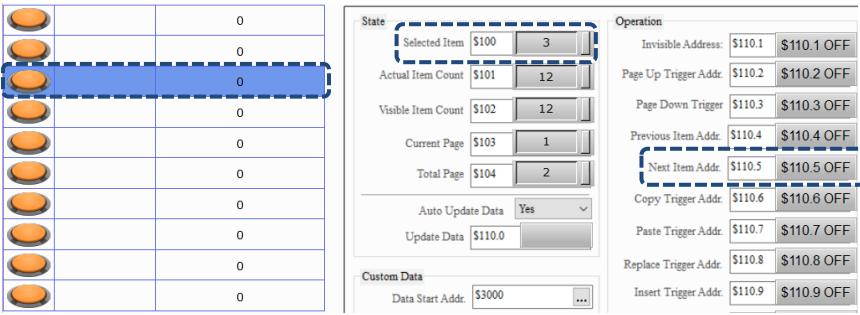
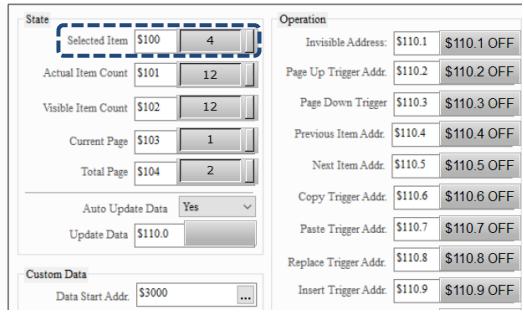
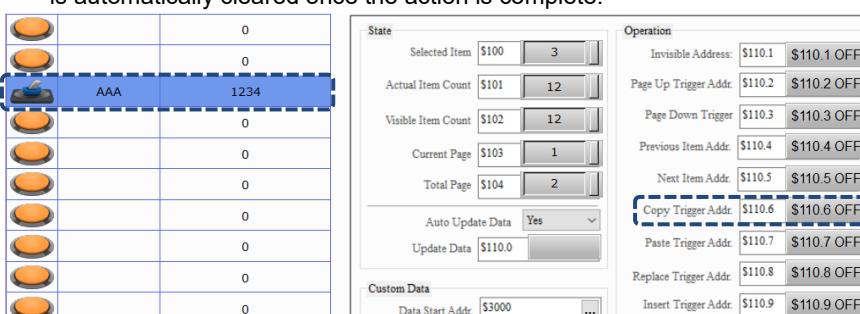
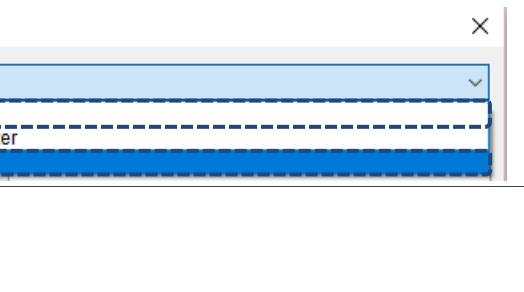
No.	Property	Function description
(10)	Invisible Address	<ul style="list-style-type: none"> <li>When the Invisible Address is On, the GridBox element is hidden.</li> </ul>  <p style="text-align: center;">Element is hidden</p> <ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul> 
(11)	Page Up Trigger Addr.	<ul style="list-style-type: none"> <li>When the Page Up Trigger Addr. bit is On, the element display switches to the previous page and this bit is automatically cleared once the action is complete.</li> <li>When the Page Up Trigger Addr. bit is not On, the Current Page shows 2; when it is On, the Current Page shows 1.</li> </ul>   <ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul> 

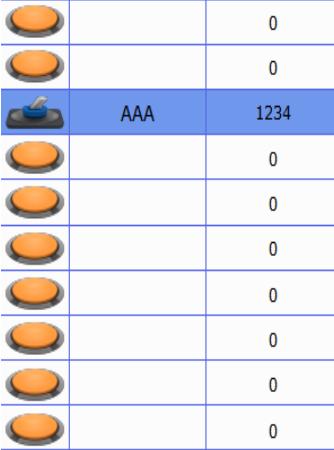
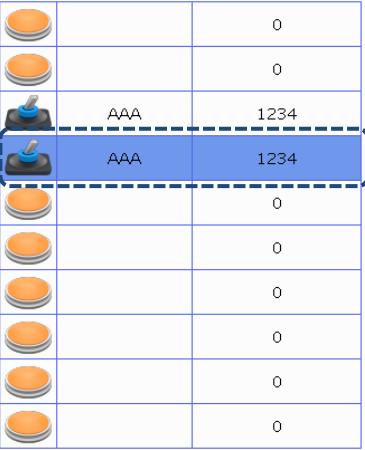
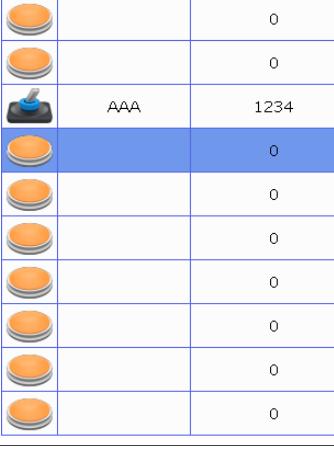
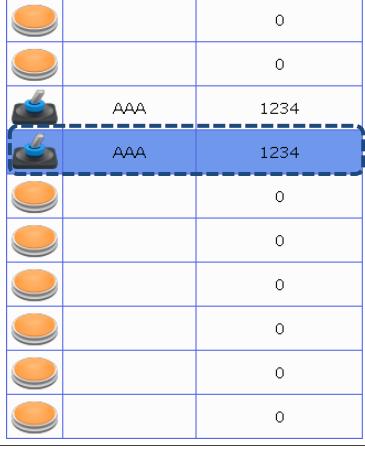
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No.	Property	Function description
(12)	Page Down Trigger	<p>■ When the Page Down Trigger bit is On, the element display switches to the next page and this bit is automatically cleared once the action is complete.</p> <p>■ When the Page Down Trigger bit is not On, the Current Page shows 1; when it is On, the Current Page shows 2.</p>  <p>The screenshot displays two configurations of a page down trigger. In the top configuration, the 'Current Page' register (\$103) is set to 1, indicating the first page. In the bottom configuration, the 'Current Page' register is set to 2, indicating the second page. A large downward arrow is positioned between the two configurations, indicating the transition from the first state to the second state.</p>

No.	Property	Function description
(13)	Previous Item Addr.	<p>■ When the Previous Item Addr. bit is On, the previous item on the element is selected and this bit is automatically cleared once the action is complete.</p> <p>■ When the Previous Item Addr. bit is not On, the Selected Item shows 4; when it is On, the Selected Item shows 3.</p>    <p>■ The controller address (Bit) and the internal register address (Bit) are supported.</p> 

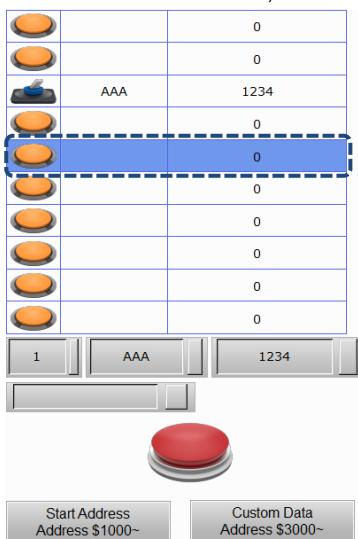
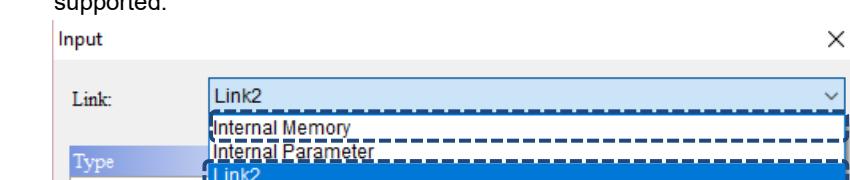
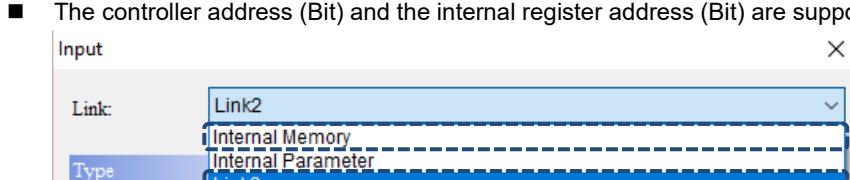
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No.	Property	Function description
(14)	Next Item Addr.	<ul style="list-style-type: none"> <li>When the Next Item Addr. bit is On, the next item on the element is selected and this bit is automatically cleared once the action is complete.</li> <li>When the Next Item Addr. bit is not On, the Selected Item shows 3; when it is On, the Selected Item shows 4.</li> </ul>  <p>↓</p> 
(15)	Copy Trigger Addr.	<ul style="list-style-type: none"> <li>When the Copy Trigger Addr. bit is On, the current item is copied and this bit is automatically cleared once the action is complete.</li> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>  <p>↓</p> 

No.	Property	Function description	
(16)	Paste Trigger Addr.	<ul style="list-style-type: none"> <li>When the Paste Trigger Addr. bit is On, the copied item is pasted and this bit is automatically cleared once the action is complete.</li> <li>The copied item is pasted after the selected row.</li> </ul> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Before</p>  </div> <div style="text-align: center;"> <p>After</p>  </div> </div>	
(17)	Replace Trigger Addr.	<ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; width: fit-content;"> <p>Input</p> <div style="border: 1px solid #ccc; padding: 2px; margin-bottom: 2px;">Link:</div> <div style="border: 1px solid #ccc; padding: 2px; margin-bottom: 2px;">Internal Memory</div> <div style="border: 1px solid #ccc; padding: 2px; margin-bottom: 2px;">Internal Parameter</div> <div style="border: 1px solid #ccc; padding: 2px; background-color: #0070C0; color: white; font-weight: bold;">Link2</div> </div>	<ul style="list-style-type: none"> <li>When the Replace Trigger Addr. bit is On, the copied item replaces the selected item and this bit is automatically cleared once the action is complete.</li> <li>The copied item appears on the selected row.</li> </ul> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Before</p>  </div> <div style="text-align: center;"> <p>After</p>  </div> </div>

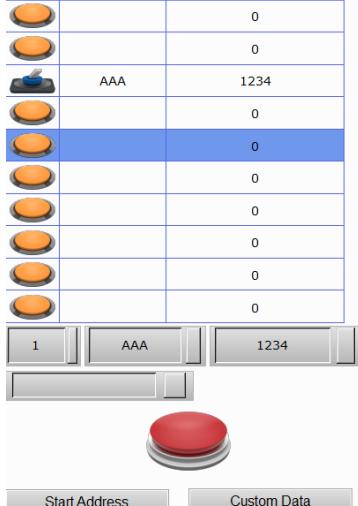
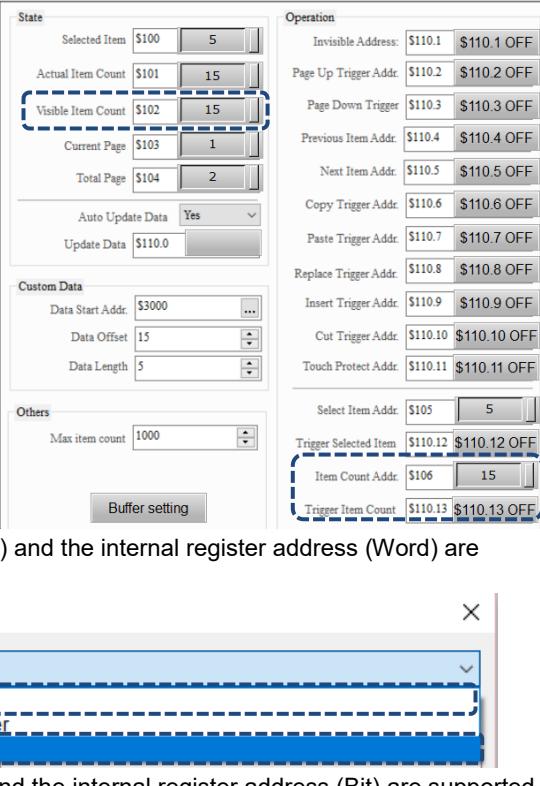
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No.	Property	Function description																																																													
(18)	Insert Trigger Addr.	<ul style="list-style-type: none"> <li>When the Insert Trigger Addr. bit is On, a new blank item is inserted and this bit is automatically cleared once the action is complete.</li> <li>The blank item is inserted after the selected row.</li> </ul> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Before</p> <table border="1" style="margin-top: 10px; border-collapse: collapse;"> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> </table> </div> <div style="text-align: center;"> <p>After</p> <table border="1" style="margin-top: 10px; border-collapse: collapse;"> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> </table> </div> </div>				0			0		AAA	1234		AAA	1234		AAA	1234			0			0			0			0			0			0			0		AAA	1234		AAA	1234		AAA	1234			0			0			0			0			0
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(19)	Cut Trigger Addr.	<ul style="list-style-type: none"> <li>When the Cut Trigger Addr. bit is On, the current item is deleted and this bit is automatically cleared once the action is complete.</li> </ul> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Before</p> <table border="1" style="margin-top: 10px; border-collapse: collapse;"> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> </table> </div> <div style="text-align: center;"> <p>After</p> <table border="1" style="margin-top: 10px; border-collapse: collapse;"> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td>AAA</td><td>1234</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> <tr><td></td><td></td><td>0</td></tr> </table> </div> </div>				0			0		AAA	1234		AAA	1234		AAA	1234			0			0			0			0			0			0			0		AAA	1234		AAA	1234			0			0			0			0			0			0
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(20)	Touch Protect Addr.	<ul style="list-style-type: none"> <li>When the Touch Protect Addr. bit is On, you cannot click the GridBox element.</li> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Input</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <b>Link:</b> Link2  <span style="border-bottom: 2px dashed #ccc; padding: 0 5px;">Internal Memory</span>  <span style="border-bottom: 2px dashed #ccc; padding: 0 5px;">Internal Parameter</span>  <b>Type:</b> Link2         </div> </div> </div>																																																													

No.	Property	Function description
(21)	Select Item Addr.	<p>■ Use Select Item Addr. to specify the item to select. Then, set the Trigger Selected Item to On, and the specified item is selected.</p> 
	Trigger Selected Item	<p>■ The controller address (Word) and the internal register address (Word) are supported.</p>  <p>■ The controller address (Bit) and the internal register address (Bit) are supported.</p> 

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No.	Property	Function description
(22)	ItemCount Addr.	<p>■ Use the Item Count Addr. to specify the visible items. Then, set the Trigger Item Count to On, and the element changes the value of Visible Item Count.</p>  <p>The screenshot shows a list of items with their addresses. The first item has address \$100 and value 5. The second item has address \$101 and value 15. The third item has address \$102 and value 15. The fourth item has address \$103 and value 1. The fifth item has address \$104 and value 2. Below the list is a red button.</p>
	Trigger Item Count	<p>■ The controller address (Word) and the internal register address (Word) are supported.</p>  <p>The screenshot shows the 'Input' configuration for Link2. The 'Link' dropdown is set to Link2. The 'Type' dropdown is set to Link2, with other options like Internal Memory and Internal Parameter also visible.</p> <p>■ The controller address (Bit) and the internal register address (Bit) are supported.</p>  <p>The screenshot shows the 'Input' configuration for Link2. The 'Link' dropdown is set to Link2. The 'Type' dropdown is set to Link2, with other options like Internal Memory and Internal Parameter also visible.</p>

## ■ Details-2

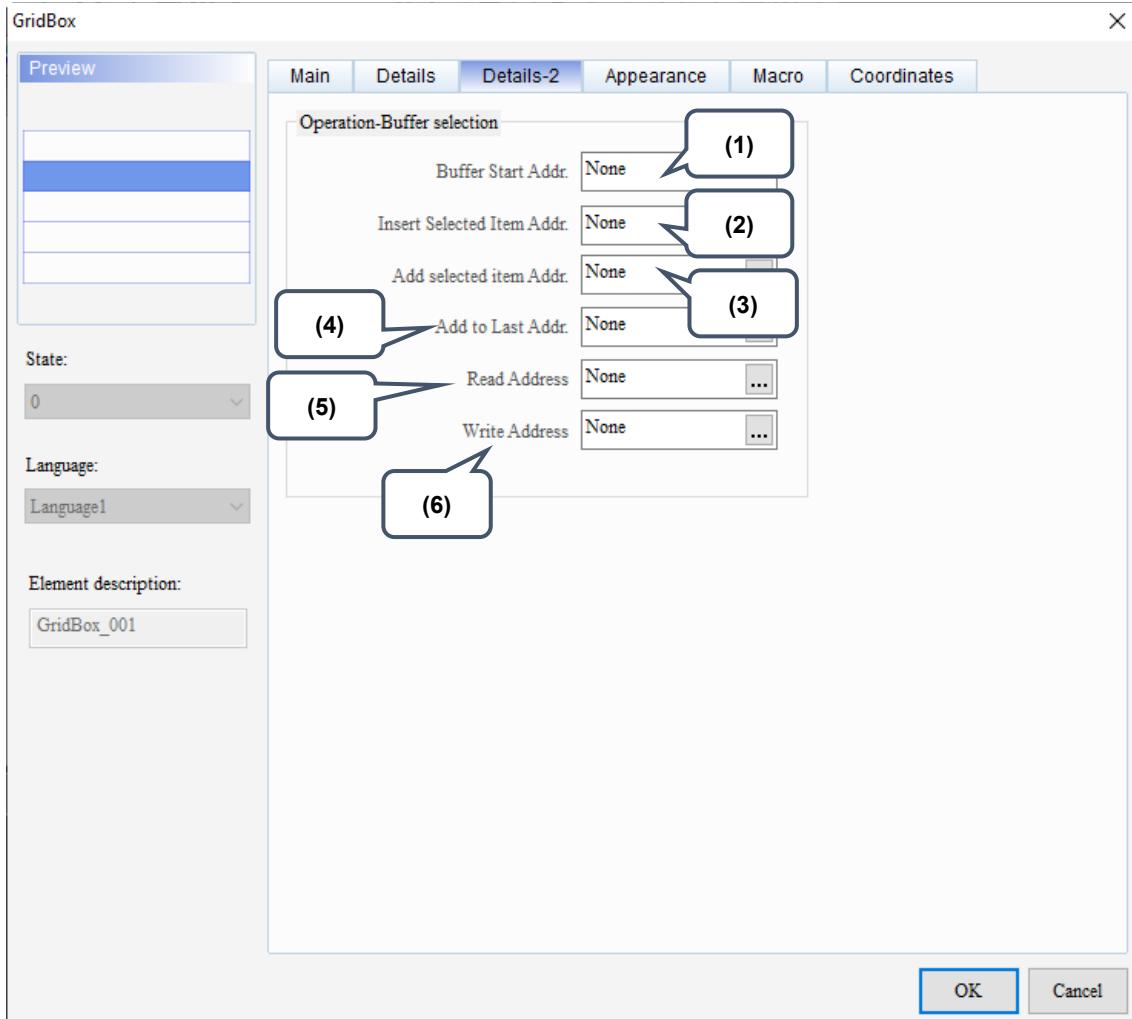


Figure 19.4.4 Details-2 property page for the GridBox element

No.	Property	Function description
(1)	Buffer Start Addr.	<ul style="list-style-type: none"> <li>This is the start address where the element temporarily stores data. The data in the buffer can be inserted, added, and written into the selected item, and the data in the selected item can also be read to the buffer.</li> <li>The controller address (Word) and the internal register address (Word) are supported.</li> </ul> <p><b>Input</b></p> <p>Link: Link2</p> <p>Type: Internal Memory</p> <p>Internal Parameter</p> <p>Link2</p>

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No.	Property	Function description																																																																			
(2)	Insert Selected Item Addr.	<ul style="list-style-type: none"> <li>When the Insert Selected Item Addr. bit is On, the Selected Item will be inserted from the Buffer Start Addr. plus the Item Addr. Offset. Then, the Actual Item Count increases by 1.</li> <li>If the Actual Item Count has reached the Max item count, the selected item cannot be inserted.</li> </ul> <table border="1"> <thead> <tr> <th colspan="3">Before</th> <th colspan="3">After</th> </tr> </thead> <tbody> <tr> <td></td><td>0</td><td></td> <td></td><td>0</td><td></td> </tr> <tr> <td></td><td>0</td><td></td> <td></td><td>0</td><td></td> </tr> <tr> <td></td><td>0</td><td></td> <td></td><td>ABC</td><td>123456789</td> </tr> <tr> <td></td><td>0</td><td></td> <td></td><td>0</td><td></td> </tr> <tr> <td>2</td><td>ABC</td><td>123456789</td> <td>2</td><td>ABC</td><td>123456789</td> </tr> </tbody> </table>		Before			After				0			0			0			0			0			ABC	123456789		0			0			0			0			0			0			0			0			0			0			0			0		2	ABC	123456789	2	ABC	123456789
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(3)	Add selected item Addr.	<ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul> <p>Input</p>																																																																			

No.	Property	Function description																																										
(4)	Add to Last Addr.	<ul style="list-style-type: none"> <li>When the Add to Last Addr. bit is On, the Selected Item will be inserted to the last item from the Buffer Start Addr. plus the Item Addr. Offset. Then, the Actual Item Count increases by 1.</li> <li>If the Actual Item Count has reached the Max item count, the selected item cannot be inserted.</li> </ul> <table border="1"> <thead> <tr> <th colspan="3">Before</th> <th colspan="3">After</th> </tr> </thead> <tbody> <tr> <td></td><td></td><td>0</td> <td></td><td></td><td>0</td> </tr> <tr> <td></td><td></td><td>0</td> <td></td><td></td><td>0</td> </tr> <tr> <td></td><td></td><td>0</td> <td></td><td></td><td>0</td> </tr> <tr> <td></td><td></td><td>0</td> <td></td><td></td><td>0</td> </tr> <tr> <td></td><td></td><td>0</td> <td></td><td>ABC</td><td>123456789</td> </tr> <tr> <td>0</td><td></td><td>0</td> <td>2</td><td>ABC</td><td>123456789</td> </tr> </tbody> </table>	Before			After					0			0			0			0			0			0			0			0			0		ABC	123456789	0		0	2	ABC	123456789
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(5)	Read Address	<ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul> <p>Input</p> <div style="border: 1px solid #ccc; padding: 5px; width: fit-content;"> <p>Link: Link2</p> <p>Type: Internal Memory</p> <p>Link2</p> </div> <ul style="list-style-type: none"> <li>When the Read Address bit is On, the element saves the content of the Selected Item to the Buffer Start Addr. without changing the element content.</li> </ul> <table border="1"> <thead> <tr> <th></th> <th></th> <th>0</th> </tr> </thead> <tbody> <tr> <th></th> <th></th> <th>0</th> </tr> <tr> <th></th> <th>DELTA</th> <th>8888</th> </tr> <tr> <th></th> <th></th> <th>0</th> </tr> <tr> <th></th> <th>TTT</th> <th>9999</th> </tr> <tr> <td>1</td> <td>DELTA</td> <td>8888</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul> <p>Input</p> <div style="border: 1px solid #ccc; padding: 5px; width: fit-content;"> <p>Link: Link2</p> <p>Type: Internal Memory</p> <p>Link2</p> </div>			0			0		DELTA	8888			0		TTT	9999	1	DELTA	8888																								
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No.	Property	Function description																																						
(6)	Write Address	<ul style="list-style-type: none"> <li>When the Write Address bit is On, the Selected Item will be written from the Buffer Start Addr. plus the Item Addr. Offset.</li> </ul>																																						
		<table border="1"> <thead> <tr> <th colspan="3">Before</th> </tr> </thead> <tbody> <tr> <td></td><td></td><td>0</td></tr> <tr> <td>2</td><td>ABC</td><td>123456789</td></tr> </tbody> </table>			Before					0			0			0			0			0			0			0			0			0	2	ABC	123456789			
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		<ul style="list-style-type: none"> <li>The controller address (Bit) and the internal register address (Bit) are supported.</li> </ul>																																						

## ■ Appearance

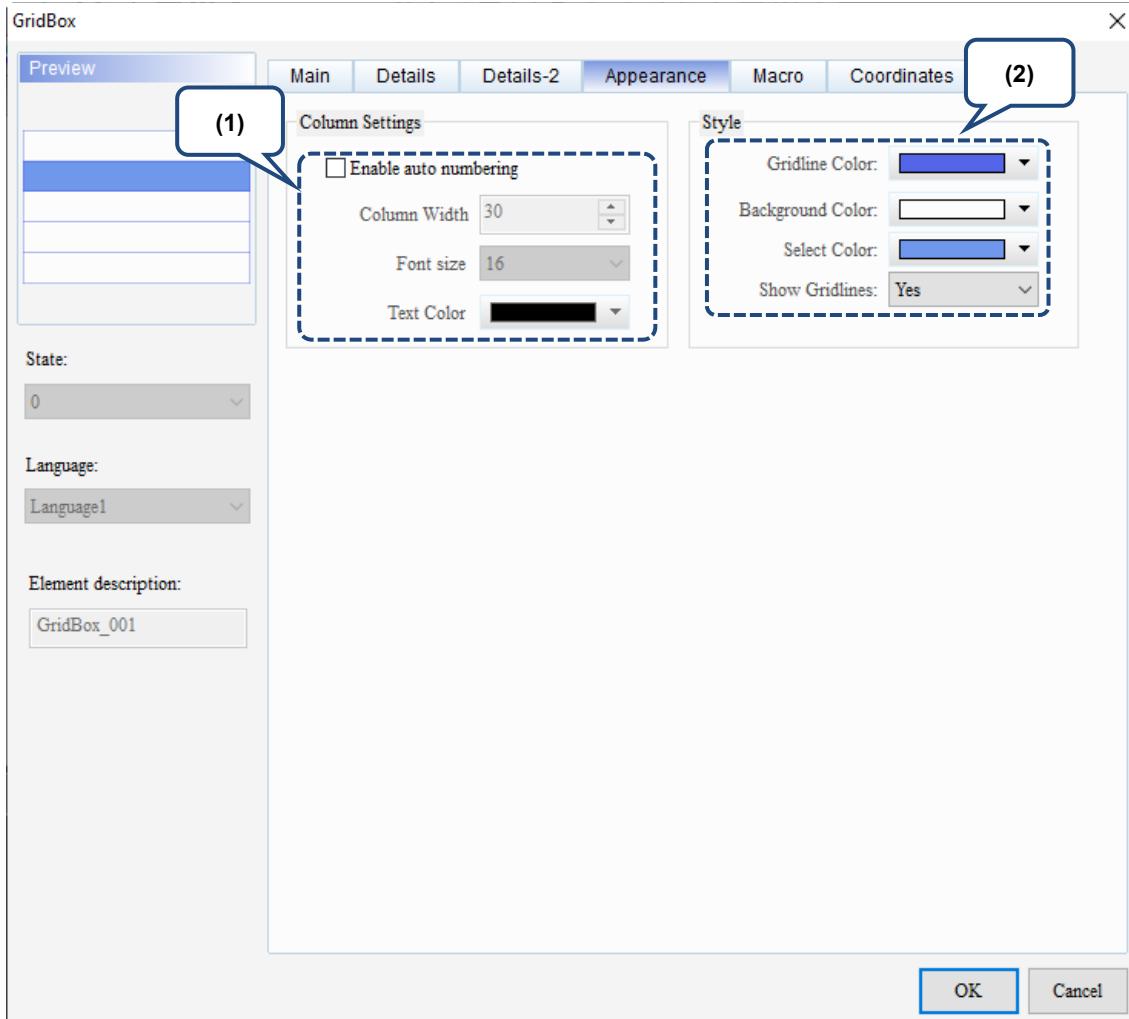
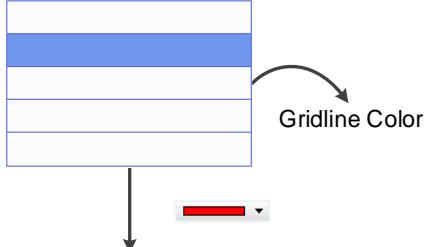
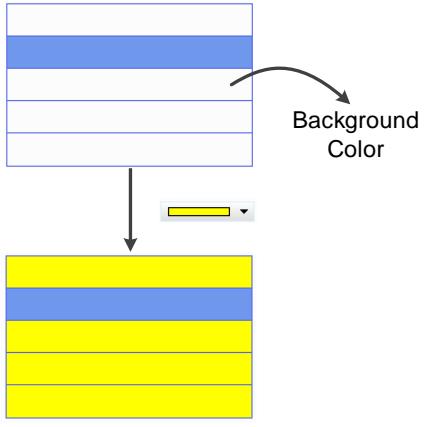
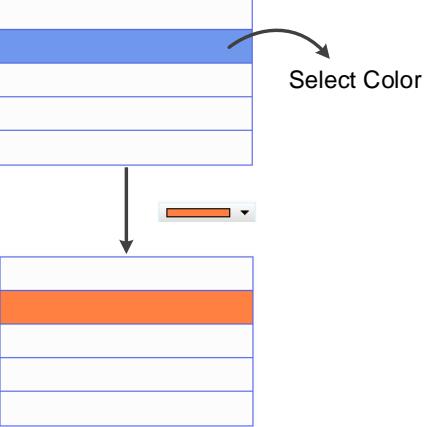
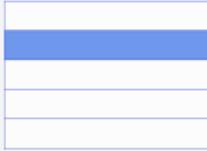
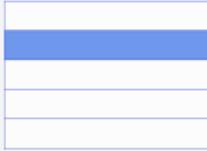
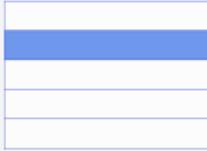


Figure 19.4.5 Appearance property page for the GridBox element

No.	Property	Function description					
(1)	Column Settings	<ul style="list-style-type: none"> <li>Select the check box for <b>Enable auto numbering</b> and set Column Width, Font size, and Text Color.</li> <li>The Enable auto numbering function is for setting whether to display the auto numbering, the width of the auto numbering column, and the font color and size of the auto numbering.</li> <li>Display auto numbering</li> </ul> <table border="1"> <tr> <td><b>Enable auto numbering not selected</b></td> <td><b>Enable auto numbering selected</b></td> </tr> <tr> <td></td> <td></td> </tr> </table> <ul style="list-style-type: none"> <li>Column width: set the width of the auto numbering column and the maximum setting is 65535.</li> </ul>	<b>Enable auto numbering not selected</b>	<b>Enable auto numbering selected</b>			
<b>Enable auto numbering not selected</b>	<b>Enable auto numbering selected</b>						

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No.	Property	Function description				
(2)	Style	<p>The Style function is for setting the color and gridline of the element, which include the Gridline Color, Background Color, Select Color, and Show Gridlines.</p> <ul style="list-style-type: none"> <li>■ Gridline Color</li>    <li>■ Background Color</li>    <li>■ Select Color</li>    <li>■ Show Gridlines</li> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">Show Gridlines is set to Yes</td> <td style="text-align: center; padding: 5px;">Show Gridlines is set to No</td> </tr> <tr> <td style="text-align: center; padding: 10px;">  </td> <td style="text-align: center; padding: 10px;">  </td> </tr> </table> </ul>	Show Gridlines is set to Yes	Show Gridlines is set to No		
Show Gridlines is set to Yes	Show Gridlines is set to No					
						

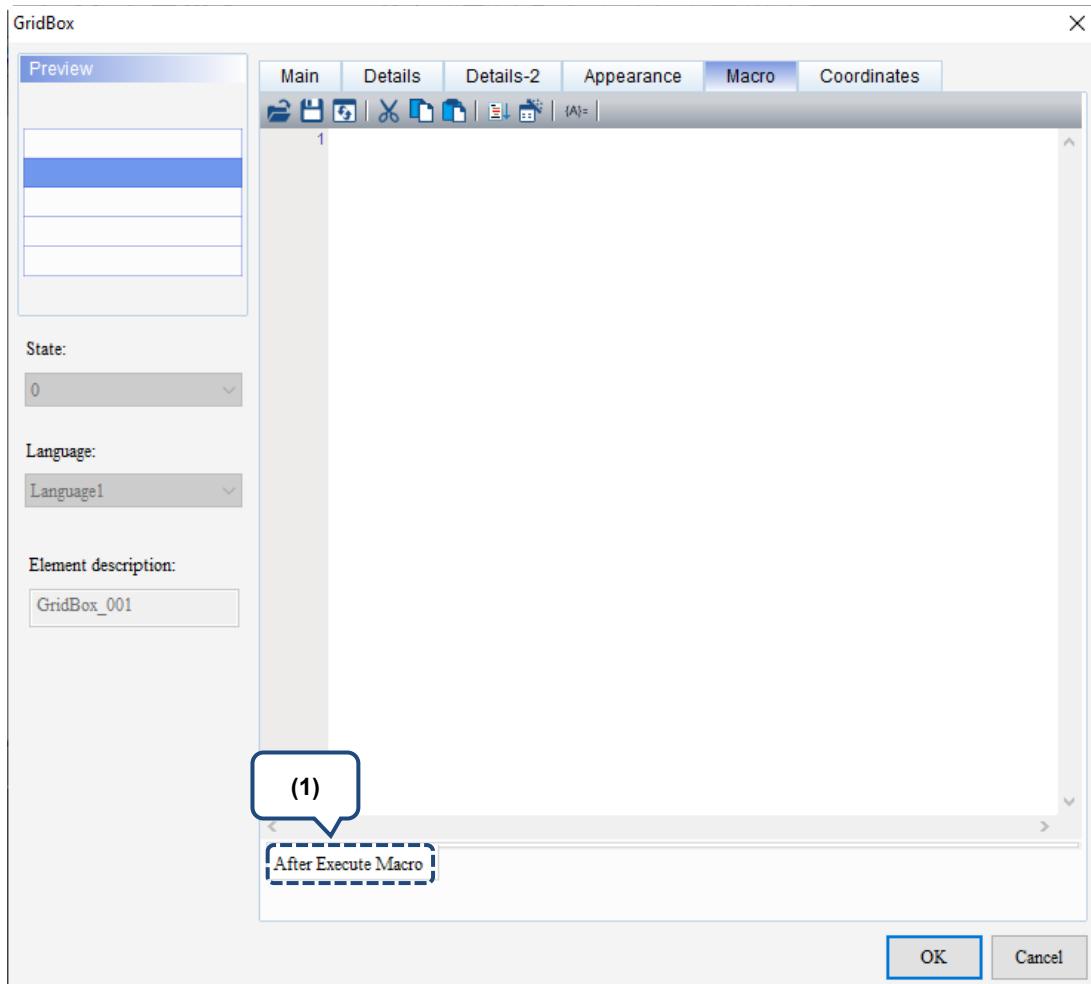
**■ Macro**

Figure 19.4.6 Macro property page for the GridBox element

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No.	Property	Function description
(1)	After Execute Macro	<p>When you press the button element, the HMI will first execute the action of the button, and then execute the macro commands. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.</p> <p>Flowchart of After Execute Macro:</p> <pre> graph TD     A1[Maintained Button] -- "Trigger to On / Enter the value" --&gt; B1[Maintained Button]     B1 -- "Button is On and the value is written" --&gt; C1[After Execute Macro]     C1 -- "Trigger to Off / Enter the value" --&gt; D1[Maintained Button]     D1 -- "Button is Off and the value is written" --&gt; E1[After Execute Macro]     E1 -- "Next trigger" --&gt; A1     A2[Maintained Button] -- "Trigger to On / Enter the value" --&gt; B2[Maintained Button]     B2 -- "Button is On and the value is written" --&gt; C2[After Execute Macro]     C2 -- "Trigger to Off / Enter the value" --&gt; D2[Maintained Button]     D2 -- "Button is Off and the value is written" --&gt; E2[After Execute Macro]     E2 -- "Next trigger" --&gt; A2     A3[Maintained Button] -- "Trigger to On / Enter the value" --&gt; B3[Maintained Button]     B3 -- "Button is On and the value is written" --&gt; C3[After Execute Macro]     C3 -- "Trigger to Off / Enter the value" --&gt; D3[Maintained Button]     D3 -- "Button is Off and the value is written" --&gt; E3[After Execute Macro]     E3 -- "Next trigger" --&gt; A3   </pre> <p>The flowchart illustrates the execution of an 'After Execute Macro' for a maintained button. It shows three cycles of the process:</p> <ul style="list-style-type: none"> <li><b>First Cycle:</b> The button is triggered to 'On'. Its value is written as 0. An 'After Execute Macro' step is triggered. The button is then triggered to 'Off'. Its value is written as 90.</li> <li><b>Second Cycle:</b> The button is triggered to 'On'. Its value is written as 50. An 'After Execute Macro' step is triggered. The button is then triggered to 'Off'. Its value is written as 90.</li> <li><b>Third Cycle:</b> The button is triggered to 'On'. Its value is written as 0. An 'After Execute Macro' step is triggered. The button is then triggered to 'Off'. Its value is written as 90.</li> </ul> <p>Each cycle starts with a 'Trigger to On / Enter the value' event, followed by the button being 'On' and its value being written. Then, it triggers to 'Off / Enter the value', followed by the button being 'Off' and its value being written. Finally, the 'Next trigger' leads back to the start of the next cycle.</p>

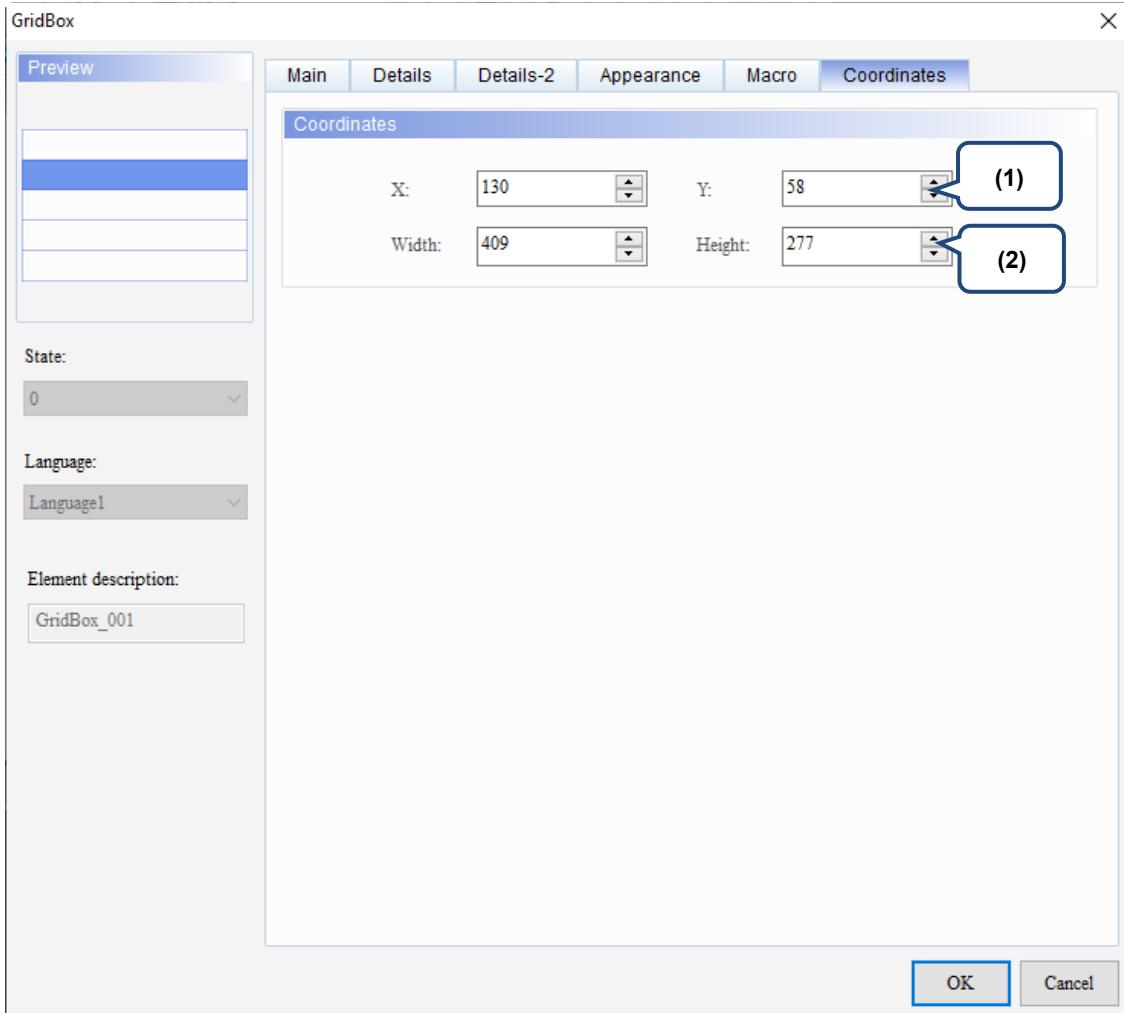
**■ Coordinates**

Figure 19.4.7 Coordinates property page for the GridBox element

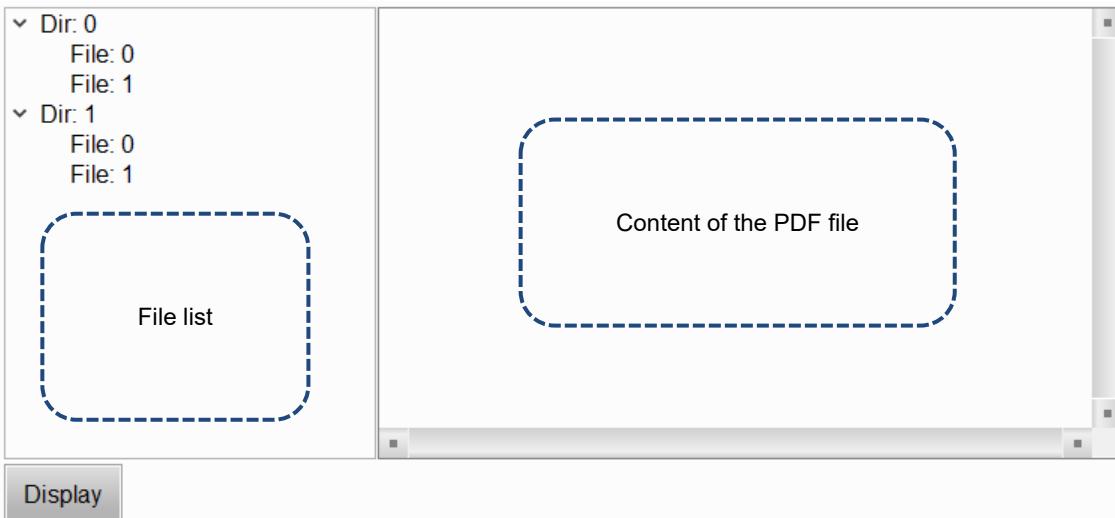
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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## 19.5 PDF Viewer

You can use the PDF Viewer function to read PDF files on the HMI by saving the PDF files in an external storage device and inserting it to the HMI. With this feature, you can view the operation steps without a PC or printouts, which is more convenient and efficient.

The PDF Viewer is divided into two sections: the file list is on the left and the content of the PDF file is displayed on the right.



PDF files are displayed on the HMI from the external storage device, so if the USB Disk or SD Card read and write speed is too slow or the PDF file size is too big, the displaying speed of the PDF file will be affected.

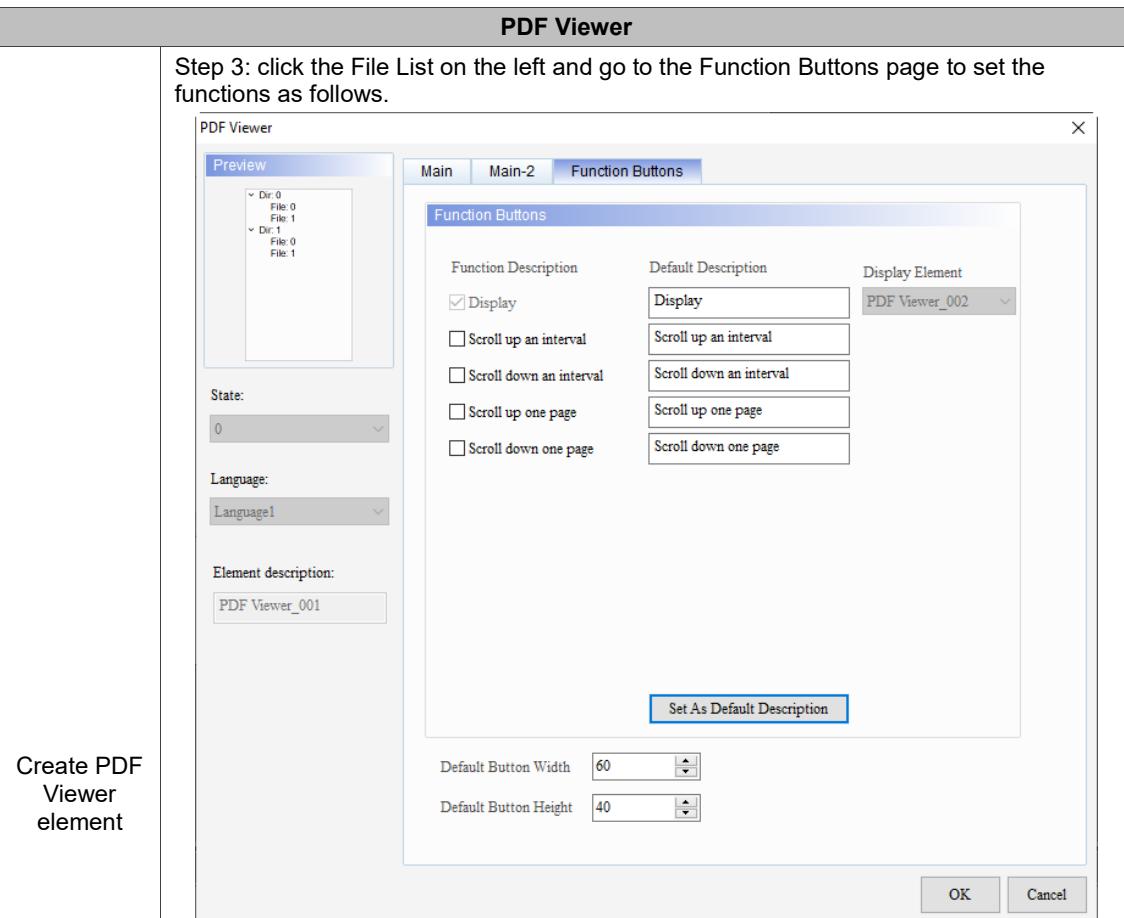
Refer to Table 19.5.1 for the PDF Viewer example.

Table 19.5.1 PDF Viewer example

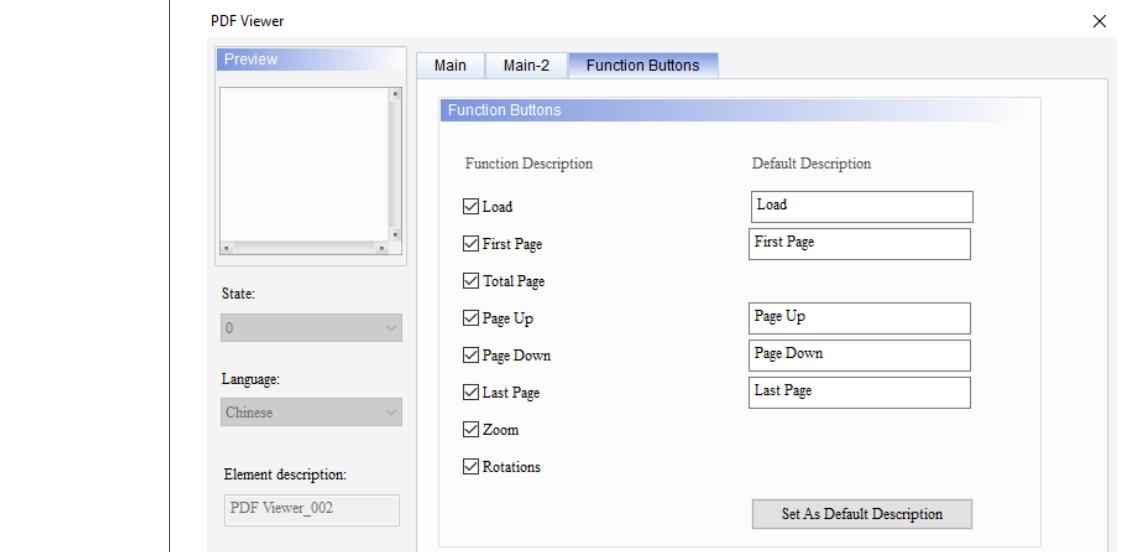
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PDF Viewer	
Create PDF Viewer element	<p>Step 1: create a PDF Viewer element.</p> <p>Step 2: click the PDF Viewer element, and then right click and select UnGroup.</p>

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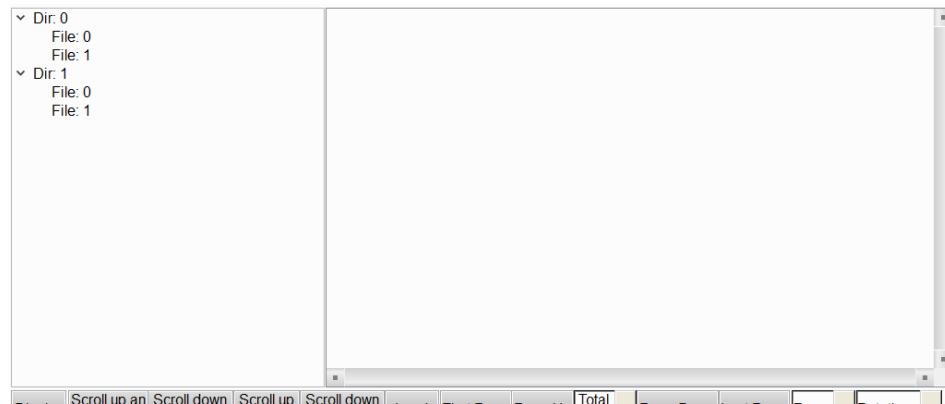


Step 4: click the display content on the right and go to the Function Buttons page to set the functions as follows.



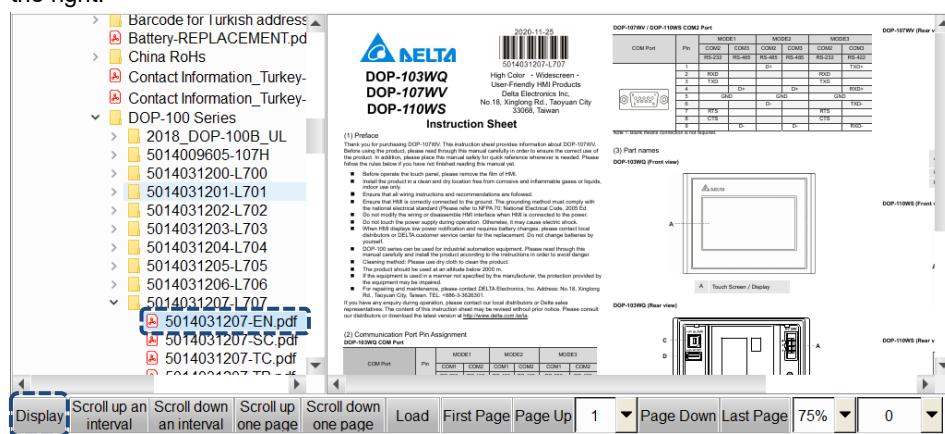
**PDF Viewer**

Step 5: when the settings are complete, the editing screen is as follows.



Create PDF  
Viewer  
element

Step 6: compile the screen prior to performing off-line simulation. Select the PDF file to display, press **Display**, and then you can see the content of the PDF file displayed on the right.



The following will explain the properties of the File List on the left and the display content on the right.

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When you double-click the File List on the left, the property page is shown as follows.

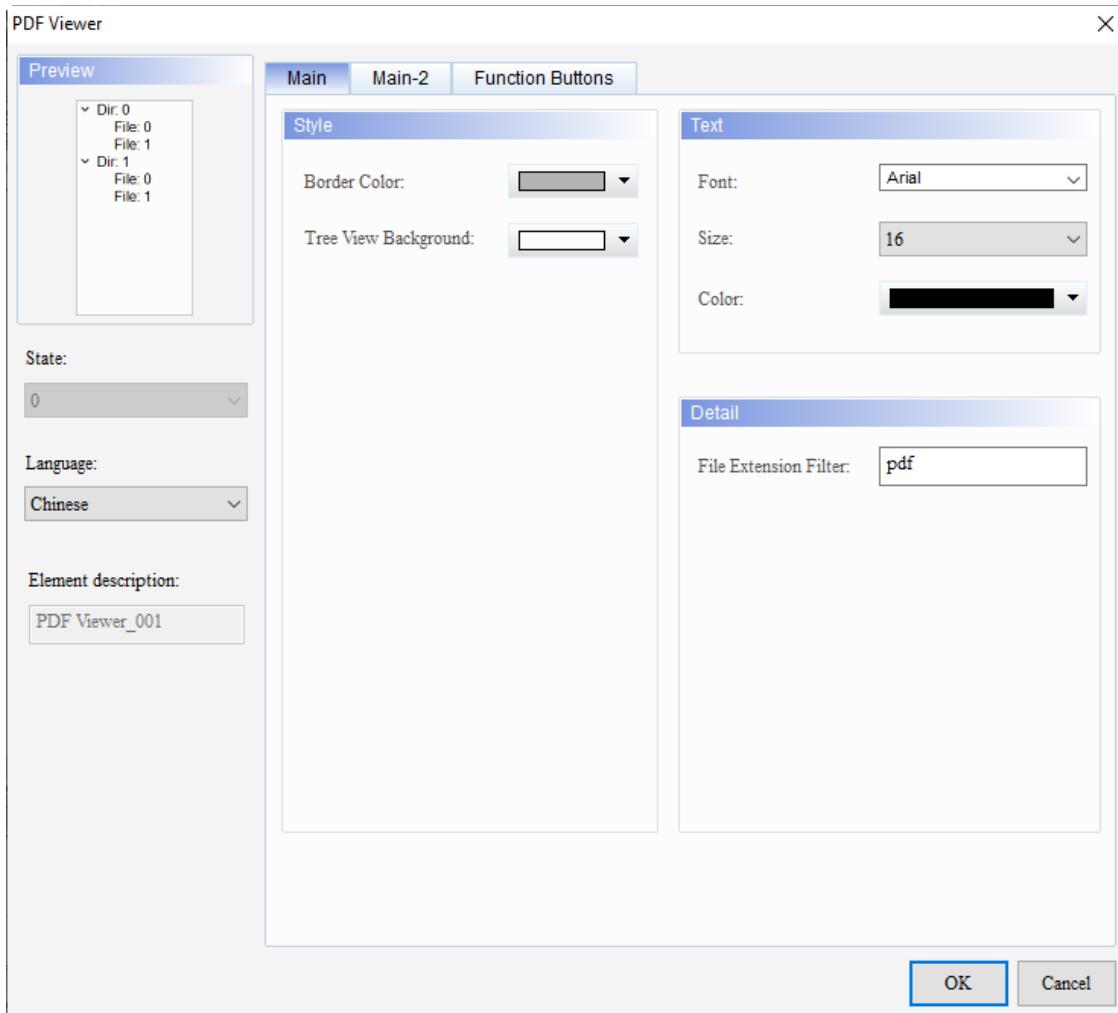


Figure 19.5.1 Properties of the PDF Viewer (Left side)

Table 19.5.2 Function page of the PDF Viewer element (Left side)

PDF Viewer (File List on the left)	
Function page	Description
Main	Set the Border Color, Tree View Background, Font, Size, and Color. Set the File Extension Filter.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Function Buttons	Select the check boxes for <b>Scroll up an interval</b> , <b>Scroll down an interval</b> , <b>Scroll up one page</b> , and <b>Scroll down one page</b> . Press <b>Set As Default Description</b> . Set the width and height of the buttons.

## ■ Main

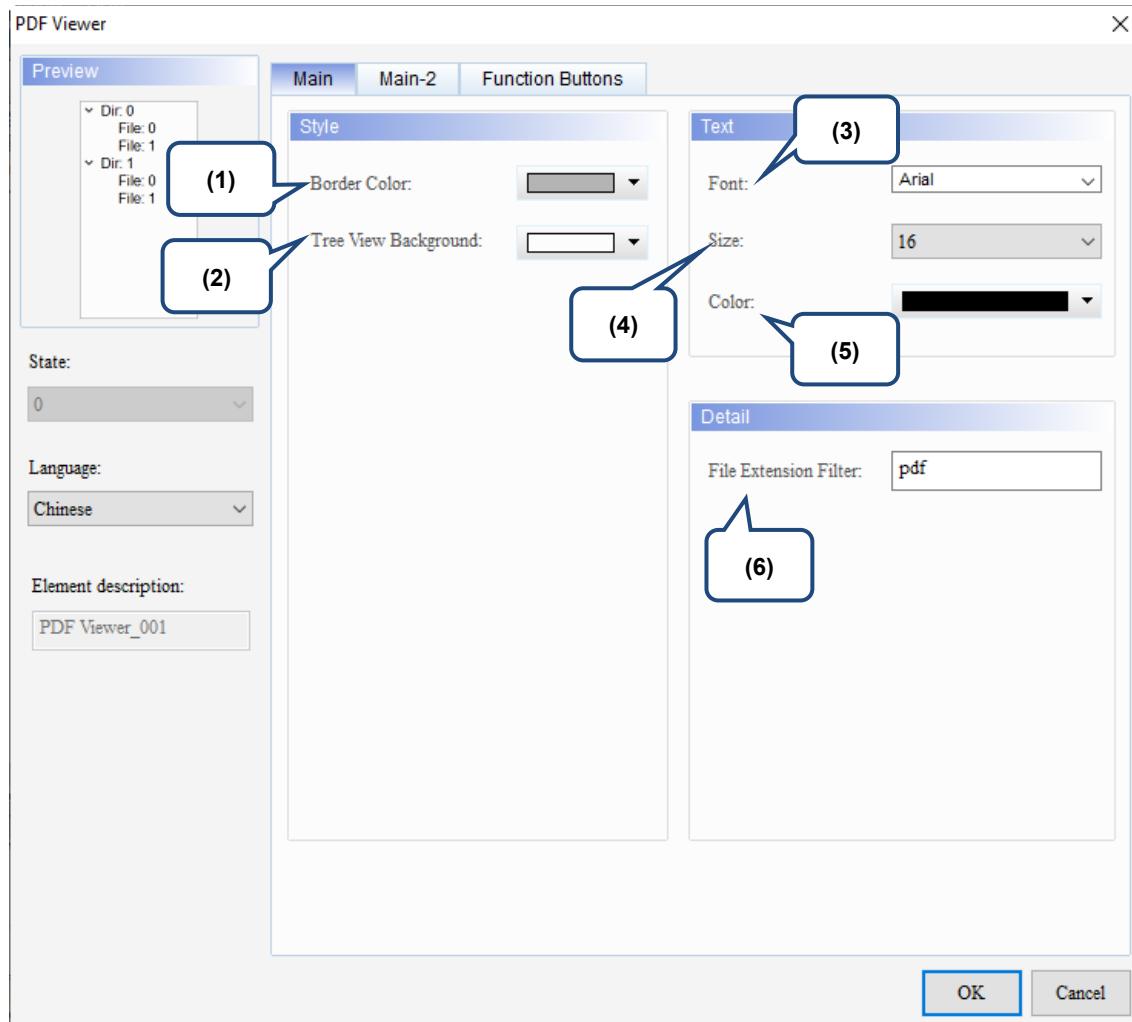
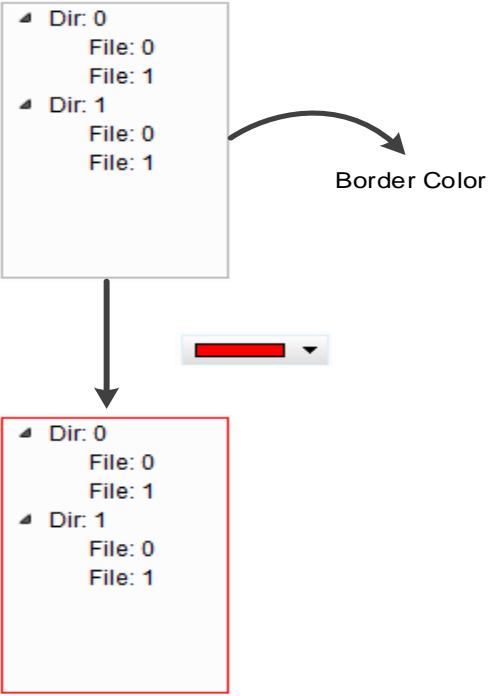
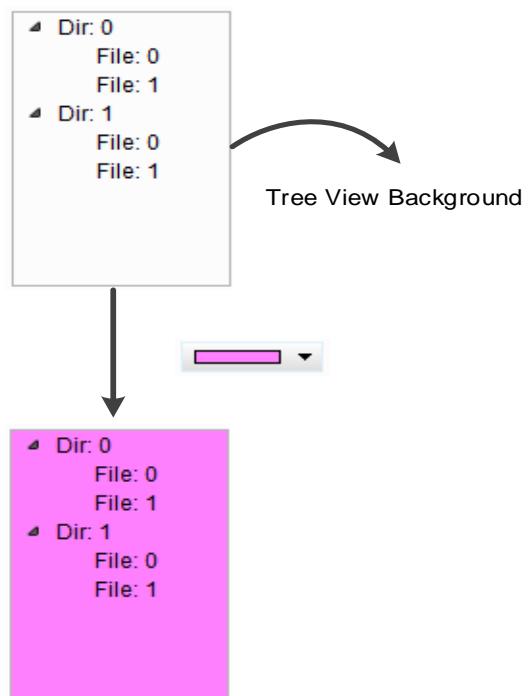


Figure 19.5.2 Main property page for the PDF Viewer element (Left side)

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No.	Property	Function description
(1)	Border Color	<p>Set the border color of the file list on the left.</p> 
(2)	Tree View Background	<p>Set the Tree View Background color of the file list on the left.</p> 
(3)	Font	Set the text font for the file list on the left.
(4)	Size	Set the text size for the file list on the left.
(5)	Color	Set the text color for the file list on the left.
(6)	File Extension Filter	Set the file extension of the files to view. The default is "pdf". Setting the File Extension Filter to "pdf" means only files in pdf format are displayed.

## ■ Main-2

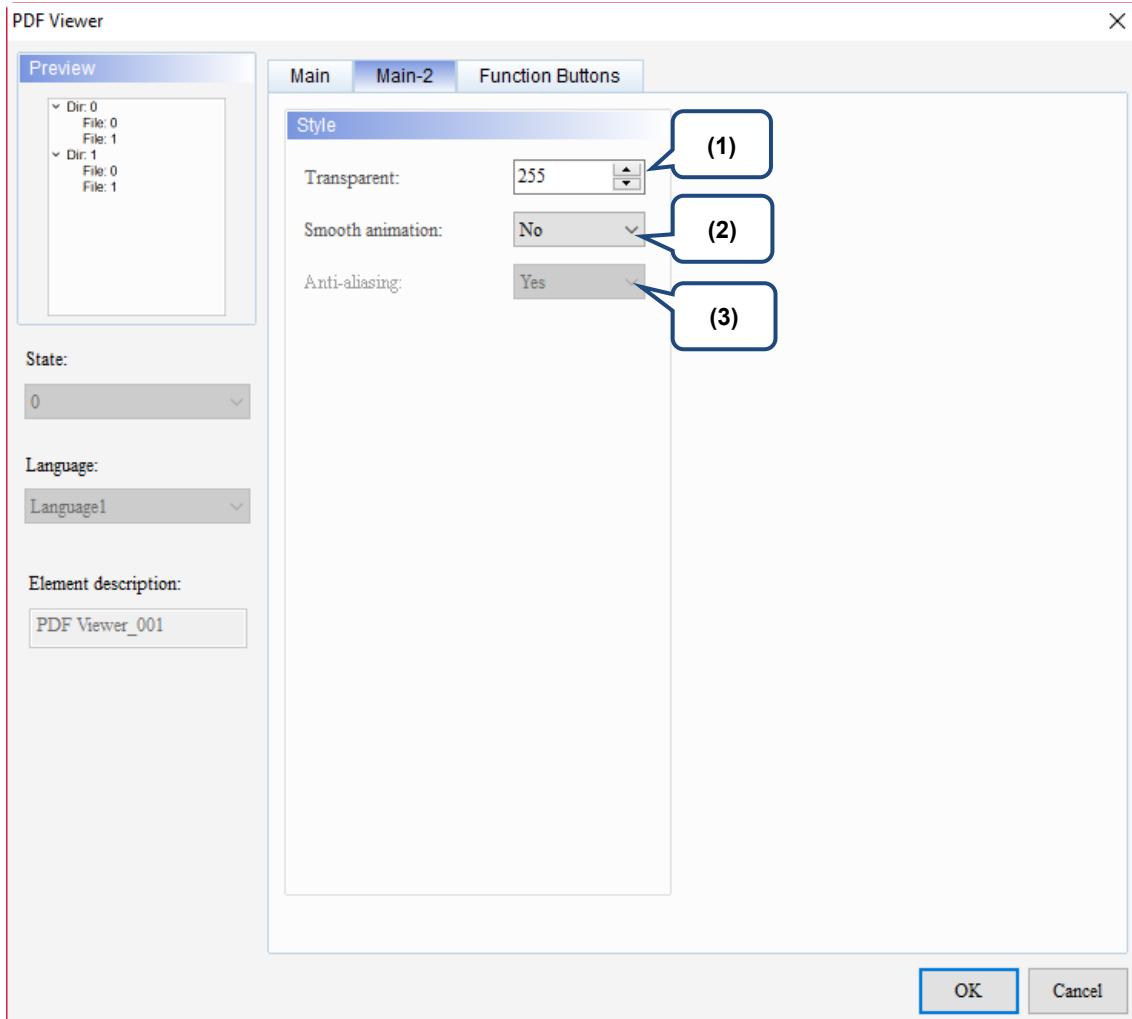


Figure 19.5.3 Main-2 property page for the PDF Viewer element (Left side)

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When you activate the Smooth animation function, there is a sliding effect when the file list is expanded or collapsed.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Function Buttons

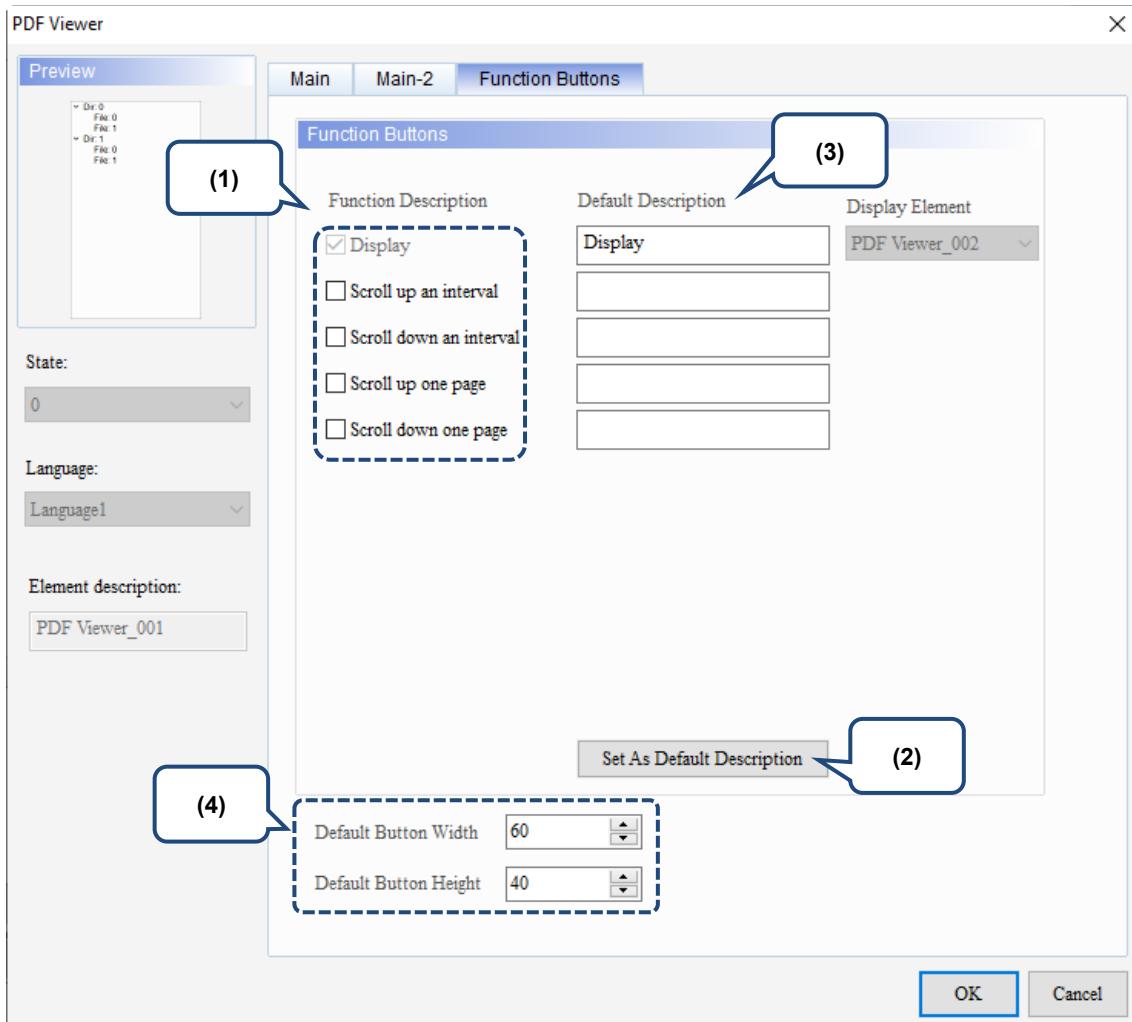


Figure 19.5.4 Function Buttons property page for the PDF Viewer element (Left side)

No.	Property	Function description
(1)	Function Buttons	<ul style="list-style-type: none"> <li>These are function buttons for the File List on the left. <b>Display</b> is selected by default and cannot be canceled.</li> <li>Other function buttons including <b>Scroll up an interval</b>, <b>Scroll down an interval</b>, <b>Scroll up one page</b>, and <b>Scroll down one page</b> are used to scroll the file list and determine how many lines to scroll each time.</li> </ul>
(2)	Set As Default Description	Press this button to insert the default strings to the Default Description fields.
(3)	Default Description	Press <b>Set As Default Description</b> to insert the default strings to the fields. You can also enter user-defined strings.
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.

When you double-click the display content on the right, the property page is shown as follows.

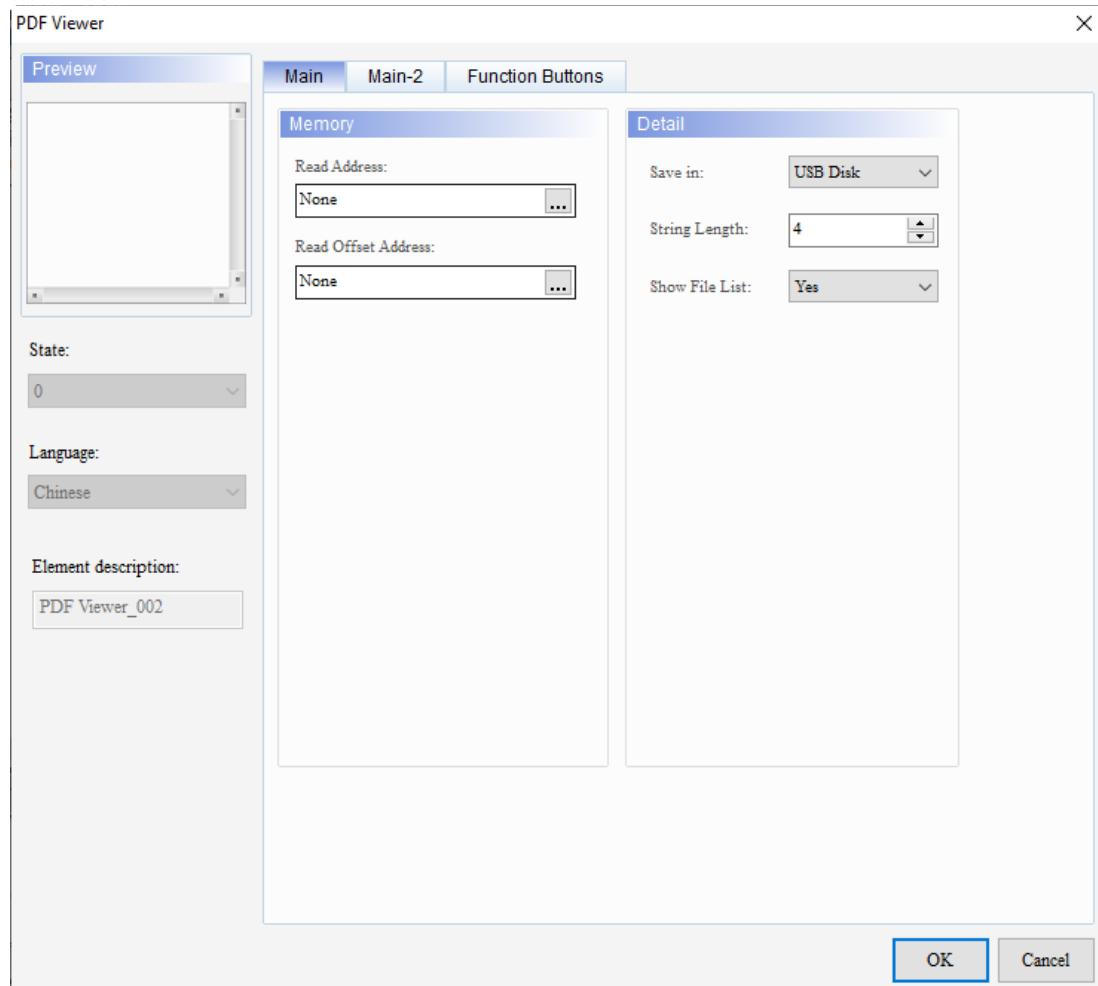


Figure 19.5.5 Properties of the PDF Viewer (Right side)

Table 19.5.3 Function page of the PDF Viewer element (Right side)

PDF Viewer (display content on the right)	
Function page	Description
Main	Set the Read Address and Read Offset Address. Set the Save in, String Length, and Show File List.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Function Buttons	<ul style="list-style-type: none"> <li>■ Select the check boxes for <b>Load</b>, <b>First Page</b>, <b>Total Page</b>, <b>Page Up</b>, <b>Page Down</b>, <b>Last Page</b>, <b>Zoom</b>, and <b>Rotations</b>.</li> <li>■ Press <b>Set As Default Description</b>.</li> <li>■ Set the width and height of the buttons.</li> </ul>

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## ■ Main

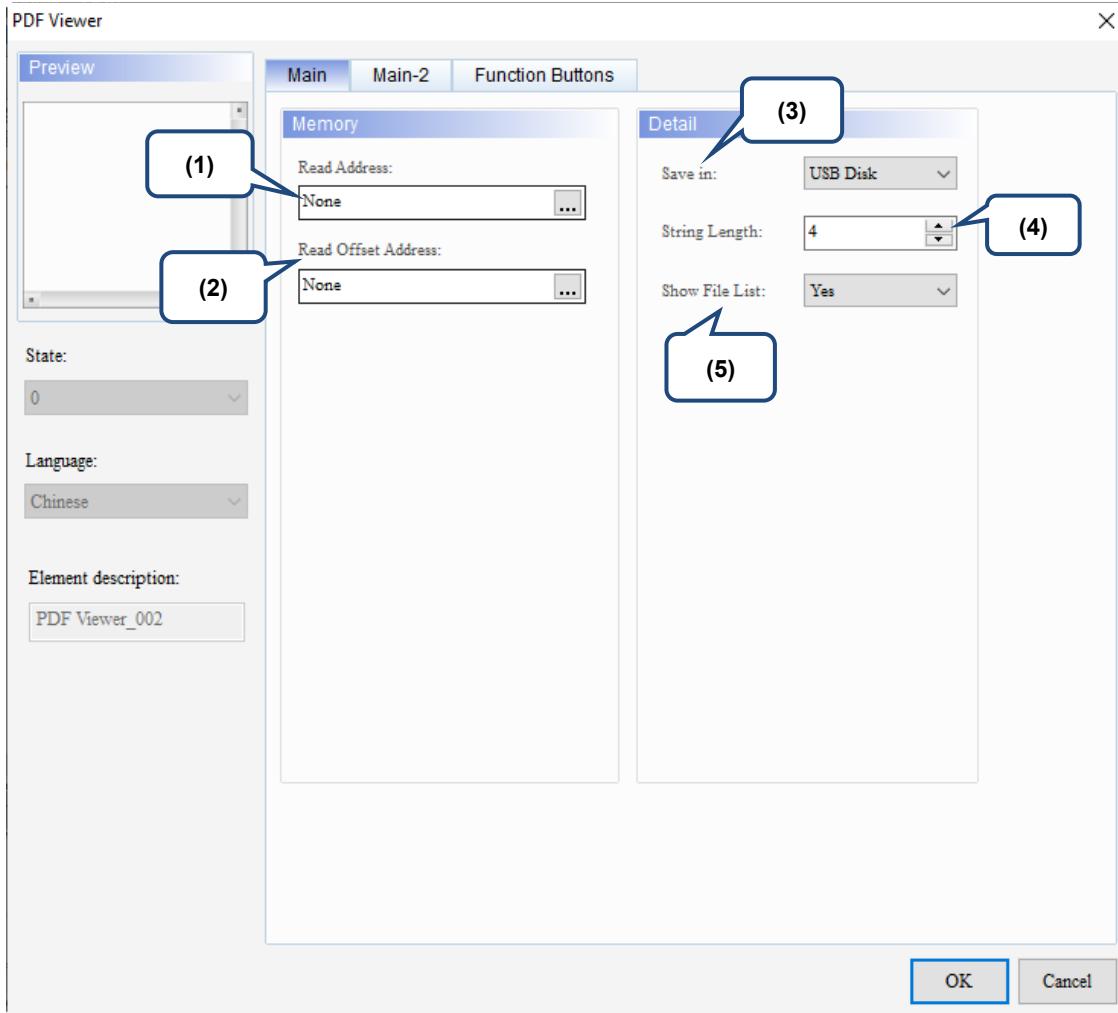


Figure 19.5.6 Main property page for the PDF Viewer element (Right side)

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>■ You can select the internal memory or the controller register address.</li> <li>■ Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> <li>■ If you choose the Read Address setting, you need to create a Character Entry element and set the String Length for the PDF file to display on the HMI.</li> </ul>
(2)	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
(3)	Save in	<ul style="list-style-type: none"> <li>■ You can select USB Disk or SD Card as the storage device.</li> <li>■ When you save the PDF file in the USB Disk or SD Card, the HMI can read the PDF file from the storage device.</li> </ul>
(4)	String Length	<ul style="list-style-type: none"> <li>■ The String Length setting is mainly used with the Character Entry element.</li> <li>■ The length of the string determines the input file name of the PDF.</li> </ul>
(5)	Show File list	<ul style="list-style-type: none"> <li>■ Set whether to show the File List on the left. The default is Yes.</li> <li>■ If you set the Show File List to No, the file list on the left is not shown.</li> </ul>

## ■ Main-2

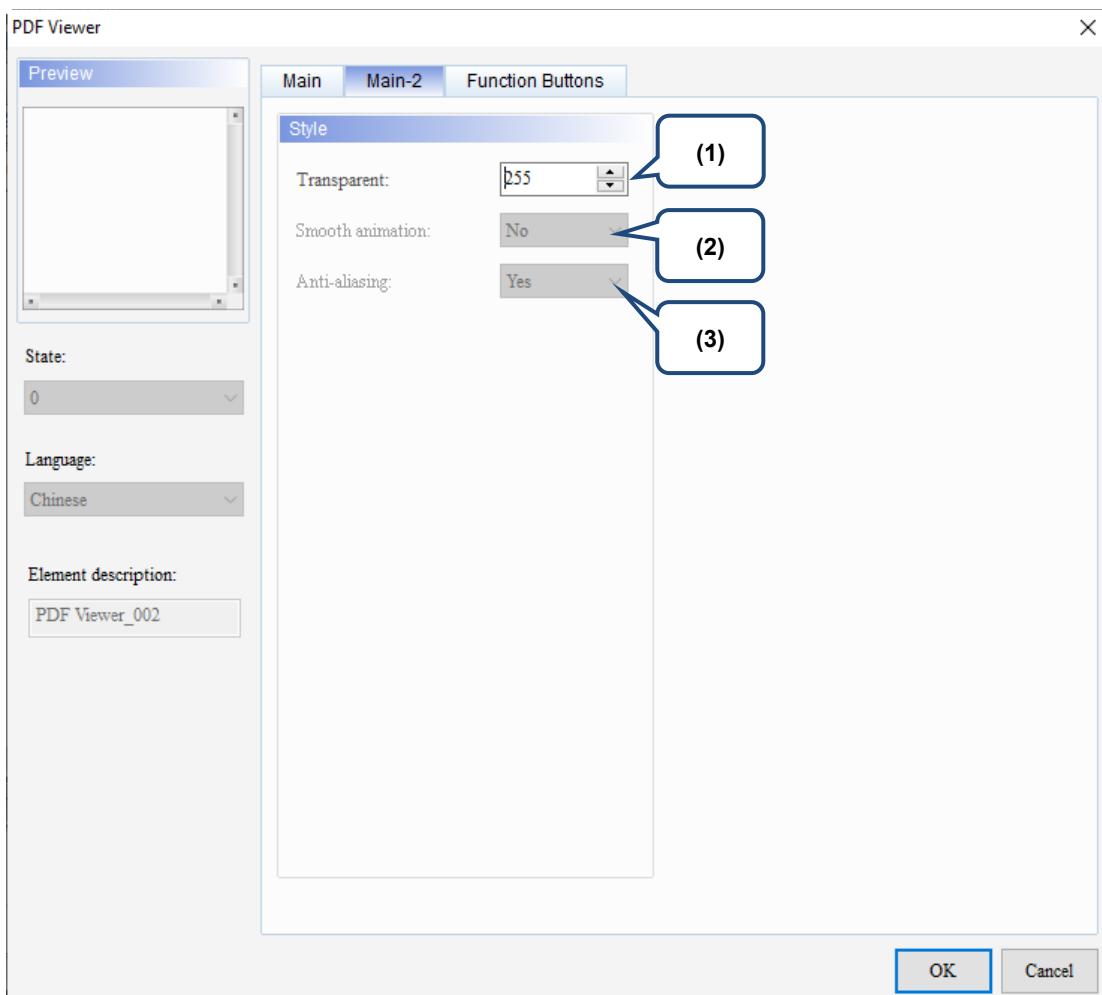


Figure 19.5.7 Main-2 property page for the PDF View element (Right side)

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Function Buttons

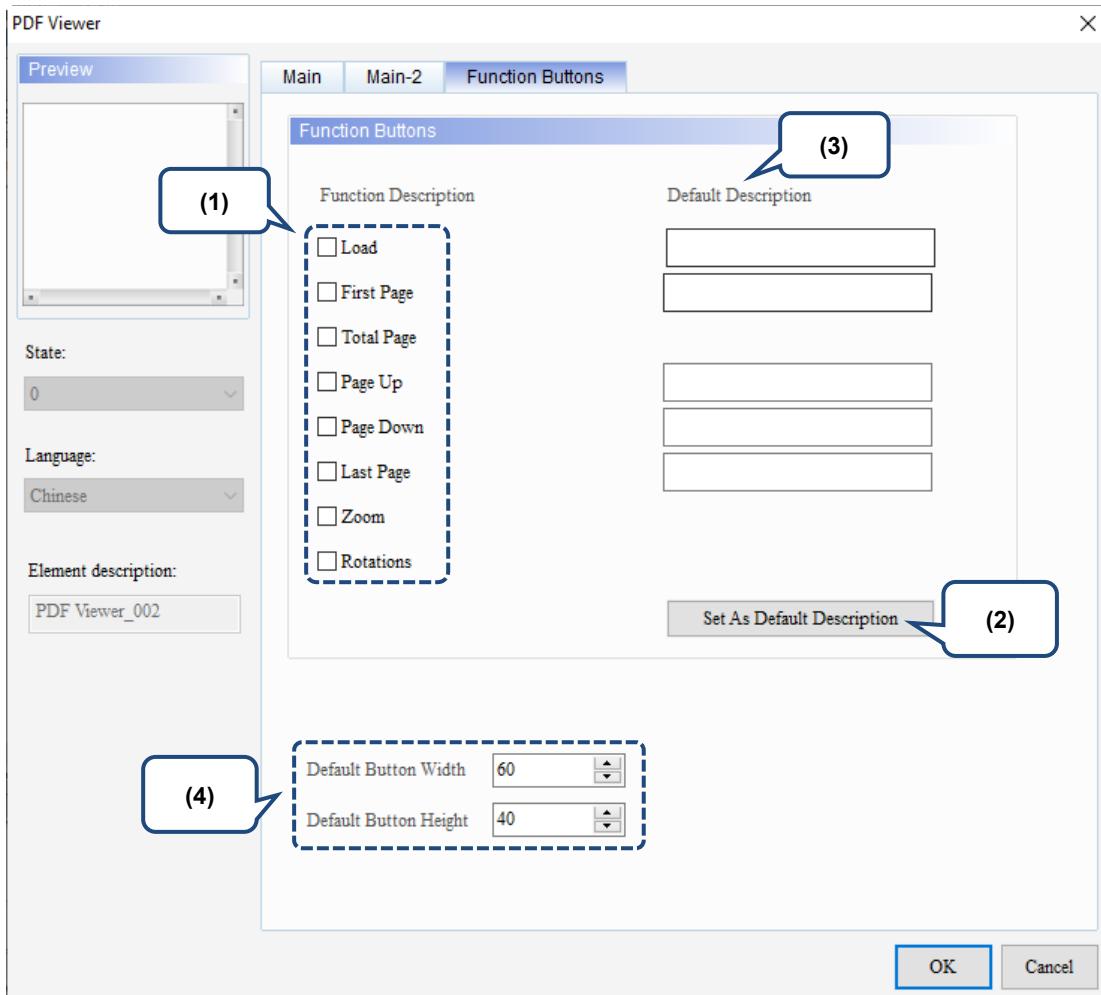


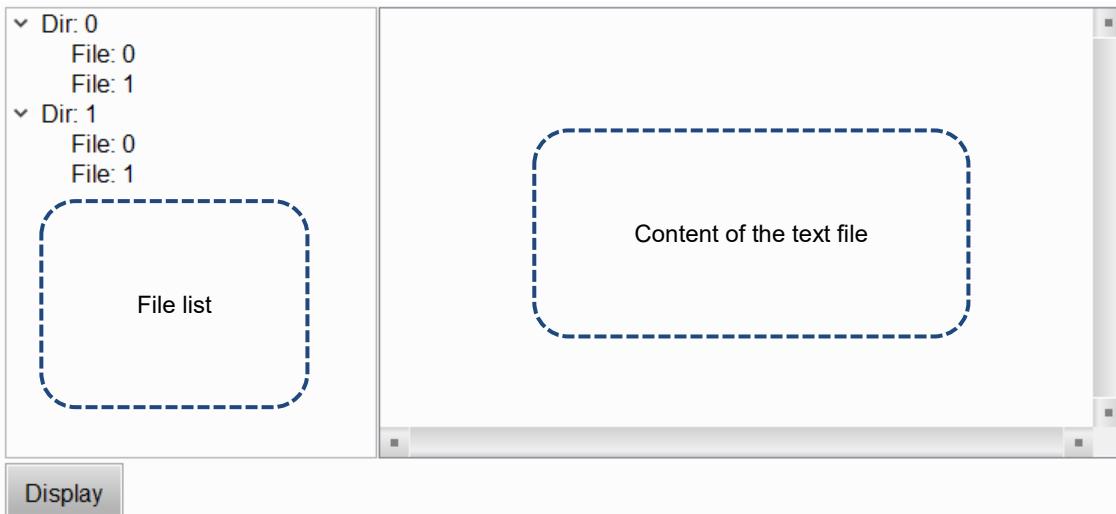
Figure 19.5.8 Function Buttons property page for the PDF Viewer element (Right side)

No.	Property	Function description
(1)	Function Buttons	<ul style="list-style-type: none"> <li>These are function buttons for the display content on the right, including Load, First Page, Total Page, Page Up, Page Down, Last Page, Zoom, and Rotations.</li> <li>The Load function button for the display content and the Display function button for the File List are both used to read and display PDF files, but the way to use them are different. For the Load button, you need to manually enter the PDF file name and use the set Read Address to display the PDF file on the HMI. As for the Display button, you only need to save the PDF file to a USB Disk or SD Card to display the PDF file on the HMI without manually entering the PDF file name.</li> </ul>
(2)	Set As Default Description	<ul style="list-style-type: none"> <li>Press this button to insert the default strings to the Default Description fields.</li> <li>There are no default descriptions for Total Page, Zoom, and Rotations.</li> </ul>
(3)	Default Description	<ul style="list-style-type: none"> <li>Press <b>Set As Default Description</b> to insert the default strings to the fields.</li> <li>You can also enter user-defined strings.</li> </ul>
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.

## 19.6 Text Viewer

You can use the Text Viewer function to read .txt or .csv files on the HMI by saving the text files in an external storage device and inserting it to the HMI. With this feature, you can view the operation steps without a PC or printouts or record the data with the HMI, which is more convenient and efficient.

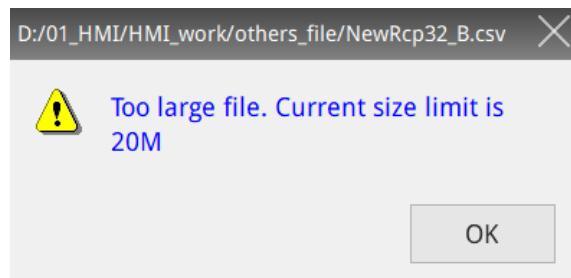
The Text Viewer is divided into two sections: the file list is on the left and the content of the text file is displayed on the right.



Text files are displayed on the HMI from the external storage device, so if the USB Disk or SD Card read and write speed is too slow or the text file size is too big, the displaying speed of the text file will be affected.

Note:

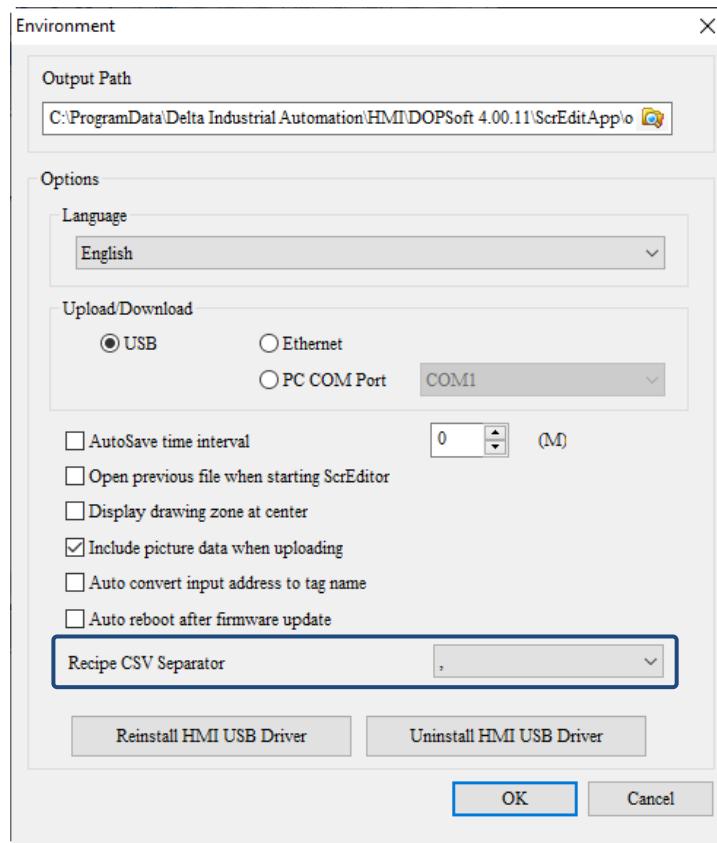
1. The maximum supported file size is 20 M. When the file size exceeds the limit, the software displays the following alarm message.



2. This function supports multi-language contents encoded in UTF-8. Multi-language contents not encoded in UTF-8 are displayed as garbled text.
3. You can create only one Text Viewer element on the screen.

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4. If the text file is a CSV file, the table is drawn by referring to the setting of Recipe CSV Separator in [Options] > [Environment]. The default is “,”.

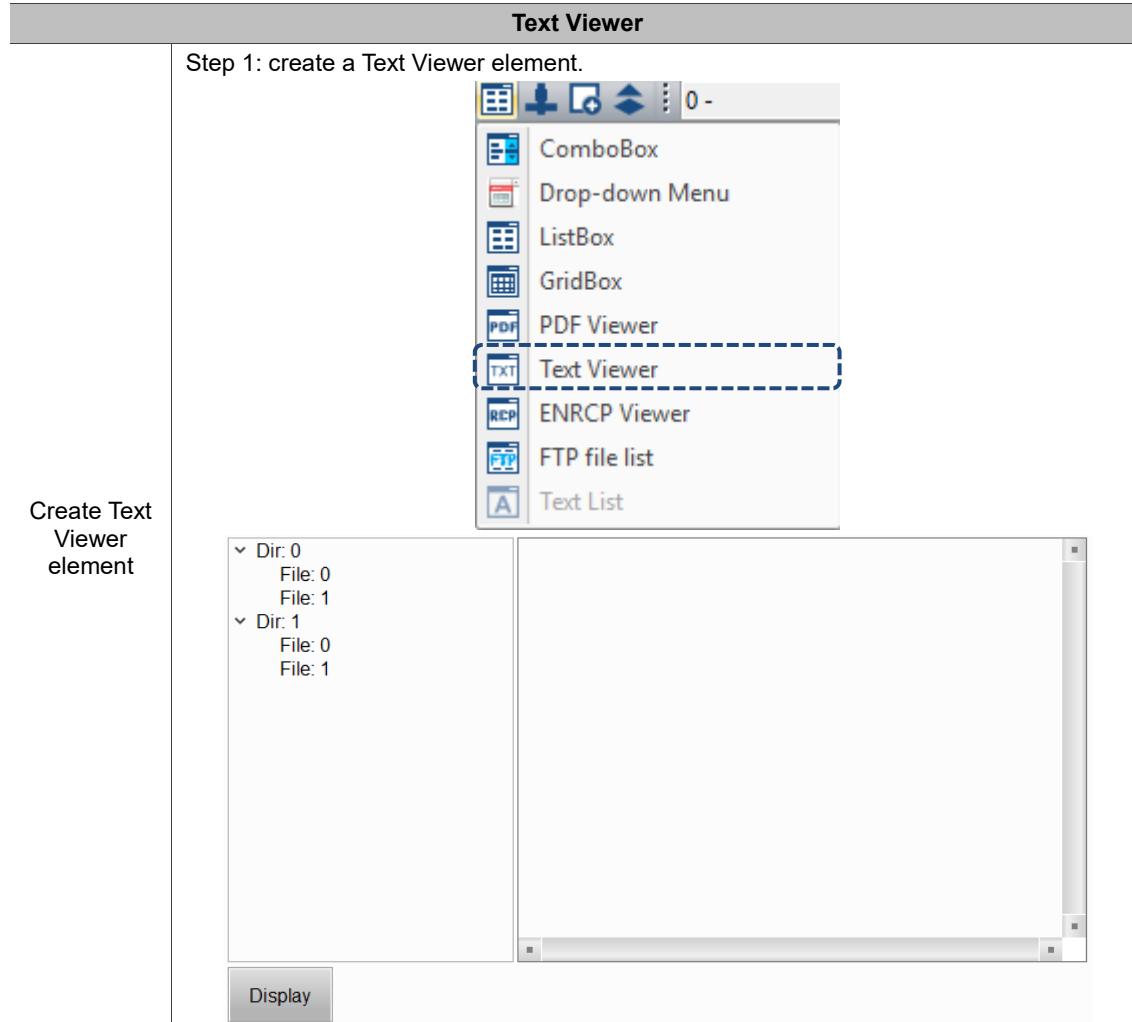


5. If the text file is a CSV file, the column width is evenly distributed based on the column count and element width.

	1	2	3	4
1	remark	CSV-Import-E:		
2	remark	Date = Thu Se		
3	remark	Version = RSL		
4	remark	Owner = sheng		
5	remark	Company = de		
6	0.3			
7	TYPE	SCOPE	NAME	DESCRIPTION/ DATA/TYP
8	TAG		_alarm	ALAI
9	TAG		_alarm2	ALAI
10	TAG		_alarm3	"ALA
11	TAG			

Refer to Table 19.6.1 for the Text Viewer example.

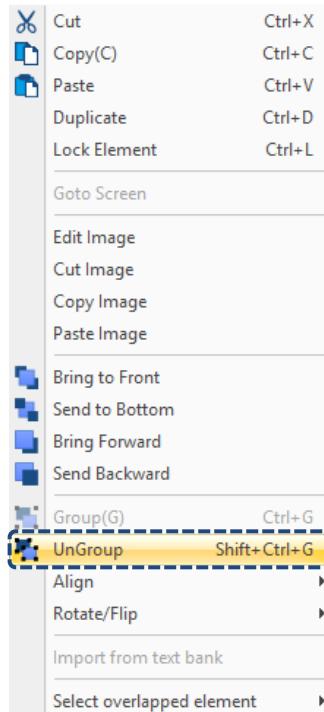
Table 19.6.1 Text Viewer example



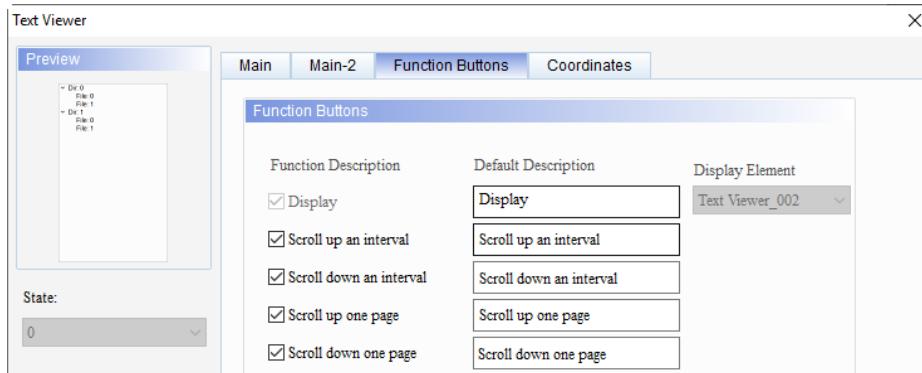
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### Create Text Viewer element

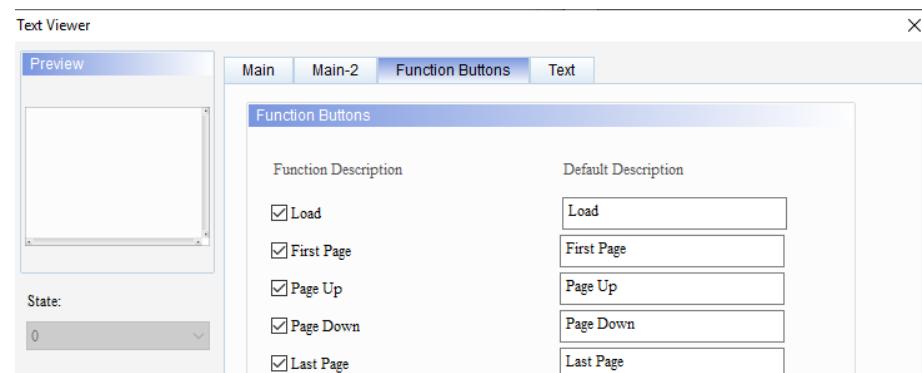
Step 2: click the Text Viewer element, and then right click and select UnGroup.



Step 3: click the File List on the left and go to the Function Buttons page to set the functions as follows.



Step 4: click the display content on the right and go to the Function Buttons page to set the functions as follows.



**Text Viewer**

Step 5: when the settings are complete, the editing screen is as follows.

The screenshot shows a software interface titled "Text Viewer". On the left side, there is a file tree view with two main entries: "Dir: 0" and "Dir: 1". Under "Dir: 0", there are two entries: "File: 0" and "File: 1". Under "Dir: 1", there are also two entries: "File: 0" and "File: 1". The right side of the interface is a large, empty text area. At the bottom of the interface, there is a toolbar with several buttons: "Display", "Scroll up an interval", "Scroll down an interval", "Scroll up one page", "Scroll down one page", "Load", "First Page", "Page Up", "Page Down", and "Last Page".

**Create Text Viewer element**

Step 6: compile the screen prior to performing off-line simulation. Select the text file to display, press **Display**, and then you can see the content of the text file displayed on the right.

The screenshot shows the same "Text Viewer" interface as before. The file tree on the left now highlights "HelloWorld.lua". The right side of the interface contains a code editor window displaying the following Lua code:

```

1 -- defines a factorial function
2 function fact (n)
3     if n == 0 then
4         return 1
5     else
6         return n * fact(n-1)
7     end
8 end
9
10 print("enter a number:")
11 -- read a number
12 a = io.read("*number")
13 print(fact(a))
14

```

At the bottom of the interface, the "Display" button is highlighted with a blue border, indicating it has been selected. The other buttons in the toolbar are greyed out. The right side of the interface shows the content of the selected file, "HelloWorld.lua".

The following will explain the properties of the File List on the left and the display content on the right.

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When you double-click the File List on the left, the property page is shown as follows.

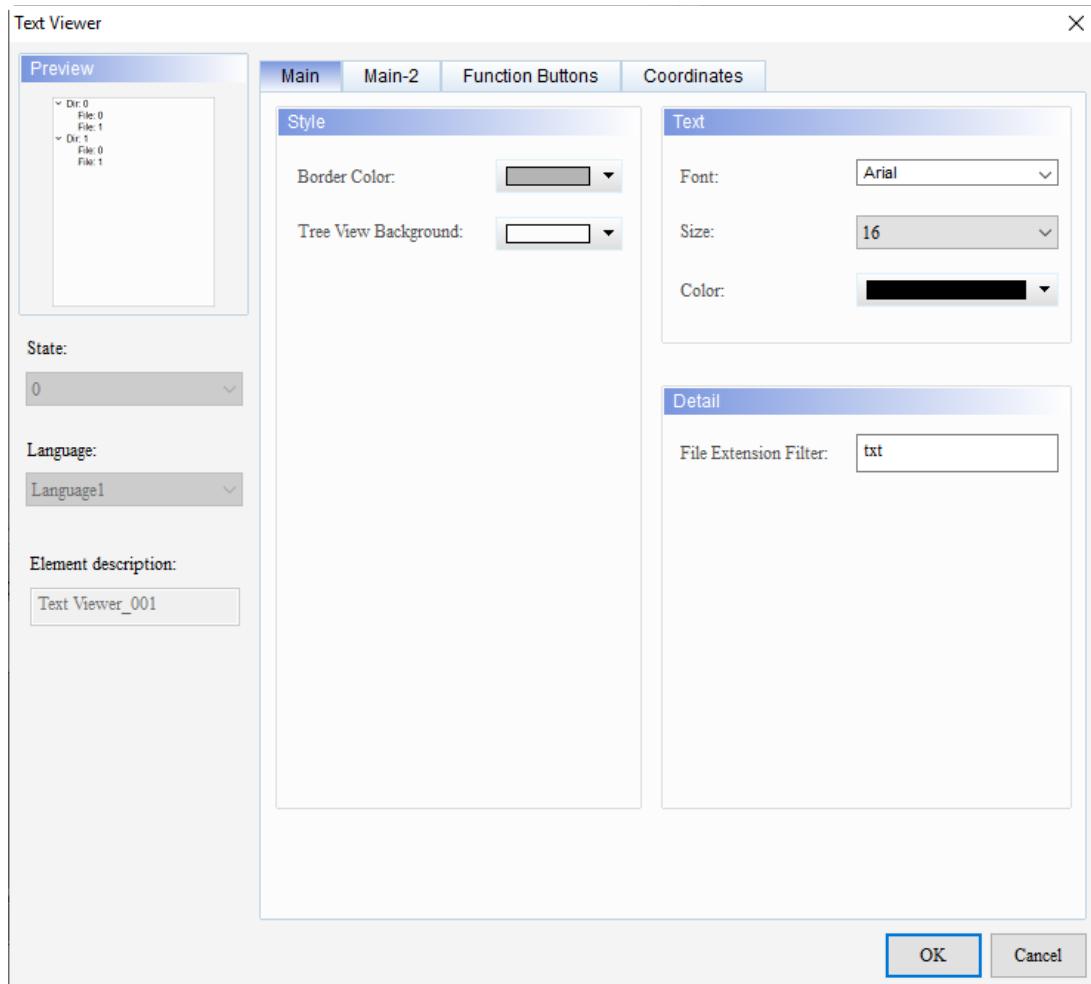


Figure 19.6.1 Properties of the Text Viewer (Left side)

Table 19.6.2 Function page of the Text Viewer element (Left side)

Text Viewer (File List on the left)	
Function page	Description
Main	Set the Border Color, Tree View Background, Font, Size, and Color. Set the File Extension Filter.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Function Buttons	Select the check boxes for <b>Scroll up an interval</b> , <b>Scroll down an interval</b> , <b>Scroll up one page</b> , and <b>Scroll down one page</b> . Press <b>Set As Default Description</b> . Set the width and height of the buttons.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

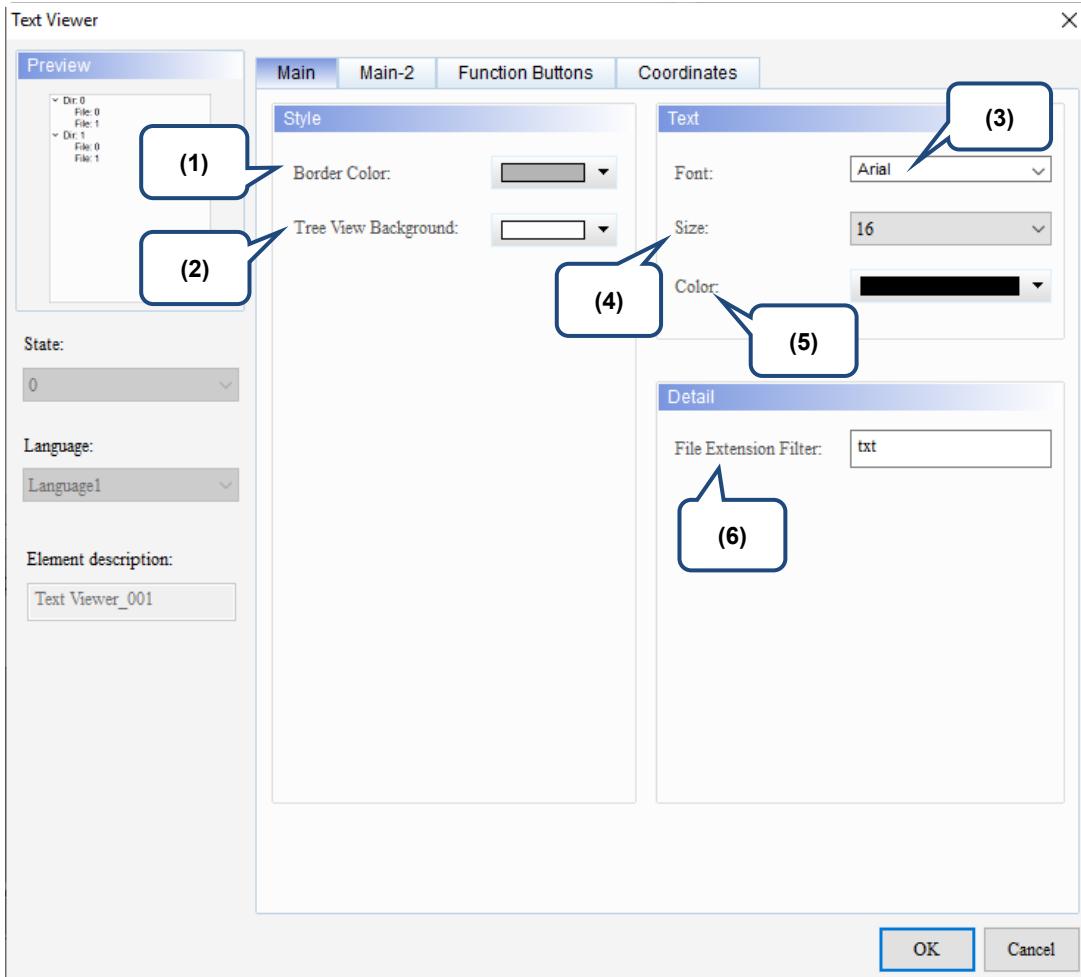
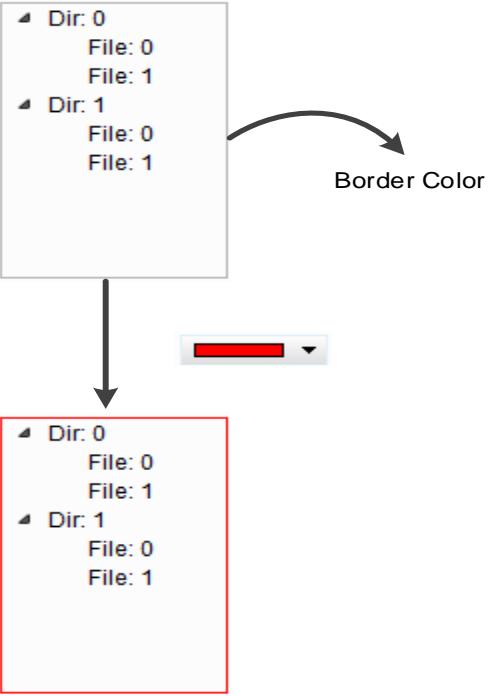
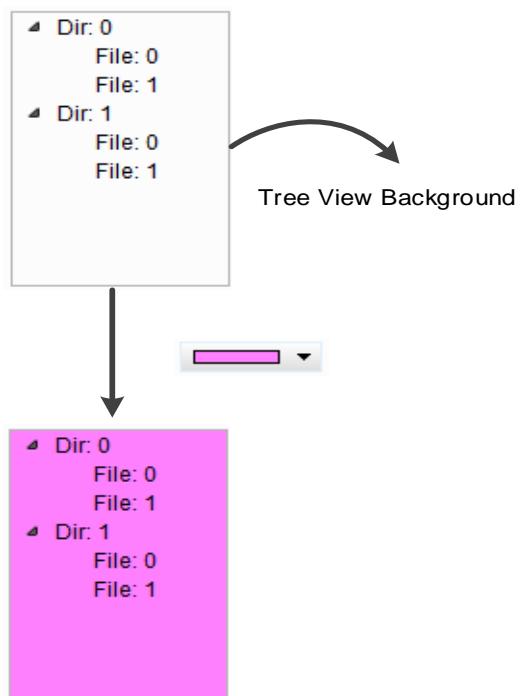


Figure 19.6.2 Main property page for the Text Viewer element (Left side)

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No.	Property	Function description
(1)	Border Color	<p>Set the border color of the file list on the left.</p> 
(2)	Tree View Background	<p>Set the Tree View Background color of the file list on the left.</p> 
(3)	Font	Set the text font for the file list on the left.
(4)	Size	Set the text size for the file list on the left.
(5)	Color	Set the text color for the file list on the left.

No.	Property	Function description
(6)	File Extension Filter	<p>■ Set the file format(s) to display in the file list on the left. This function supports displaying files of multiple formats. The default is "txt".</p> <p>■ To display files of multiple formats, you can insert a " " symbol between file extensions. For example, if you enter "txt csv" in the File Extension Filter field, both .txt and .csv files are displayed in the file list on the left. You can also enter "*" in the File Extension Filter field to display all files.</p> <p>The figure consists of three vertically stacked screenshots. Each screenshot shows a 'Detail' dialog box with a 'File Extension Filter' input field. An arrow points from each dialog to a vertical file list on the right.</p> <ul style="list-style-type: none"> <li><b>Top Screenshot:</b> The 'File Extension Filter' field contains 'txt'. The file list shows files ending in '.txt': Desktop, Error_Login, test, 英文手冊改版, 4.00.11.07下載連結.txt, APPLE ID.txt, Language.txt, Omron tag.txt.</li> <li><b>Middle Screenshot:</b> The 'File Extension Filter' field contains 'txt csv'. The file list shows files ending in '.txt' or '.csv': Desktop, Error_Login, test, 英文手冊改版, 4.00.11.07下載連結.txt, AB EIP_RSLogix5000_Tags.CSV, APPLE ID.txt, Language.txt, Omron tag.txt.</li> <li><b>Bottom Screenshot:</b> The 'File Extension Filter' field contains '*'. The file list shows all files listed on the right.</li> </ul>

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## ■ Main-2

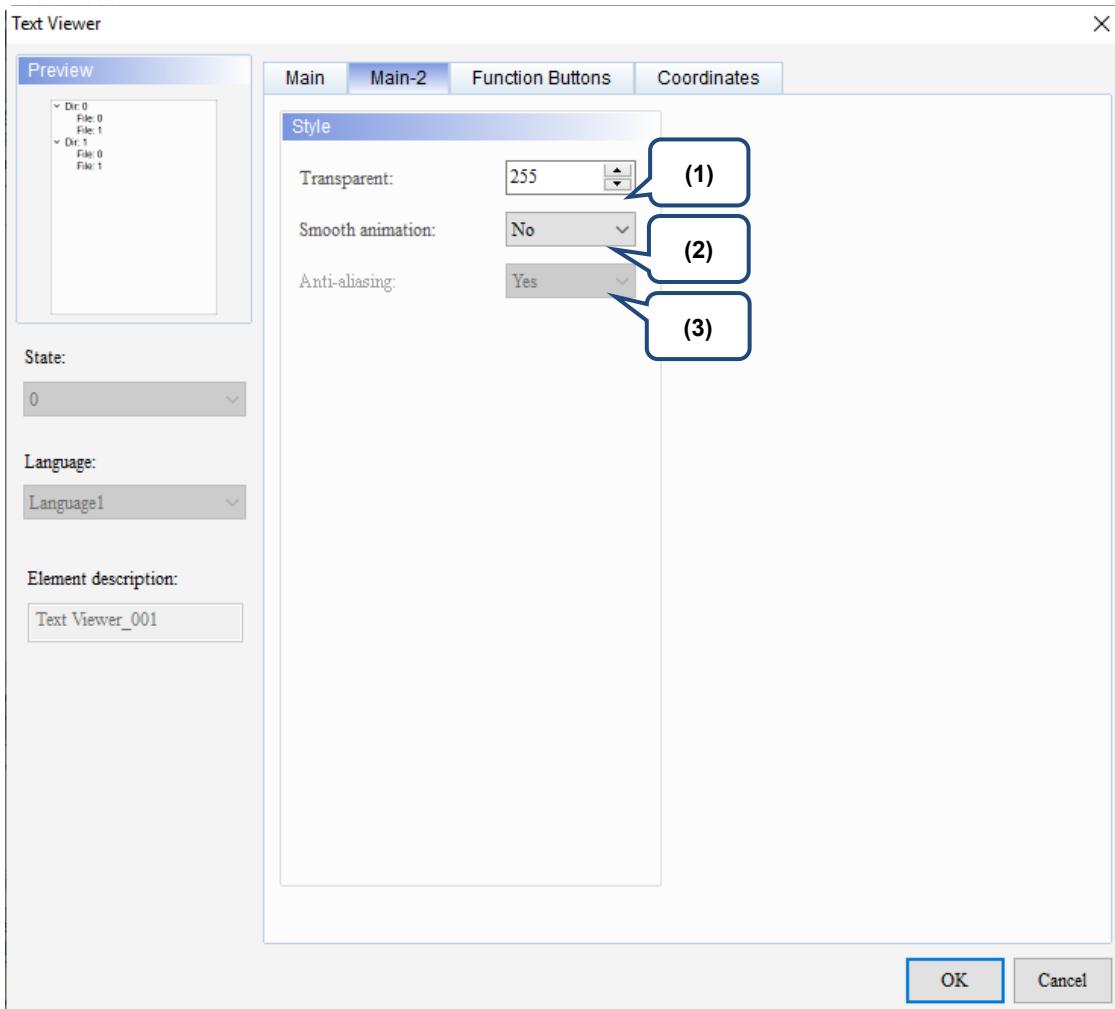


Figure 19.6.3 Main-2 property page for the Text Viewer element (Left side)

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When you activate the Smooth animation function, there is a sliding effect when the file list is expanded or collapsed.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Function Buttons

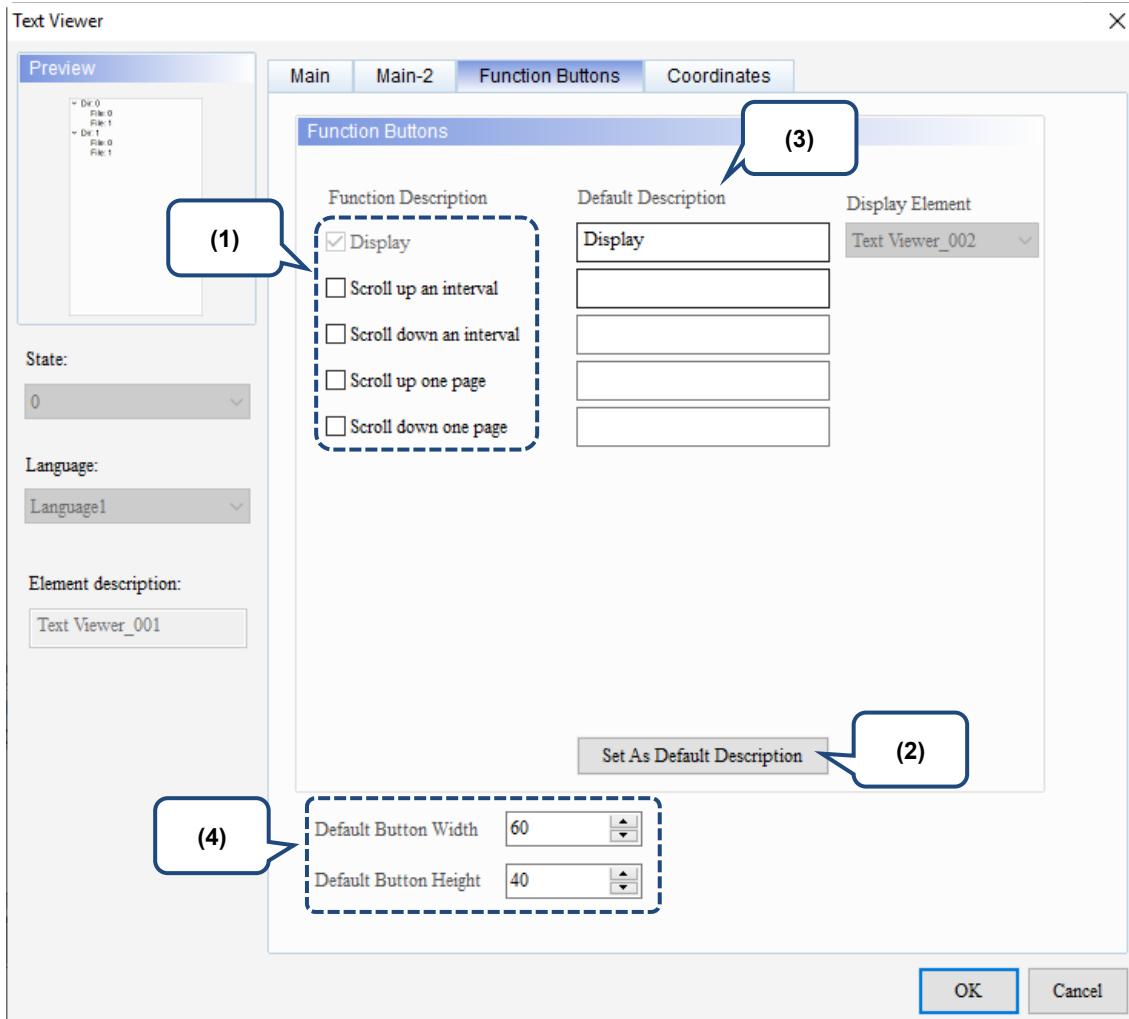


Figure 19.6.4 Function Buttons property page for the Text Viewer element (Left side)

No.	Property	Function description
(1)	Function Buttons	<ul style="list-style-type: none"> <li>These are function buttons for the File List on the left. <b>Display</b> is selected by default and cannot be canceled.</li> <li>Other function buttons, including <b>Scroll up an interval</b>, <b>Scroll down an interval</b>, <b>Scroll up one page</b>, and <b>Scroll down one page</b>, are used to scroll the file list and determine how many lines to scroll each time.</li> </ul>
(2)	Set As Default Description	Press this button to insert the default strings to the Default Description fields.
(3)	Default Description	Press <b>Set As Default Description</b> to insert the default strings to the fields. You can also enter user-defined strings.
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.

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## ■ Coordinates

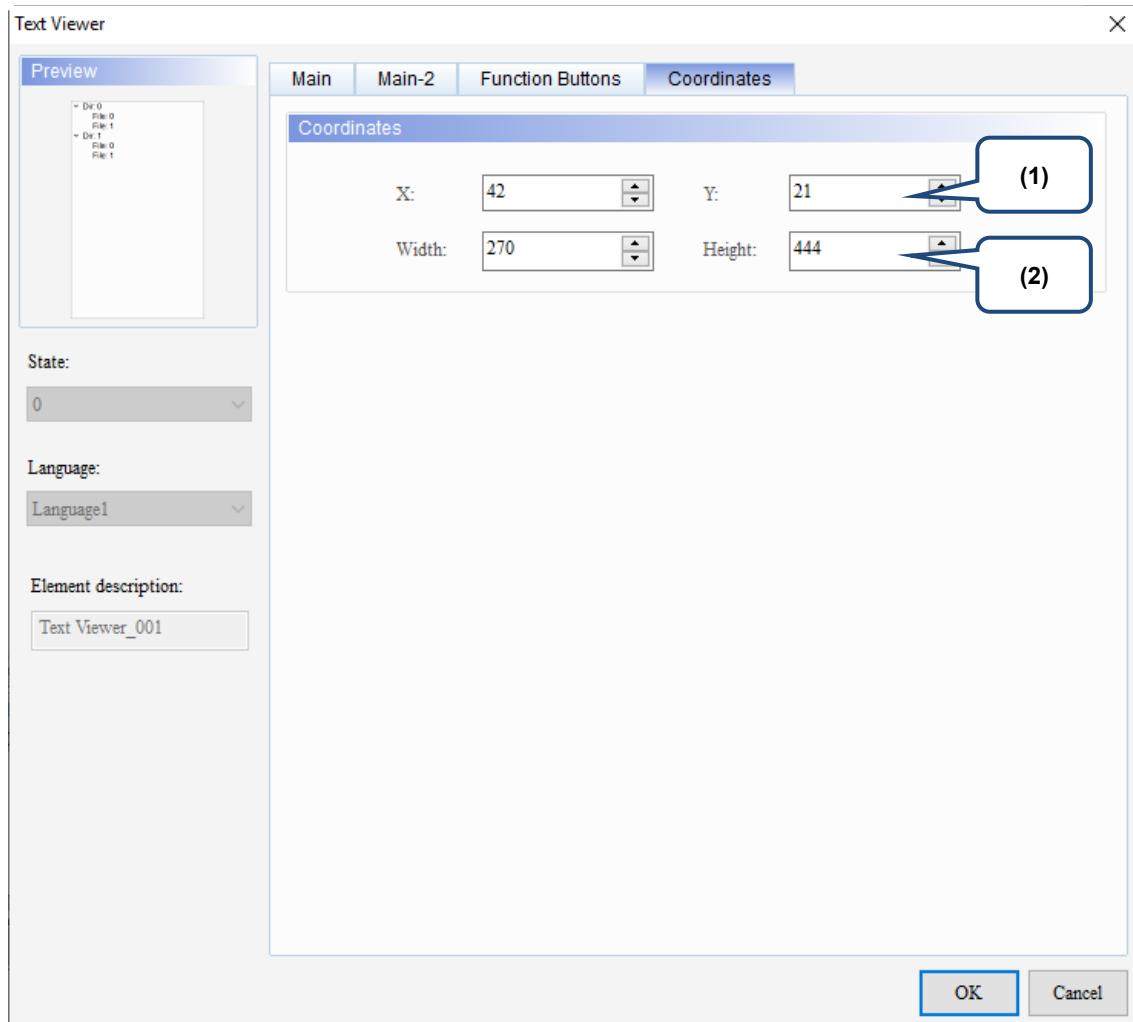


Figure 19.6.5 Coordinates property page for the Text Viewer element (Left side)

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

When you double-click the display content on the right, the property page is shown as follows.

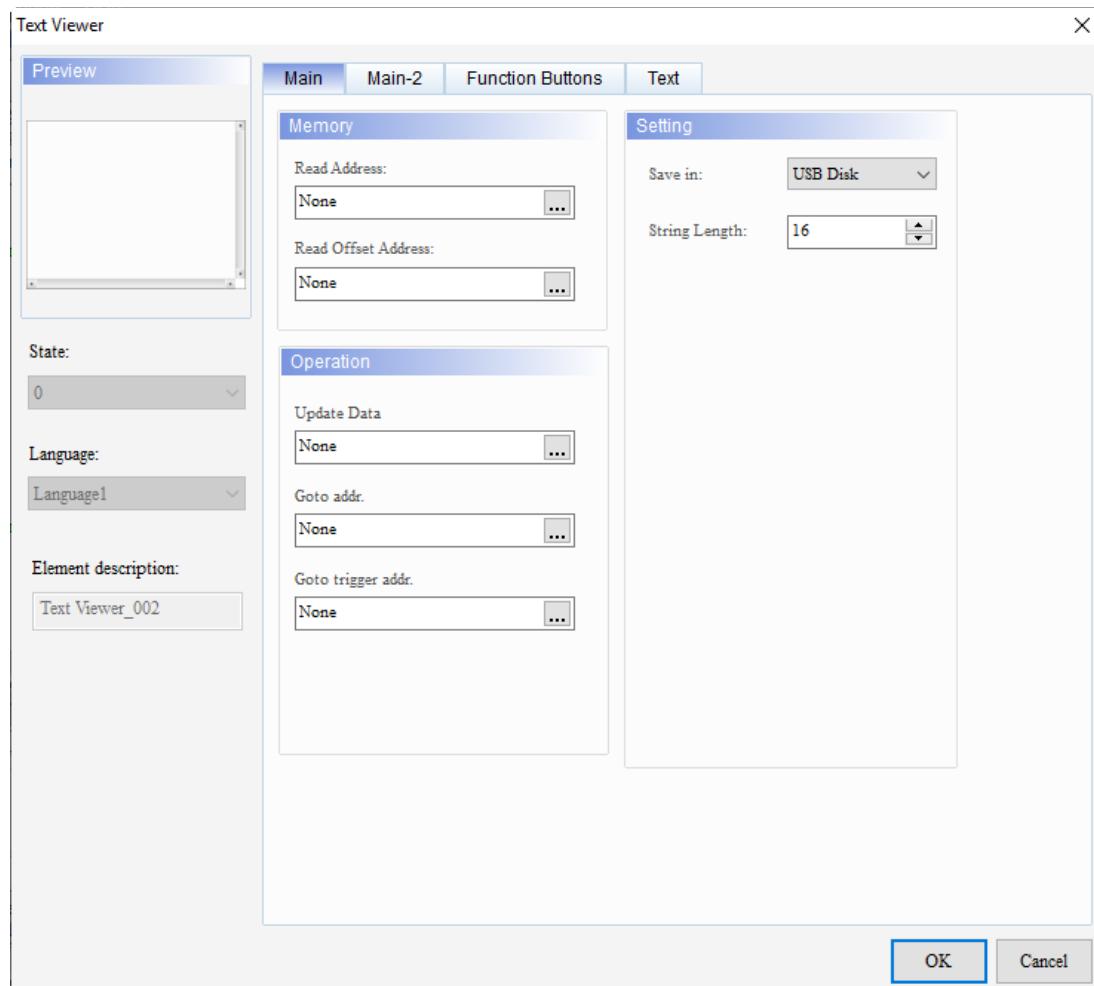


Figure 19.6.6 Properties of the Text Viewer (Right side)

Table 19.6.3 Function page of the Text Viewer element (Right side)

Text Viewer (display content on the right)	
Function page	Description
Main	Set the Read Address and Read Offset Address. Set the Update Data, Goto addr., and Goto trigger addr. Set the Save in and String Length.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Function Buttons	Select the check boxes for <b>Load</b> , <b>First Page</b> , <b>Page Up</b> , <b>Page Down</b> , and <b>Last Page</b> . Press <b>Set As Default Description</b> . Set the width and height of the buttons.
Text	Set the text properties, including the font, size, and color.

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## ■ Main

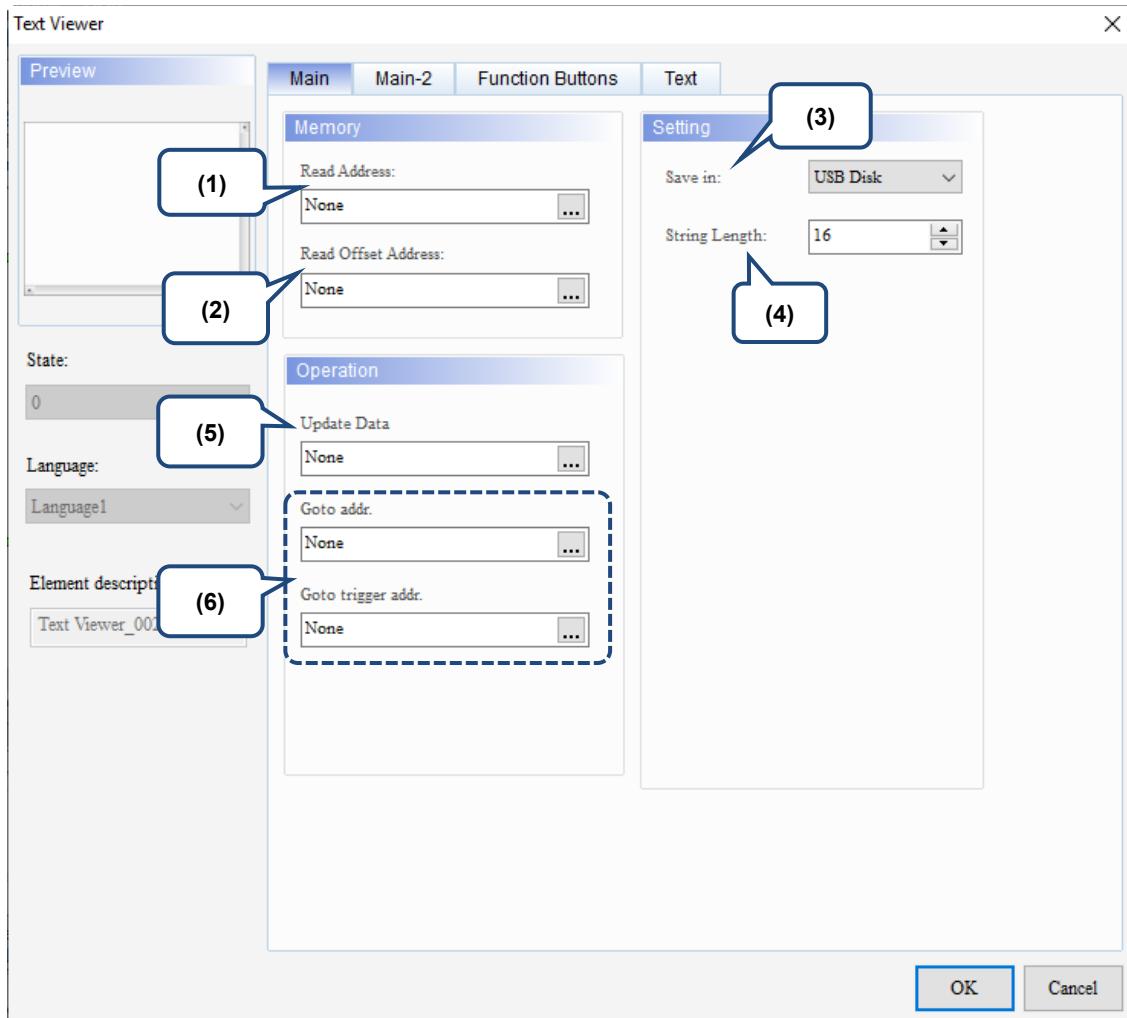


Figure 19.6.7 Main property page for the Text Viewer element (Right side)

No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>■ You can select the internal memory or the controller register address.</li> <li>■ Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> <li>■ If you choose the Read Address setting, you need to create a Character Entry element and set the String Length for the text file to display on the HMI.</li> </ul>
(2)	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
(3)	Save in	<ul style="list-style-type: none"> <li>■ You can select USB Disk or SD Card as the storage device.</li> <li>■ When you save the text file in the USB Disk or SD Card, the HMI can read the text file from the storage device.</li> </ul>
(4)	String Length	<ul style="list-style-type: none"> <li>■ The String Length setting is mainly used with the Character Entry element.</li> <li>■ The length of the string determines the input file name of the text file.</li> </ul>
(5)	Update Data	<ul style="list-style-type: none"> <li>■ When the Update Data bit is On, the HMI rereads the text file set in the memory address.</li> <li>■ Note that the file displayed here is the file set in the Read Address rather than the file selected in the file list on the left.</li> </ul>
(6)	Goto addr.	<ul style="list-style-type: none"> <li>■ Use Goto addr. to specify the line to be selected. Then, set Goto trigger addr. to On, and the specified line is selected.</li> <li>■ The Goto addr. function supports the controller address (Word) and the internal register address (Word).</li> </ul>
	Goto trigger addr.	<ul style="list-style-type: none"> <li>■ The Goto trigger addr. supports the controller address (Bit) and the internal register address (Bit).</li> </ul>

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## ■ Main-2

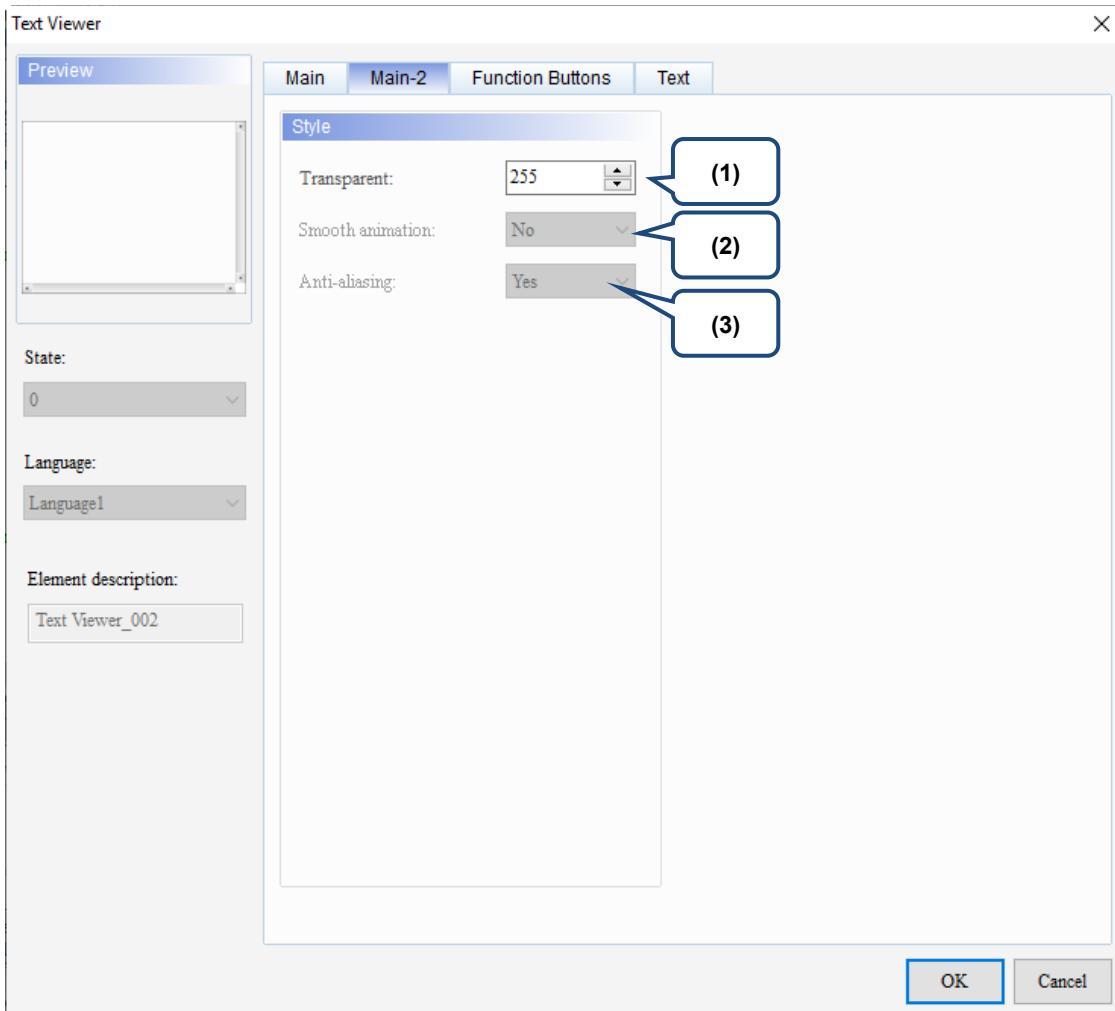


Figure 19.6.8 Main-2 property page for the Text Viewer element (Right side)

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Function Buttons

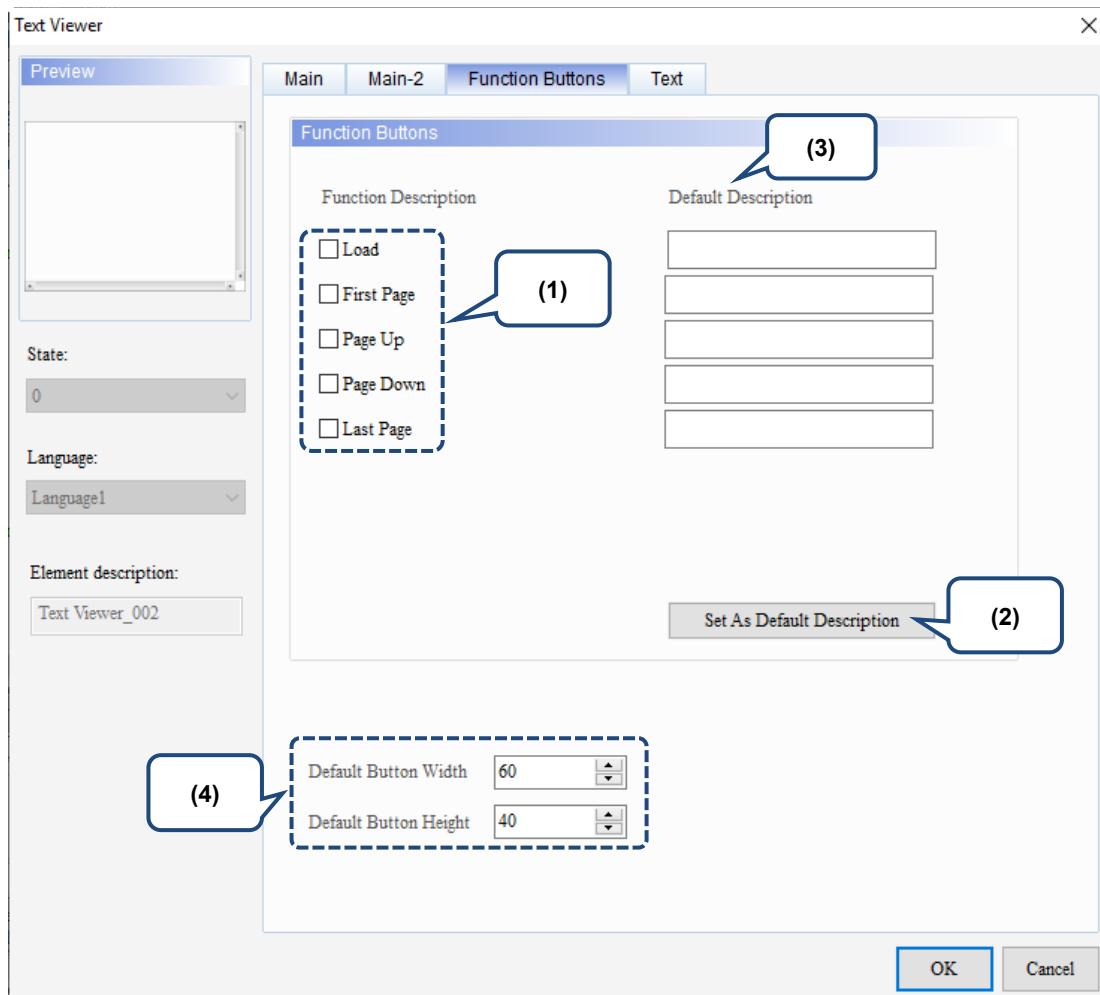


Figure 19.6.9 Function Buttons property page for the Text Viewer element (Right side)

No.	Property	Function description
(1)	Function Buttons	<ul style="list-style-type: none"> <li>These are function buttons for the display content on the right, including Load, First Page, Page Up, Page Down, and Last Page.</li> <li>The Load function button for the display content and the Display function button for the File List are both used to read and display text files, but the way to use them are different. For the Load button, you need to manually enter the file name of the text file and use the set Read Address to display the text on the HMI. As for the Display button, you only need to save the text file to a USB Disk or SD Card to display the text file on the HMI without manually entering the file name of the text file.</li> </ul>
(2)	Set As Default Description	Press this button to insert the default strings to the Default Description fields.
(3)	Default Description	<ul style="list-style-type: none"> <li>Press <b>Set As Default Description</b> to insert the default strings to the fields.</li> <li>You can also enter user-defined strings.</li> </ul>
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.

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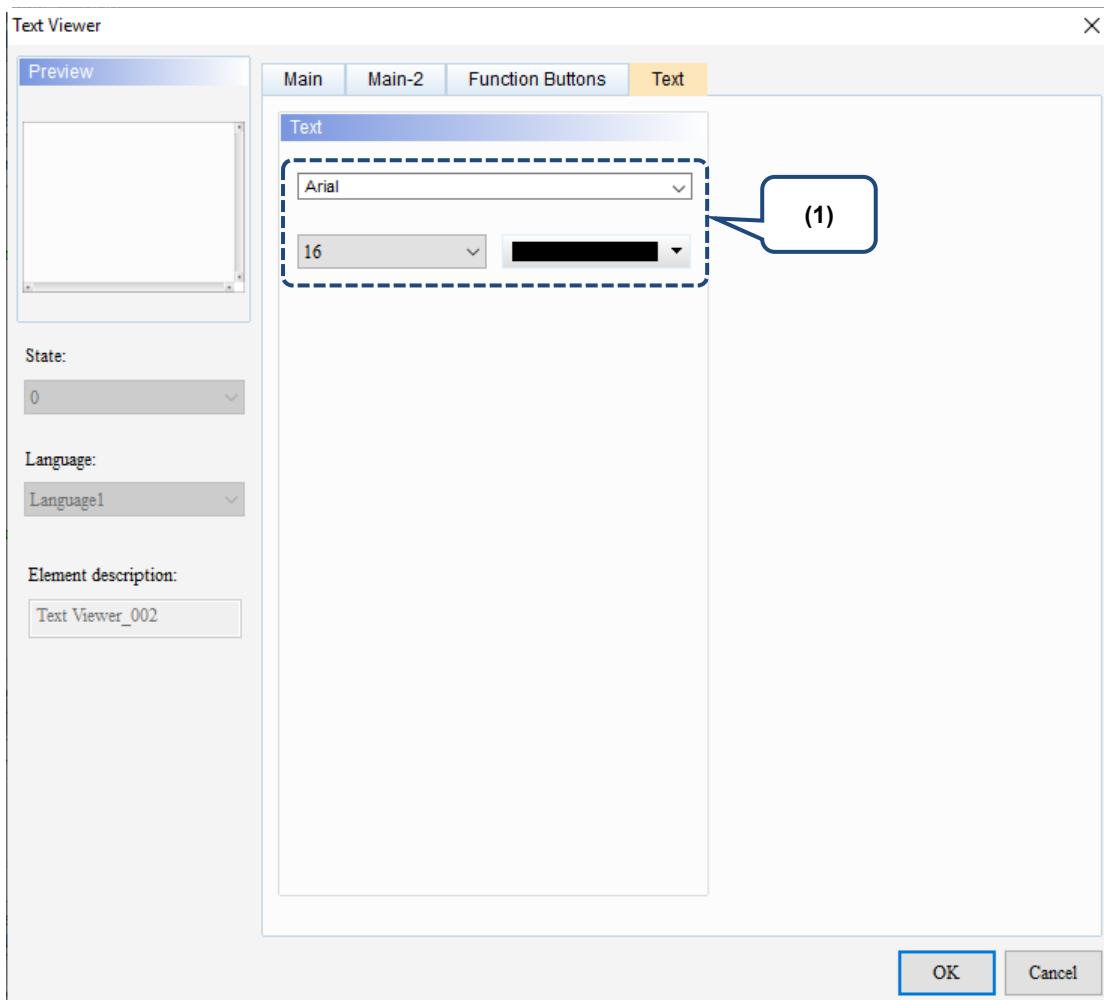
**■ Text**

Figure 19.6.10 Text property page for the Text Viewer element (Right side)

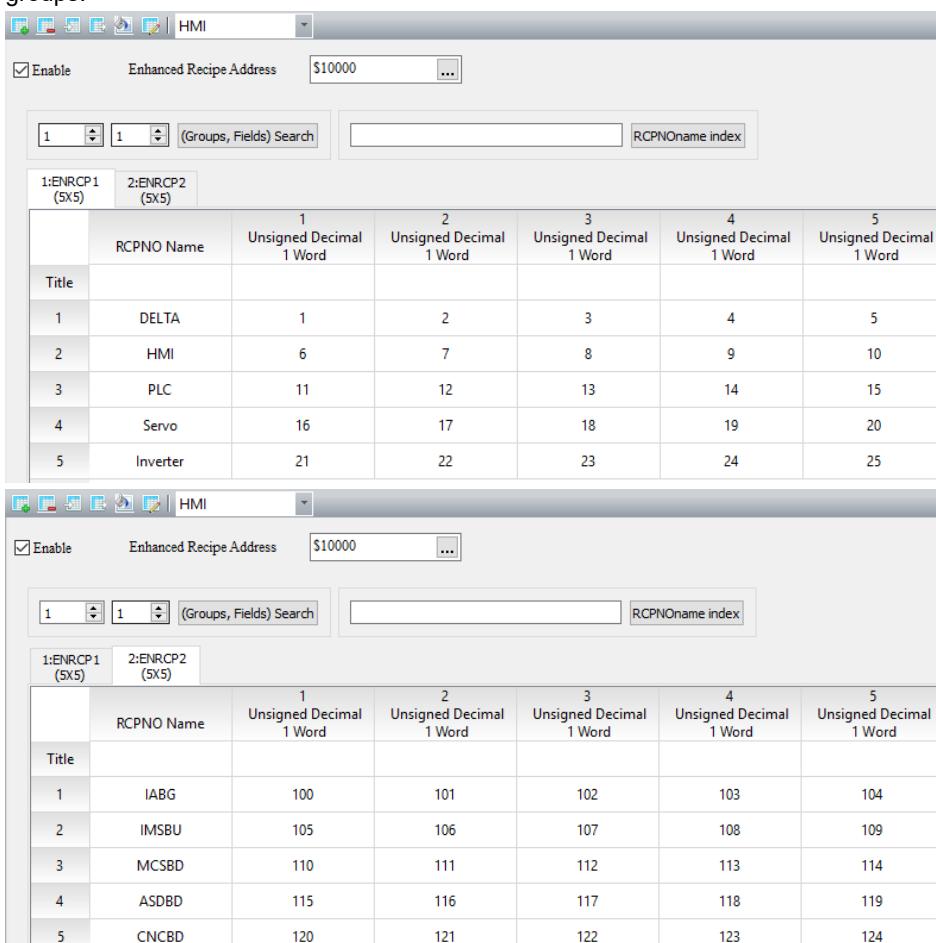
No.	Property	Function description
(1)	Text property	Set the text properties, including the font, size, and color.

## 19.7 ENRCP Viewer

Users used to display the recipe parameters on the HMI by using the GridBox element with the recipe addresses, which is not flexible and convenient because the settings are complicated and the recipe addresses do not match. Therefore, the ENRCP Viewer element is provided to allow users to list and modify each enhanced recipe parameter in the table.

Refer to Table 19.7.1 for the ENRCP Viewer example.

Table 19.7.1 ENRCP Viewer example

ENRCP Viewer						
Step 1: go to [Options] > [Recipe] > [Enhanced Recipe] to create two enhanced recipe groups.						
 <p>The screenshot shows the ENRCP Viewer interface with two tables of recipe parameters. The top table has columns: RCPNO Name, Unsigned Decimal 1 Word, Unsigned Decimal 1 Word, Unsigned Decimal 1 Word, Unsigned Decimal 1 Word, Unsigned Decimal 1 Word. The bottom table has columns: RCPNO Name, Unsigned Decimal 1 Word, Unsigned Decimal 1 Word, Unsigned Decimal 1 Word, Unsigned Decimal 1 Word. Both tables have rows labeled 1 through 5, with various values like DELTA, HMI, PLC, Servo, Inverter, IABG, IMSBU, MCSBD, ASDBD, CNCBD.</p>						
Set enhanced recipes and create elements						

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ENRCP Viewer

Step 2-1: create an ENRCP Viewer element with the ENRC PG Read Address set as \$10 and the read only as No.

ENRCP Viewer

Main Main-2 Function Buttons Coordinates

Address

ENRC PG Read Address:  ...

Setting

read only:

OK Cancel

Set enhanced recipes and create elements

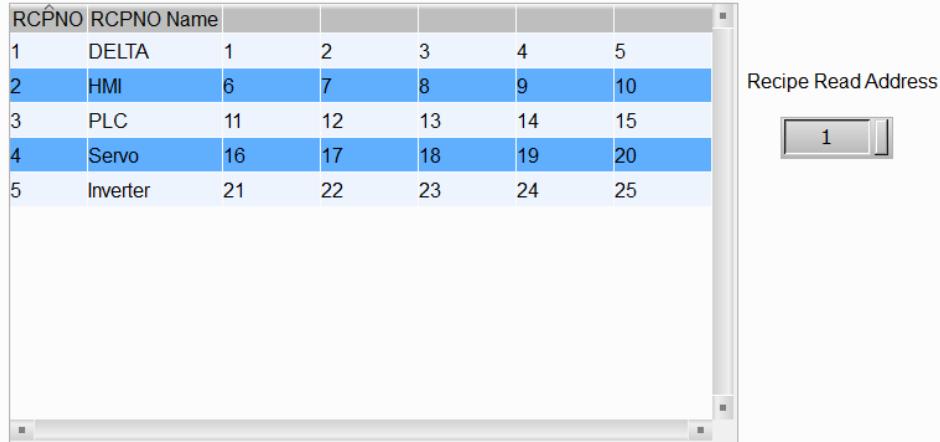
Step 2-2: create a Numeric Entry element with the Write Address set as \$10.

Recipe Read Address

W:\$10

### ENRCP Viewer

- After creating and setting the elements, download the project to the HMI.
- Enter “1” to \$10 and you can check the recipe parameters of the first enhanced recipe group with the ENRCP Viewer.



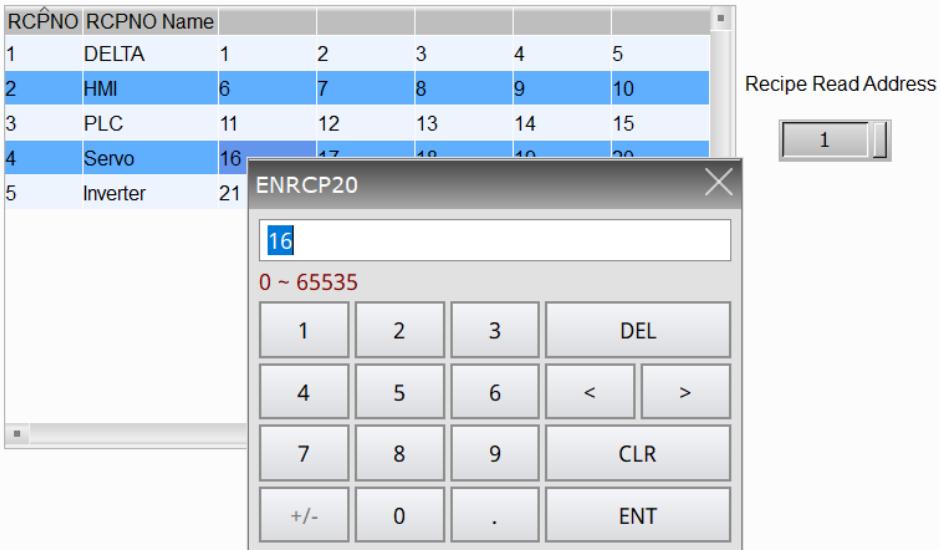
The screenshot shows the ENRCP Viewer interface. On the left is a table with columns labeled "RCPNO" and "RCPNO Name". The rows contain data for various components: DELTA (1), HMI (2), PLC (3), Servo (4), and Inverter (5). To the right of the table is a text input field labeled "Recipe Read Address" containing the value "1".

RCPNO	RCPNO Name	1	2	3	4	5
1	DELTA	1	2	3	4	5
2	HMI	6	7	8	9	10
3	PLC	11	12	13	14	15
4	Servo	16	17	18	19	20
5	Inverter	21	22	23	24	25

1

Execution results

- You can also click the ENRCP Viewer element to modify the recipe parameters. Note that if the read only function on the Main page is set to Yes, you cannot modify the parameters.



The screenshot shows the ENRCP Viewer interface. On the left is a table with columns labeled "RCPNO" and "RCPNO Name". The rows contain data for various components: DELTA (1), HMI (2), PLC (3), Servo (4), and Inverter (5). To the right of the table is a numeric keypad dialog box titled "ENRCP20". The number "16" is displayed in the top text field, which has a red "0 ~ 65535" validation message below it. The keypad includes a numeric grid from 1 to 9, a decimal point, and function keys like DEL, CLR, and ENT.

RCPNO	RCPNO Name	1	2	3	4	5	6	7	8	9	DEL
1	DELTA	1	2	3	4	5	6	7	8	9	DEL
2	HMI	6	7	8	9	10					
3	PLC	11	12	13	14	15					
4	Servo	16	17	18	19	20					
5	Inverter	21									

16  
0 ~ 65535

1	2	3	DEL	
4	5	6	<	>
7	8	9	CLR	
+/-	0	.	ENT	

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When you double-click the ENRCP Viewer, the property page is shown as follows.

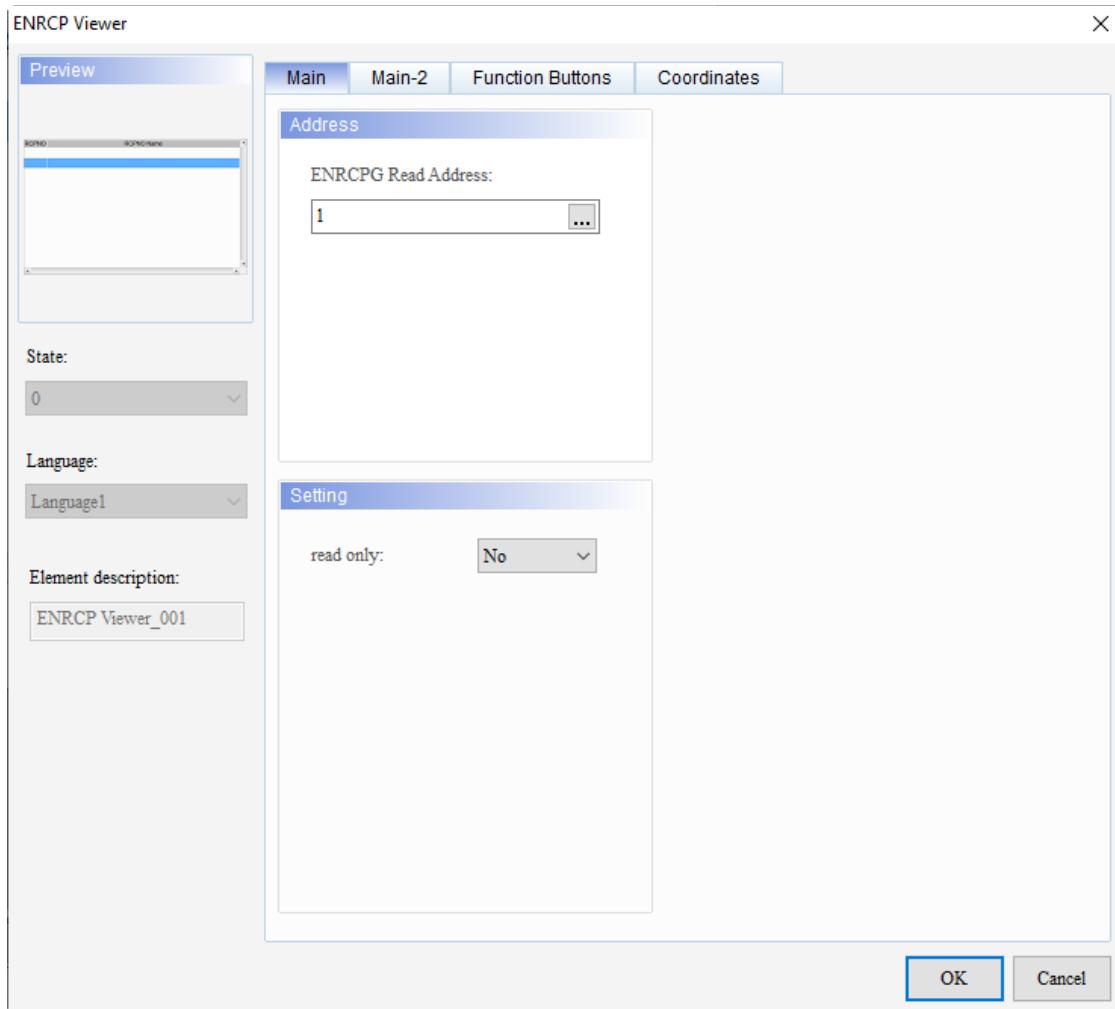


Figure 19.7.1 ENRCP Viewer example

Table 19.7.2 Function page of the ENRCP Viewer element

ENRCP Viewer	
Function page	Description
Main	Set the ENRCPG Read Address. Set the read only.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Function Buttons	Select the check boxes for <b>Scroll up one page</b> and <b>Scroll down one page</b> . Press <b>Set As Default Description</b> . Set the width and height of the buttons.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

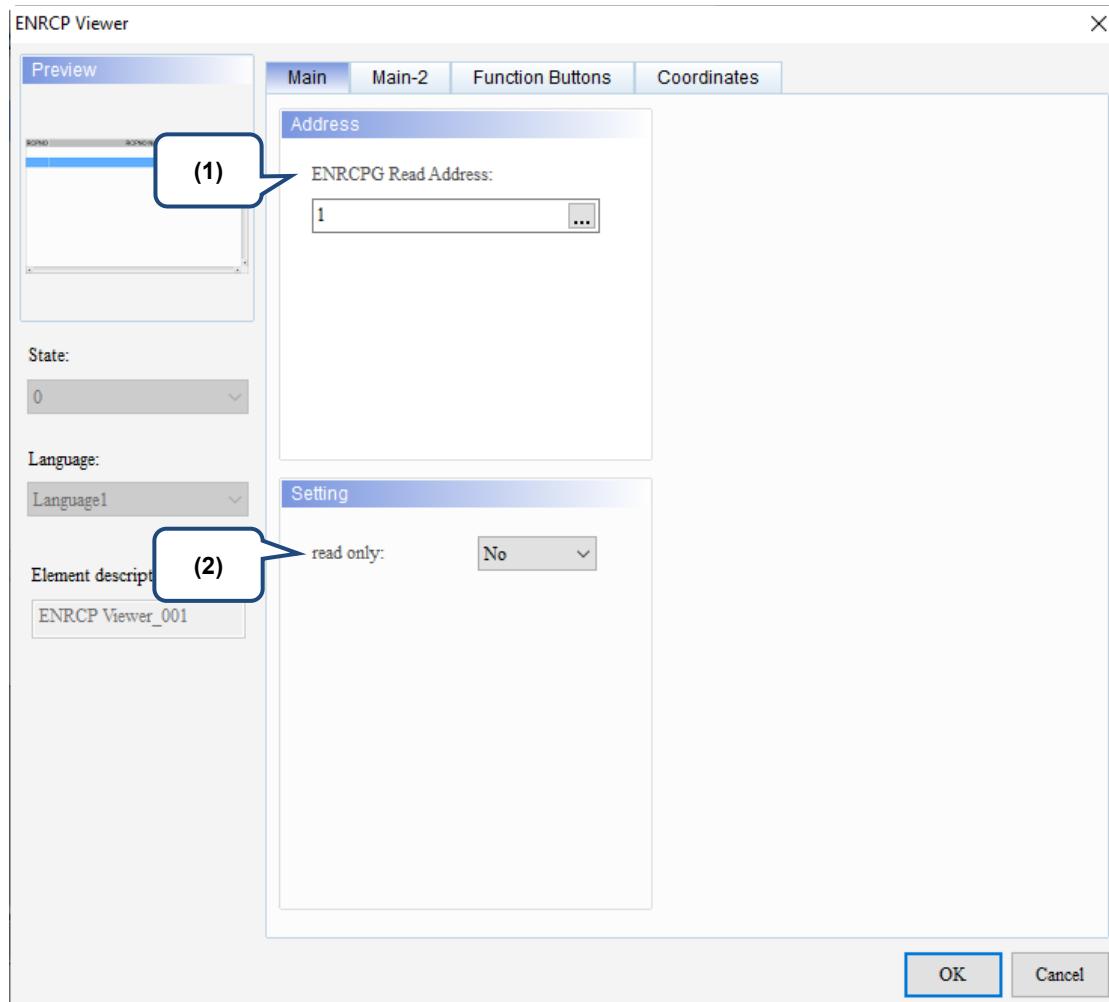
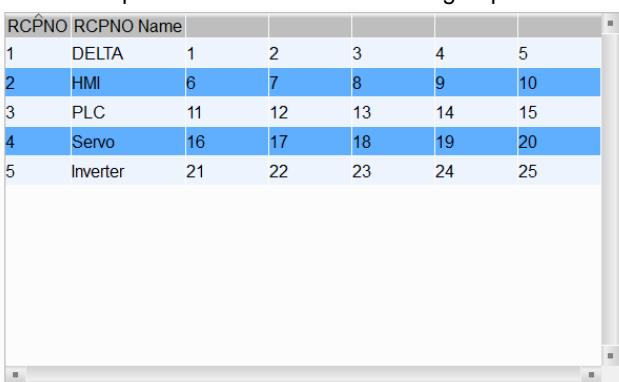
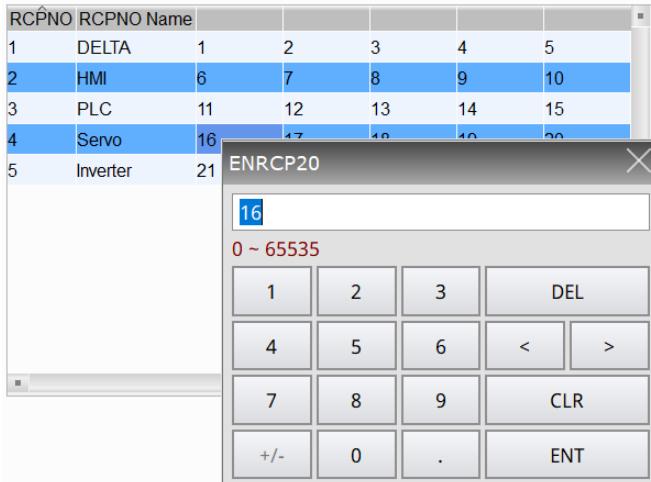


Figure 19.7.2 Main property page for the ENRCP Viewer element

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No.	Property	Function description																			
(1)	ENRCPG Read Address	<p>You can read the enhanced recipe group with this address. When the ENRCPG Read Address is 1, you can read the first group of the enhanced recipe. When the ENRCPG Read Address is 2, you can read the second group of the enhanced recipe. The same is true for other groups.</p>  <p>Recipe Read Address</p> <input type="text" value="1"/>																			
(2)	read only	<ul style="list-style-type: none"> <li>Sets whether the content of the enhanced recipe can be edited. The default is No, indicating the recipe parameters can be modified.</li> </ul>  <p>Recipe Read Address</p> <input type="text" value="1"/> <p>ENRCP20</p> <p>16</p> <p>0 ~ 65535</p> <table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>DEL</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>&lt;</td><td>&gt;</td></tr> <tr><td>7</td><td>8</td><td>9</td><td>CLR</td><td></td></tr> <tr><td>+/-</td><td>0</td><td>.</td><td>ENT</td><td></td></tr> </table> <ul style="list-style-type: none"> <li>When the read only function is set to Yes, clicking the recipe parameters is invalid.</li> </ul>	1	2	3	DEL	4	5	6	<	>	7	8	9	CLR		+/-	0	.	ENT	
1	2	3	DEL																		
4	5	6	<	>																	
7	8	9	CLR																		
+/-	0	.	ENT																		

## ■ Main-2

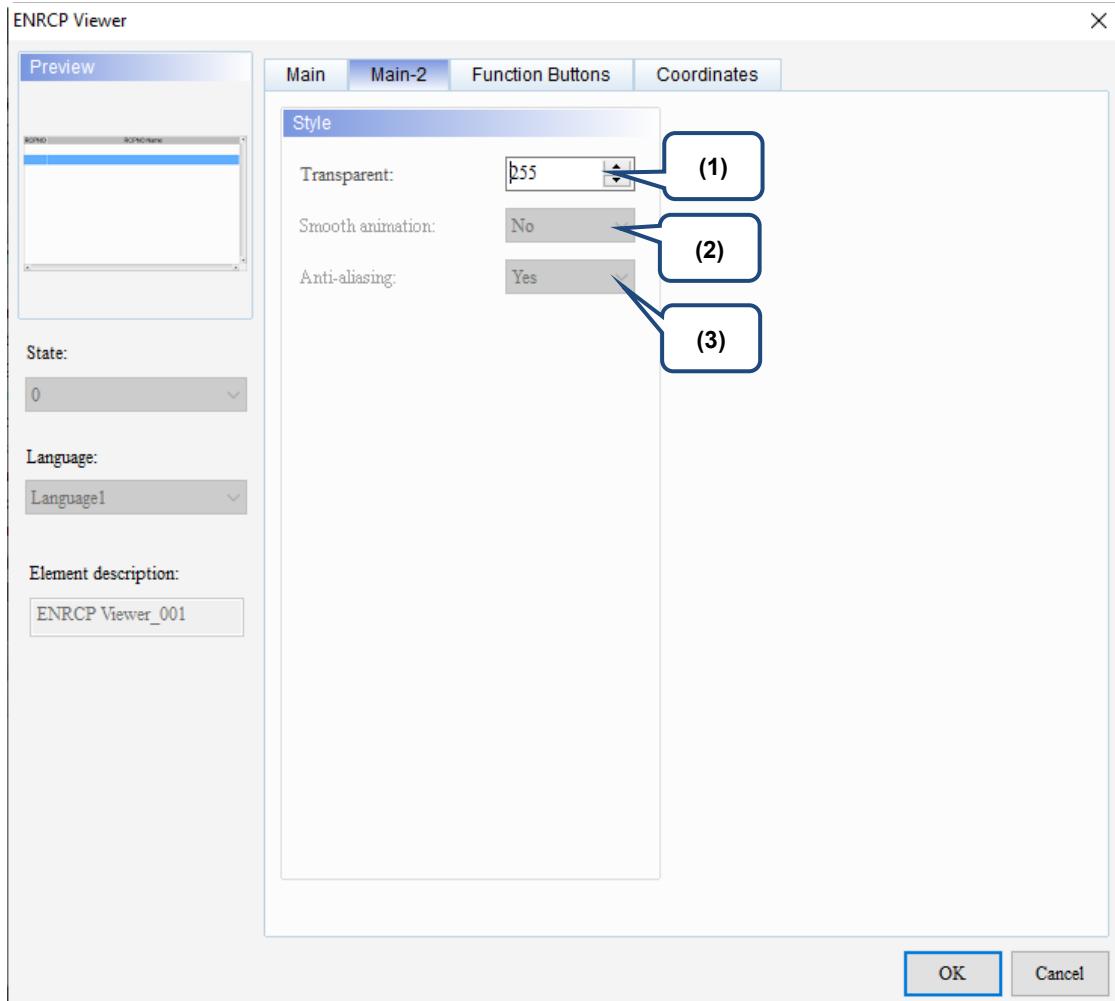


Figure 19.7.3 Main-2 property page for the ENRCP Viewer element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

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## ■ Function Buttons

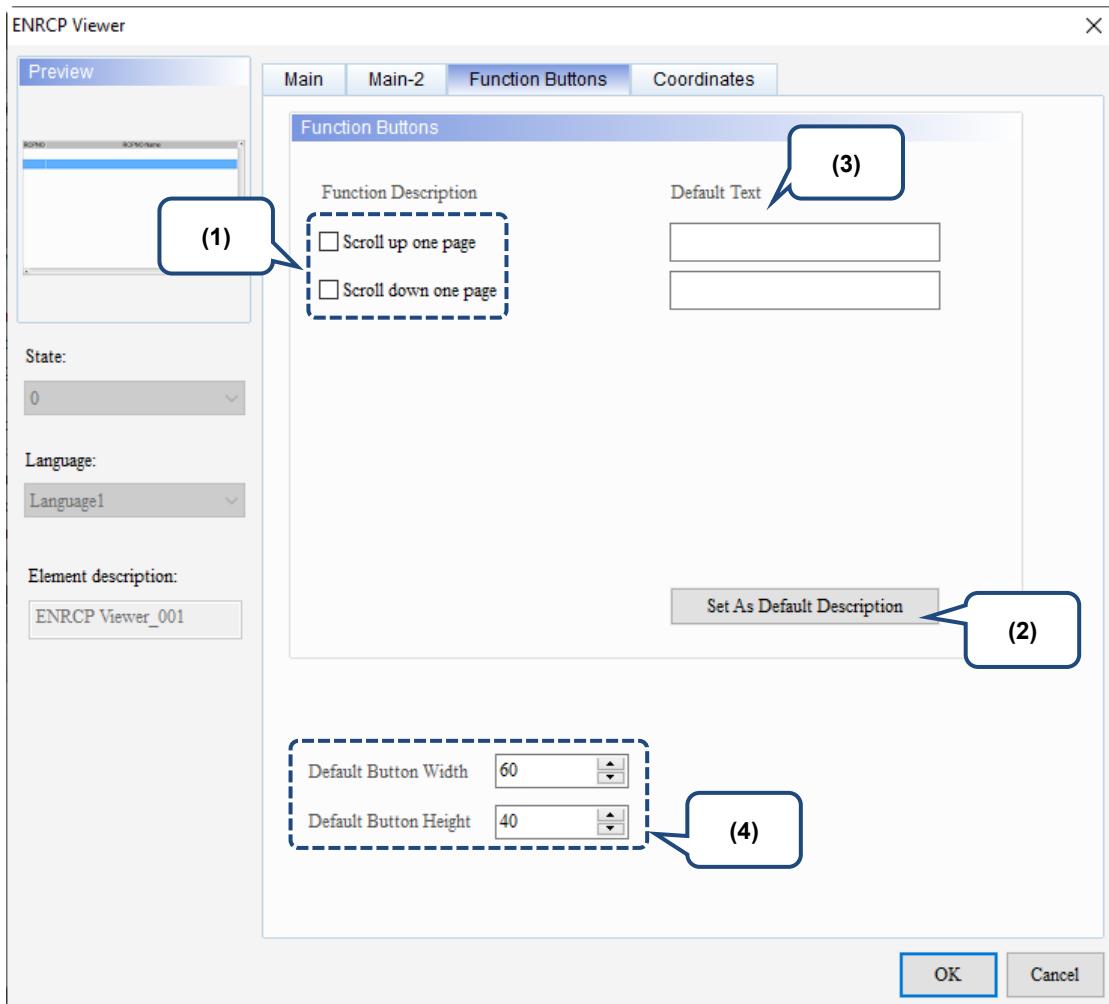


Figure 19.7.4 Function Buttons property page for the ENRCP Viewer element

No.	Property	Function description
(1)	Function Buttons	These are function buttons for the ENRCP Viewer element, including Scroll up one page and Scroll down one page.
(2)	Set As Default Description	Press this button to insert the default strings to the Default Text fields.
(3)	Default Text	Press <b>Set As Default Description</b> to insert the default strings to the fields. You can also enter user-defined strings.
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.

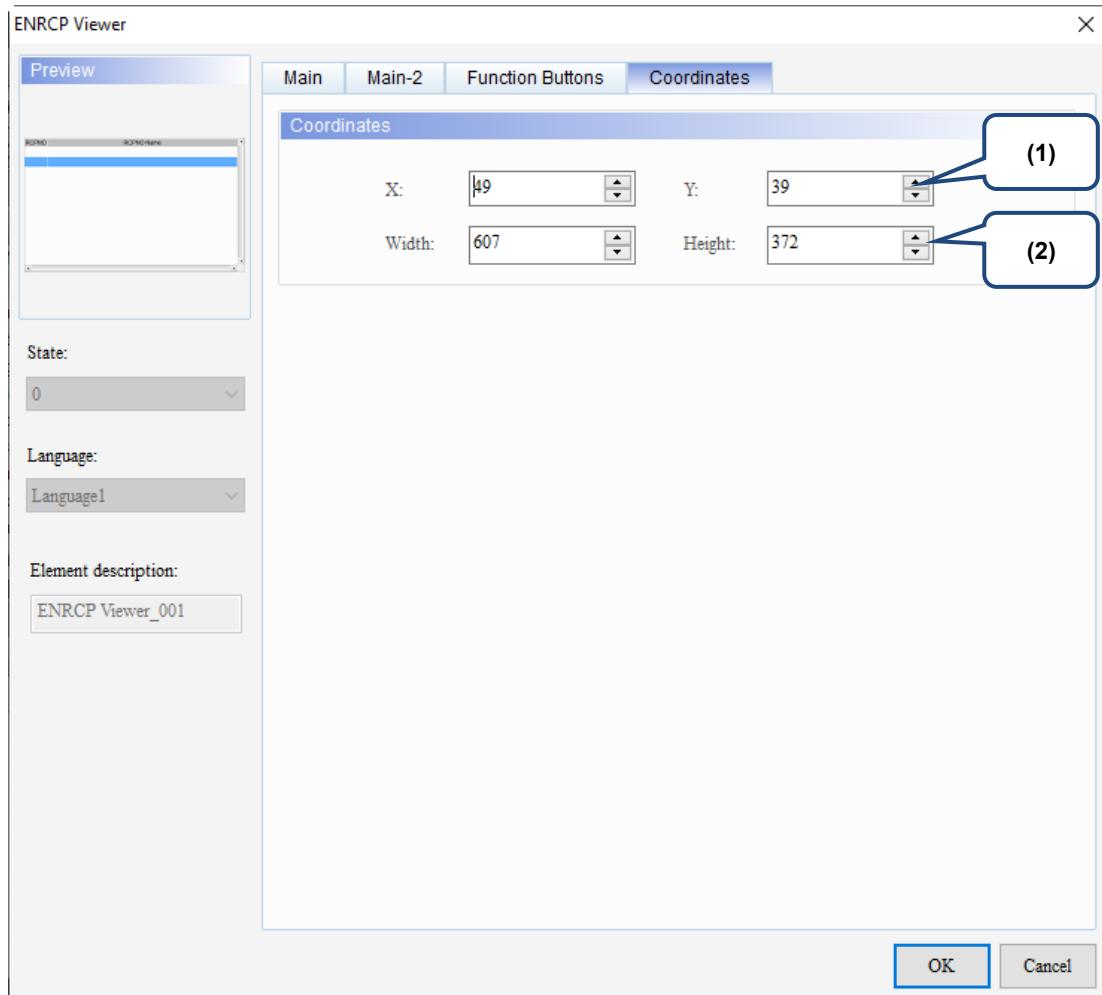
**■ Coordinates**

Figure 19.7.5 Coordinates property page for the ENRCP Viewer element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 19.8 FTP file list

This function supports file transfer on the DOP-107H models only (FTP client). With this function, you can transfer files between the DOP-107H series HMI and the FTP server. Besides, functions of the login / logout mechanism, file upload, file deletion, file download, file management, file renaming, and directory (folder) management are provided.

The FTP file list element must be used with the FTP File Setting functions in [Options] > [Configuration] > [Network Settings] > [FTP].

When you double-click the FTP file list, the property page is shown as follows.

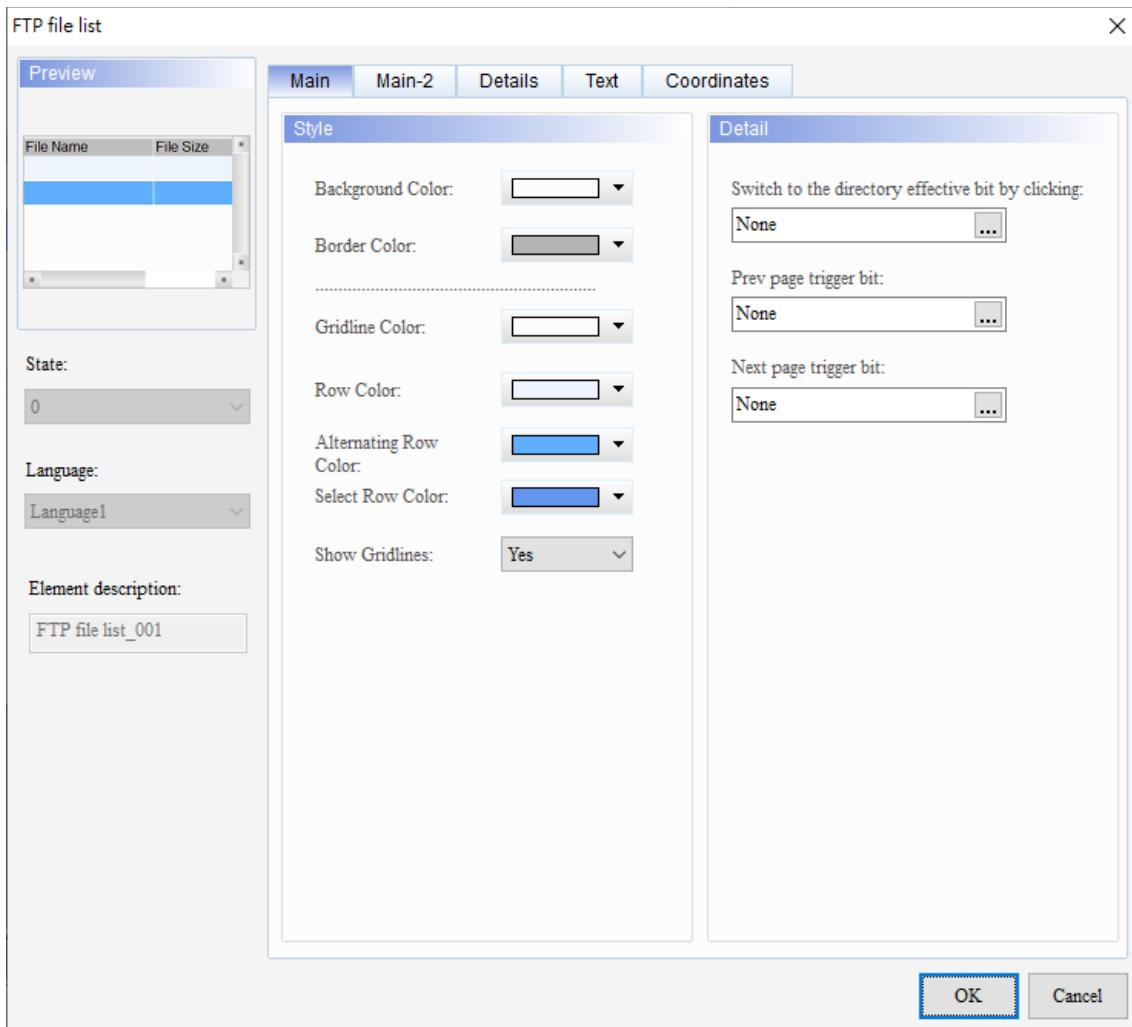


Figure 19.8.1 Properties of FTP file list

Table 19.8.1 Function page of the FTP file list element

FTP file list	
Function page	Description
Main	Set the Background Color, Border Color, Gridline Color, Row Color, Alternating Row Color, Select Row Color, and Show Gridlines options. Set the Switch to the directory effective bit by clicking, Prev page trigger bit, and Next page trigger bit.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Details	Select the check boxes for <b>File Size</b> , <b>File Timestamp</b> , and <b>File Name</b> , and set the Column order. Set the Title Text Alignment, Title Background, and Title Text Color.
Text	Set the font, size, and color of the texts.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

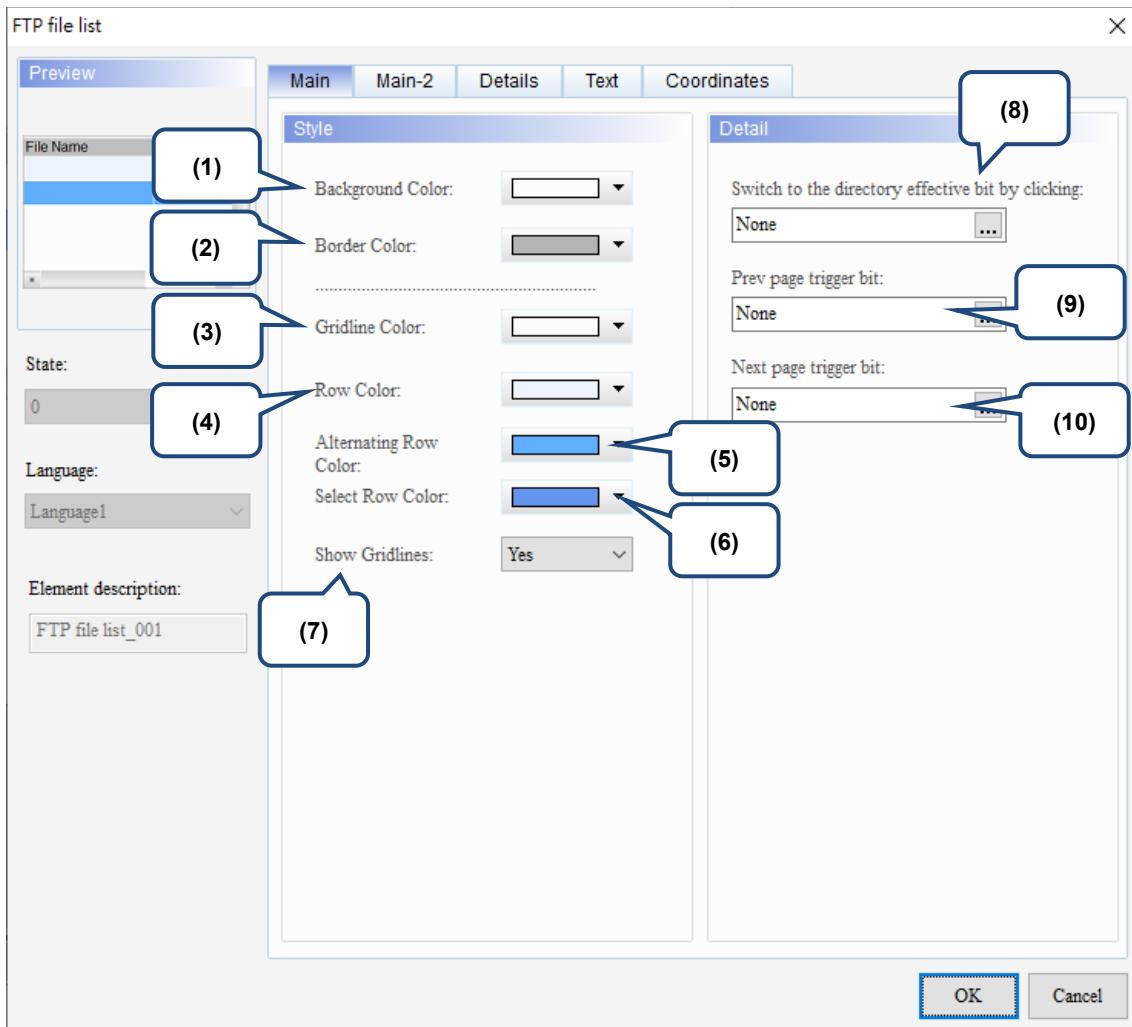
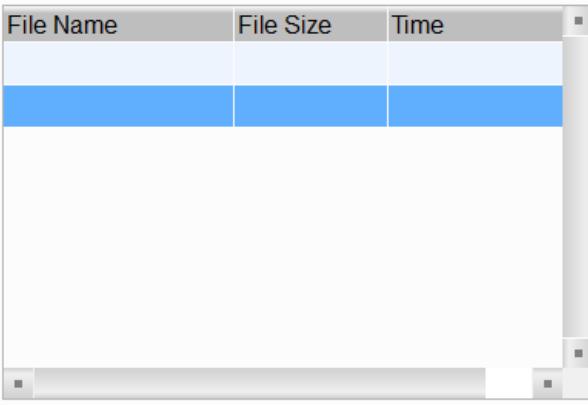
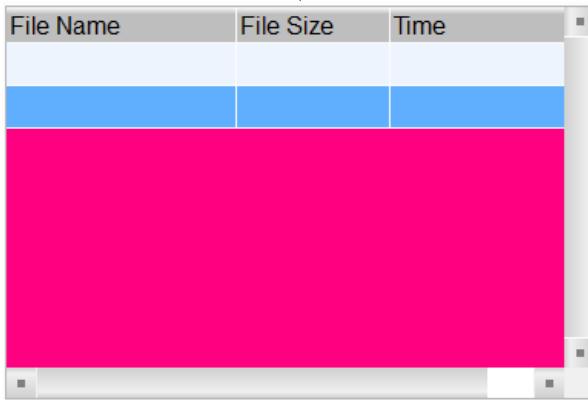
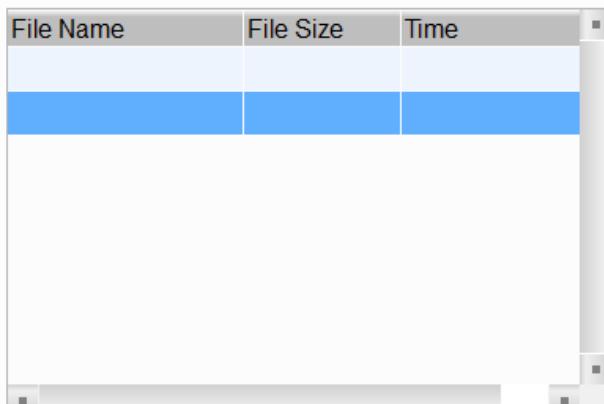
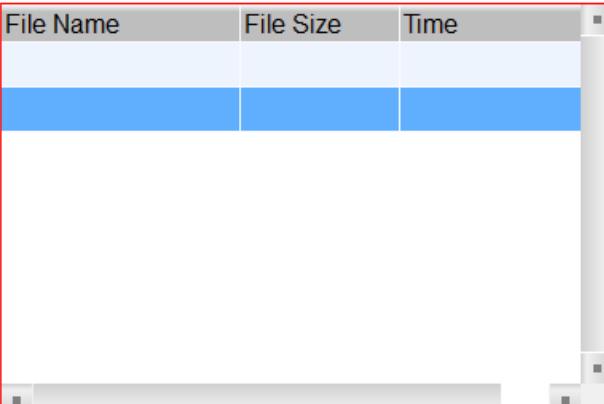


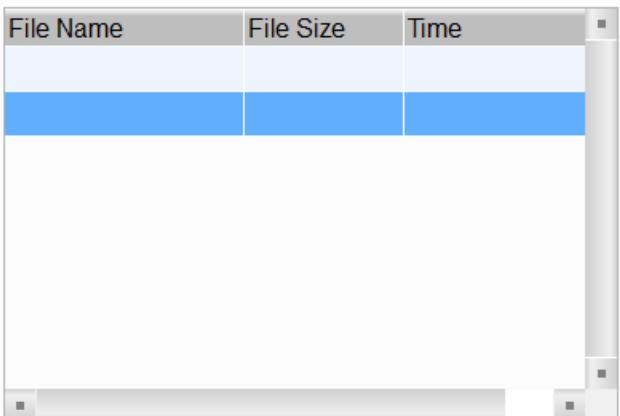
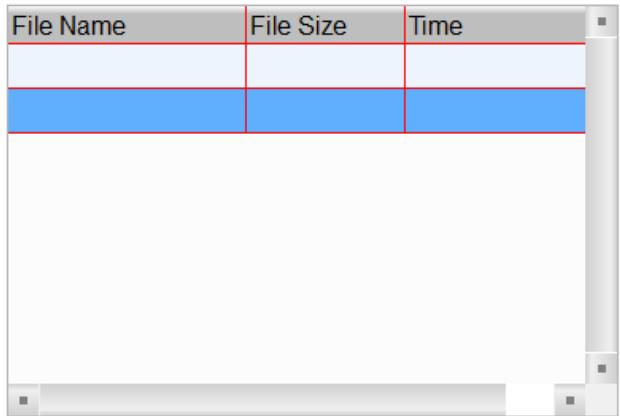
Figure 19.8.2 Main property page for the FTP file list element

No.	Property	Function description
(1)	Background Color	<p>Set the background color of the element. The default is white.</p>  <p>Background Color</p>  <p>Background Color</p> 

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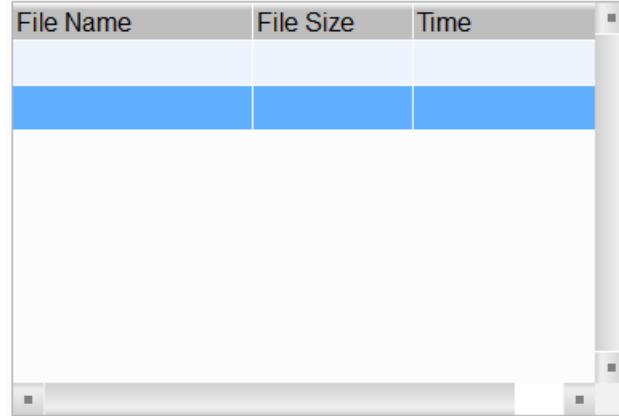
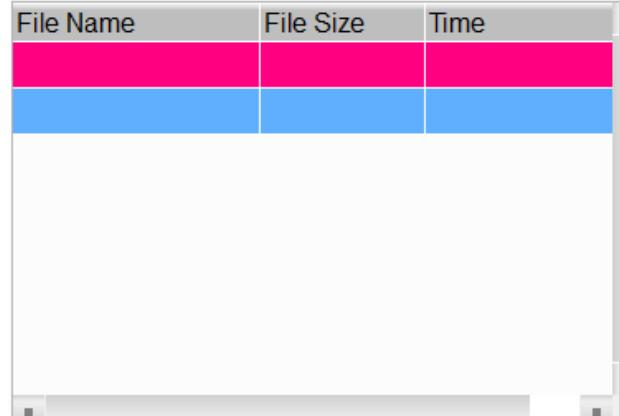
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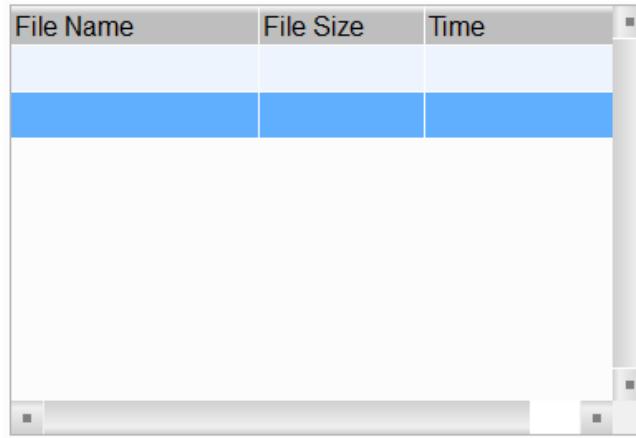
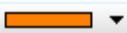
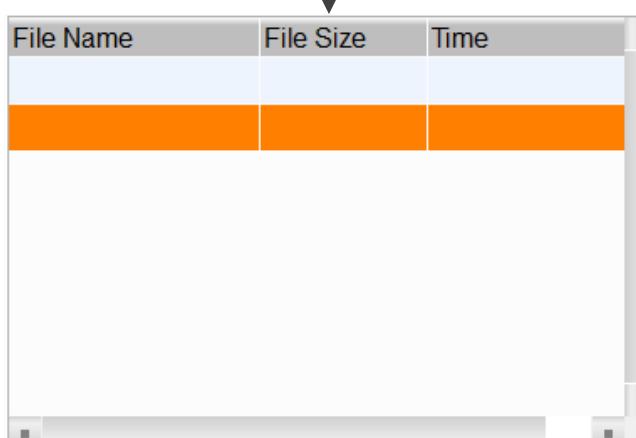
No.	Property	Function description
(2)	Border Color	<p>Set the border color of the element. The default is gray.</p>  <p>Border Color </p> 

No.	Property	Function description
(3)	Gridline Color	<p>■ The Gridline Color setting is available only when you select <b>Yes</b> for Show Gridlines.</p> <p>■ Set the gridline color of the element. The default is white.</p>  <p>Gridline Color </p> 

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No.	Property	Function description
(4)	Row Color	<p>Set the color for each row. The default is  .</p>  <p>↓</p> <p>Row Color </p> 

No.	Property	Function description
(5)	Alternating Row Color	<p>Set the color for the alternating row. The default is  .</p>  <p>↓</p> <p>Alternating Row Color </p> 
(6)	Select Row Color	<ul style="list-style-type: none"> <li>■ The color of the data row you select in the FTP file list.</li> <li>■ Set the color of the selected row. The default is  .</li> </ul>
(7)	Show Gridlines	<ul style="list-style-type: none"> <li>■ The default is Yes.</li> <li>■ When you select No, the Gridline Color setting is not available.</li> </ul>
(8)	Switch to the directory effective bit by clicking	When this bit is On, you can double-click the directory to go inside the folder.
(9)	Prev page trigger bit	When this bit is On, the element display switches to the previous page and this bit is automatically cleared once the action is complete.
(10)	Next page trigger bit	When this bit is On, the element display switches to the next page and this bit is automatically cleared once the action is complete.

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## ■ Main-2

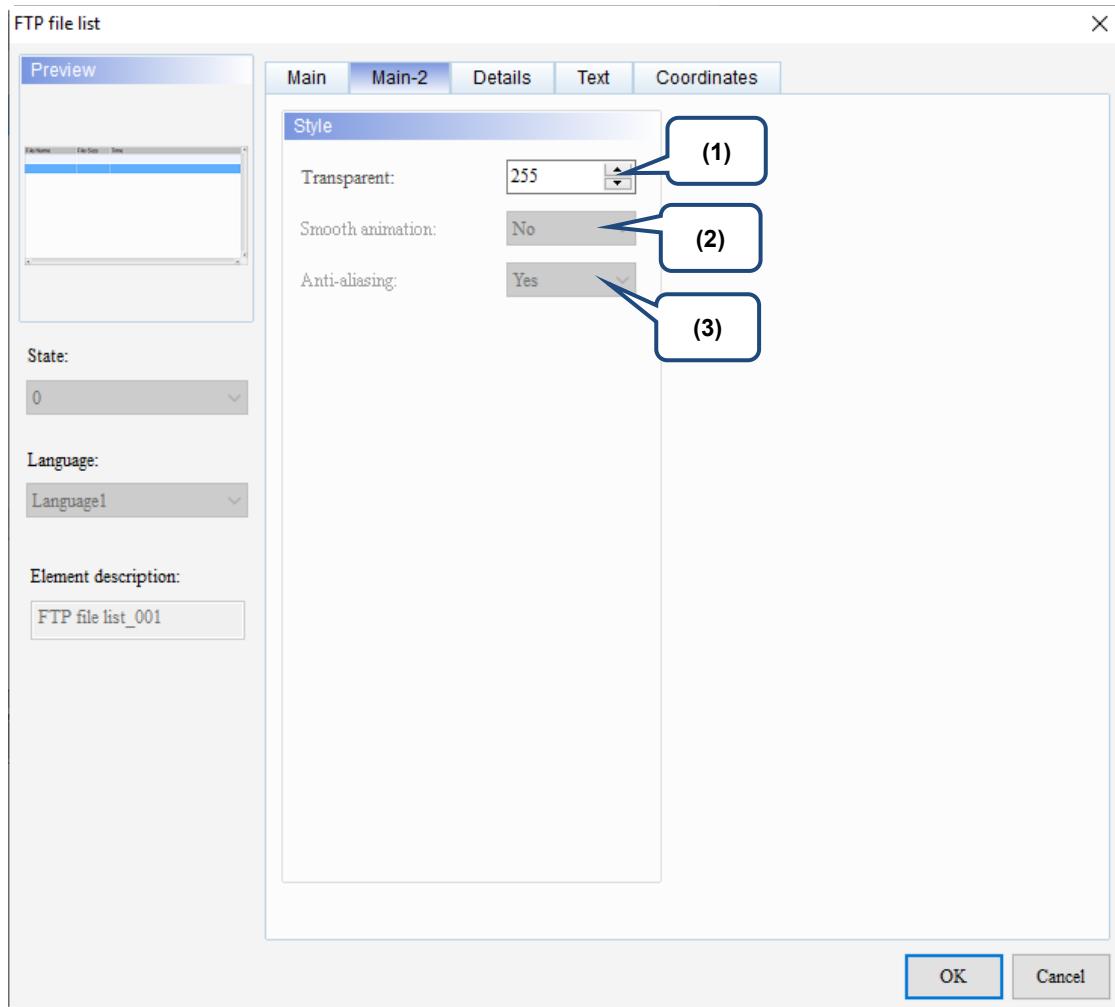


Figure 19.8.3 Main-2 property page for the FTP file list element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

■ Details

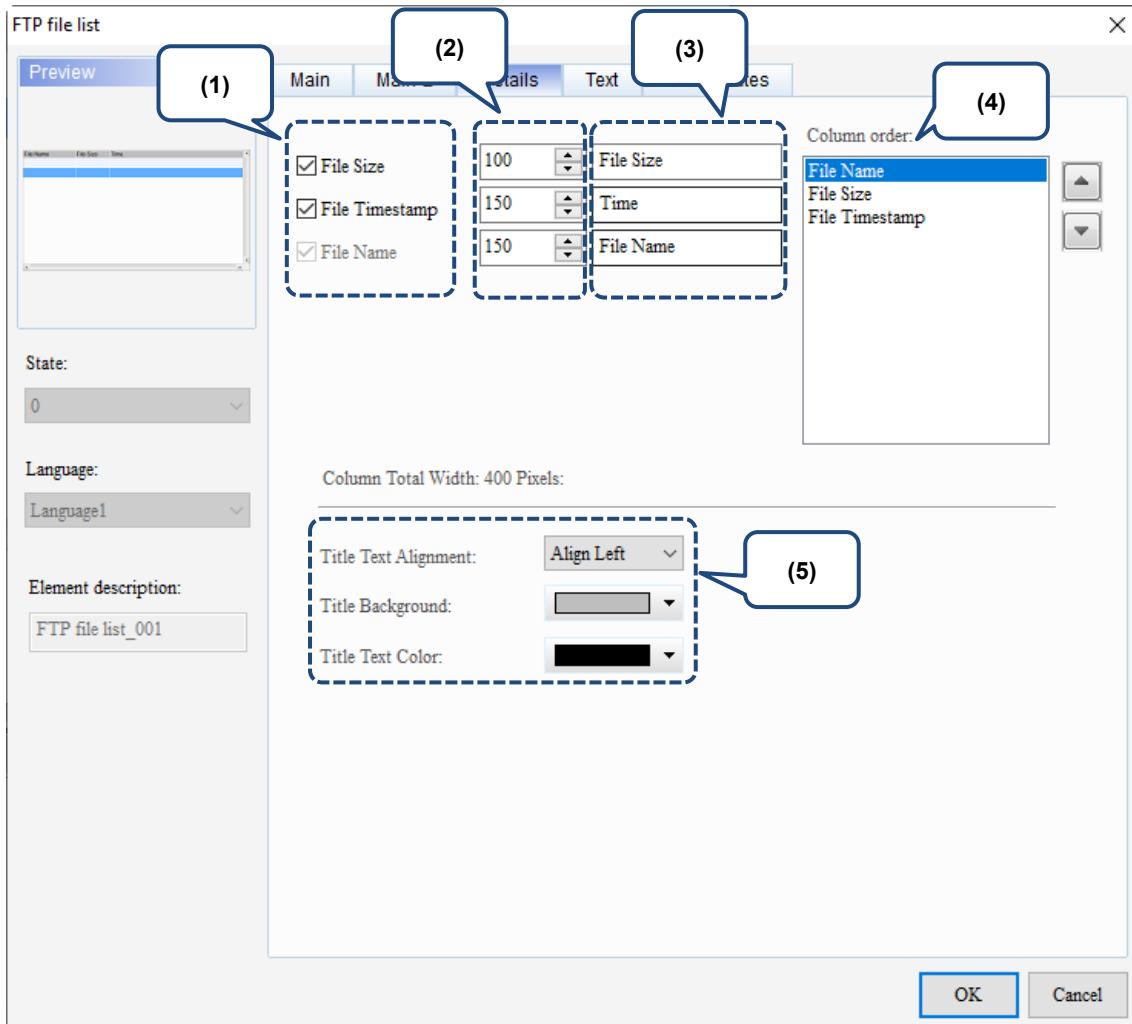
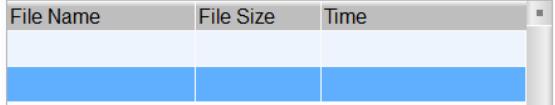
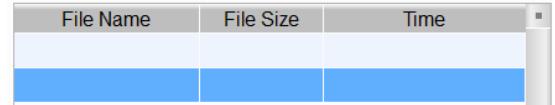
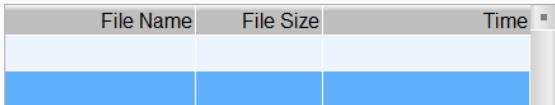
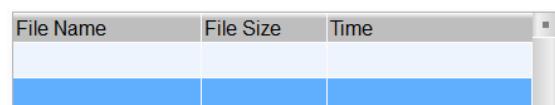
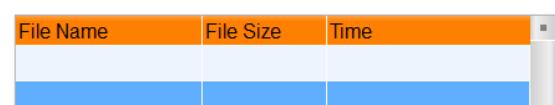


Figure 19.8.4 Details property page for the FTP file list element

No.	Property	Function description
(1)	Column display	Select the columns you want to display on the element.
(2)	Column width	You can adjust the width for each column.
(3)	Column title	You can define the titles for each column.
(4)	Column order	After selecting the columns you want to display, you can use  and  to adjust the column displaying order.

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No.	Property	Function description		
(5)	Title Text Alignment	Set the column title to align left, center, or right.		
		Align Left		
		Center		
	Title Background	Align Right		
		Default		
	Title Text Color	After		
		Default		
		After		

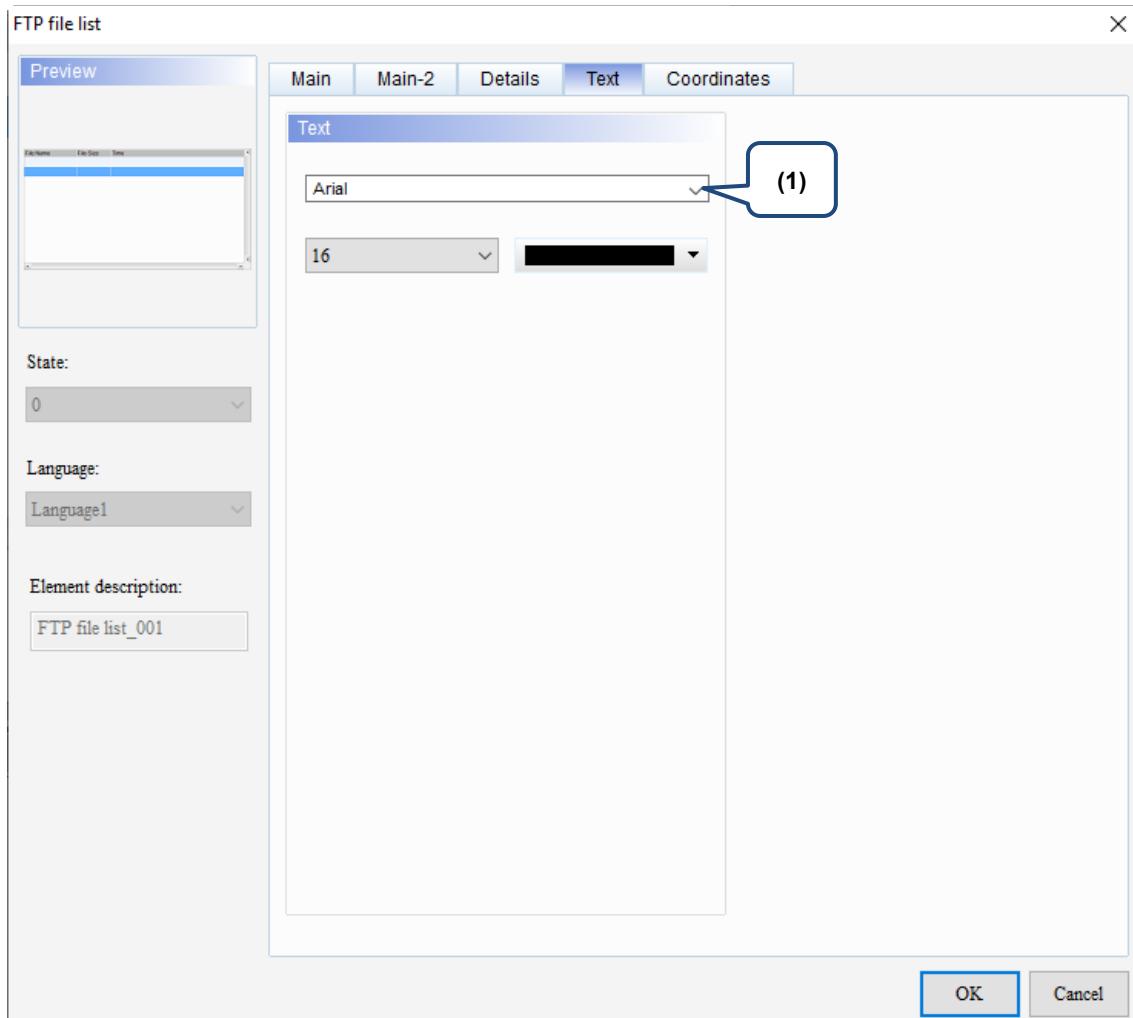
**■ Text**

Figure 19.8.5 Text property page for the FTP file list element

No.	Property	Function description
(1)	Text property	Set the text properties, including the font, size, and color.

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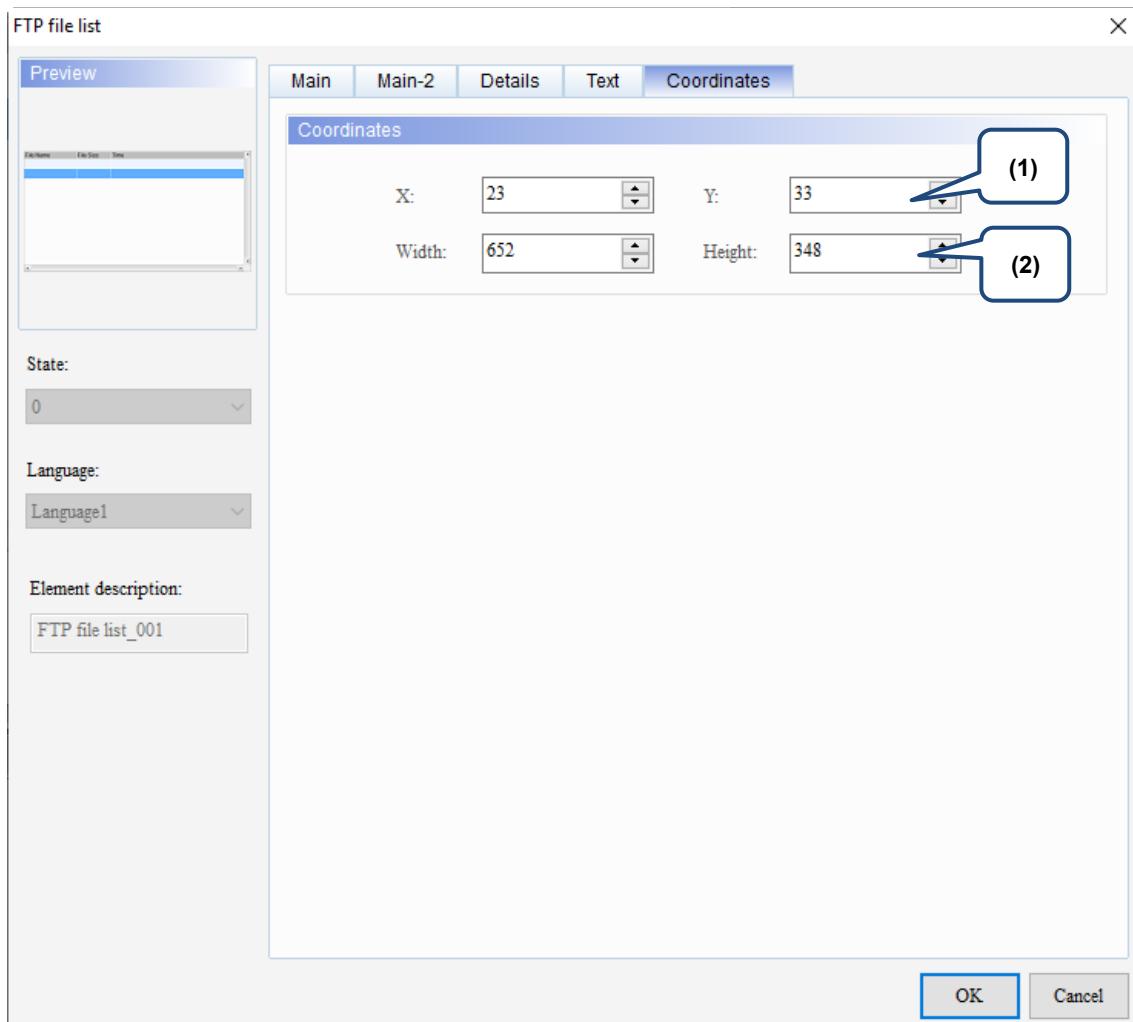
**■ Coordinates**

Figure 19.8.6 Coordinates property page for the FTP file list element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

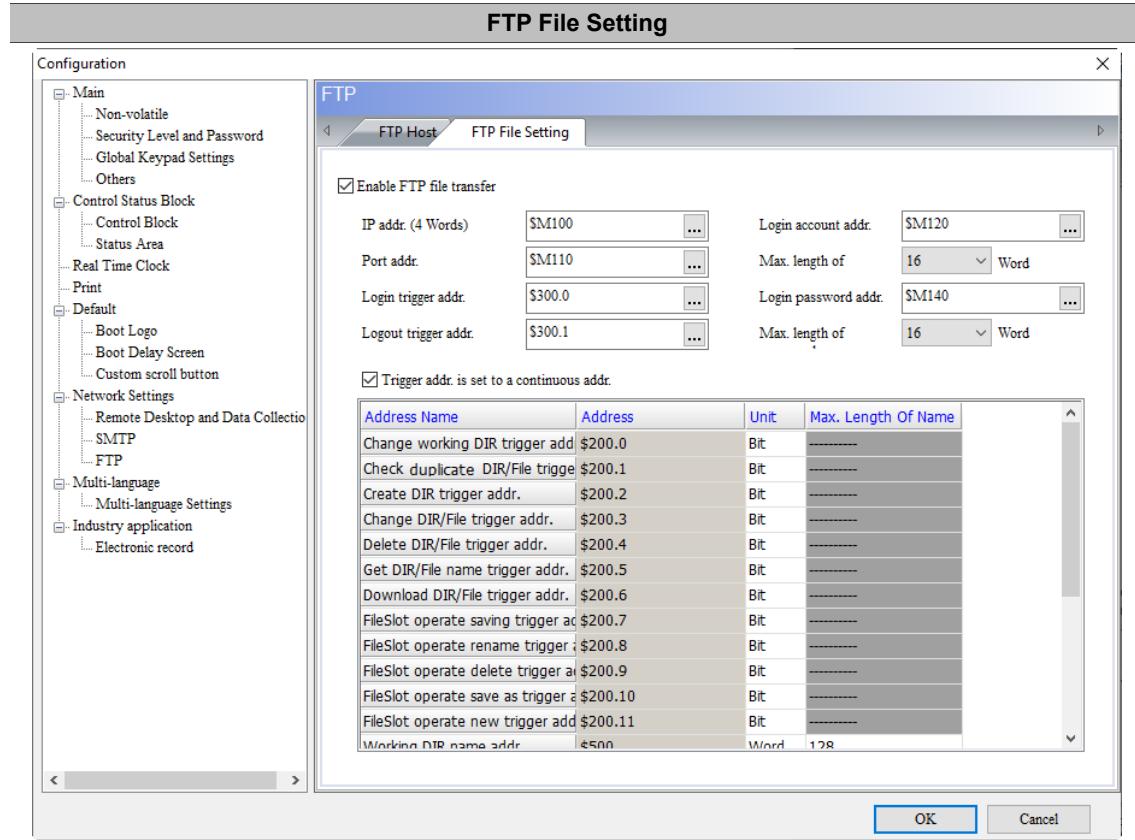
## 19.9 FTP File Setting

This function supports file transfer on the DOP-107H models only (FTP client). With this function, you can transfer files between the DOP-107H series HMI and the FTP server. Besides, functions of the login / logout mechanism, file upload, file deletion, file download, file management, file renaming, and directory (folder) management are provided.

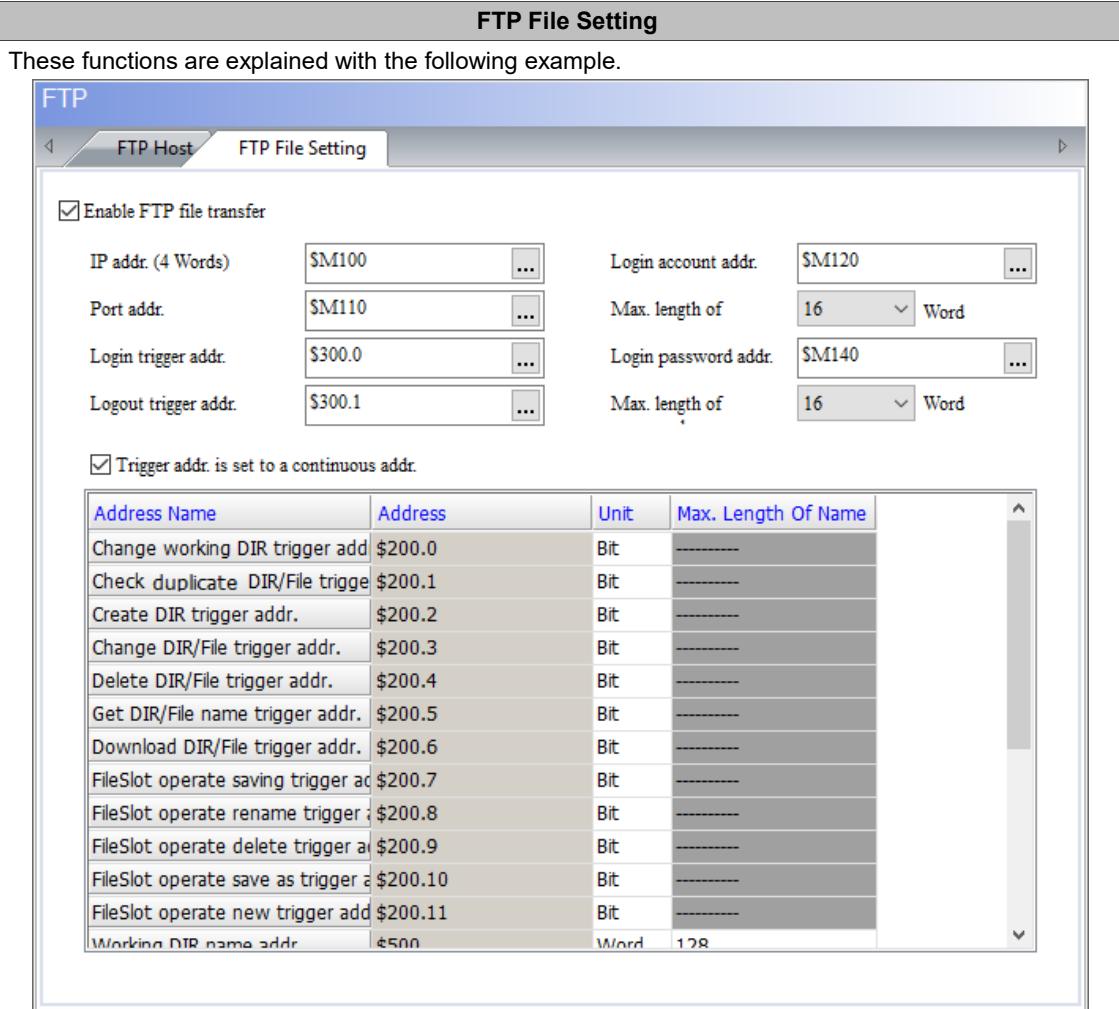
The FTP File Setting functions must be used with the FTP file list element.

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Table 19.9.1 FTP File Setting



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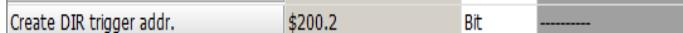
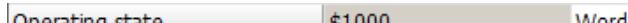
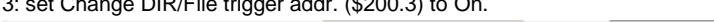
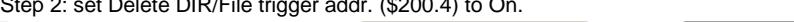


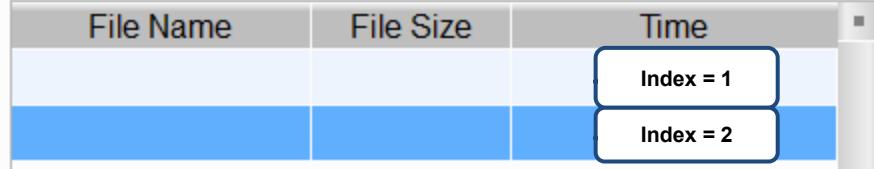
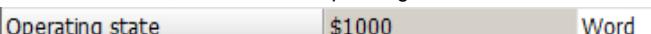
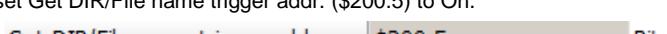
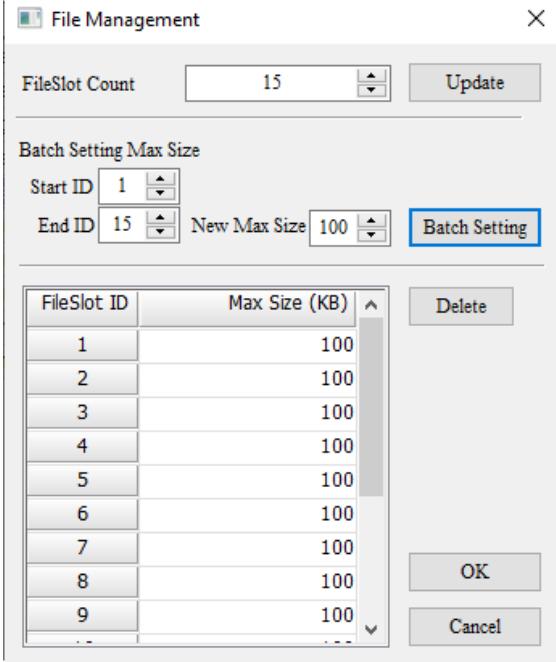
Property	Description	
Enable FTP file transfer	Select the check box for <b>Enable FTP file transfer</b> to enable the FTP client function.	
Host login	IP addr.	Set the IP address of the FTP server to connect.
	Port addr.	Set the port of the FTP server to connect. The default is 21.
	Login trigger addr.	The value is in bit. Triggering this bit to On to log in.
	Logout trigger addr.	The value is in bit. Triggering this bit to On to log out.
	Login account addr.	Set the start address of the account. The maximum length of the account is up to 16 words.
	Max. length of	Set the start address of the password. The maximum length of the password is up to 16 words.
	Login password addr.	
	Max. length of	

FTP File Setting																																								
Property	Description																																							
Switch working directory	<p>Change working DIR trigger addr. When this bit is On, the working directory is switched. This bit is automatically cleared once the action is complete.</p> <p>Example</p> <p>Step 1: set the string in Working DIR name addr. (\$500) to "/lua".</p> <p><input checked="" type="checkbox"/> Trigger addr. is set to a continuous addr.</p> <table border="1"> <thead> <tr> <th>Address Name</th> <th>Address</th> <th>Unit</th> <th>Max. Length Of Name</th> </tr> </thead> <tbody> <tr> <td>FileSlot operate rename trigger addr.</td> <td>\$200.8</td> <td>Bit</td> <td>-----</td> </tr> <tr> <td>FileSlot operate delete trigger addr.</td> <td>\$200.9</td> <td>Bit</td> <td>-----</td> </tr> <tr> <td>FileSlot operate save as trigger addr.</td> <td>\$200.10</td> <td>Bit</td> <td>-----</td> </tr> <tr> <td>FileSlot operate new trigger addr.</td> <td>\$200.11</td> <td>Bit</td> <td>-----</td> </tr> <tr> <td>Working DIR name addr.</td> <td>\$500</td> <td>Word</td> <td>128</td> </tr> <tr> <td>Selected DIR/File name addr.</td> <td>\$700</td> <td>Word</td> <td>16</td> </tr> </tbody> </table> <p>Step 2: set Change working DIR trigger addr. (\$200.0) to On.</p> <p><input checked="" type="checkbox"/> Trigger addr. is set to a continuous addr.</p> <table border="1"> <thead> <tr> <th>Address Name</th> <th>Address</th> <th>Unit</th> <th>Max. Length Of Name</th> </tr> </thead> <tbody> <tr> <td>Change working DIR trigger addr.</td> <td>\$200.0</td> <td>Bit</td> <td>-----</td> </tr> </tbody> </table> <p>Step 3: the FTP file list element switches to the lua directory. If the directory does not exist, the content of Operating state becomes 0x0022.</p> <table border="1"> <thead> <tr> <th>Operating state</th> <th>\$1000</th> <th>Word</th> </tr> </thead> </table> <p>Step 4: once the action of changing the working directory is complete, this bit is automatically set to Off.</p>	Address Name	Address	Unit	Max. Length Of Name	FileSlot operate rename trigger addr.	\$200.8	Bit	-----	FileSlot operate delete trigger addr.	\$200.9	Bit	-----	FileSlot operate save as trigger addr.	\$200.10	Bit	-----	FileSlot operate new trigger addr.	\$200.11	Bit	-----	Working DIR name addr.	\$500	Word	128	Selected DIR/File name addr.	\$700	Word	16	Address Name	Address	Unit	Max. Length Of Name	Change working DIR trigger addr.	\$200.0	Bit	-----	Operating state	\$1000	Word
Address Name	Address	Unit	Max. Length Of Name																																					
FileSlot operate rename trigger addr.	\$200.8	Bit	-----																																					
FileSlot operate delete trigger addr.	\$200.9	Bit	-----																																					
FileSlot operate save as trigger addr.	\$200.10	Bit	-----																																					
FileSlot operate new trigger addr.	\$200.11	Bit	-----																																					
Working DIR name addr.	\$500	Word	128																																					
Selected DIR/File name addr.	\$700	Word	16																																					
Address Name	Address	Unit	Max. Length Of Name																																					
Change working DIR trigger addr.	\$200.0	Bit	-----																																					
Operating state	\$1000	Word																																						
Check duplicate directories / files	<p>Check duplicate DIR/File trigger addr. When this bit is On, the HMI checks for the duplicate directories or files. This bit is automatically cleared once the action is complete.</p> <p>Example</p> <p>Step 1: set the string in Change/Create/Check name addr. (\$750) to "lua".</p> <table border="1"> <thead> <tr> <th>Change/Create/Check name addr.</th> <th>\$750</th> <th>Word</th> <th>16</th> </tr> </thead> </table> <p>Step 2: set Check duplicate DIR/File trigger addr. (\$200.1) to On.</p> <table border="1"> <thead> <tr> <th>Check duplicate DIR/File trigger</th> <th>\$200.1</th> <th>Bit</th> <th>-----</th> </tr> </thead> </table> <p>Step 3: if the lua directory already exists, the content of Check duplicated DIR/File result (\$900) becomes 1; if the directory does not exist, the content of Check duplicated DIR/File result (\$900) becomes 0.</p> <table border="1"> <thead> <tr> <th>Check duplicated DIR/File result</th> <th>\$900</th> <th>Word</th> <th>-----</th> </tr> </thead> </table> <p>Step 4: once the action of checking the duplicate directories is complete, this bit is automatically set to Off.</p>	Change/Create/Check name addr.	\$750	Word	16	Check duplicate DIR/File trigger	\$200.1	Bit	-----	Check duplicated DIR/File result	\$900	Word	-----																											
Change/Create/Check name addr.	\$750	Word	16																																					
Check duplicate DIR/File trigger	\$200.1	Bit	-----																																					
Check duplicated DIR/File result	\$900	Word	-----																																					

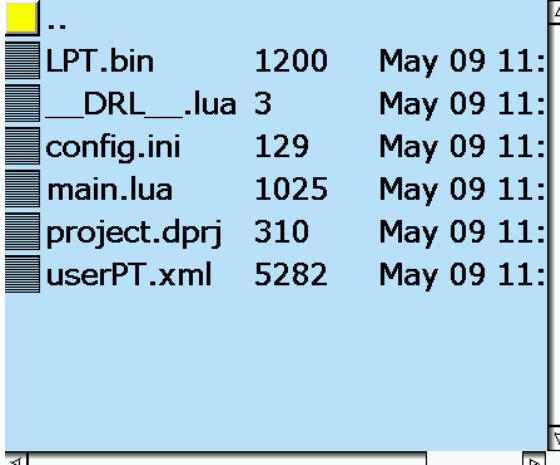
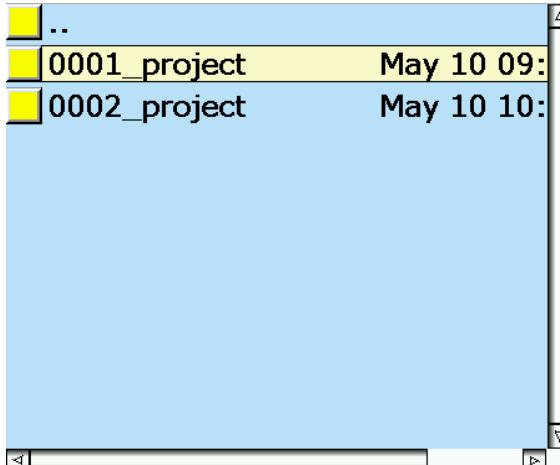
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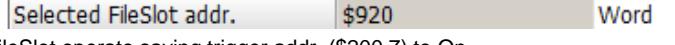
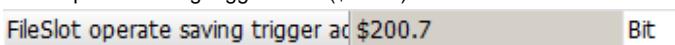
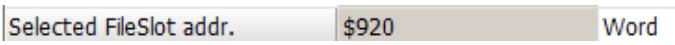
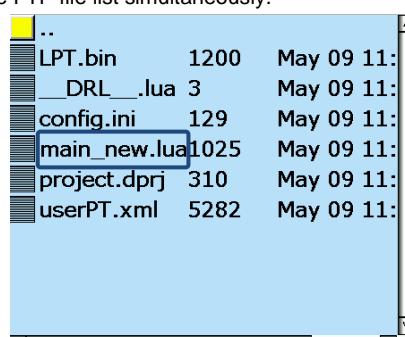
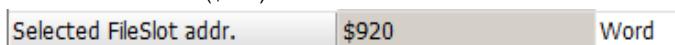
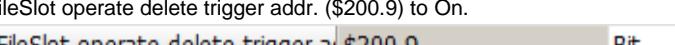
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FTP File Setting		
Property	Description	
	Create DIR trigger addr.	When this bit is On, the directory is created. This bit is automatically cleared once the action is complete.
<b>Example</b>		
Step 1: set the string in Change/Create/Check name addr. (\$750) to "TestHMI".		
		
Step 2: set Create DIR trigger addr. (\$200.2) to On.		
		
Step 3: the TestHMI directory is created in the FTP server and the FTP file list element is updated. If the TestHMI directory already exists, the content of Operating state becomes 0x0042.		
		
Step 4: once the action of creating the directory is complete, this bit is automatically set to Off.		
	Change DIR/File trigger addr.	When this bit is On, the name of the directory or file is changed. This bit is automatically cleared once the action is complete.
<b>Example</b>		
Step 1: use the FTP file list element and click the TestHMI directory which is to be changed.		
Step 2: set the string in Change/Create/Check name addr. (\$750) to "ChangeHMI".		
		
Step 3: set Change DIR/File trigger addr. (\$200.3) to On.		
		
Step 4: the name of the TestHMI directory is changed to ChangeHMI, and the HMI updates the FTP file list element simultaneously. If the ChangeHMI directory already exists, the content of Operating state (\$1000) becomes 0x0052.		
		
Step 5: once the action of changing the directory name is complete, this bit is automatically set to Off.		
Note: the preceding example illustrates the operation on directories. The trigger address is also available for the operation on files.		
	Delete DIR/File trigger addr.	When this bit is On, the name of the directory or file is deleted. This bit is automatically cleared once the action is complete.
<b>Example</b>		
Step 1: set the string in Selected DIR/File name addr. (\$700) to "ChangeHMI".		
		
Step 2: set Delete DIR/File trigger addr. (\$200.4) to On.		
		
Step 3: the ChangeHMI directory in the FTP server is deleted and the HMI updates the FTP file list element simultaneously.		
Step 4: once the action of deleting the directory is complete, this bit is automatically cleared to Off.		
Note: the preceding example illustrates the operation on directories. The trigger address is also available for the operation on files.		

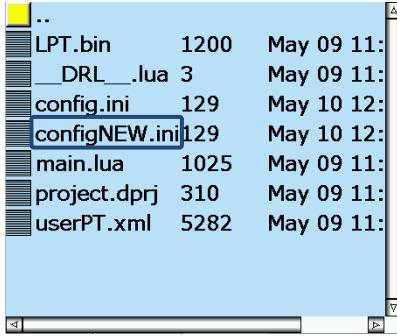
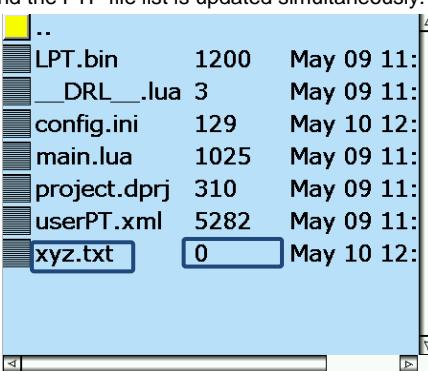
FTP File Setting	
Property	Description
Obtain the directory / file name	<p>Get DIR/File name trigger addr. When this bit is On, the name of the directory or file is obtained. This bit is automatically cleared once the action is complete.</p> <p>Example Step 1: the FTP file list element is as follows.</p>  <p>Step 2: set Index of DIR/File name addr. (\$921) to 2.</p>  <p>If the index value is 0, the content of Operating state becomes 0x0027.</p>  <p>Step 3: set Get DIR/File name trigger addr. (\$200.5) to On.</p>  <p>Step 4: the directory name when the index value of the FTP server is 2 is obtained, and the content of Get DIR/File name result (\$770) is "lua".</p>  <p>Note 1: the preceding example illustrates the operation on directories. The trigger address is also available for the operation on files.</p> <p>Note 2: refer to the index value of the FTP server. The displaying order of the FTP file list element on the HMI may not be identical to the order in the FTP server.</p>
Download the directory / file	<p>Download DIR/File trigger addr. When this bit is On, the HMI starts to download the file from the FTP server. This bit is automatically cleared once the action is complete.</p> <p>Before using this function, you need to go to [Option] &gt; [FileSlot File Management] to set the related settings.</p> 

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FTP File Setting	
Property	Description
Download the directory / file	<p>Example Step 1: when the FTP server file is stored in the /lua/0001_project directory as shown in the following figure.</p>  <p>Switch to the /lua directory and select the 0001_project directory as shown in the following figure.</p>  <p>Step 2: set Download DIR/File trigger addr. (\$200.6) to On.</p> <p><b>Download DIR/File trigger addr. \$200.6</b> Bit</p> <p>Step 3: the HMI downloads the file from the FTP server to the FileSlot storage space set in Selected FileSlot addr. (\$920). If there are multiple files in the directory, the Selected FileSlot addr. (\$920) refers to the FileSlot start address.</p> <p><b>Selected FileSlot addr. \$920</b> Word</p> <p>After the download is complete, the value of Number of downloads (\$910) becomes 6.</p> <p><b>Number of downloads \$910</b> Word</p> <p>Step 4: after the download is complete, the file is stored in the FileSlot storage space. To edit the file, you need to use the Text List element. To read the name of the file, you need to use the FileSlotGetName macro command.</p> <p>Note 1: the preceding example illustrates the operation on directories. The trigger address is also available for the operation on files.</p> <p>Note 2: if the name of the downloaded file is known, the HMI can access the ID of the file in the FileSlot with the FileSlotGetID macro command.</p>

FTP File Setting				
Property	Description			
	FileSlot operate saving trigger addr.	When this bit is On, the HMI uploads the selected FileSlot file to the FTP server. This bit is automatically cleared once the action is complete.		
Before using this function, you need to set the FileSlot function and execute the Download DIR/File function. Example Step 1: set Selected FileSlot addr. (\$920) to 4.				
				
Step 2: set FileSlot operate saving trigger addr. (\$200.7) to On.				
				
Step 3: the HMI uploads the file (main.lua) which FileSlotID is 4 to the FTP server.				
FileSlot operation	FileSlot operate rename trigger addr.	When this bit is On, the HMI changes the name of the selected FileSlot file and uploads it to the FTP server. This bit is automatically cleared once the action is complete.		
	Before using this function, you need to set the FileSlot function and execute the Download DIR/File function. Example Step 1: set Selected FileSlot addr. (\$920) to 4.			
				
	Step 2: set the string in Change/Create/Check name addr. (\$750) to "main_new.lua". Step 3: set FileSlot operate rename trigger addr. (\$200.8) to On.			
				
Step 4: the HMI changes the file name from "main.lua" to "main_new.lua", and changes the name in the FileSlot and updates the FTP file list simultaneously.				
				
	FileSlot operate delete trigger addr.	When this bit is On, the HMI deletes the selected FileSlot file from the FTP server. This bit is automatically cleared once the action is complete.		
	Before using this function, you need to set the FileSlot function and execute the Download DIR/File function. Example Step 1: set Selected FileSlot addr. (\$920) to 1.			
				
	Step 2: set FileSlot operate delete trigger addr. (\$200.9) to On.			
				
Step 3: the HMI deletes the file "LPT.bin" from the FTP server and updates the FTP file list simultaneously.				

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FTP File Setting																																	
Property	Description																																
	<p>FileSlot operate save as trigger addr.</p> <p>When this bit is On, the HMI saves the selected FileSlot file in the FTP server. This bit is automatically cleared once the action is complete.</p> <p>Before using this function, you need to set the FileSlot function and execute the Download DIR/File function.</p> <p>Example</p> <p>Step 1: set Selected FileSlot addr. (\$920) to 3.</p> <p style="text-align: center;"><b>Selected FileSlot addr. \$920 Word</b></p> <p>Step 2: set the string in Change/Create/Check name addr. (\$750) to "configNEW.ini".</p> <p style="text-align: center;"><b>Change/Create/Check name addr. \$750 Word 16</b></p> <p>Step 3: set FileSlot operate save as trigger addr. (\$200.10) to On.</p> <p style="text-align: center;"><b>FileSlot operate save as trigger \$200.10 Bit</b></p> <p>Step 4: the HMI saves the file to the FTP server. The file named "configNEW.ini" is added to the FTP server and the FTP file list is updated simultaneously.</p>  <table border="1"> <tr><td>..</td><td></td><td></td><td></td></tr> <tr><td>LPT.bin</td><td>1200</td><td>May 09 11:</td><td></td></tr> <tr><td>__DRL__.lua</td><td>3</td><td>May 09 11:</td><td></td></tr> <tr><td>config.ini</td><td>129</td><td>May 10 12:</td><td></td></tr> <tr><td><b>configNEW.ini</b></td><td><b>129</b></td><td><b>May 10 12:</b></td><td></td></tr> <tr><td>main.lua</td><td>1025</td><td>May 09 11:</td><td></td></tr> <tr><td>project.dprj</td><td>310</td><td>May 09 11:</td><td></td></tr> <tr><td>userPT.xml</td><td>5282</td><td>May 09 11:</td><td></td></tr> </table>	..				LPT.bin	1200	May 09 11:		__DRL__.lua	3	May 09 11:		config.ini	129	May 10 12:		<b>configNEW.ini</b>	<b>129</b>	<b>May 10 12:</b>		main.lua	1025	May 09 11:		project.dprj	310	May 09 11:		userPT.xml	5282	May 09 11:	
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main.lua	1025	May 09 11:																															
project.dprj	310	May 09 11:																															
userPT.xml	5282	May 09 11:																															
FileSlot operation	<p>FileSlot operate new trigger addr.</p> <p>When this bit is On, the HMI adds the selected FileSlot file to the FTP server. This bit is automatically cleared once the action is complete.</p> <p>Before using this function, you need to set the FileSlot function.</p> <p>Example</p> <p>Step 1: set Selected FileSlot addr. (\$920) to 10.</p> <p style="text-align: center;"><b>Selected FileSlot addr. \$920 Word</b></p> <p>Step 2: set the string in Change/Create/Check name addr. (\$750) to "xyz.txt".</p> <p style="text-align: center;"><b>Change/Create/Check name addr. \$750 Word 16</b></p> <p>Step 3: set FileSlot operate new trigger addr. (\$200.11) to On.</p> <p style="text-align: center;"><b>FileSlot operate new trigger add \$200.11 Bit</b></p> <p>Step 4: the HMI adds the file to the FTP server. The file named "xyz.txt" with the file size as 0 is added to the FTP server and the FTP file list is updated simultaneously.</p>  <table border="1"> <tr><td>..</td><td></td><td></td><td></td></tr> <tr><td>LPT.bin</td><td>1200</td><td>May 09 11:</td><td></td></tr> <tr><td>__DRL__.lua</td><td>3</td><td>May 09 11:</td><td></td></tr> <tr><td>config.ini</td><td>129</td><td>May 10 12:</td><td></td></tr> <tr><td>main.lua</td><td>1025</td><td>May 09 11:</td><td></td></tr> <tr><td>project.dprj</td><td>310</td><td>May 09 11:</td><td></td></tr> <tr><td>userPT.xml</td><td>5282</td><td>May 09 11:</td><td></td></tr> <tr><td><b>xyz.txt</b></td><td><b>0</b></td><td><b>May 10 12:</b></td><td></td></tr> </table>	..				LPT.bin	1200	May 09 11:		__DRL__.lua	3	May 09 11:		config.ini	129	May 10 12:		main.lua	1025	May 09 11:		project.dprj	310	May 09 11:		userPT.xml	5282	May 09 11:		<b>xyz.txt</b>	<b>0</b>	<b>May 10 12:</b>	
..																																	
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<b>xyz.txt</b>	<b>0</b>	<b>May 10 12:</b>																															

FTP File Setting	
Operations of setting the names and addresses for directories and files	Set the name of the working directory to be switched
	Maximum name length
	Set the name of the selected directory / file
	Maximum name length
	Set the name of the directory / file to be changed / added / checked
	Maximum name length
	Set the selected FileSlot
Execution result settings	Set the index to obtain directory / file name
	Operation status
	Result of checking for duplicate directories / files
	Number of downloaded file
	Result of obtaining directory / file name

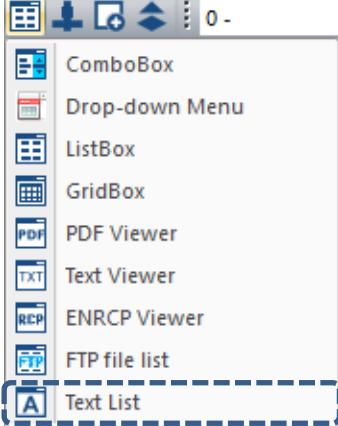
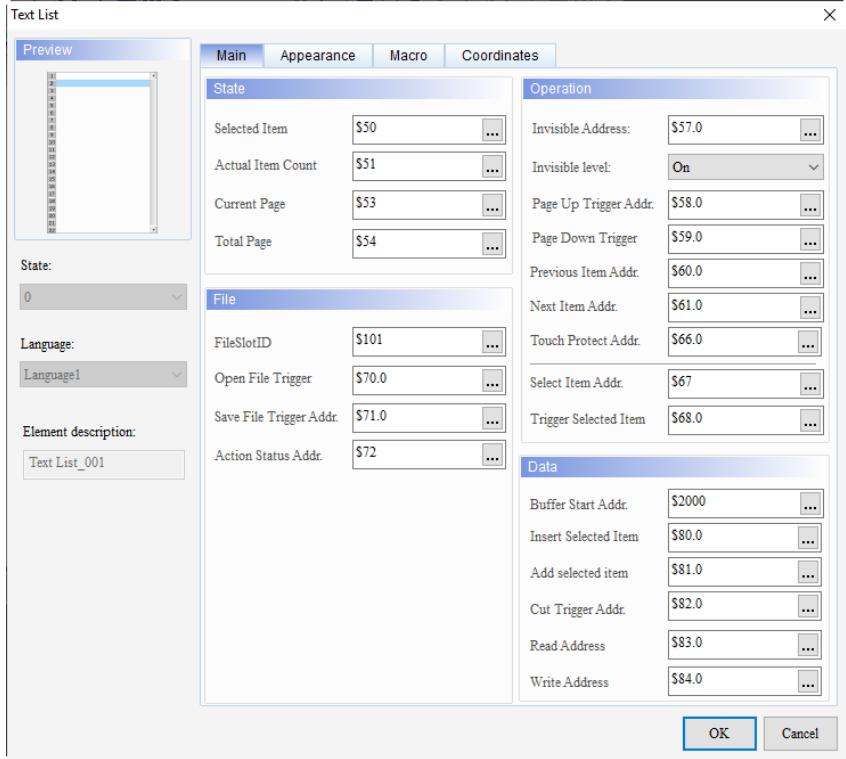
## 19.10 Text List

If there is a need for editing text files on the HMI, the Text List element supports reading and saving files, and file editing with the basic functions of Copy, Paste, Cut, and Insert. You can edit any text with the Text List element along with the Character Entry element and the buffer configuration.

Note: this function is available only on the DOP-107H handheld HMIs.

Refer to Table 19.10.1 for the Text List example.

Table 19.10.1 Text List example

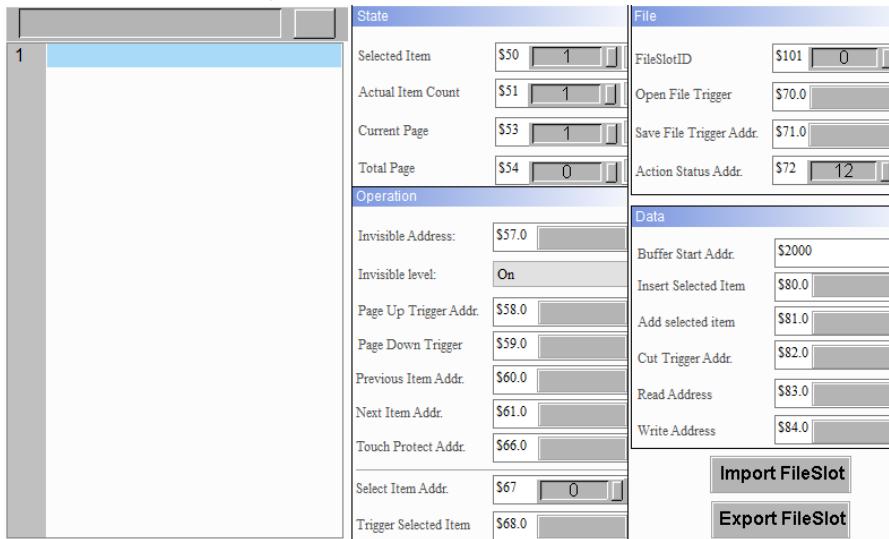
Text List	
Create Text List element	<p>Step 1: in the editing screen, go to [List] &gt; [Text List] and create a Text List element on the screen.</p>  <p>Step 2: on the Main property page, set the corresponding state addresses, including FileSlotID address, Select Item Addr., and trigger addresses of other editing actions.</p> 

Text List	
<p>Create Text List element</p>	<p>Step 3: on the Appearance property page, set and adjust the appearance of the element.</p>
<p>Create Character Entry element</p>	<p>Create a Character Entry element on the screen and set its Write Address as the Buffer Start Addr. (\$2000) of the Text List element. Then, you can enter user-defined data with the Character Entry element.</p>
<p>Create Maintained button and Numeric Entry elements</p>	<p>Create Numeric Entry and Maintained button elements corresponding to the settings in the Main property page of the Text List element for editing the Text List element.</p>

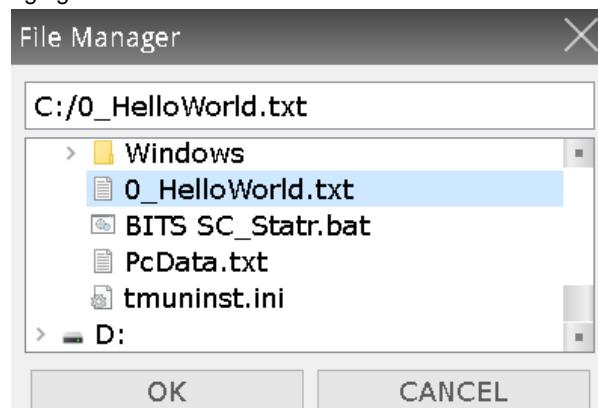
19

Execution results

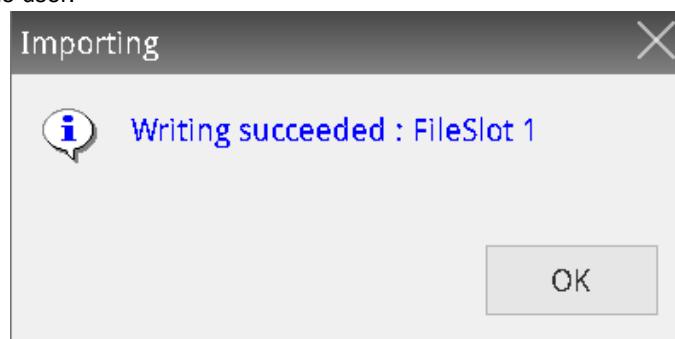
- After creating the elements, compile the elements and download the screen to the HMI.
- A blank file is created by default.



- Set FileSlotID to 1 and execute **Import FileSlot** to select the file to import as shown in the following figure.

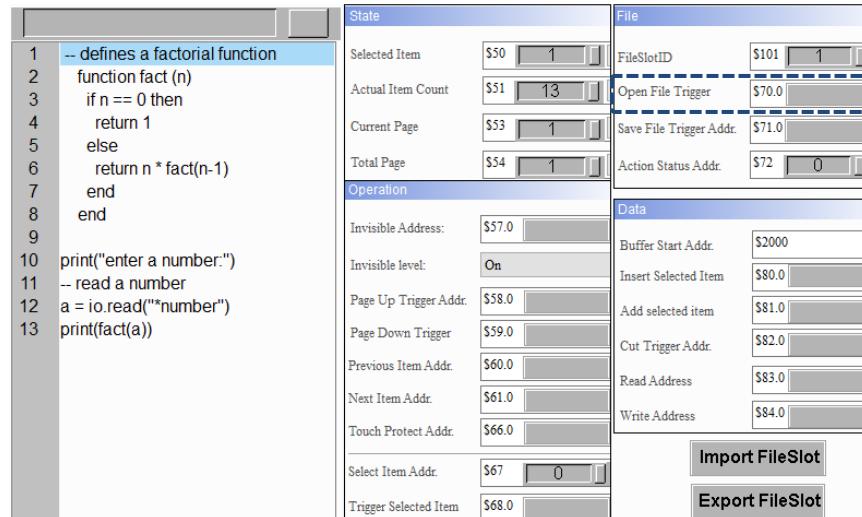


- After the file is successfully imported, the software displays the following message to notify the user.



### Text List

- Then, trigger the Open File Trigger address, and the Text List element loads the imported file 0\_HelloWord.txt.



- When the number of data rows exceeds the display range, the Text List element displays the data on different pages and shows a vertical scroll bar on the right.

Execution results

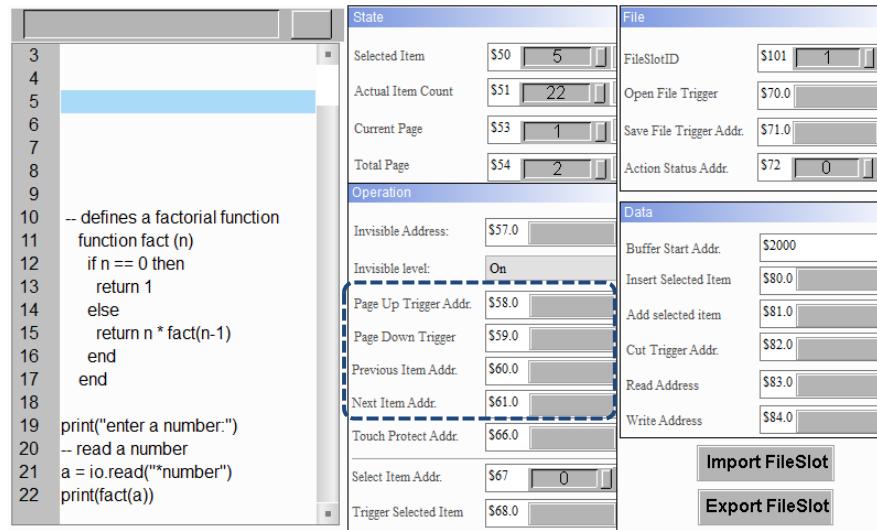
```

1
2
3
4
5
6
7
8
9
10 -- defines a factorial function
11 function fact (n)
12     if n == 0 then
13         return 1
14     else
15         return n * fact(n-1)
16     end
17 end
18
19 print("enter a number:")
20 -- read a number
21 a = io.read("*number")

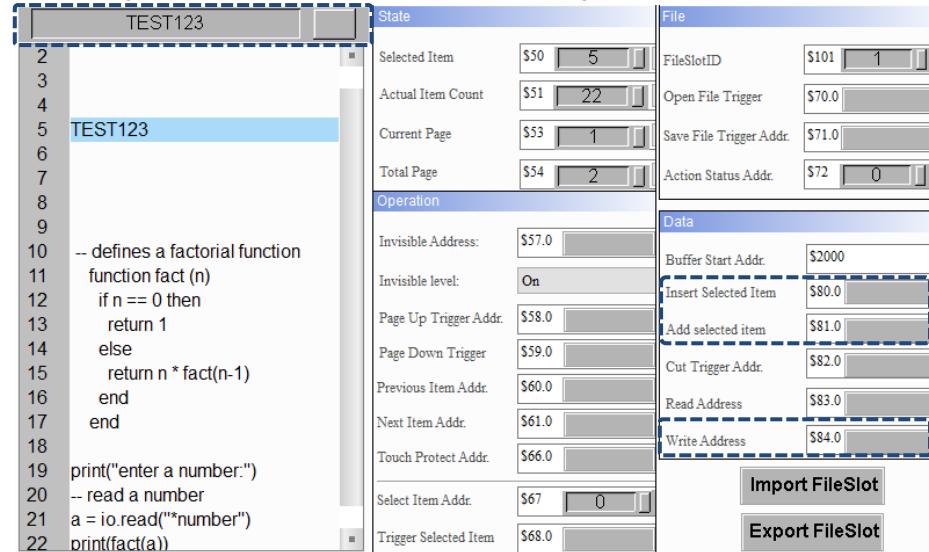
```

## Execution results

- Press **Page Up Trigger Addr.**, **Page Down Trigger**, **Previous Item Addr.**, or **Next Item Addr.** to trigger the action of selecting the previous item or the next item, or going to the previous page or the next page.



- Enter user-defined data in the Character Entry element and then press **Insert Selected Item**, **Add selected item**, or **Write Address** to trigger the action of inserting before or after the selected line, or pasting.



**Text List**

- Select the row to be deleted or copied and press **Cut Trigger Addr.** or **Read Address** to trigger the action of moving or copying the content to the buffer.

TEST123		
		State
1		Selected Item \$50 5
2		Actual Item Count \$51 20
3		Current Page \$53 1
4		Total Page \$54 1
5		Operation
6		Invisible Address: \$57.0
7		Invisible level: On
8	-- defines a factorial function	Page Up Trigger Addr. \$58.0
9	function fact (n)	Page Down Trigger \$59.0
10	if n == 0 then	Previous Item Addr. \$60.0
11	return 1	Next Item Addr. \$61.0
12	else	Touch Protect Addr. \$66.0
13	return n * fact(n-1)	Select Item Addr. \$67 0
14	end	Trigger Selected Item \$68.0
15	end	
16		
17	print("enter a number:")	
18	-- read a number	
19	a = io.read("*number")	
20	print(fact(a))	

Execution results

- Set FileSlotID as 1 and press **Save File Trigger Addr.**, and then the element saves the current file content to the 0\_HelloWord.txt file.

TEST123		
		State
1		Selected Item \$50 5
2		Actual Item Count \$51 20
3		Current Page \$53 1
4		Total Page \$54 1
5		Operation
6		Invisible Address: \$57.0
7		Invisible level: On
8	-- defines a factorial function	Page Up Trigger Addr. \$58.0
9	function fact (n)	Page Down Trigger \$59.0
10	if n == 0 then	Previous Item Addr. \$60.0
11	return 1	Next Item Addr. \$61.0
12	else	Touch Protect Addr. \$66.0
13	return n * fact(n-1)	Select Item Addr. \$67 0
14	end	Trigger Selected Item \$68.0
15	end	
16		
17	print("enter a number:")	
18	-- read a number	
19	a = io.read("*number")	
20	print(fact(a))	

19

When you double-click the Text List, the property page is shown as follows.

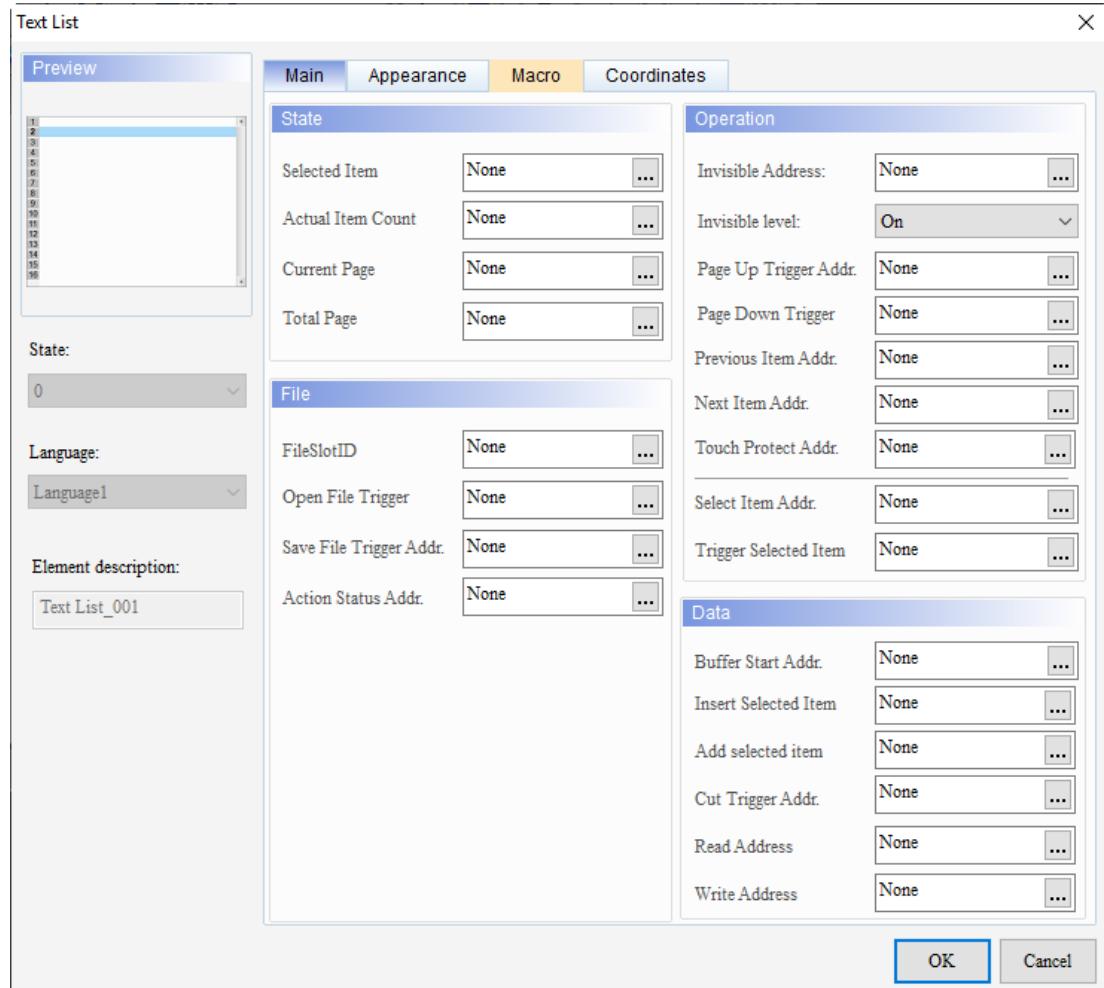
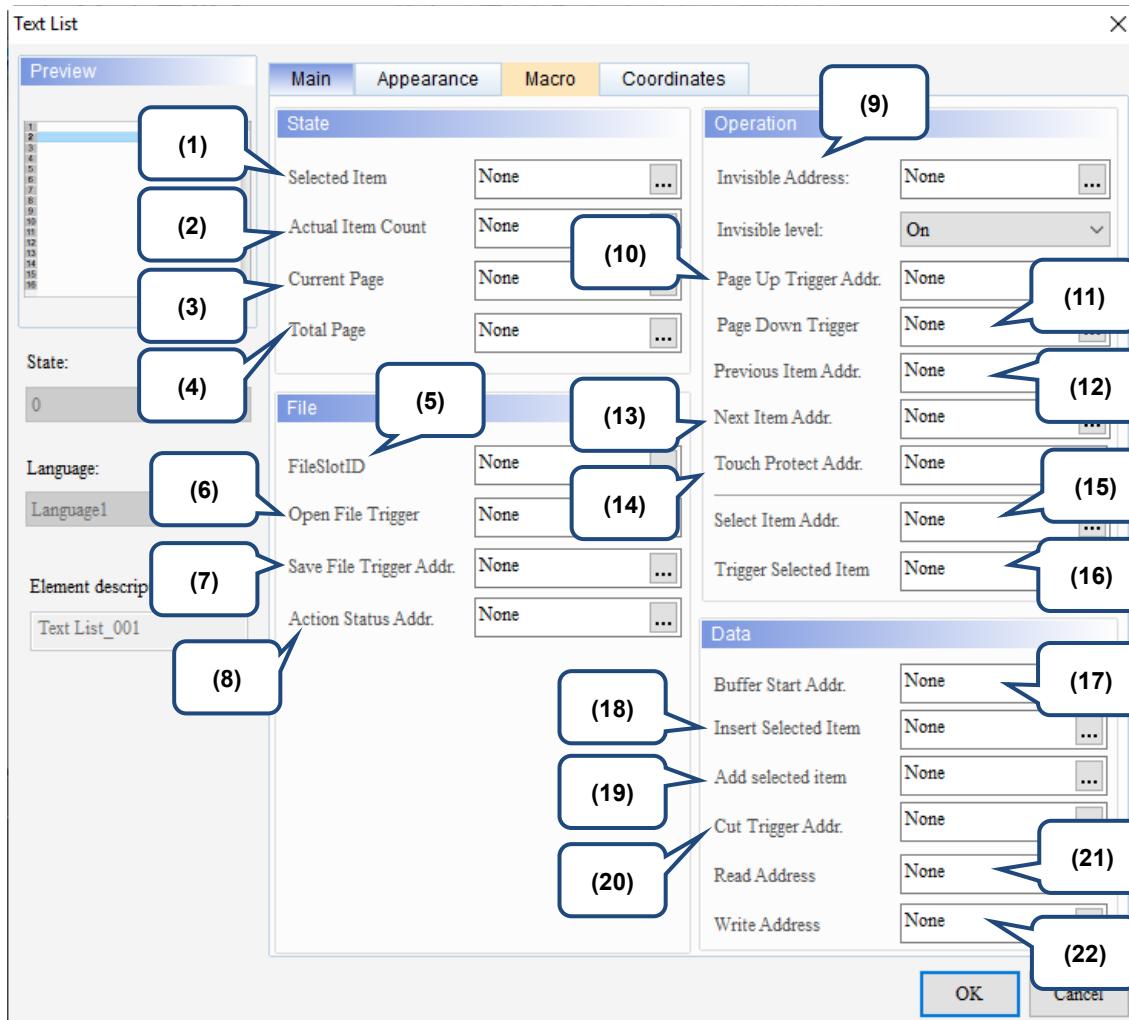


Figure 19.10.1 Properties of Text List

Table 19.10.2 Function page of the Text List element

Text List	
Function page	Description
Main	Set the Selected Item, Actual Item Count, Current Page, and Total Page. Set the FileSlotID, Open File Trigger, Save File Trigger Addr., and Action Status Addr. Set the Invisible Address, Page Up Trigger Addr., Page Down Trigger, Previous Item Addr., Next Item Addr., Touch Protect Addr., Select Item Addr., and Trigger Selected Item. Set the Buffer Start Addr., Insert Selected Item, Add selected item, Cut Trigger Addr., Read Address, and Write Address.
Appearance	Set the Font size, Background Color, Select Color, Show Line No., and Row Height.
Macro	Set the After Execute Macro.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

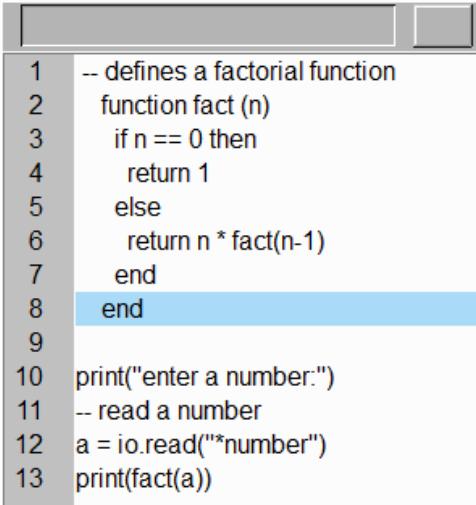
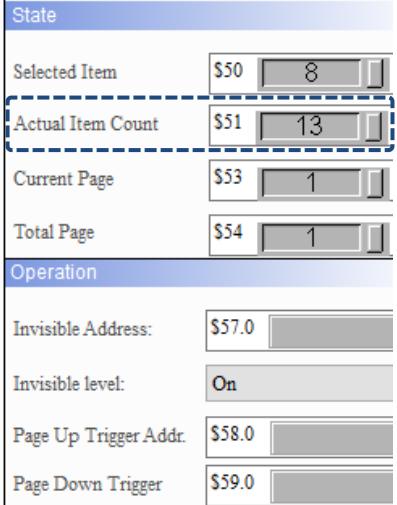
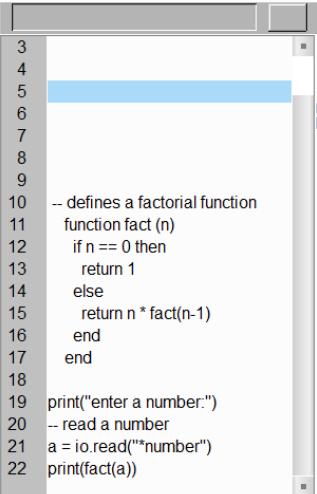
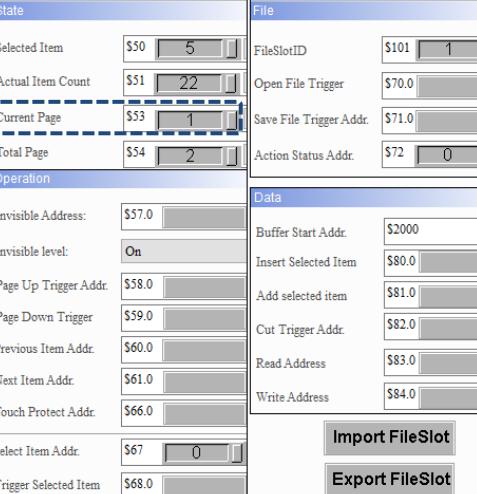


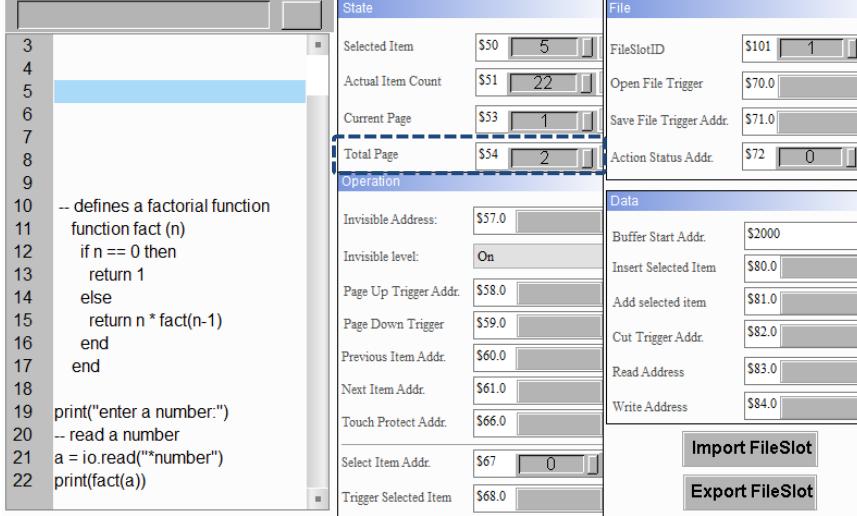
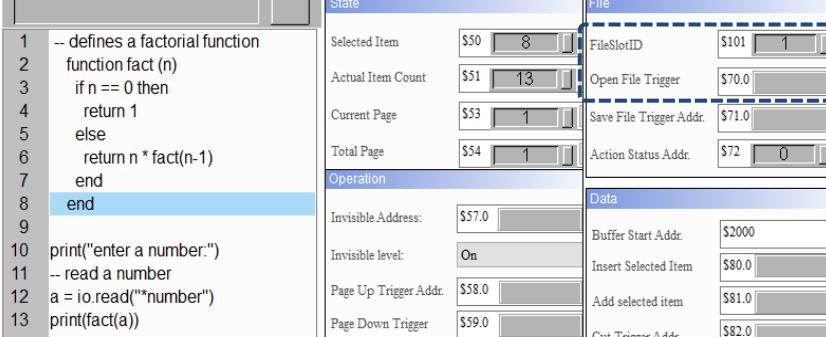
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Figure 19.10.2 Main property page for the Text List element

No.	Property	Function description
(1)	Selected Item	<ul style="list-style-type: none"> <li>When the 8<sup>th</sup> row is selected, the value of the Selected Item is 8.</li> </ul> <div style="border: 1px solid #ccc; padding: 10px;"> <pre> 1 -- defines a factorial function 2 function fact (n) 3   if n == 0 then 4     return 1 5   else 6     return n * fact(n-1) 7   end 8 end 9 10 print("enter a number:") 11 -- read a number 12 a = io.read("*number") 13 print(fact(a)) </pre> <p>The screenshot shows the 'Selected Item' field set to \$50, which corresponds to the value of the 8th row in the code listing.</p> <ul style="list-style-type: none"> <li>You can select the controller address (Word) or the internal register address (Word).</li> </ul> </div>

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No.	Property	Function description
(2)	Actual Item Count	<ul style="list-style-type: none"> <li>■ Displays the total number of data rows.</li> </ul>   <ul style="list-style-type: none"> <li>■ You can select the controller address (Word) or the internal register address (Word).</li> </ul>
(3)	Current Page	<ul style="list-style-type: none"> <li>■ Shows the currently displayed page. When the total number of data rows exceeds the display range of the element, the data is displayed on different pages.</li> </ul>   <ul style="list-style-type: none"> <li>■ You can select the controller address (Word) or the internal register address (Word).</li> </ul>

No.	Property	Function description
(4)	Total Page	<ul style="list-style-type: none"> <li>Shows the total number of pages.</li> </ul>  <pre> 3 4 5 6 7 8 9 10 -- defines a factorial function 11 function fact (n) 12   if n == 0 then 13     return 1 14   else 15     return n * fact(n-1) 16   end 17 end 18 19 print("enter a number:") 20 -- read a number 21 a = io.read("number") 22 print(fact(a)) </pre>
(5)	FileSlotID	<ul style="list-style-type: none"> <li>You can select the controller address (Word) or the internal register address (Word).</li> </ul>
(6)	Open File Trigger	<ul style="list-style-type: none"> <li>Specify the ID of the file under [DOPSoft] &gt; [FileSlot File Manager] with FileSlotID then trigger Open File Trigger to On, and the element opens the file corresponding to the specified FileSlotID.</li> <li>When Save File Trigger Addr. is triggered to On, the element saves the current content to the file corresponding to the specified FileSlotID.</li> <li>You can select the controller address (Word) or the internal register address (Word) for FileSlotID.</li> </ul>
(7)	Save File Trigger Addr.	 <pre> 1 -- defines a factorial function 2 function fact (n) 3   if n == 0 then 4     return 1 5   else 6     return n * fact(n-1) 7   end 8 end 9 10 print("enter a number:") 11 -- read a number 12 a = io.read("number") 13 print(fact(a)) </pre> <ul style="list-style-type: none"> <li>You can select the controller address (Bit) or the internal register address (Bit) for Open File Trigger.</li> <li>When Save File Trigger Addr. is On, the content is saved to the file of the specified FileSlotID. If the file path does not exist, a file is created to save the content. This bit is automatically cleared once the action is complete.</li> <li>You can select the controller address (Bit) or the internal register address (Bit) for Save File Trigger Addr.</li> </ul>

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No.	Property	Function description																																																												
(8)	Action Status Addr.	<ul style="list-style-type: none"> <li>You can select the controller address (Word) or the internal register address (Word).</li> <li>You can access the current state of the Text List with the state values.</li> </ul> <table border="1"> <thead> <tr> <th>State value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>Zero state</td></tr> <tr> <td>1</td><td>Row number does not exist</td></tr> <tr> <td>3</td><td>File does not exist</td></tr> <tr> <td>5</td><td>Failed to open file</td></tr> <tr> <td>6</td><td>Failed to write file</td></tr> <tr> <td>7</td><td>Triggered Open File Trigger or Save File Trigger Addr. without specifying FileSlotID</td></tr> <tr> <td>13</td><td>Element is touch-protected</td></tr> <tr> <td>14</td><td>Element is invisible</td></tr> <tr> <td>16</td><td>Exceeded the maximum file size (Maximum: 20 MB)</td></tr> </tbody> </table>	State value	Description	0	Zero state	1	Row number does not exist	3	File does not exist	5	Failed to open file	6	Failed to write file	7	Triggered Open File Trigger or Save File Trigger Addr. without specifying FileSlotID	13	Element is touch-protected	14	Element is invisible	16	Exceeded the maximum file size (Maximum: 20 MB)																																								
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(9)	Invisible Address	<ul style="list-style-type: none"> <li>When the Invisible Address is On, the Text List is invisible, and Action Status Addr. is set to 14.</li> </ul> <table border="1"> <thead> <tr> <th colspan="2">State</th> <th colspan="2">File</th> </tr> </thead> <tbody> <tr> <td>Selected Item</td><td>\$50 1</td> <td>FileSlotID</td><td>\$101 1</td> </tr> <tr> <td>Actual Item Count</td><td>\$51 13</td> <td>Open File Trigger</td><td>\$70.0</td> </tr> <tr> <td>Current Page</td><td>\$53 1</td> <td>Save File Trigger Addr.</td><td>\$71.0</td> </tr> <tr> <td>Total Page</td><td>\$54 1</td> <td>Action Status Addr.</td><td>\$72 14</td> </tr> <tr> <th colspan="4">Operation</th> </tr> <tr> <td>Invisible Address:</td><td>\$57.0</td> <td colspan="2">Data</td> </tr> <tr> <td>Invisible level:</td><td>On</td> <td>Buffer Start Addr.</td><td>\$2000</td> </tr> <tr> <td>Page Up Trigger Addr.</td><td>\$58.0</td> <td>Insert Selected Item</td><td>\$80.0</td> </tr> <tr> <td>Page Down Trigger</td><td>\$59.0</td> <td>Add selected item</td><td>\$81.0</td> </tr> <tr> <td>Previous Item Addr.</td><td>\$60.0</td> <td>Cut Trigger Addr.</td><td>\$82.0</td> </tr> <tr> <td>Next Item Addr.</td><td>\$61.0</td> <td>Read Address</td><td>\$83.0</td> </tr> <tr> <td>Touch Protect Addr.</td><td>\$66.0</td> <td>Write Address</td><td>\$84.0</td> </tr> <tr> <td>Select Item Addr.</td><td>\$67 0</td> <td colspan="2">Import FileSlot</td> </tr> <tr> <td>Trigger Selected Item</td><td>\$68.0</td> <td colspan="2">Export FileSlot</td> </tr> </tbody> </table>	State		File		Selected Item	\$50 1	FileSlotID	\$101 1	Actual Item Count	\$51 13	Open File Trigger	\$70.0	Current Page	\$53 1	Save File Trigger Addr.	\$71.0	Total Page	\$54 1	Action Status Addr.	\$72 14	Operation				Invisible Address:	\$57.0	Data		Invisible level:	On	Buffer Start Addr.	\$2000	Page Up Trigger Addr.	\$58.0	Insert Selected Item	\$80.0	Page Down Trigger	\$59.0	Add selected item	\$81.0	Previous Item Addr.	\$60.0	Cut Trigger Addr.	\$82.0	Next Item Addr.	\$61.0	Read Address	\$83.0	Touch Protect Addr.	\$66.0	Write Address	\$84.0	Select Item Addr.	\$67 0	Import FileSlot		Trigger Selected Item	\$68.0	Export FileSlot	
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(11)	Page Down Trigger	<ul style="list-style-type: none"> <li>When Page Down Trigger is On, the element switches to the next page. This bit is automatically cleared once the action is complete.</li> <li>You can select the controller address (Bit) or the internal register address (Bit).</li> </ul>																																																												

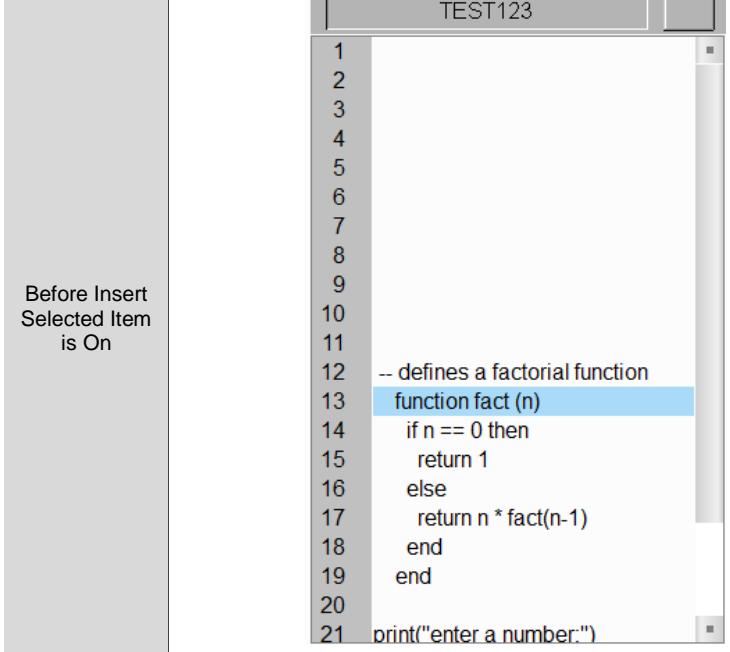
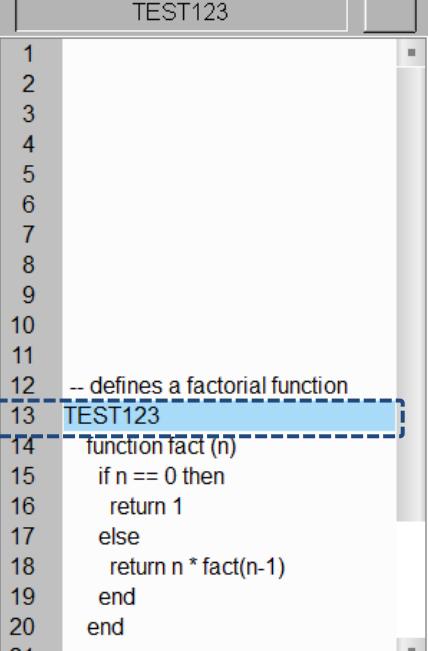
No.	Property	Function description																																																												
(12)	Previous Item Addr.	<p>■ When Previous Item Addr. is On, the selected item switches to the previous one. This bit is automatically cleared once the action is complete.</p> <p>Example:</p> <p>When Previous Item Addr. is not triggered to On, the Selected Item shows 13.</p> <p>When Previous Item Addr. is triggered to On, the Selected Item shows 12.</p> <div style="display: flex; justify-content: space-between;"> <div style="flex: 1;"> <p>Before Previous Item Addr. is On</p> <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 if n == 0 then 15     return 1 16 else 17     return n * fact(n-1) 18 end 19 end 20 21 print("enter a number:") </pre> </div> <div style="flex: 1;"> <p>State</p> <table border="1"> <tr><td>Selected Item</td><td>\$50</td><td>13</td></tr> <tr><td>Actual Item Count</td><td>\$51</td><td>24</td></tr> <tr><td>Current Page</td><td>\$53</td><td>1</td></tr> <tr><td>Total Page</td><td>\$54</td><td>2</td></tr> </table> <p>Operation</p> <table border="1"> <tr><td>Invisible Address:</td><td>\$57.0</td></tr> <tr><td>Invisible level:</td><td>On</td></tr> <tr><td>Page Up Trigger Addr.</td><td>\$58.0</td></tr> <tr><td>Page Down Trigger</td><td>\$59.0</td></tr> <tr><td>Previous Item Addr.</td><td>\$60.0</td></tr> <tr><td>Next Item Addr.</td><td>\$61.0</td></tr> <tr><td>Touch Protect Addr.</td><td>\$66.0</td></tr> <tr><td>Select Item Addr.</td><td>\$67 0</td></tr> <tr><td>Trigger Selected Item</td><td>\$68.0</td></tr> </table> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="flex: 1;"> <p>After Previous Item Addr. is On</p> <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 if n == 0 then 15     return 1 16 else 17     return n * fact(n-1) 18 end 19 end 20 21 print("enter a number:") </pre> </div> <div style="flex: 1;"> <p>State</p> <table border="1"> <tr><td>Selected Item</td><td>\$50</td><td>12</td></tr> <tr><td>Actual Item Count</td><td>\$51</td><td>24</td></tr> <tr><td>Current Page</td><td>\$53</td><td>1</td></tr> <tr><td>Total Page</td><td>\$54</td><td>2</td></tr> </table> <p>Operation</p> <table border="1"> <tr><td>Invisible Address:</td><td>\$57.0</td></tr> <tr><td>Invisible level:</td><td>On</td></tr> <tr><td>Page Up Trigger Addr.</td><td>\$58.0</td></tr> <tr><td>Page Down Trigger</td><td>\$59.0</td></tr> <tr><td>Previous Item Addr.</td><td>\$60.0</td></tr> <tr><td>Next Item Addr.</td><td>\$61.0</td></tr> <tr><td>Touch Protect Addr.</td><td>\$66.0</td></tr> <tr><td>Select Item Addr.</td><td>\$67 0</td></tr> <tr><td>Trigger Selected Item</td><td>\$68.0</td></tr> </table> </div> </div>	Selected Item	\$50	13	Actual Item Count	\$51	24	Current Page	\$53	1	Total Page	\$54	2	Invisible Address:	\$57.0	Invisible level:	On	Page Up Trigger Addr.	\$58.0	Page Down Trigger	\$59.0	Previous Item Addr.	\$60.0	Next Item Addr.	\$61.0	Touch Protect Addr.	\$66.0	Select Item Addr.	\$67 0	Trigger Selected Item	\$68.0	Selected Item	\$50	12	Actual Item Count	\$51	24	Current Page	\$53	1	Total Page	\$54	2	Invisible Address:	\$57.0	Invisible level:	On	Page Up Trigger Addr.	\$58.0	Page Down Trigger	\$59.0	Previous Item Addr.	\$60.0	Next Item Addr.	\$61.0	Touch Protect Addr.	\$66.0	Select Item Addr.	\$67 0	Trigger Selected Item	\$68.0
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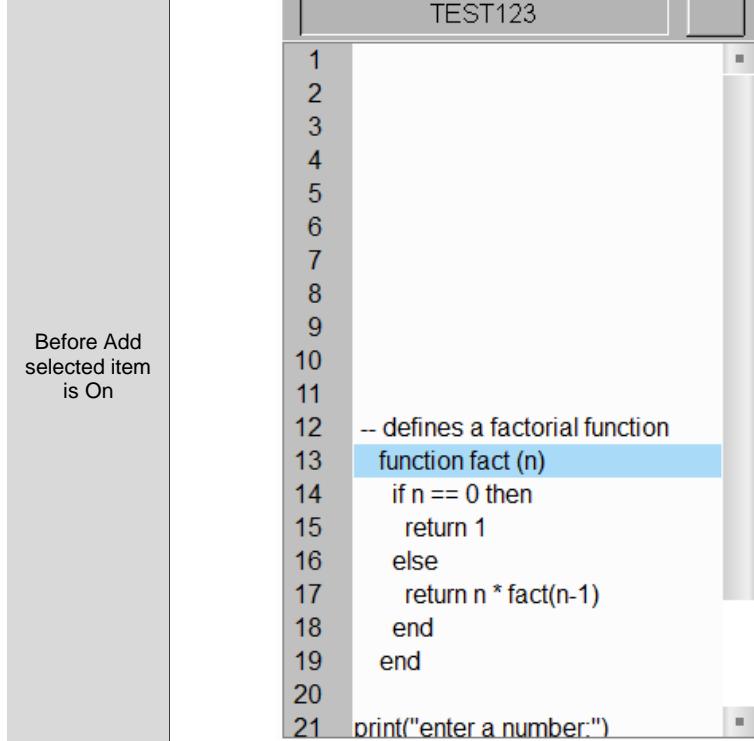
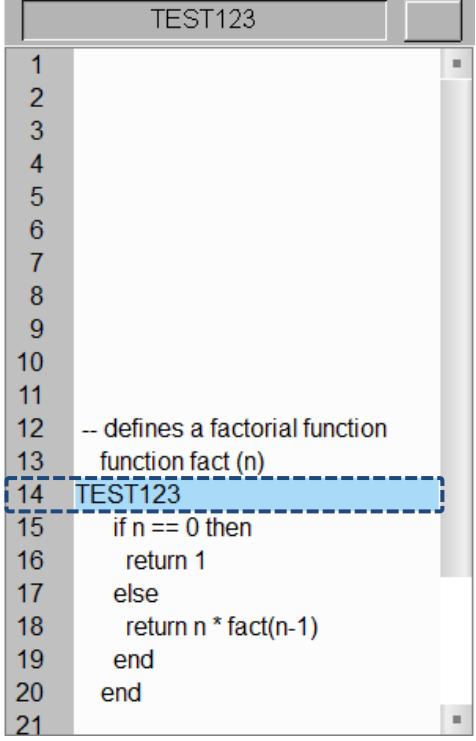
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No.	Property	Function description
(13)	Next Item Addr.	<p>■ When Next Item Addr. is On, the selected item switches to the next one. This bit is automatically cleared once the action is complete.</p> <p>Example:</p> <p>When Next Item Addr. is not triggered to On, the Selected Item shows 13.</p> <p>When Next Item Addr. is triggered to On, the Selected Item shows 14.</p> <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 if n == 0 then 15   return 1 16 else 17   return n * fact(n-1) 18 end 19 end 20 21 print("enter a number:") </pre>
(14)	Touch Protect Addr.	<p>■ You can select the controller address (Bit) or the internal register address (Bit).</p> <p>■ When Touch Protect Addr. is On, the Text List element is disabled and any other operations are unavailable, and Action Status Addr. is set to 13.</p> <p>■ You can select the controller address (Bit) or the internal register address (Bit).</p>

No.	Property	Function description
(15)	Select Item Addr.	<ul style="list-style-type: none"> <li>Specify the item to select with Select Item Addr. When the Trigger Selected Item bit is On, the specified item is selected. This bit is automatically cleared once the action is complete.</li> </ul>
(16)	Trigger Selected Item	<pre> 12 -- defines a factorial function 13 function fact (n) 14     if n == 0 then 15         return 1 16     else 17         return n * fact(n-1) 18 end 19 end 20 21 print("enter a number:") </pre> <ul style="list-style-type: none"> <li>You can select the controller address (Word) or the internal register address (Word) for Select Item Addr.</li> <li>You can select the controller address (Bit) or the internal register address (Bit) for Trigger Selected Item.</li> </ul>
(17)	Buffer Start Addr.	<ul style="list-style-type: none"> <li>The address takes up 64 words (128 bytes) at most by default. If the address is set to none, the function of entering user-defined data with the Character Entry element is not supported.</li> </ul>

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No.	Property	Function description
(18)	Insert Selected Item	<p>■ When Insert Selected Item is set to On, the previously copied or deleted item is inserted before the currently selected item. This bit is automatically cleared once the action is complete.</p> <p>Before Insert Selected Item is On</p>  <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 if n == 0 then 15   return 1 16 else 17   return n * fact(n-1) 18 end 19 end 20 21 print("enter a number:") </pre> <p>After Insert Selected Item is On</p>  <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 TEST123 14 function fact (n) 15 if n == 0 then 16   return 1 17 else 18   return n * fact(n-1) 19 end 20 end 21 </pre> <p>■ You can select the controller address (Bit) or the internal register address (Bit).</p>

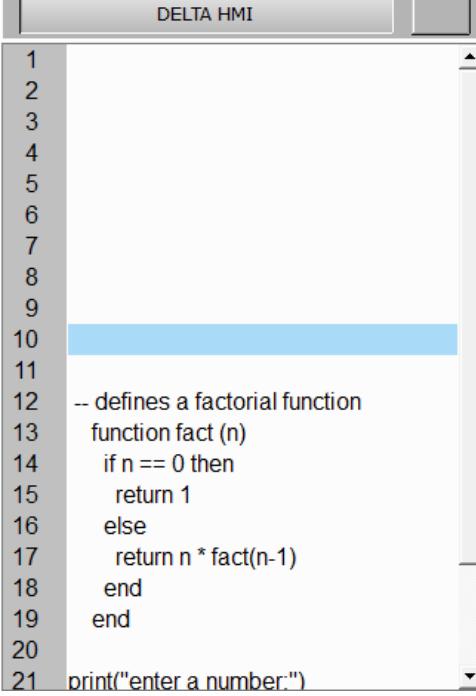
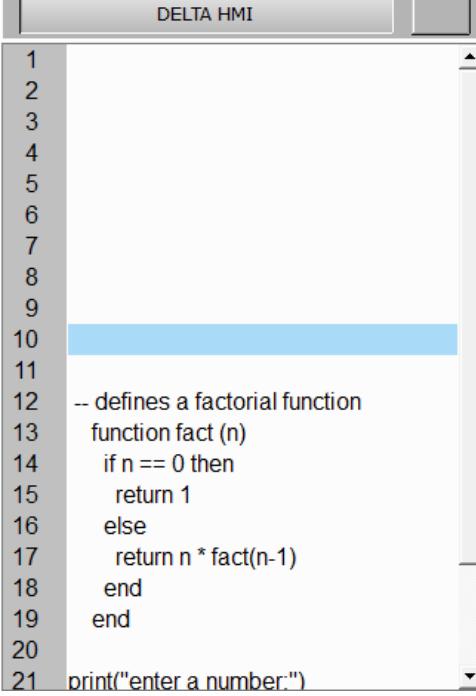
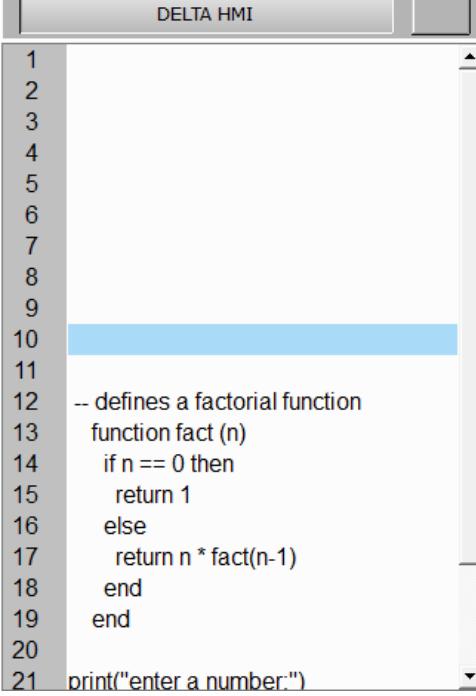
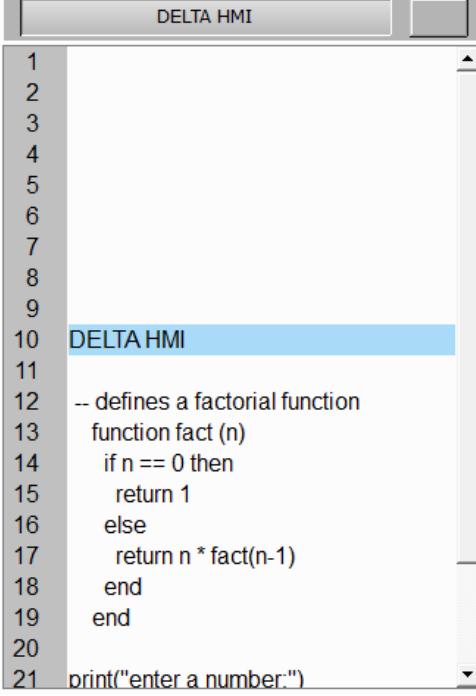
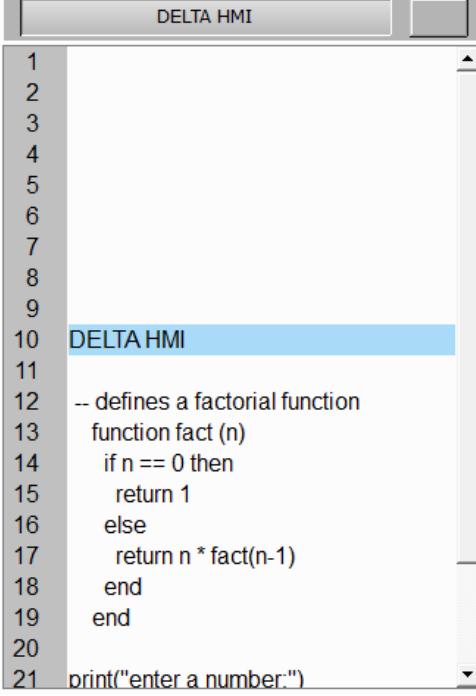
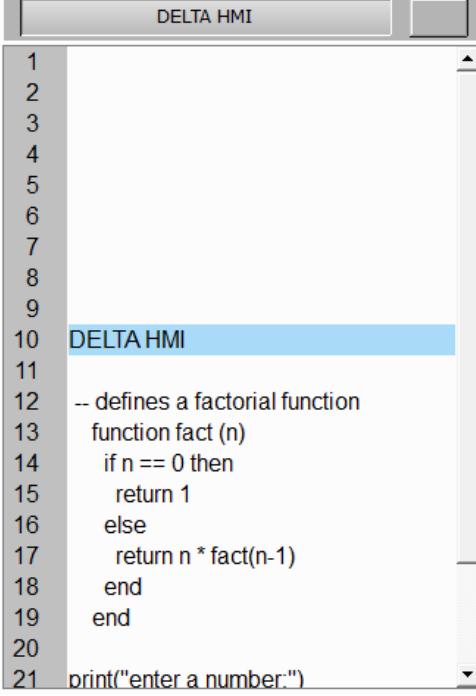
No.	Property	Function description
(19)	Add selected item	<p>■ When Add selected item is set to On, the previously copied or deleted item is inserted after the currently selected item. This bit is automatically cleared once the action is complete.</p>  <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 if n == 0 then 15   return 1 16 else 17   return n * fact(n-1) 18 end 19 end 20 21 print("enter a number:") </pre>
	After Add selected item is On	 <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 TEST123 15 if n == 0 then 16   return 1 17 else 18   return n * fact(n-1) 19 end 20 end 21 </pre> <p>■ You can select the controller address (Bit) or the internal register address (Bit).</p>

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No.	Property	Function description
		<p>■ When Cut Trigger Addr. is On, the currently selected content is deleted and moved to the buffer. This bit is automatically cleared once the action is complete.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>Before Cut Trigger Addr. is On</p> <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 TEST 123 15 if n == 0 then 16   return 1 17 else 18   return n * fact(n-1) 19 end 20 end 21 </pre> </div>
(20)	Cut Trigger Addr.	<div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>After Cut Trigger Addr. is On</p> <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 if n == 0 then 15   return 1 16 else 17   return n * fact(n-1) 18 end 19 end 20 21 print("enter a number:") </pre> </div> <p>■ You can select the controller address (Bit) or the internal register address (Bit).</p>

No.	Property	Function description
(21)	Read Address	<p>■ When Read Address is set to On, the currently selected data is copied. This bit is automatically cleared once the action is complete.</p> <p>Before Read Address is On</p> <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 if n == 0 then 15   return 1 16 else 17   return n * fact(n-1) 18 end 19 end 20 21 print("enter a number:") </pre>
	After Read Address is On	<p>if n == 0 then</p> <pre> 1 2 3 4 5 6 7 8 9 10 11 12 -- defines a factorial function 13 function fact (n) 14 if n == 0 then 15   return 1 16 else 17   return n * fact(n-1) 18 end 19 end 20 21 print("enter a number:") </pre> <p>■ You can select the controller address (Bit) or the internal register address (Bit).</p>

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No.	Property	Function description		
(22)	Write Address	<p>■ When Write Address is set to On, the previously copied or deleted item is pasted to the currently selected row. This bit is automatically cleared once the action is complete.</p> <table border="1"> <tr> <td style="text-align: center; vertical-align: middle;">Before Write Address is On</td> <td style="text-align: center; vertical-align: middle;">  <pre> 1 2 3 4 5 6 7 8 9 10 -- defines a factorial function 11 function fact(n) 12   if n == 0 then 13     return 1 14   else 15     return n * fact(n-1) 16   end 17 end 18 19 20 21 print("enter a number:") </pre> </td> </tr> </table>	Before Write Address is On	 <pre> 1 2 3 4 5 6 7 8 9 10 -- defines a factorial function 11 function fact(n) 12   if n == 0 then 13     return 1 14   else 15     return n * fact(n-1) 16   end 17 end 18 19 20 21 print("enter a number:") </pre>
Before Write Address is On	 <pre> 1 2 3 4 5 6 7 8 9 10 -- defines a factorial function 11 function fact(n) 12   if n == 0 then 13     return 1 14   else 15     return n * fact(n-1) 16   end 17 end 18 19 20 21 print("enter a number:") </pre>			
		<table border="1"> <tr> <td style="text-align: center; vertical-align: middle;">After Write Address is On</td> <td style="text-align: center; vertical-align: middle;">  <pre> 1 2 3 4 5 6 7 8 9 10 DELTA HMI 11 12 -- defines a factorial function 13 function fact(n) 14   if n == 0 then 15     return 1 16   else 17     return n * fact(n-1) 18   end 19 end 20 21 print("enter a number:") </pre> </td> </tr> </table> <p>■ You can select the controller address (Bit) or the internal register address (Bit).</p>	After Write Address is On	 <pre> 1 2 3 4 5 6 7 8 9 10 DELTA HMI 11 12 -- defines a factorial function 13 function fact(n) 14   if n == 0 then 15     return 1 16   else 17     return n * fact(n-1) 18   end 19 end 20 21 print("enter a number:") </pre>
After Write Address is On	 <pre> 1 2 3 4 5 6 7 8 9 10 DELTA HMI 11 12 -- defines a factorial function 13 function fact(n) 14   if n == 0 then 15     return 1 16   else 17     return n * fact(n-1) 18   end 19 end 20 21 print("enter a number:") </pre>			

## ■ Appearance

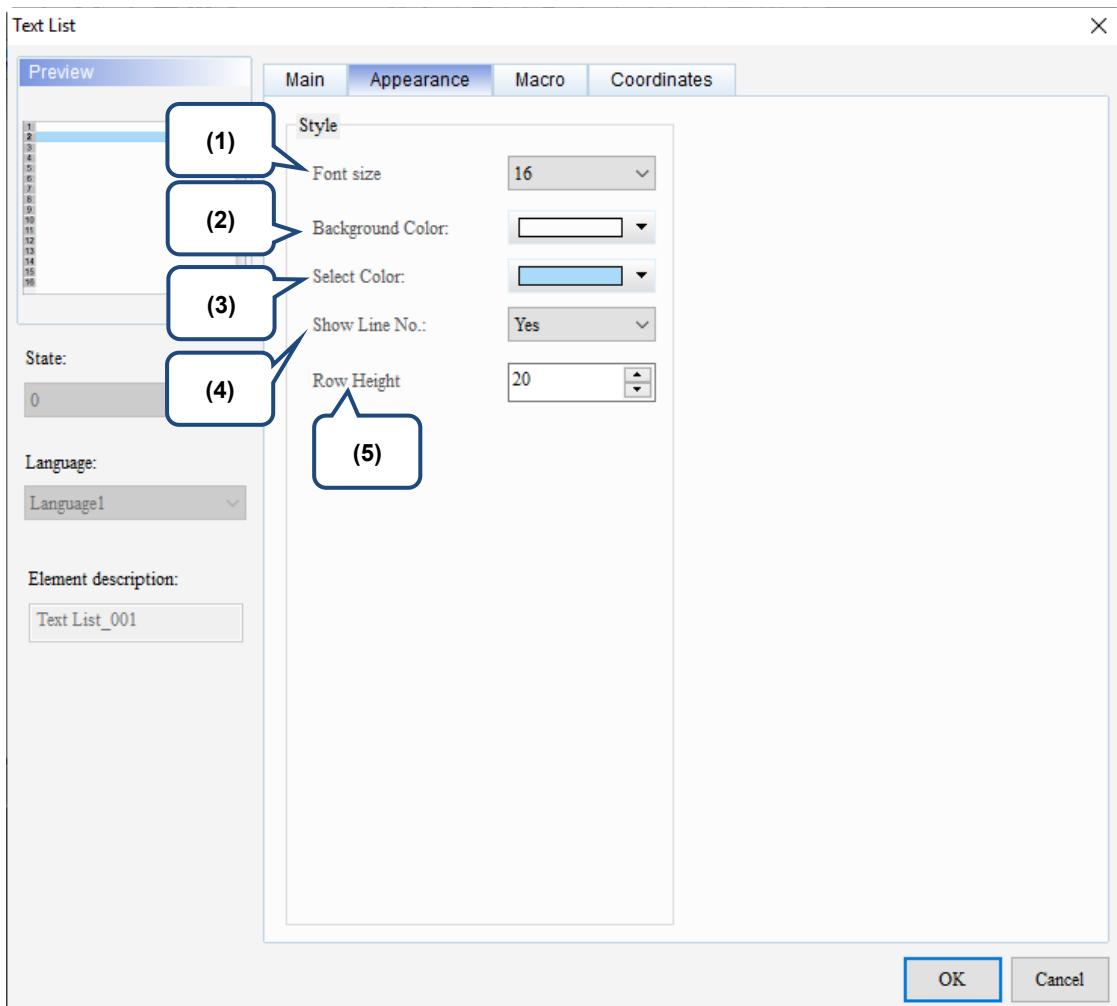
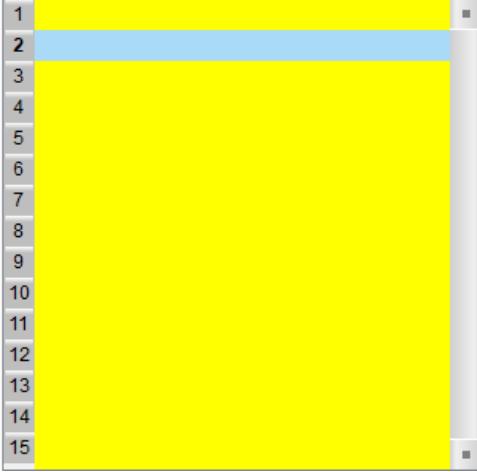


Figure 19.10.3 Appearance property page for the Text List element

No.	Property	Function description
(1)	Font size	Sets the font size of the Text List element.
(2)	Background Color	Sets the background color of the Text List element. The default is . 

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No.	Property	Function description
(3)	Select Color	<p>Sets the color of the selected item for the Text List element. The default is  .</p> <pre> 1 -- defines a factorial function 2 function fact (n) 3   if n == 0 then 4     return 1 5   else 6     return n * fact(n-1) 7   end 8 end 9 10 print("enter a number:") 11 -- read a number 12 a = io.read("*number") 13 print(fact(a)) </pre>
(4)	Show Line No.	<p>The default is Yes for displaying the row numbers.</p> <pre> 1 -- defines a factorial function 2 function fact (n) 3   if n == 0 then 4     return 1 5   else 6     return n * fact(n-1) 7   end 8 end 9 10 print("enter a number:") 11 -- read a number 12 a = io.read("*number") 13 print(fact(a)) </pre>
(5)	Row Height	Sets the height of each row. The default is 20 and the maximum is 256.

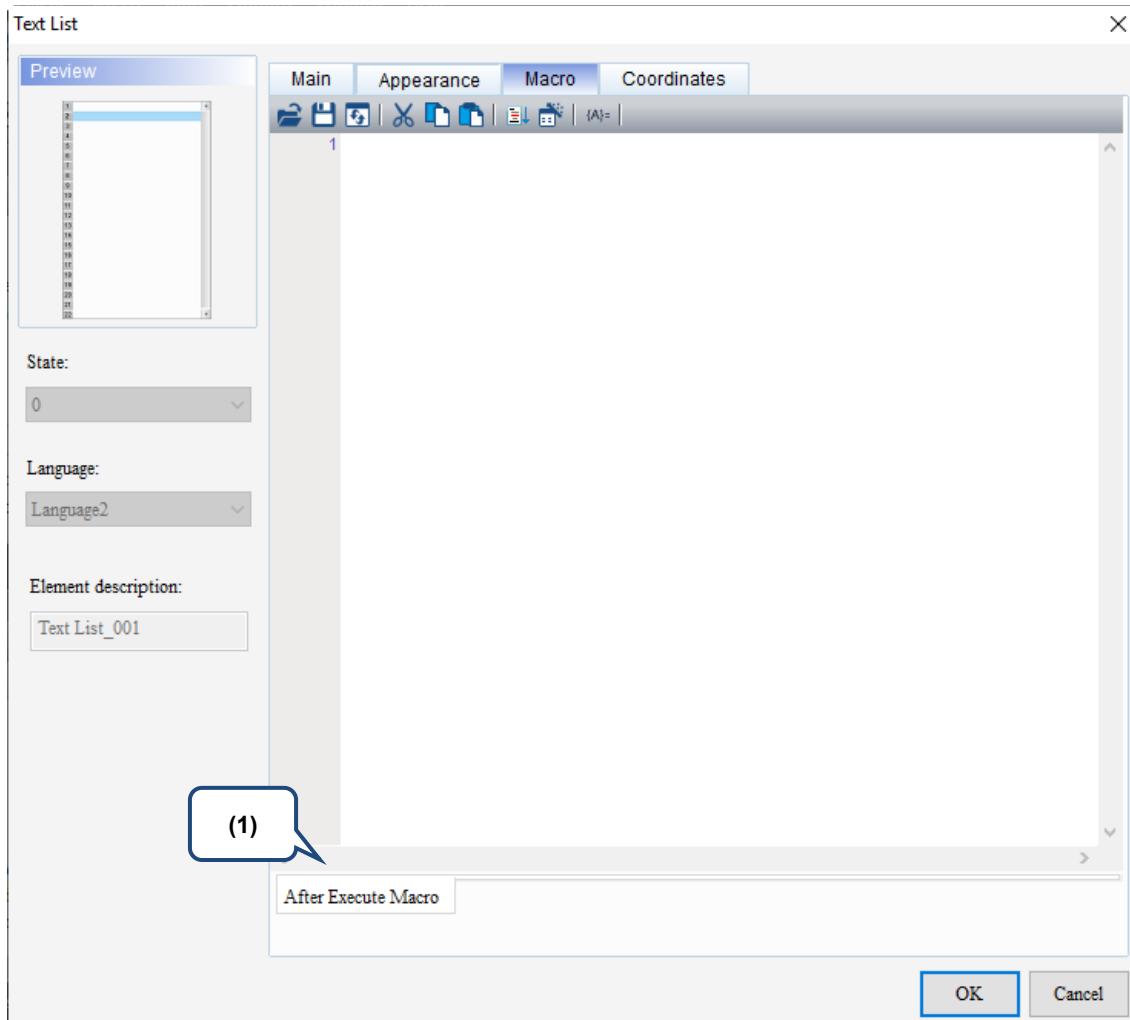
**■ Macro**

Figure 19.10.4 Macro property page for the Text List element

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No.	Property	Function description
(1)	After Execute Macro	<p>When you press the button element, the HMI will first execute the action of the button and then execute the macro commands. However, if the state of the button is not changed with the button touch (using external controller commands or other macros instead), the HMI will not execute the macro commands.</p> <p>Flowchart of After Execute Macro:</p> <pre> graph TD     A1[Maintained Button] -- "Trigger to On / Enter the value" --&gt; B1[Maintained Button]     B1 -- "Button is On and the value is written" --&gt; C1[After Execute Macro]     C1 -- "Trigger to Off / Enter the value" --&gt; D1[Maintained Button]     D1 -- "Button is Off and the value is written" --&gt; E1[After Execute Macro]     E1 -- "Next trigger" --&gt; A1     A2[Maintained Button] -- "Trigger to On / Enter the value" --&gt; B2[Maintained Button]     B2 -- "Button is On and the value is written" --&gt; C2[After Execute Macro]     C2 -- "Trigger to Off / Enter the value" --&gt; D2[Maintained Button]     D2 -- "Button is Off and the value is written" --&gt; E2[After Execute Macro]     E2 -- "Next trigger" --&gt; A2     A3[Maintained Button] -- "Trigger to On / Enter the value" --&gt; B3[Maintained Button]     B3 -- "Button is On and the value is written" --&gt; C3[After Execute Macro]     C3 -- "Trigger to Off / Enter the value" --&gt; D3[Maintained Button]     D3 -- "Button is Off and the value is written" --&gt; E3[After Execute Macro]     E3 -- "Next trigger" --&gt; A3   </pre> <p>The flowchart illustrates three cycles of button presses and macro execution. Each cycle starts with a 'Maintained Button' being triggered to 'On'. This triggers an 'After Execute Macro' block, which then triggers the button to 'Off'. Finally, the button is triggered to 'On' again, completing the cycle. The 'After Execute Macro' block is triggered each time the button goes from 'On' to 'Off'.</p>

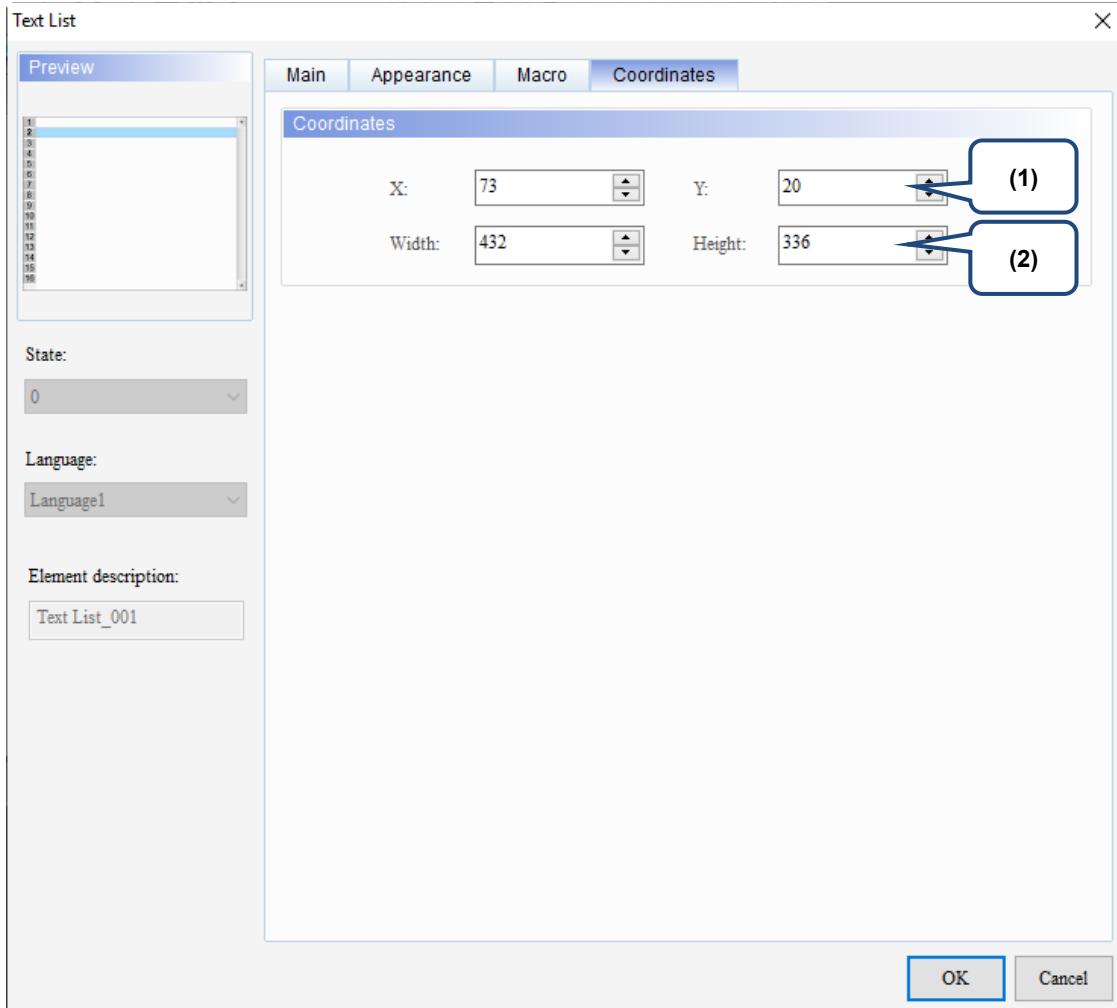
**■ Coordinates**

Figure 19.10.5 Coordinates property page for the Text List element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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# Frame

# 20

This chapter provides the usage and setting details for the Frame elements.

20.1	Embedded Subscreen .....	20-2
20.2	Camera display .....	20-9
20.3	VGA display.....	20-20
20.4	Video Play.....	20-25
20.5	Event trigger .....	20-40

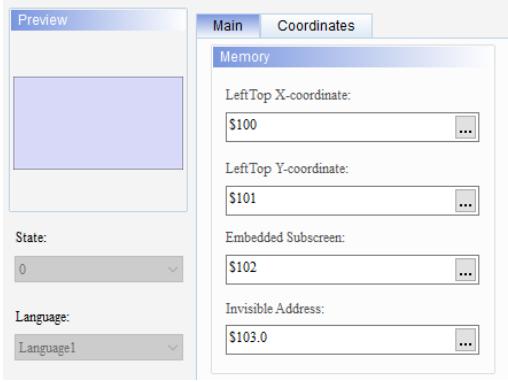
## 20.1 Embedded Subscreen

You can use this function to embed the subscreen into the main screen and switch between different subscreens to display on the main screen.

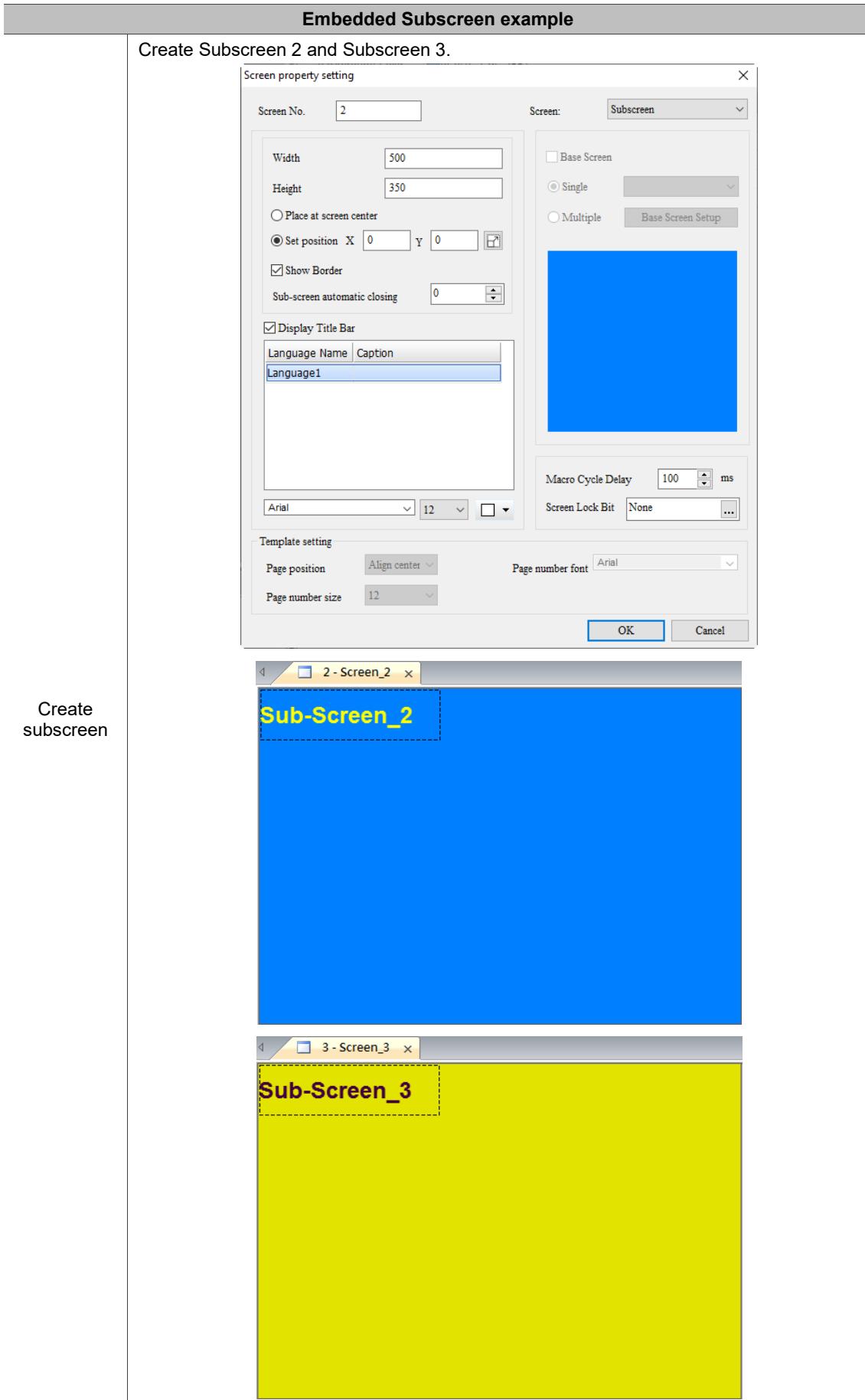
Note:

1. Embedded Subscreen elements cannot be placed on subscreens.
2. The size of the subscreen can be different from the Embedded Subscreen. It remains the same size before being embedded.
3. When the Screen Lock function is enabled for the embedded subscreen, this function is automatically disabled after the subscreen is embedded.

Table 20.1.1 Embedded Subscreen example

Embedded Subscreen example	
Create Embedded Subscreen element	Select [Frame] > [Embedded SubScreen] from the Element Tool in the editing window and create it on Screen 1. 
Set memory address	Set the memory addresses for the Embedded Subscreen element. 
Create Numeric Entry and Maintained button elements	Create three Numeric Entry elements (\$100, \$101, and \$102) and one Maintained button element (\$103.0). 

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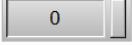
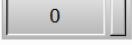
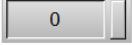
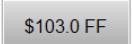


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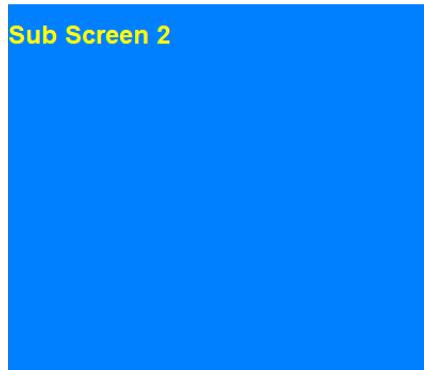
Execution results

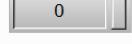
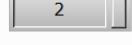
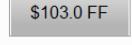
**Embedded Subscreen example**

- After the screens are downloaded to the HMI, the subscreens are not loaded on the HMI screen.

	Left Top X Coordinate
	Left Top Y Coordinate
	Embedded Subscreen
	Invisible Address

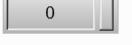
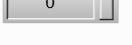
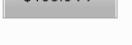
- Change the number of the subscreen \$102 to 2 and Subscreen 2 is embedded to the screen.



	Left Top X Coordinate
	Left Top Y Coordinate
	Embedded Subscreen
	Invisible Address

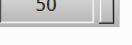
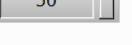
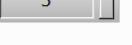
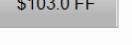
- Change the number of the subscreen \$102 to 3 and Subscreen 3 is embedded to the screen.



	Left Top X Coordinate
	Left Top Y Coordinate
	Embedded Subscreen
	Invisible Address

- Change the element's position: set \$100 to 50 and \$101 to 50, and then the subscreen moves to the set coordinate position.



	Left Top X Coordinate
	Left Top Y Coordinate
	Embedded Subscreen
	Invisible Address

When you double-click the Embedded Subscreen, the property page is shown as follows.

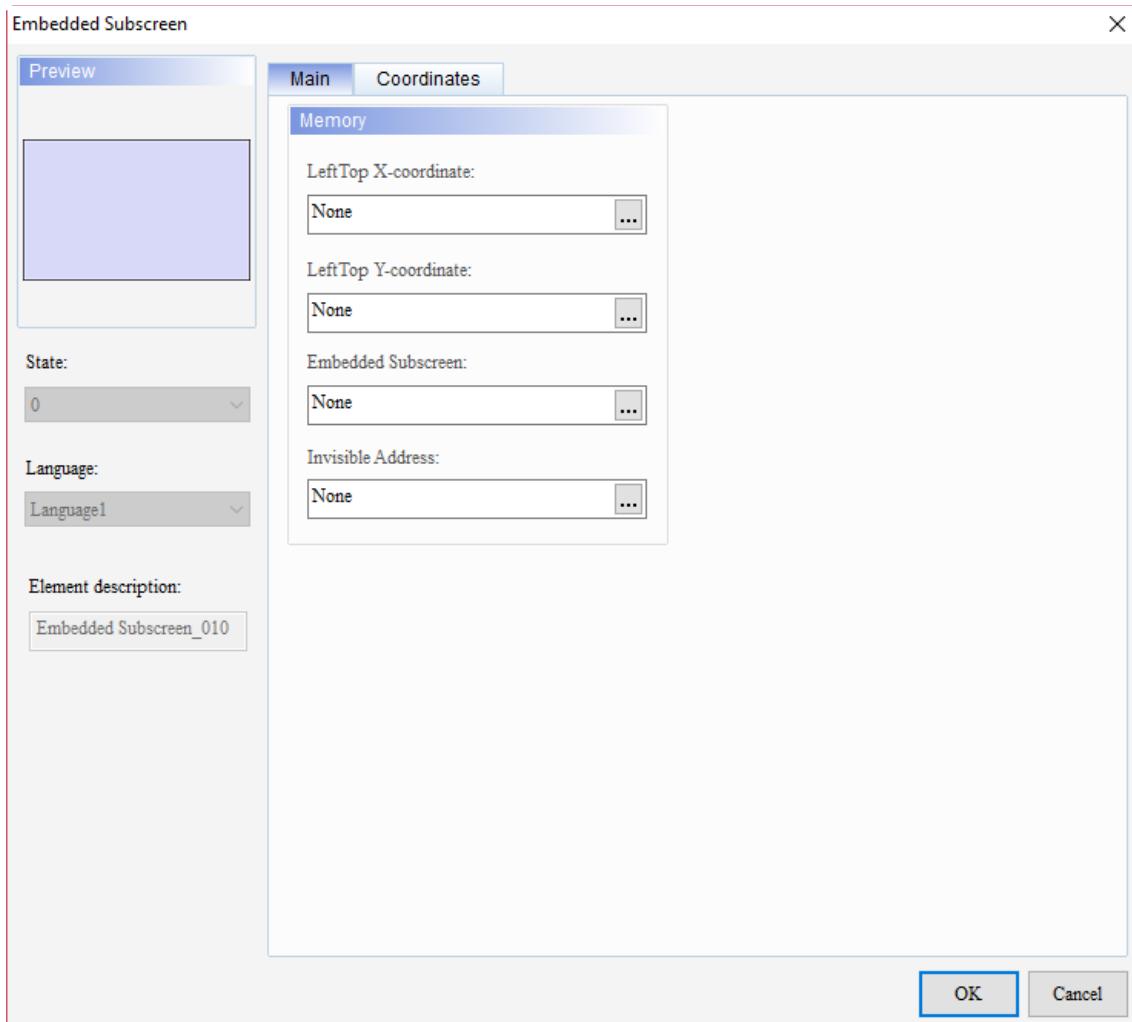


Figure 20.1.1 Properties of Embedded Subscreen

Table 20.1.2 Function page of the Embedded Subscreen element

Embedded Subscreen	
Function page	Description
Main	Set the LeftTop X-coordinate, LeftTop Y-coordinate, Embedded Subscreen, and Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

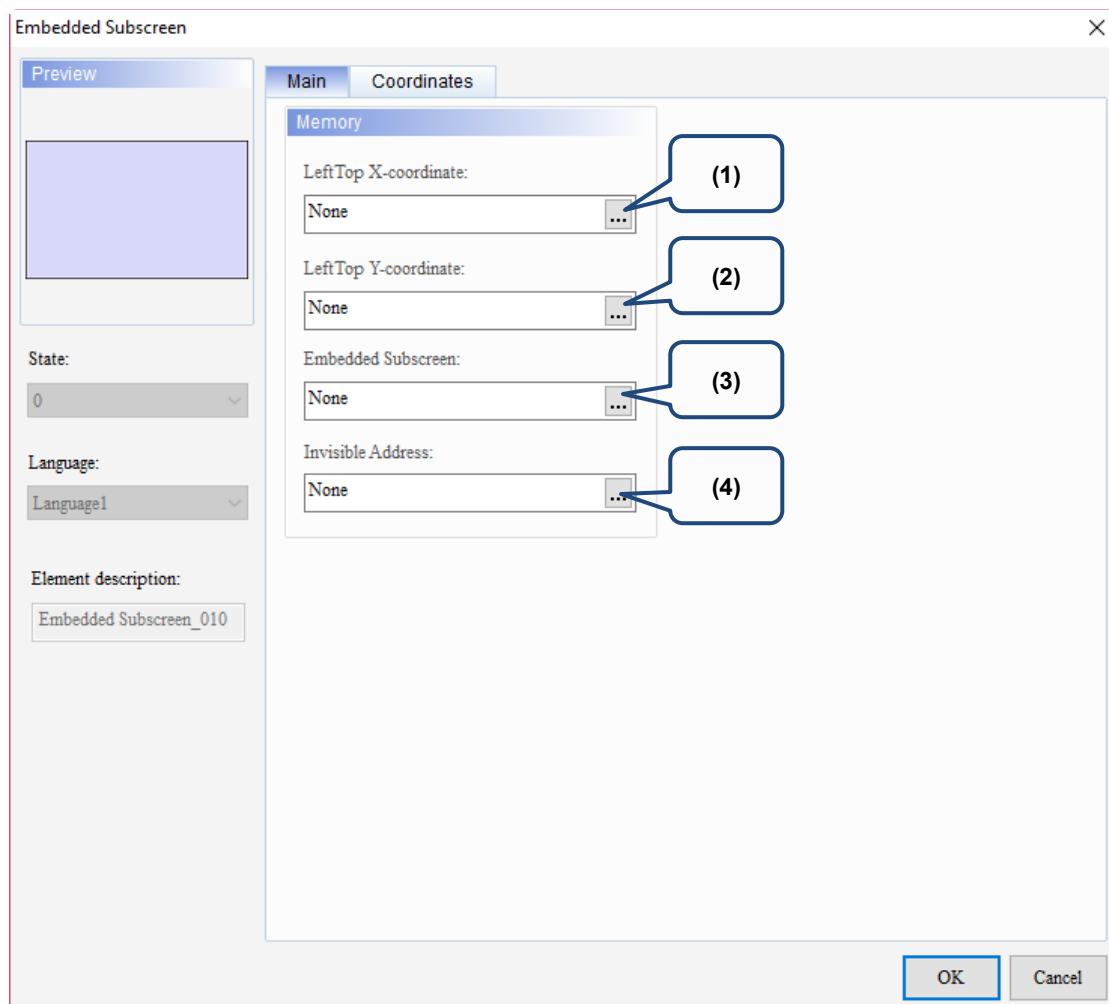
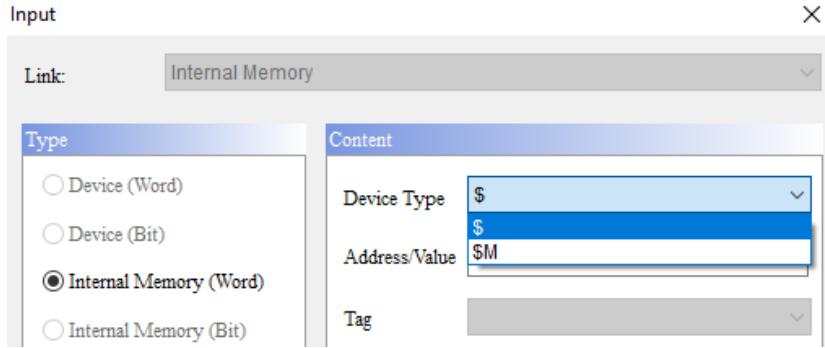
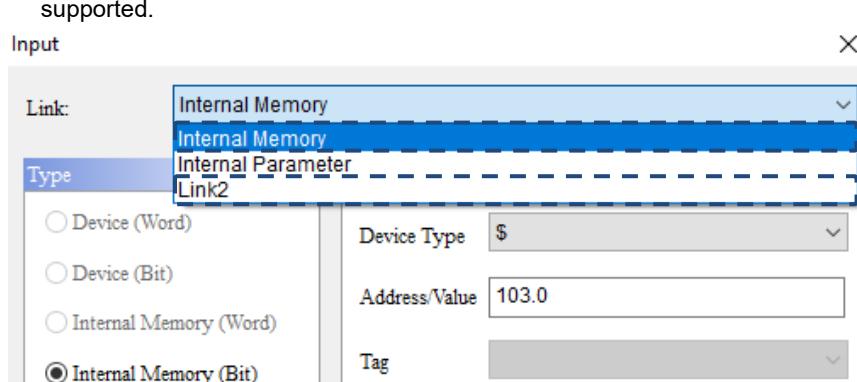


Figure 20.1.2 Main property page for the Embedded Subscreen element

No.	Property	Function description
(1)	LeftTop X-coordinate	Set the element's X-axis position on the screen. Only internal memory address (Word) is supported. 
(2)	LeftTop Y-coordinate	Set the element's Y-axis position on the screen. Only internal memory address (Word) is supported. 

No.	Property	Function description						
(3)	Embedded Subscreen	<p>Set the displaying subscreen number of the element. Only internal memory address (Word) is supported.</p> 						
(4)	Invisible Address	<p>■ When the Invisible Address is set to On, the Embedded Subscreen element is invisible and you cannot execute its set functions.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Invisible Address is Off</td> <td style="width: 60%; background-color: blue; color: yellow; text-align: center;">Sub Screen 2</td> <td style="width: 25%; text-align: right;"> <input type="text" value="0"/> Left Top X Coordinate  <input type="text" value="0"/> Left Top Y Coordinate  <input type="text" value="2"/> Embedded Subscreen  <input type="text" value="\$103.0 FF"/> Invisible Address         </td> </tr> <tr> <td>Invisible Address is On</td> <td style="background-color: #cccccc; border: 2px dashed black; text-align: center;">Element is invisible</td> <td style="text-align: right;"> <input type="text" value="0"/> Left Top X Coordinate  <input type="text" value="0"/> Left Top Y Coordinate  <input type="text" value="2"/> Embedded Subscreen  <input type="text" value=""/> Invisible Address         </td> </tr> </table> <p>■ The controller address (Bit) and the internal register address (Bit) are supported.</p> 	Invisible Address is Off	Sub Screen 2	<input type="text" value="0"/> Left Top X Coordinate <input type="text" value="0"/> Left Top Y Coordinate <input type="text" value="2"/> Embedded Subscreen <input type="text" value="\$103.0 FF"/> Invisible Address	Invisible Address is On	Element is invisible	<input type="text" value="0"/> Left Top X Coordinate <input type="text" value="0"/> Left Top Y Coordinate <input type="text" value="2"/> Embedded Subscreen <input type="text" value=""/> Invisible Address
Invisible Address is Off	Sub Screen 2	<input type="text" value="0"/> Left Top X Coordinate <input type="text" value="0"/> Left Top Y Coordinate <input type="text" value="2"/> Embedded Subscreen <input type="text" value="\$103.0 FF"/> Invisible Address						
Invisible Address is On	Element is invisible	<input type="text" value="0"/> Left Top X Coordinate <input type="text" value="0"/> Left Top Y Coordinate <input type="text" value="2"/> Embedded Subscreen <input type="text" value=""/> Invisible Address						

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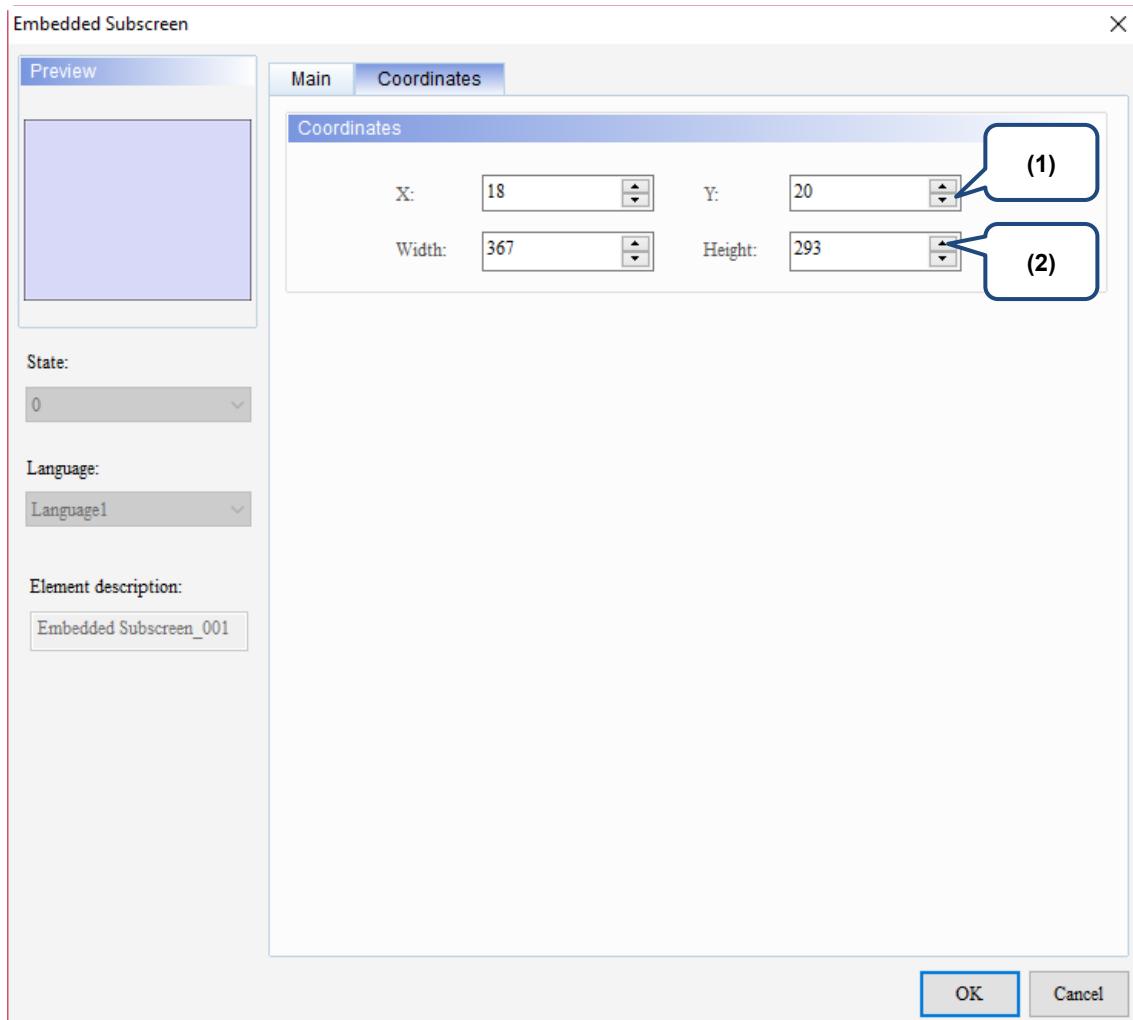
**■ Coordinates**

Figure 20.1.3 Coordinates property page for the Embedded Subscreen element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	You can also set the width and height of the elements.

## 20.2 Camera display

The DOP-100 series HMI models come in two screen sizes: 12-inch and 15-inch. There are four models available, including DOP-112MX, DOP-112WX, DOP-115MX, and DOP-115WX.

M indicates a multimedia model, W indicates a narrow-framed model, and X indicates the model has an XGA TFT display.

The multimedia type models support functions such as Analog Camera, IP Camera, VGA display, Video Play, and Event trigger.

The following will introduce the models with multimedia functions. If you are using the DOP-112MX and DOP-115MX models, refer to the following descriptions for setting and operating these functions. If you are using the DOP-112WX and DOP-115WX models, the functions supported by the multimedia type models are not available.

The Camera display element supports two camera types, Analog Camera and IP Camera.

### Analog Camera

An analog camera only supports CVBS signals in PAL or NTSC format. The input format of CVBS signal is different from that of AHD, TVI, and CVI signals. The analog camera connector is a BNC connector.

PAL is short for Phase Alternating Line. Generally, PAL uses a bandwidth of 8 MHz and the color signal transmission can tolerate a larger phase error.

NTSC is short for National Television System Committee and is the earliest developed television system. Generally, NTSC uses a bandwidth of 6 MHz and covers the widest range of colors.

CVBS is short for Composite Video Baseband Signal, which is commonly known as the visual signal of the AV connector. CVBS is the original video signal format that hasn't been processed. A CVBS signal cable includes luminance (Y), chrominance (C), horizontal synchronization (Hsync), and vertical synchronization (Vsync).

### IP Camera

IP camera combines traditional cameras and network technologies. It is a digital device based on network transmission and is equipped with a network output interface through which it can use the Ethernet for remote network connection. The IP Camera supported by the HMI only provides Real Time Streaming Protocol (RTSP). RTSP is an application layer protocol in the TCP/IP protocol system, which is designed for entertainment and communication systems to control streaming media servers.

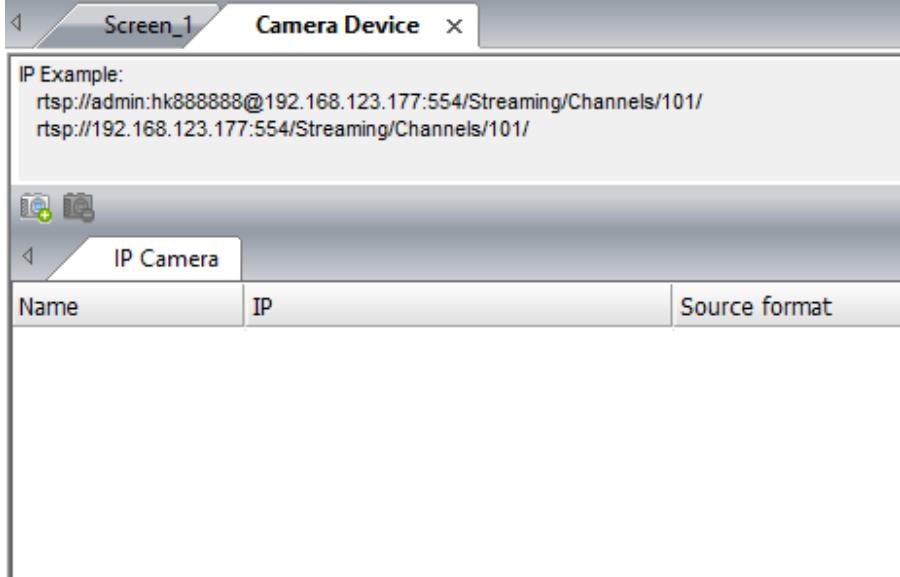
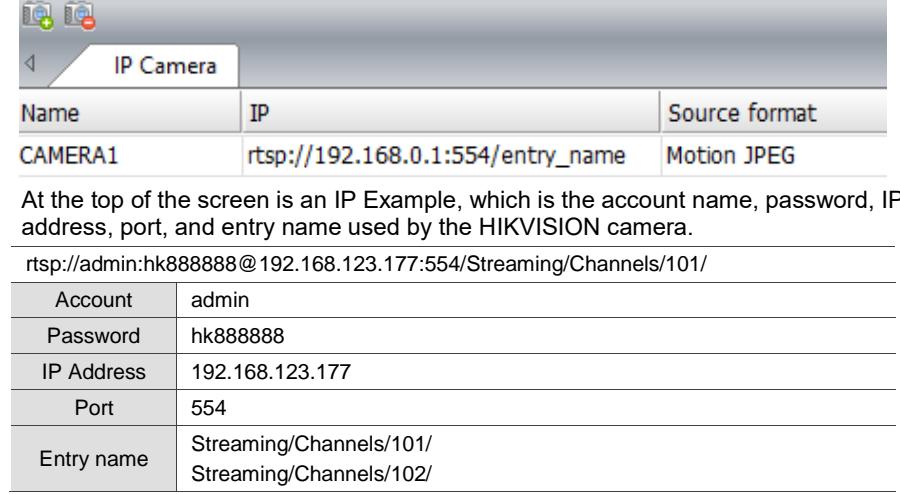
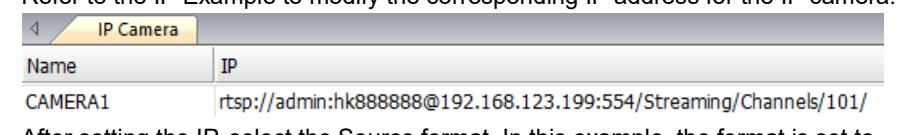
Refer to the following tables for the Analog Camera and IP Camera examples.

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Table 20.2.1 Analog Camera example

Analog Camera	
Create a Camera display element and set its parameters.	
	Camera display element
	Camera type ANALOG CAMERA
	Camera Name CH1
	Show size 640x360
Analog Camera Display	
Camera display element	
<ul style="list-style-type: none"><li>■ After creating the elements, compile and download the elements to the HMI.</li><li>■ When the download is complete, you can see the video recorded by the Analog Camera (CH1) displayed on the Camera display element.</li></ul>	
Execution results	

Table 20.2.2 IP Camera example

IP Camera											
Camera settings	<ul style="list-style-type: none"> <li>Before using the IP Camera, first set the IP Camera device by going to [Options] &gt; [Camera Device]. The setting screen of the Camera Device is as follows.</li> </ul>  <p>The screenshot shows the 'Camera Device' settings window. At the top, it displays the IP Example: rtsp://admin:hk888888@192.168.123.177:554/Streaming/Channels/101/ and rtsp://192.168.123.177:554/Streaming/Channels/101/. Below this, there is a toolbar with icons for camera management. The main area is titled 'IP Camera' and contains a table with columns for Name, IP, and Source format. One entry is visible: Name is 'CAMERA1', IP is 'rtsp://192.168.0.1:554/entry_name', and Source format is 'Motion JPEG'.</p>										
	<ul style="list-style-type: none"> <li>Click  to add a camera. The default IP is rtsp://192.168.0.1:554/entry_name.</li> </ul>  <p>The screenshot shows the 'IP Camera' settings window. It displays the IP Example at the top: rtsp://admin:hk888888@192.168.123.177:554/Streaming/Channels/101/. Below the example, there is a table with columns for Account, Password, IP Address, Port, and Entry name. The values are: Account: admin, Password: hk888888, IP Address: 192.168.123.177, Port: 554, and Entry name: Streaming/Channels/101/ Streaming/Channels/102/.</p>										
	<ul style="list-style-type: none"> <li>At the top of the screen is an IP Example, which is the account name, password, IP address, port, and entry name used by the HIKVISION camera.</li> </ul> <p>rtsp://admin:hk888888@192.168.123.177:554/Streaming/Channels/101/</p> <table border="1"> <tr> <td>Account</td><td>admin</td></tr> <tr> <td>Password</td><td>hk888888</td></tr> <tr> <td>IP Address</td><td>192.168.123.177</td></tr> <tr> <td>Port</td><td>554</td></tr> <tr> <td>Entry name</td><td>Streaming/Channels/101/ Streaming/Channels/102/</td></tr> </table> <ul style="list-style-type: none"> <li>Refer to the IP Example to modify the corresponding IP address for the IP camera.</li> </ul>  <p>The screenshot shows the 'IP Camera' settings window. It displays the IP Example at the top: rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/101/. Below the example, there is a table with columns for Name and IP. The values are: Name: CAMERA1 and IP: rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/101/.</p>	Account	admin	Password	hk888888	IP Address	192.168.123.177	Port	554	Entry name	Streaming/Channels/101/ Streaming/Channels/102/
Account	admin										
Password	hk888888										
IP Address	192.168.123.177										
Port	554										
Entry name	Streaming/Channels/101/ Streaming/Channels/102/										
	<ul style="list-style-type: none"> <li>After setting the IP, select the Source format. In this example, the format is set to H.264.</li> </ul> <table border="1"> <tr> <td>IP</td><td>Source format</td></tr> <tr> <td>rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/101/</td><td>H.264</td></tr> </table>	IP	Source format	rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/101/	H.264						
IP	Source format										
rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/101/	H.264										

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Camera display element

**IP Camera**  
Create a Camera display element and set its parameters.

Camera display element	
Camera type	IP CAMERA
Camera Name	CAMERA1
Show size	640x360

IP Camera Display

- After creating the elements, compile and download the elements to the HMI.
- When the download is complete, you can see the video recorded by the IP Camera displayed on the Camera display element.



Execution results

When you double-click the Camera display element, the property page is shown as follows.

(Note: since the Camera display element is shared by the Analog Camera and IP Camera, you can refer to the following settings for the Analog Camera when using the IP Camera.)

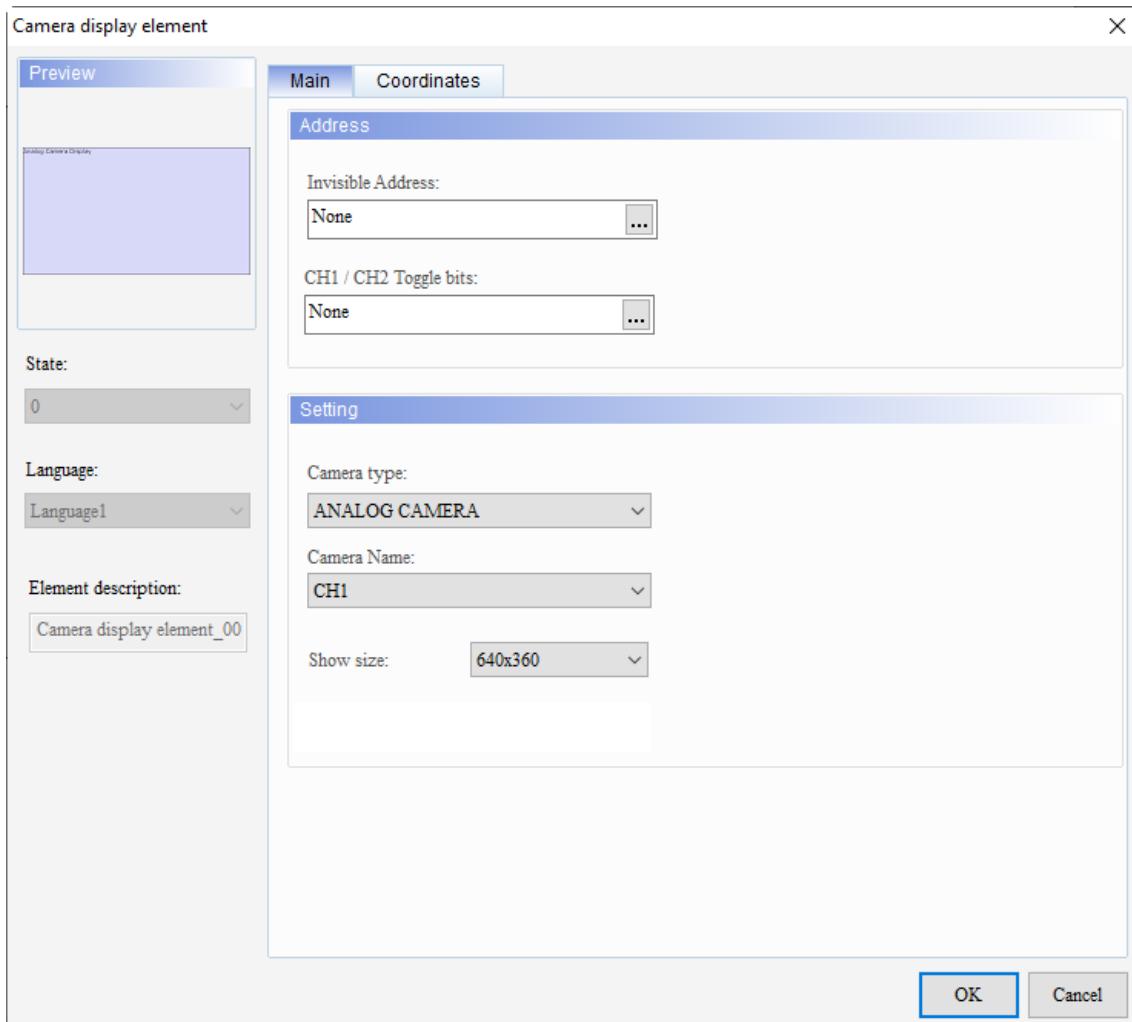


Figure 20.2.1 Properties of Camera display element

Table 20.2.3 Function page of Camera display element

Camera display element	
Function page	Description
Preview	Camera display elements do not support multiple state values and multi-language data display.
Main	Set the Invisible Address and CH1 / CH2 Toggle bits. Set the Camera type, Camera Name, and Show size options.
Coordinates	Set the X and Y coordinates.

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## ■ Main

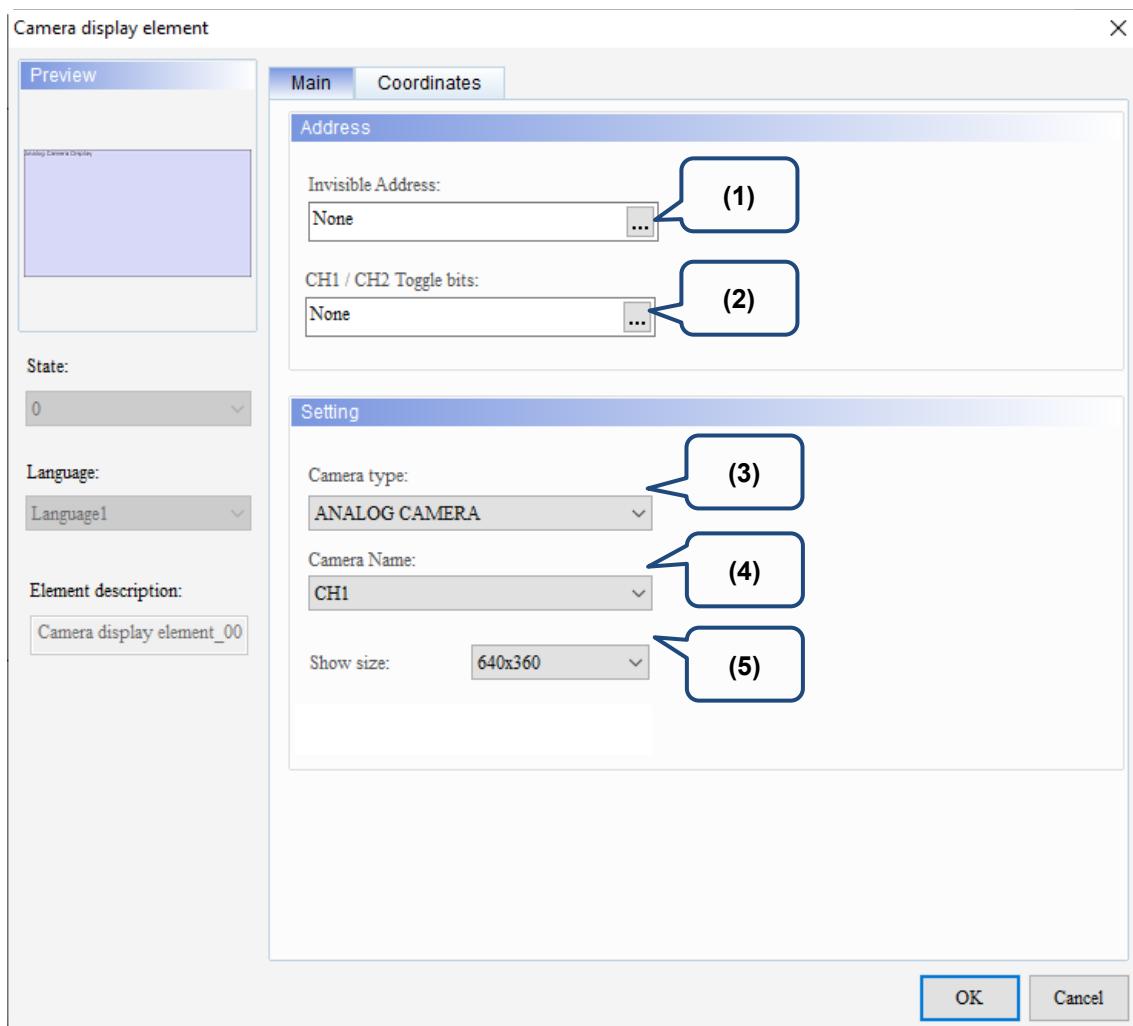
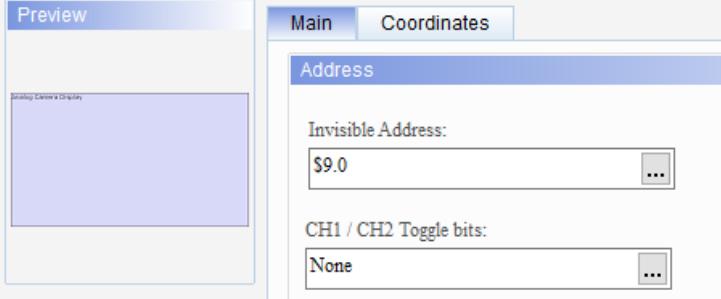
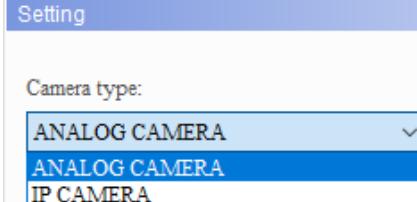
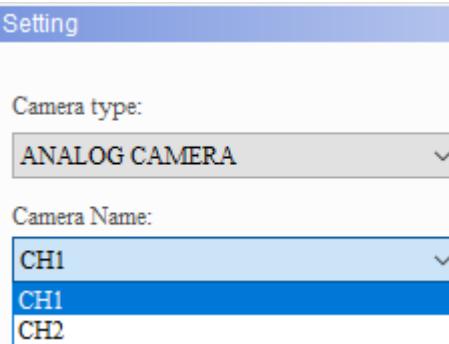


Figure 20.2.2. Main property page for the Camera display element

No.	Property	Function description								
(1)	Invisible Address	<p>When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</p> <p>Camera display element</p>  <table border="1"> <tr> <td>Invisible Address is Off</td> <td></td> <td>\$9.0 OFF</td> </tr> <tr> <td>Invisible Address is On</td> <td>Element is invisible</td> <td>\$9.0 ON</td> </tr> </table>			Invisible Address is Off		\$9.0 OFF	Invisible Address is On	Element is invisible	\$9.0 ON
Invisible Address is Off		\$9.0 OFF								
Invisible Address is On	Element is invisible	\$9.0 ON								
(2)	CH1 / CH2 Toggle bits	<ul style="list-style-type: none"> <li>Use the toggle bit to switch between the CH1 and CH2 channels of the Analog Camera.</li> <li>As soon as the toggle bit is triggered to On, CH1 is switched to CH2 immediately, or vice versa.</li> </ul>								
		<p>Select ANALOG CAMERA or IP CAMERA.</p> 								
(3)	Camera type									
(4)	Camera Name	<ul style="list-style-type: none"> <li>The options vary depending on the selected Camera type.</li> <li>If you select ANALOG CAMERA for the Camera type, the options for Camera Name are CH1 and CH2. Connect a corresponding BNC connector to the CH1 or CH2 port on the back of the HMI.</li> </ul> 								

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No.	Property	Function description													
(4)	Camera Name	<p>If you select IP CAMERA for the Camera type, the options for the Camera Name are CAMERA1 and CAMERA2. Use a webcam and set the network segment of its IP address the same as that of the HMI.</p>													
(5)	Show size	<p>Set the display resolution of the element.</p> <table border="1"> <tr><td>640x360</td></tr> <tr><td>800x600</td></tr> <tr><td>640x480</td></tr> <tr><td>320x240</td></tr> <tr><td>160x120</td></tr> <tr><td>64x48</td></tr> <tr><td>1024x576</td></tr> <tr><td>960x720</td></tr> <tr><td>960x540</td></tr> <tr><td>640x360</td></tr> <tr><td>512x288</td></tr> <tr><td>256x144</td></tr> <tr><td>1024x768</td></tr> </table>	640x360	800x600	640x480	320x240	160x120	64x48	1024x576	960x720	960x540	640x360	512x288	256x144	1024x768
640x360															
800x600															
640x480															
320x240															
160x120															
64x48															
1024x576															
960x720															
960x540															
640x360															
512x288															
256x144															
1024x768															

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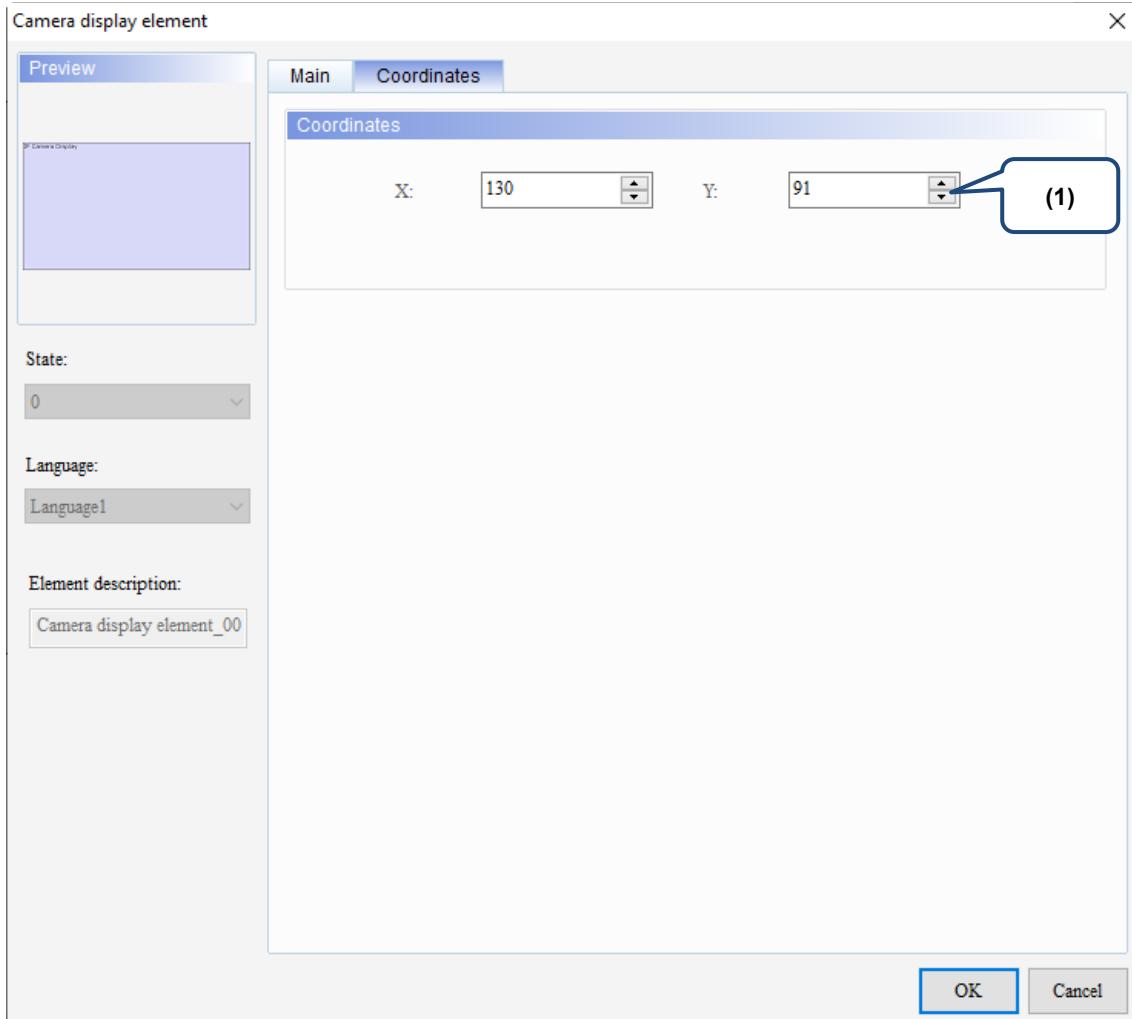
**■ Coordinates**

Figure 20.2.3. Coordinates property page for the Camera display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.

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The following introduces the properties of Camera Device.

Go to [Options] > [Camera Device] to enter the setting screen.

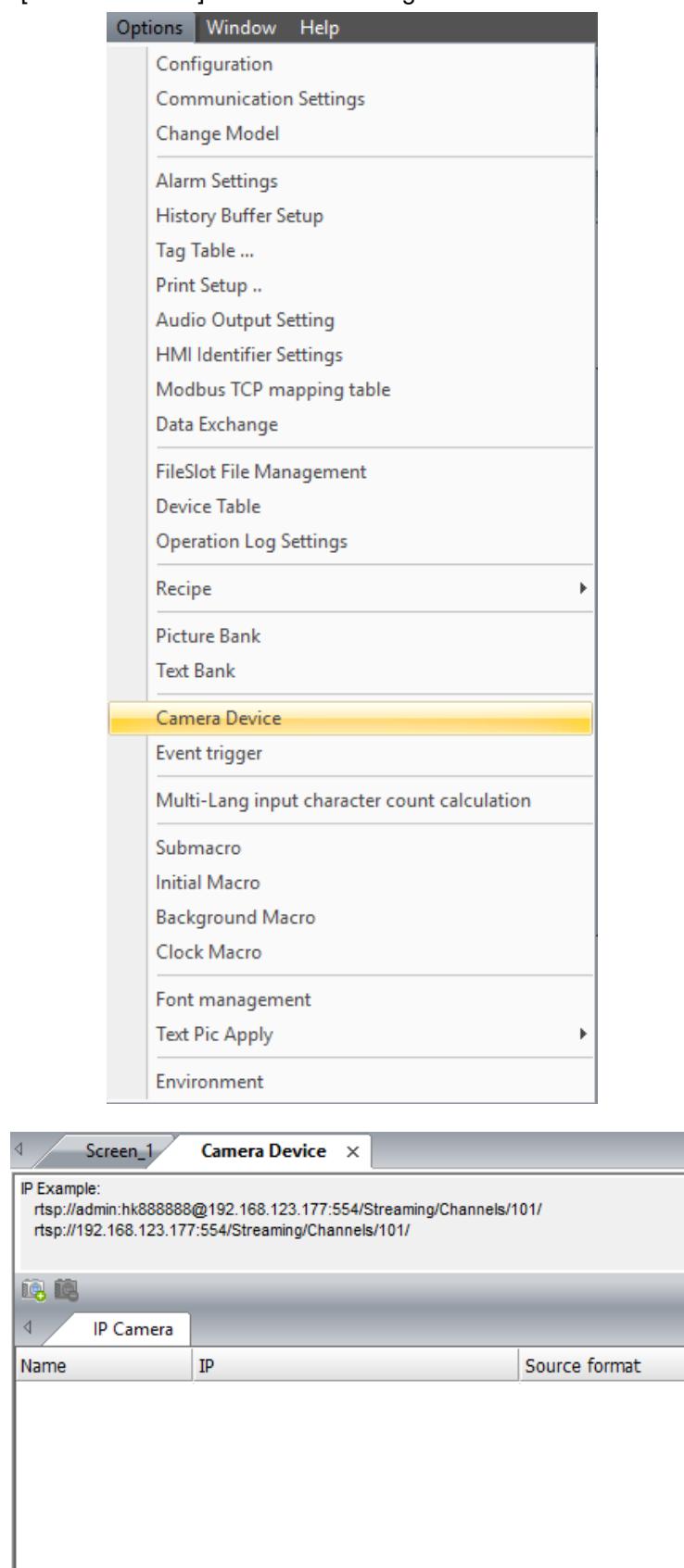
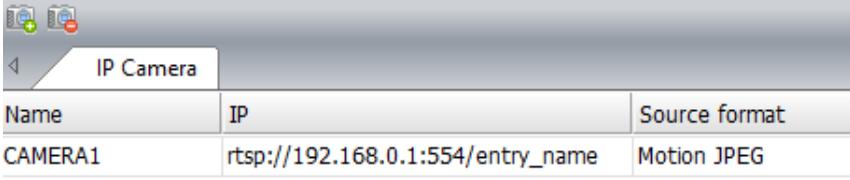
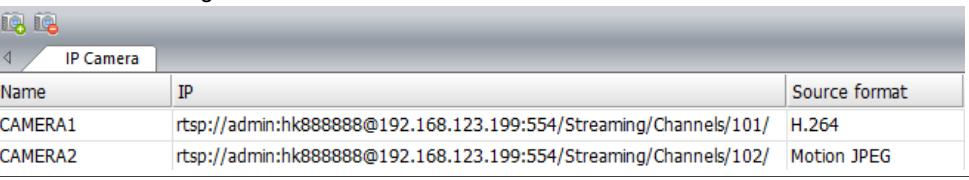


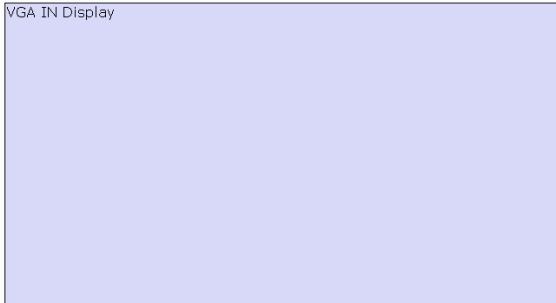
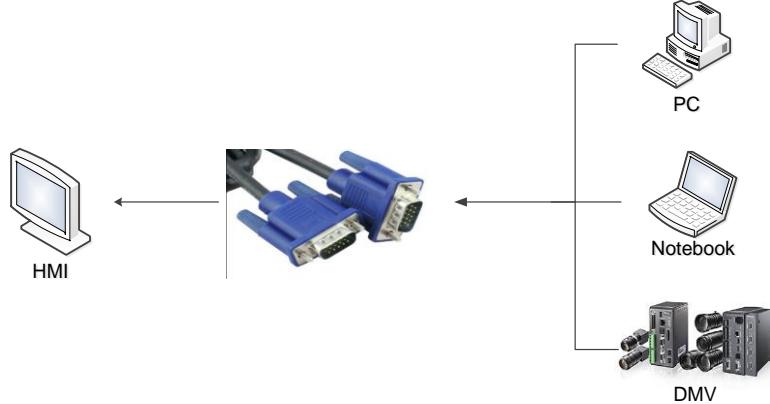
Figure 20.2.4 Camera Device

	<p>Click  to add a camera.</p> 												
Add a camera 	<p>Name</p> <p>You can name the camera.</p> <p>The format of the IP address is fixed. Modify the content according to the network camera settings. The IP address can be divided into several parts as follows.</p> <table border="1"> <tr> <td>Account</td> <td>Enter the account according to the settings of the network camera.</td> </tr> <tr> <td>Password</td> <td>Enter the password according to the settings of the network camera.</td> </tr> <tr> <td>IP address</td> <td>Enter the IP address according to the settings of the network camera.</td> </tr> <tr> <td>Port</td> <td>The default is 554.</td> </tr> </table> <p>IP</p> <p>Entry name</p> <ul style="list-style-type: none"> <li>■ The entry name varies from different brands. Enter [Brand name rtsp address] in the input field of the search engine such as "HIKVISION rtsp address".</li> <li>■ The search results are as follows.</li> </ul> <p>Main Stream rtsp://192.168.1.100:554/Streaming/Channels/101/ rtsp://admin:examplepass123!@192.168.1.100:554/Streaming/Channels/101/</p> <p>Sub Stream rtsp://192.168.1.100:554/Streaming/Channels/102/ rtsp://admin:examplepass123!@192.168.1.100:554/Streaming/Channels/102</p> <ul style="list-style-type: none"> <li>■ 101 indicates the mainstream and 102 indicates the substream of HIKVISION. Thus, the contents of the IP field are as follows.</li> </ul> <p>IP rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/102/ rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/101/</p> <p>Source format</p> <ul style="list-style-type: none"> <li>■ Select the corresponding source format according to the settings of the network camera.</li> <li>■ Take the brand HIKVISION for example. You can go to the IP address <a href="http://192.168.123.199/doc/page/login.asp?_1534130000127">http://192.168.123.199/doc/page/login.asp?_1534130000127</a> and enter the account and password to log in.</li> </ul> <table border="1"> <tr> <td>Account</td> <td>admin</td> </tr> <tr> <td>Password</td> <td>hk888888</td> </tr> </table> <ul style="list-style-type: none"> <li>■ Go to [Configuration] &gt; [Video/Audio] to check the Video Encoding. For HIKVISION, the mainstream supports the coding formats H.264 and H.265, and the substream supports the coding formats H.264, H.265, and Motion JPEG. Since the HMI supports only Motion JPEG and H.264, if you select the mainstream (101), the source format of the HMI should be set to H.264. If you select the substream (102), the source format of the HMI should be set to Motion JPEG.</li> <li>■ The HMI settings are as follows.</li> </ul> 	Account	Enter the account according to the settings of the network camera.	Password	Enter the password according to the settings of the network camera.	IP address	Enter the IP address according to the settings of the network camera.	Port	The default is 554.	Account	admin	Password	hk888888
Account	Enter the account according to the settings of the network camera.												
Password	Enter the password according to the settings of the network camera.												
IP address	Enter the IP address according to the settings of the network camera.												
Port	The default is 554.												
Account	admin												
Password	hk888888												
Delete a camera 	Execute  to delete the camera settings.												

## 20.3 VGA display

The HMI provides a VGA port to connect to an external device for displaying its screen images on the HMI. The external device can be a DMV (Delta Machine Vision) or the VGA output connector of a PC or notebook. The following provides an example of how to use the VGA display element.

Table 20.3.1 VGA display element example

VGA display element							
VGA display element	Create a VGA display element and set its parameters. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">VGA display element</th> </tr> </thead> <tbody> <tr> <td>Source resolution</td><td>1024x768 60 Hz</td></tr> <tr> <td>Show size</td><td>640x360</td></tr> </tbody> </table> 	VGA display element		Source resolution	1024x768 60 Hz	Show size	640x360
VGA display element							
Source resolution	1024x768 60 Hz						
Show size	640x360						
Wiring method	Use a VGA cable to connect the HMI to the output device, such as a PC, notebook, or DMV. 						
Execution results	<ul style="list-style-type: none"> <li>■ After creating the elements, compile and download the elements to the HMI.</li> <li>■ When the download is complete, the VGA display element displays the screen image of the output device.</li> </ul> 						

When you double-click the VGA display element, the property setting page is as follows.

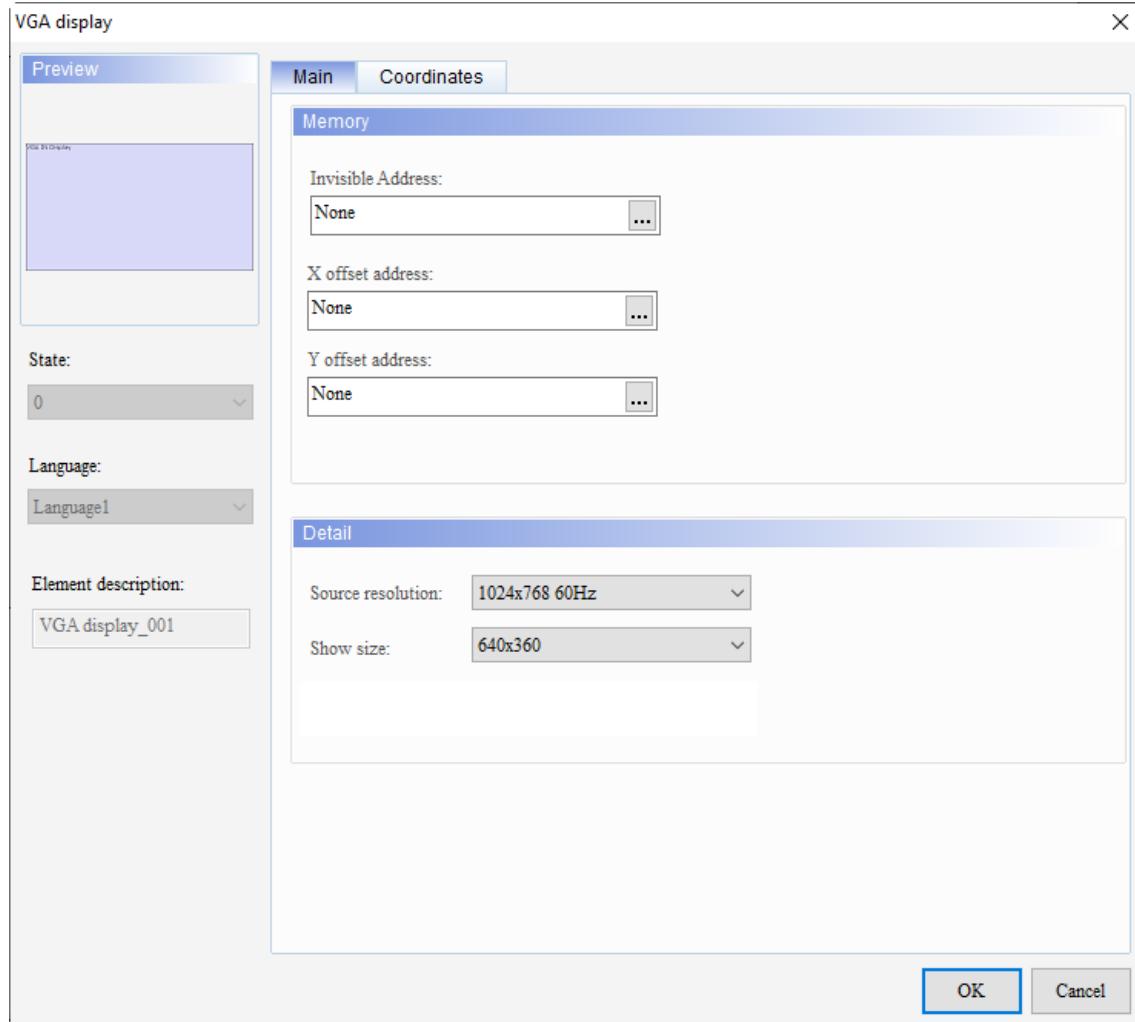


Figure 20.3.1 Properties of VGA display

Table 20.3.2 Function page of VGA display

VGA display element	
Function page	Description
Preview	VGA display elements do not support multiple state values and multi-language data display.
Main	Set the Invisible Address, X offset address, and Y offset address. Set the Source resolution and Show size options.
Coordinates	Set the X and Y coordinates.

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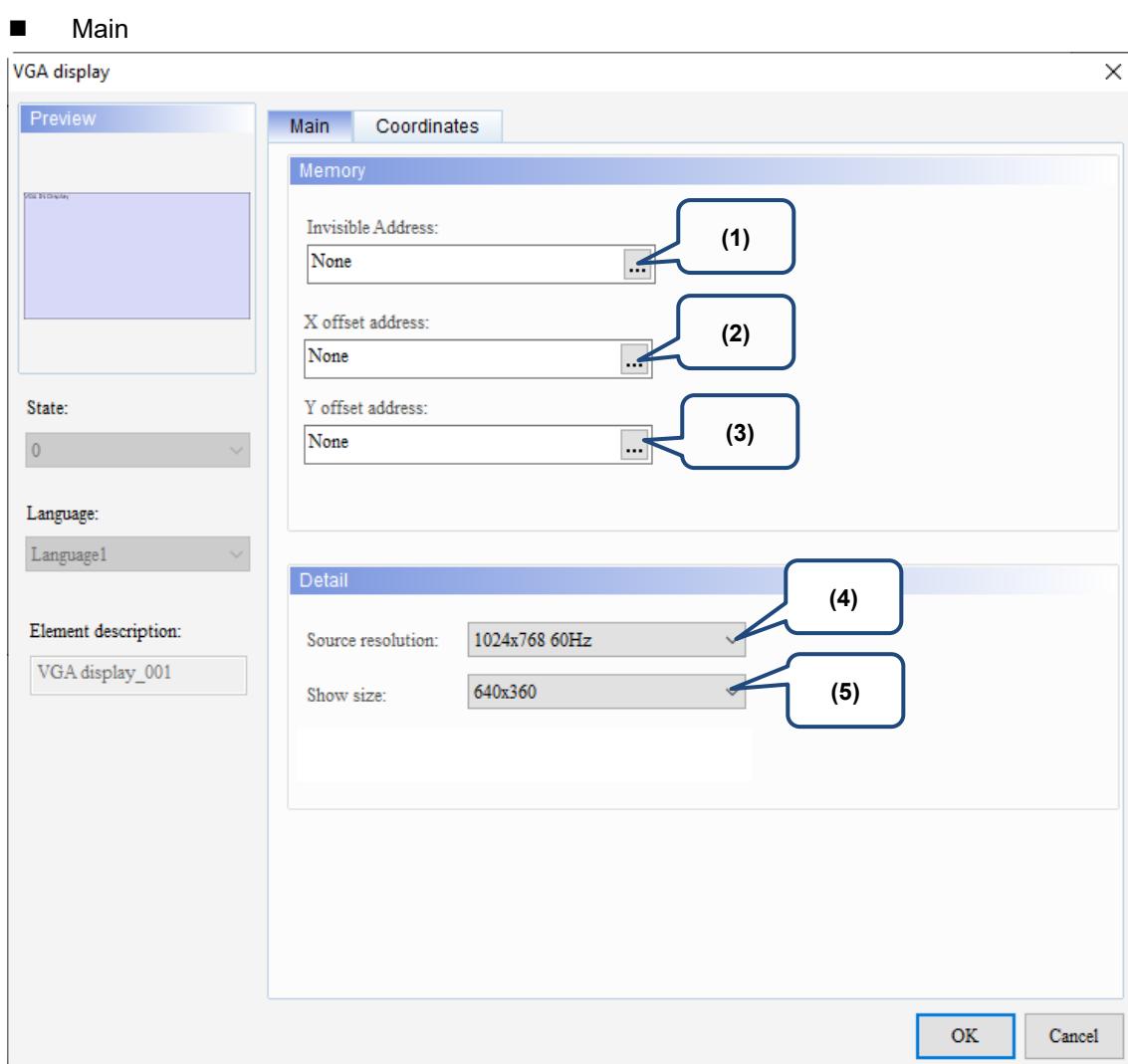


Figure 20.3.2. Main property page for the VGA display element

No.	Property	Function description						
(1)	Invisible Address	<p>When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</p> <p>VGA display</p> <table border="1"> <tr> <td>Invisible Address is Off</td> <td></td> <td>\$9.0 OFF</td> </tr> <tr> <td>Invisible Address is On</td> <td></td> <td>\$9.0 ON</td> </tr> </table>	Invisible Address is Off		\$9.0 OFF	Invisible Address is On		\$9.0 ON
Invisible Address is Off		\$9.0 OFF						
Invisible Address is On		\$9.0 ON						
(2)	X offset address	You can fine adjust and display the whole image transmitted from the input source with the two addresses.						
(3)	Y offset address							
(4)	Source resolution	Set the resolution according to the resolution of the VGA output device.						
(5)	Show size	Set the display resolution of the element.						

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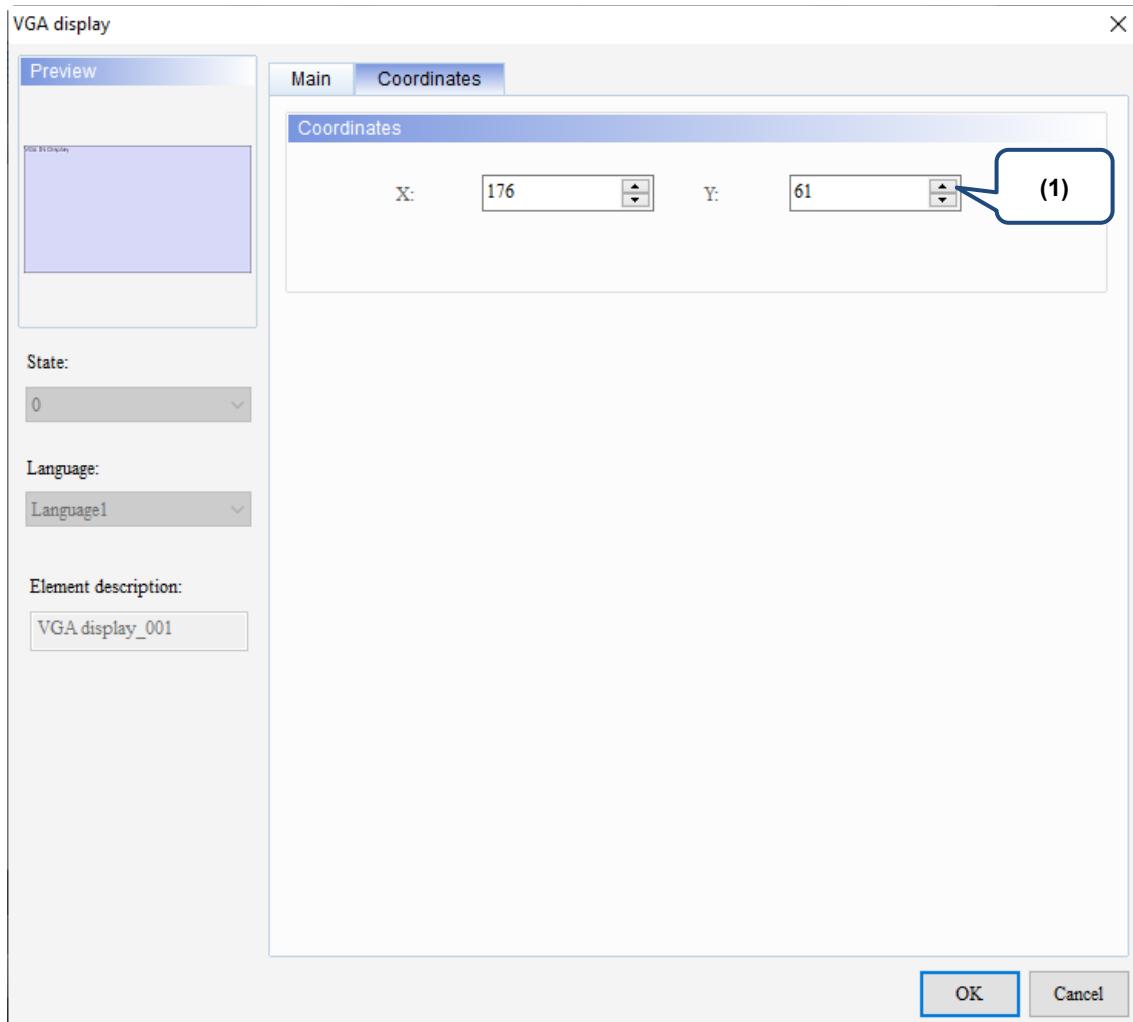
**■ Coordinates**

Figure 20.3.3 Coordinates property page for the VGA display element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.

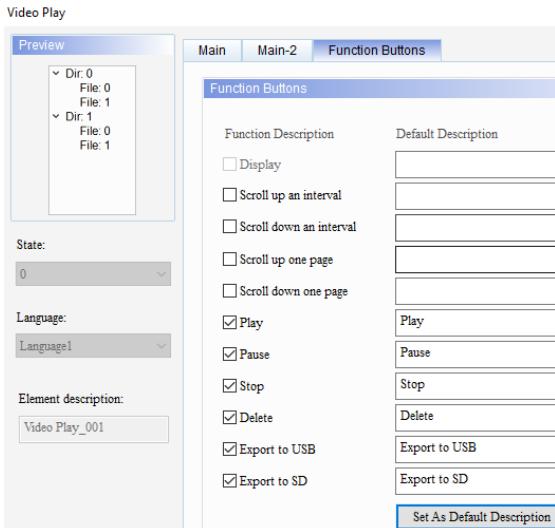
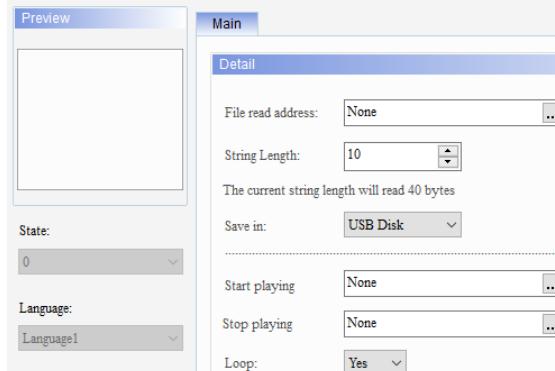
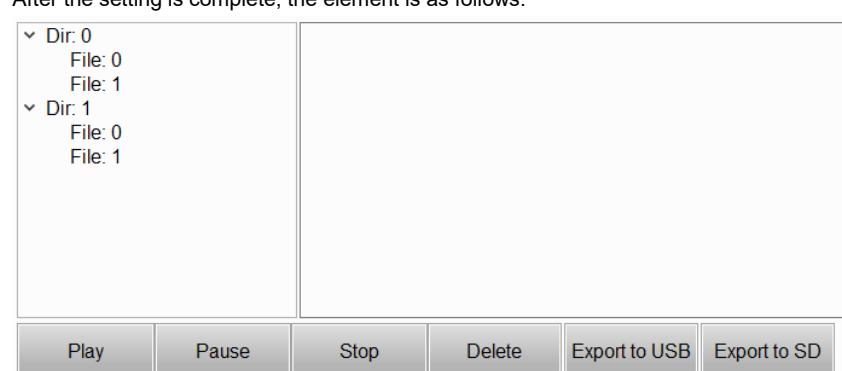
## 20.4 Video Play

You can use the Video Play element to view videos that are recorded with the Analog Camera or IP Camera and are stored in the HMI, or mpeg4 videos stored in the USB Disk or SD Card. If the videos stored in the USB Disk or SD Card are not recorded with the Analog Camera or IP Camera, the videos must be in the mpeg4 format which supports H.264 video coding for viewing on the HMI.

The following provides examples using the Video Play element to view videos recorded with the cameras and the mpeg4 videos stored in the USB Disk or SD Card.

Table 20.4.1 Video Play element example (videos recorded with cameras)

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Video Play element	
Create a Video Play element and set its parameters.	
File list on the left	<p>Select the check boxes for <b>Play</b>, <b>Pause</b>, <b>Stop</b>, <b>Delete</b>, <b>Export to USB</b>, and <b>Export to SD</b>, and click the <b>Set As Default Description</b> button.</p> 
Set Yes for loop playback (Loop).	
File content on the right	<p>Video Play</p> 
After the setting is complete, the element is as follows.	
	

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### Video Play element

■ Create a Camera display element with the parameters set as follows.

**Camera display element**

**Preview**  


**State:**  
0

**Language:**  
Language1

**Element description:**  
Camera display element\_01

**Main** **Coordinates**

**Address**  
Invisible Address:  
None

**CH1 / CH2 Toggle bits:**  
None

**Setting**  
Camera type:  
ANALOG CAMERA

Camera Name:  
CH1

Show size:  
640x360

**Camera display element**

**Analog Camera Display**

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**Video Play element**

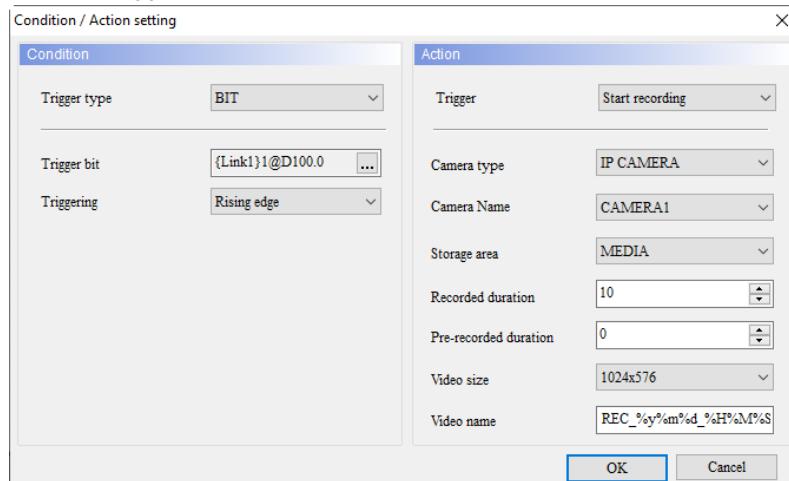
■ Create a Camera display element with the parameters set as follows.

**Camera display element**

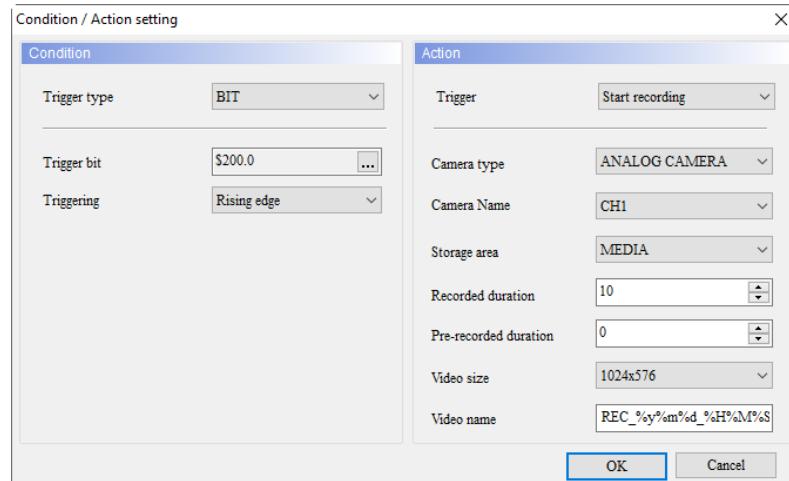
<p>Camera display element</p>	<p>Preview</p>  <p>State:</p> <p>0</p> <p>Language:</p> <p>Language1</p> <p>Element description:</p> <p>Camera display element_01</p> <p>Main Coordinates</p> <p>Address</p> <p>Invisible Address:</p> <p>None</p> <p>CH1 / CH2 Toggle bits:</p> <p>None</p> <p>Setting</p> <p>Camera type:</p> <p>IP CAMERA</p> <p>Camera Name:</p> <p>CAMERA1</p> <p>Show size:</p> <p>640x360</p> <p>IP Camera Display</p>										
<p>Camera Device</p>	<p>Go to [Options] &gt; [Camera Device] to set the IP for the IP Camera.</p> <table border="1"><tr><td colspan="2">IP Camera</td></tr><tr><td>Name</td><td>IP</td></tr><tr><td>CAMERA1</td><td>rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/101/</td></tr><tr><td colspan="2">Source format</td></tr><tr><td colspan="2">H.264</td></tr></table>	IP Camera		Name	IP	CAMERA1	rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/101/	Source format		H.264	
IP Camera											
Name	IP										
CAMERA1	rtsp://admin:hk888888@192.168.123.199:554/Streaming/Channels/101/										
Source format											
H.264											

### Video Play element

- Go to [Options] > [Event trigger] to set the trigger source to archive the recorded videos. For details of each parameter, refer to the introduction of the Event trigger function in Section 20.5.
- Add two trigger events with the parameters set as follows.



Event trigger



- After the setting is complete, the table is as follows.

Event triggered		
No.	Condition	Action
1	BIT-{Link1}1@D100.0	Start recording-IP CAMERA-CAMERA1
2	BIT-\$200.0	Start recording-ANALOG CAMERA-CH1

Create two Momentary button elements with the Write Addresses as D100.0 and \$200.0 respectively.

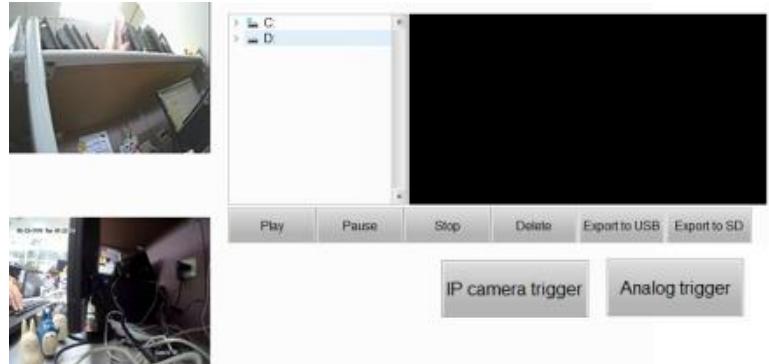
Momentary button



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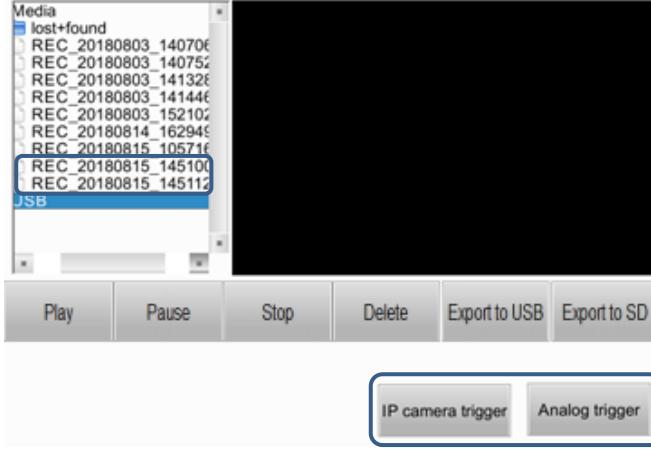
**Video Play element**

- After creating the elements, compile and download the elements to the HMI.
- When the download is complete, you can see the output videos on the Analog Camera and IP Camera display elements.

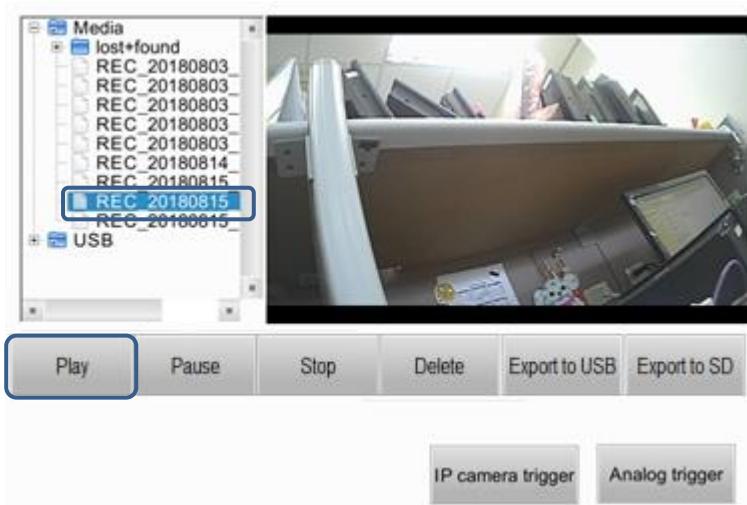


**Execution results**

- After triggering the **IP camera trigger** (D100.0) and **Analog trigger** (\$200.0) buttons, you can see there are two new video archives under the Media path.

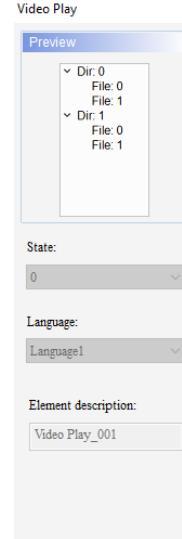
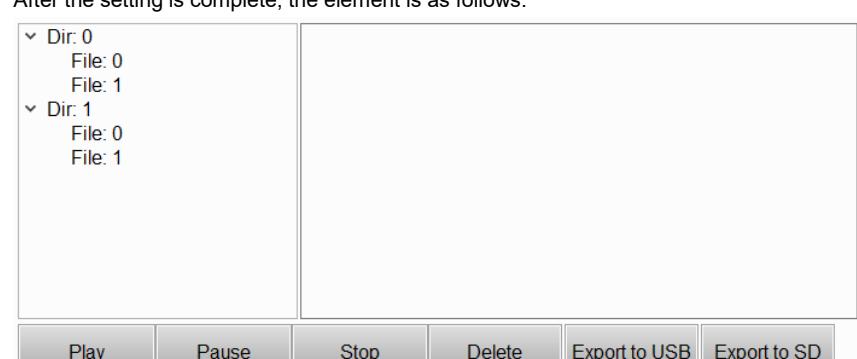


- Select a video file and click the **Play** button to play the recorded video.

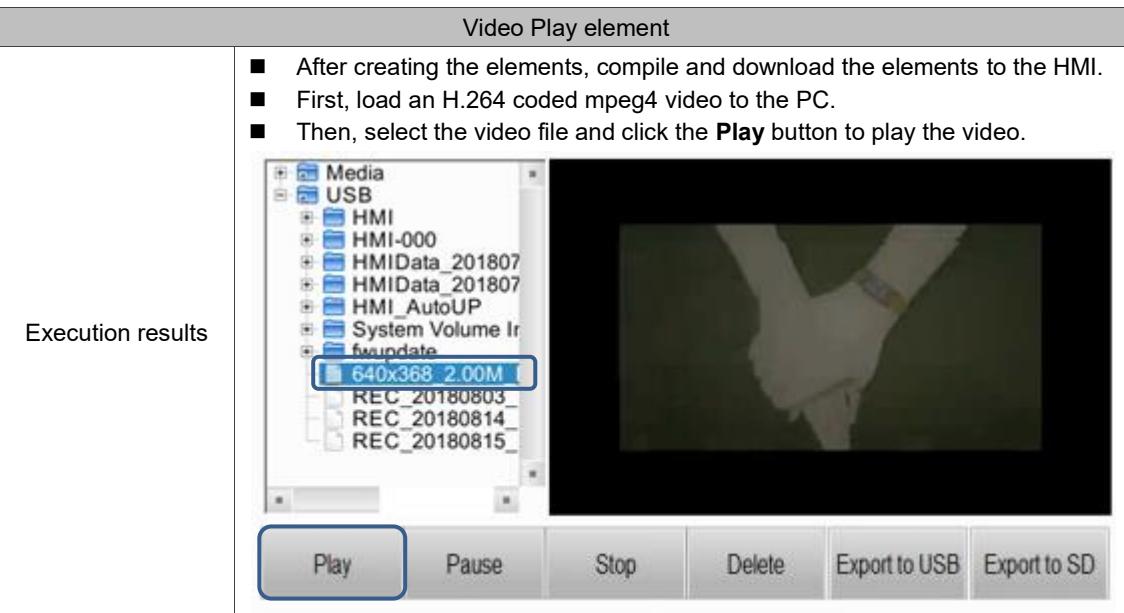


The following example demonstrates how to play mpeg4 videos saved in the USB Disk or SD Card.

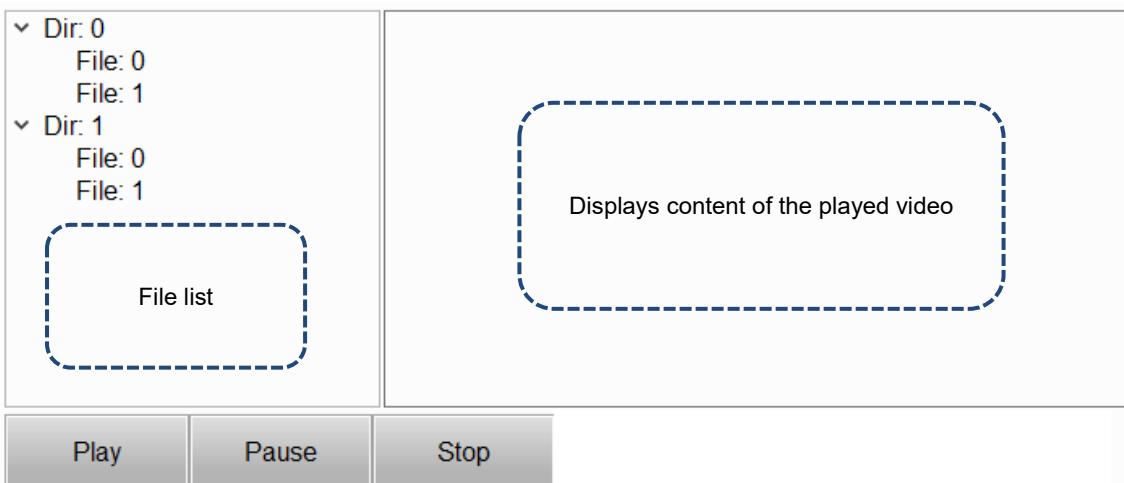
Table 20.4.2 Video Play element example (mpeg 4 videos saved in the USB Disk or SD Card)

Video Play element																									
Create a Video Play element and set its parameters.																									
<p>File list on the left</p> 	<p>Video Play element</p> <p>Select the check boxes for <b>Play</b>, <b>Pause</b>, <b>Stop</b>, <b>Delete</b>, <b>Export to USB</b>, and <b>Export to SD</b>, and click the <b>Set As Default Description</b> button.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Function Description</th> <th style="text-align: left;">Default Description</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Display</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Scroll up an interval</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Scroll down an interval</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Scroll up one page</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Scroll down one page</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Play</td> <td>Play</td> </tr> <tr> <td><input checked="" type="checkbox"/> Pause</td> <td>Pause</td> </tr> <tr> <td><input checked="" type="checkbox"/> Stop</td> <td>Stop</td> </tr> <tr> <td><input checked="" type="checkbox"/> Delete</td> <td>Delete</td> </tr> <tr> <td><input checked="" type="checkbox"/> Export to USB</td> <td>Export to USB</td> </tr> <tr> <td><input checked="" type="checkbox"/> Export to SD</td> <td>Export to SD</td> </tr> </tbody> </table> <p style="text-align: right;"><b>Set As Default Description</b></p>	Function Description	Default Description	<input type="checkbox"/> Display		<input type="checkbox"/> Scroll up an interval		<input type="checkbox"/> Scroll down an interval		<input type="checkbox"/> Scroll up one page		<input type="checkbox"/> Scroll down one page		<input checked="" type="checkbox"/> Play	Play	<input checked="" type="checkbox"/> Pause	Pause	<input checked="" type="checkbox"/> Stop	Stop	<input checked="" type="checkbox"/> Delete	Delete	<input checked="" type="checkbox"/> Export to USB	Export to USB	<input checked="" type="checkbox"/> Export to SD	Export to SD
Function Description	Default Description																								
<input type="checkbox"/> Display																									
<input type="checkbox"/> Scroll up an interval																									
<input type="checkbox"/> Scroll down an interval																									
<input type="checkbox"/> Scroll up one page																									
<input type="checkbox"/> Scroll down one page																									
<input checked="" type="checkbox"/> Play	Play																								
<input checked="" type="checkbox"/> Pause	Pause																								
<input checked="" type="checkbox"/> Stop	Stop																								
<input checked="" type="checkbox"/> Delete	Delete																								
<input checked="" type="checkbox"/> Export to USB	Export to USB																								
<input checked="" type="checkbox"/> Export to SD	Export to SD																								
<p>Video Play element</p> <p>File content on the right</p> 	<p>Set <b>Yes</b> for loop playback (Loop).</p> <p>Video Play</p> <p>Main</p> <p>Detail</p> <p>File read address: <input type="text" value="None"/></p> <p>String Length: <input type="text" value="10"/></p> <p>The current string length will read 40 bytes</p> <p>Save in: <input type="button" value="USB Disk"/></p> <p>Start playing: <input type="text" value="None"/></p> <p>Stop playing: <input type="text" value="None"/></p> <p>Loop: <input type="button" value="Yes"/></p>																								
<p>After the setting is complete, the element is as follows.</p> 																									

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The Video Play element can be divided into the file list on the left and the display window on the right.



When you double-click the file list on the left of the Video Play element, the property page is shown as follows.

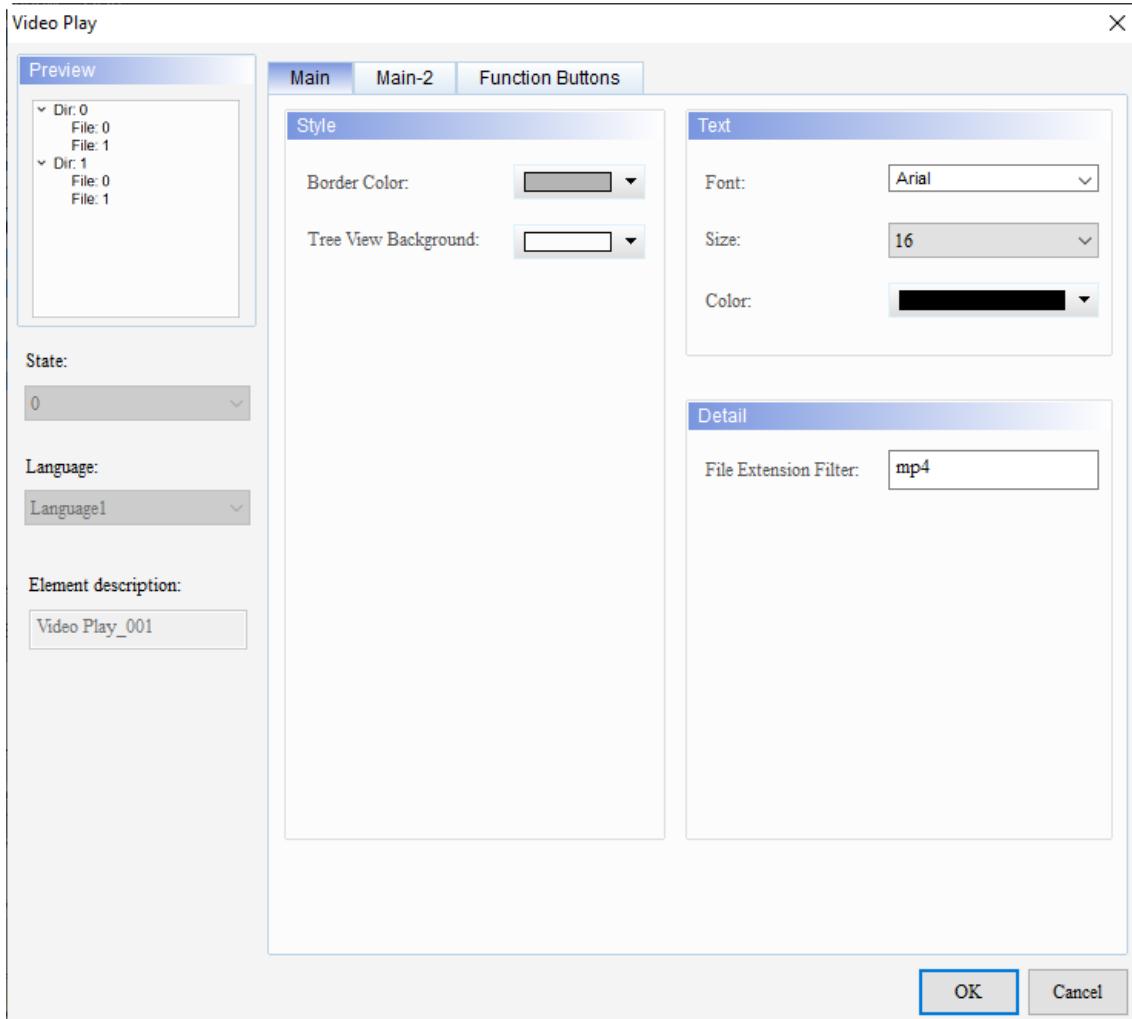


Figure 20.4.1 Properties of Video Play (file list on the left)

Table 20.4.3 Function page of Video Play (file list on the left)

Video Play element (file list on the left)	
Function page	Description
Preview	Video Play elements do not support multiple state values and multi-language data display.
Main	Set the Border Color and Tree View Background. Set the text font, size, and color. Set the File Extension Filter.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Function Buttons	Select the check boxes for <b>Scroll up an interval</b> , <b>Scroll down an interval</b> , <b>Scroll up one page</b> , <b>Scroll down one page</b> , <b>Play</b> , <b>Pause</b> , <b>Stop</b> , <b>Delete</b> , <b>Export to USB</b> , and <b>Export to SD</b> , and click the <b>Set As Default Description</b> button. Set the width and height of the buttons.

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## ■ Main

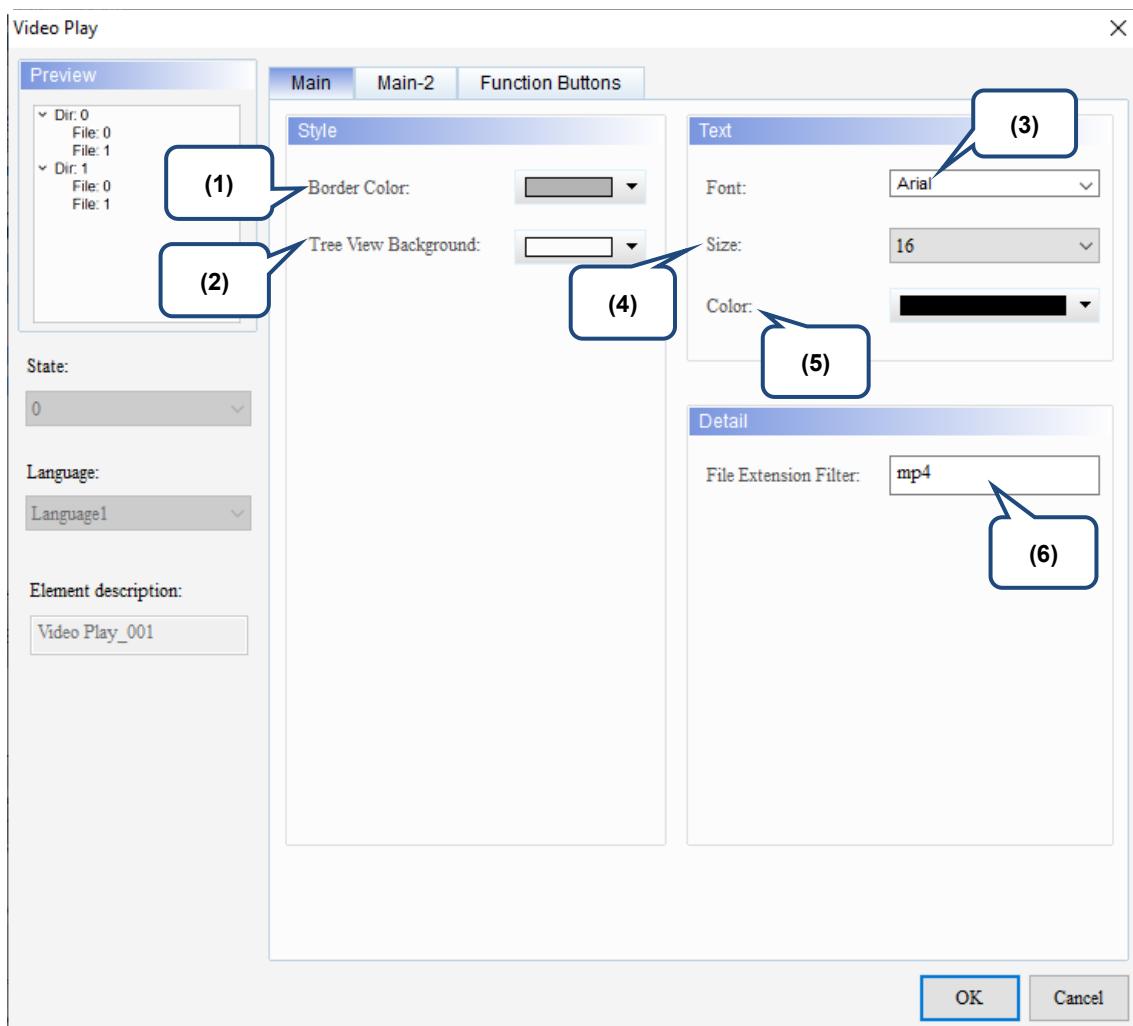
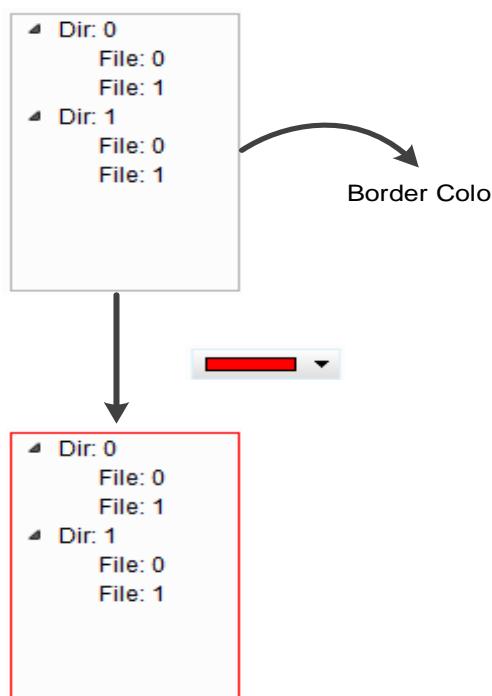
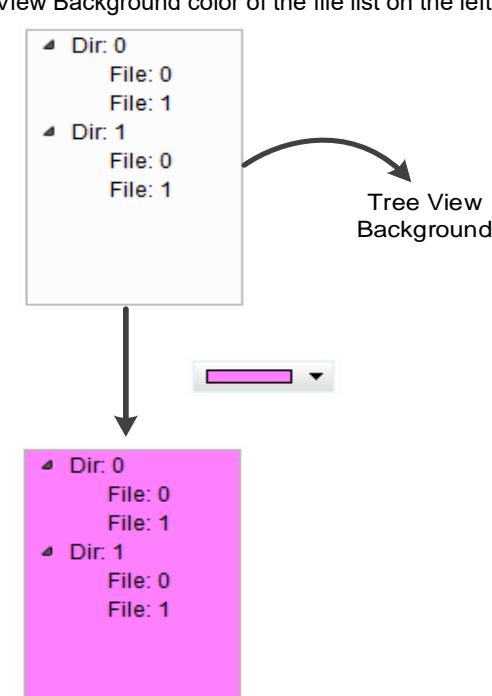


Figure 20.4.2 Main property page for the Video Play element (file list on the left)

No.	Property	Function description
(1)	Border Color	<p>Set the border color of the file list on the left.</p> 
(2)	Tree View Background	<p>Set the Tree View Background color of the file list on the left.</p> 
(3)	Font	Set the text font for the file list on the left.
(4)	Size	Set the text size for the file list on the left.
(5)	Color	Set the text color for the file list on the left.
(6)	File Extension Filter	Set the file extension to be displayed in the file list on the left. The default is mp4, meaning only the files with the mp4 file extension will be displayed in the root directory of the external drive. If you enter an asterisk symbol "*" to the File Extension Filter field, all files in the root directory will be displayed.

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## ■ Main-2

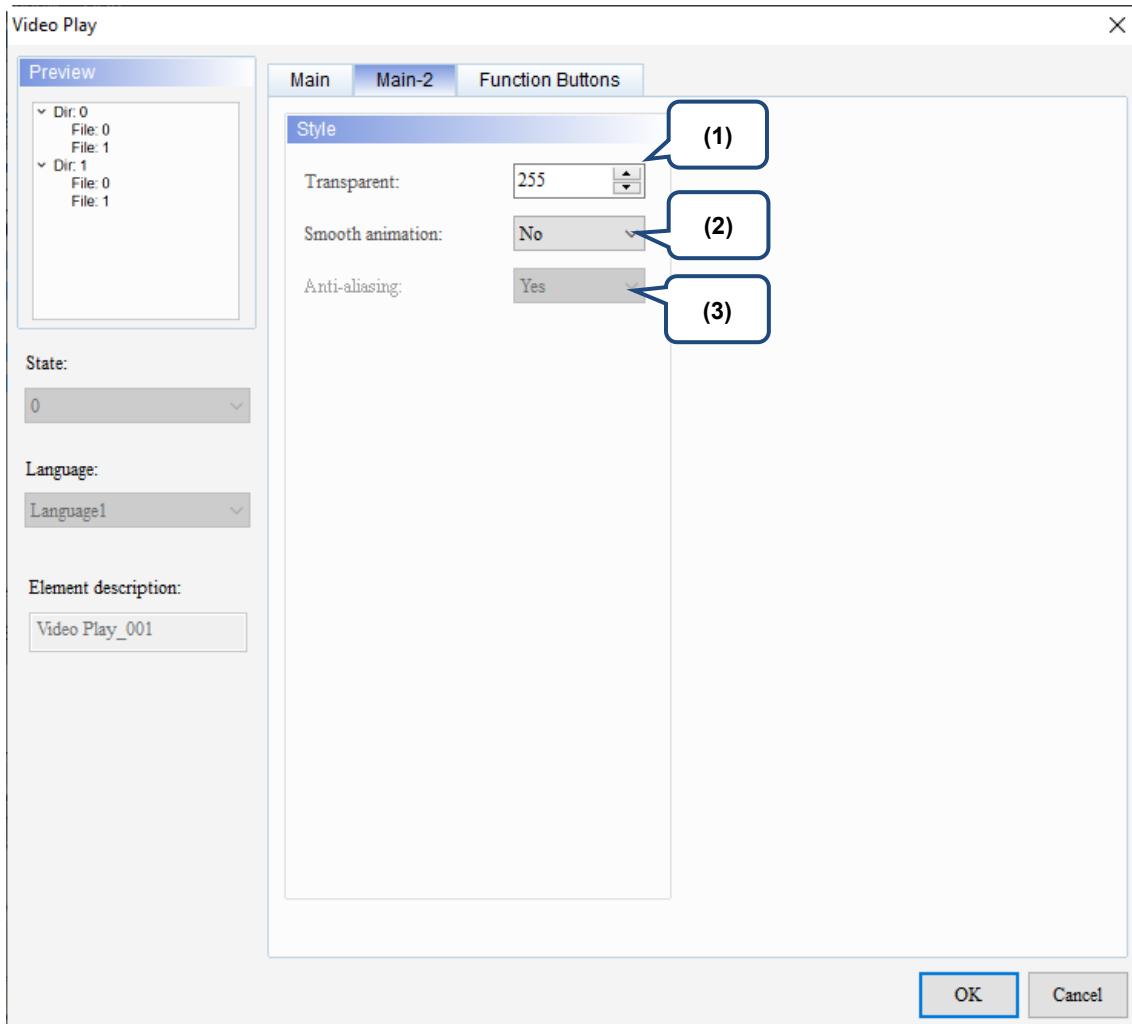


Figure 20.4.3 Main-2 property page for the Video Play element (file list on the left)

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is available for this element. When you activate the Smooth animation function, there is a sliding effect when the file list expands or retracts.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Function Buttons

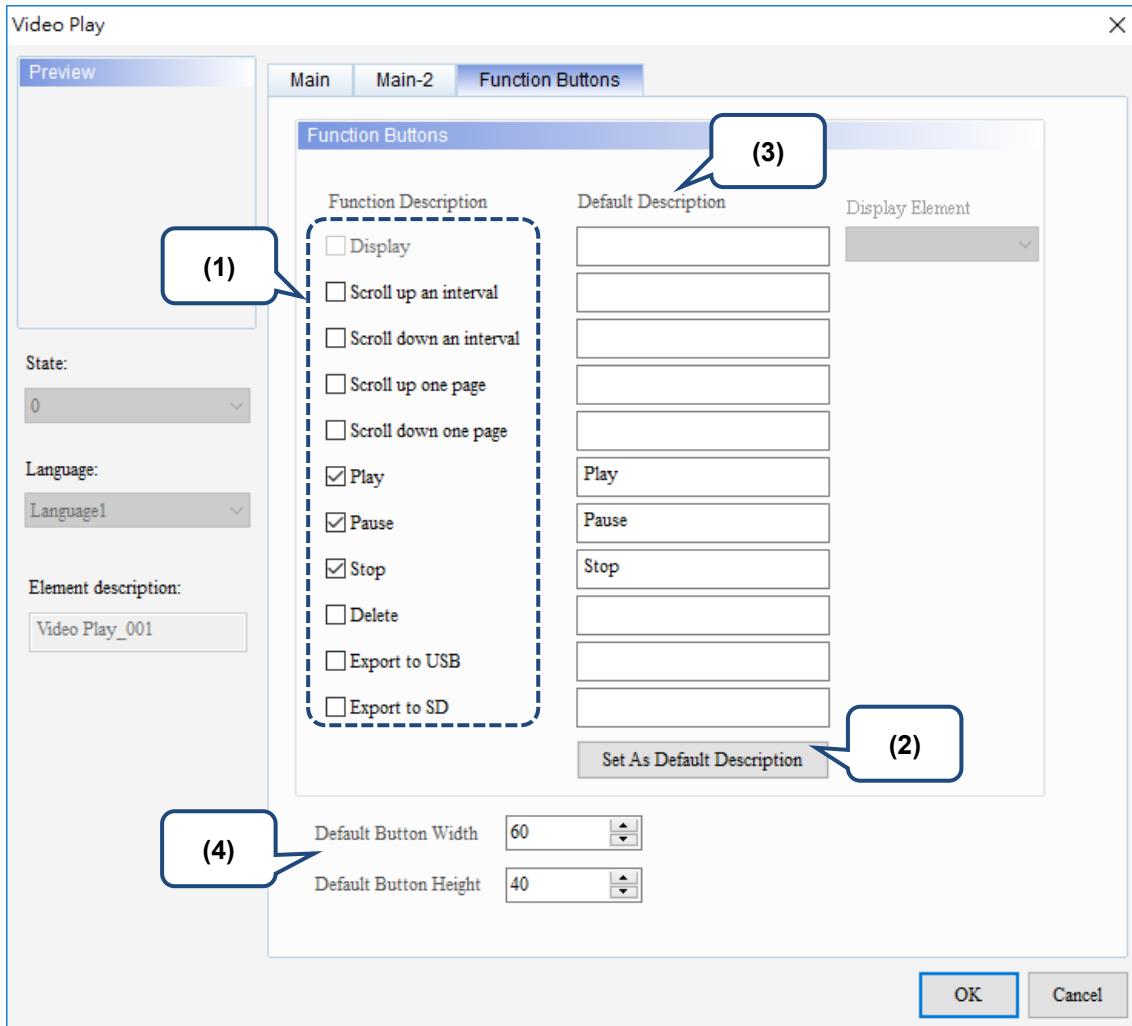


Figure 20.4.4 Function button property page for the Video Play element (file list on the left)

No.	Property	Function description
(1)	Function Buttons	<ul style="list-style-type: none"> <li>■ Function buttons for the file list on the left are provided.</li> <li>■ Scroll up an interval, Scroll down an interval, Scroll up one page, and Scroll down one page are used to scroll the file list and determine how many lines to scroll each time.</li> <li>■ Play, Pause, Stop, and Delete are video control buttons.</li> <li>■ When you select the check box for <b>Export to USB</b> or <b>Export to SD</b>, the buttons are used to export the video file stored in the HMI to the USB disk or SD card.</li> </ul>
(2)	Set As Default Description	Press this button to insert the default strings to the Default Description fields.
(3)	Default Description	Press <b>Set As Default Description</b> to insert the default strings to the fields. You can also enter user-defined strings.
(4)	Default Button Width and Height	You can adjust the width and height of the function buttons.

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When you double-click the display content on the right, the property page is shown as follows.

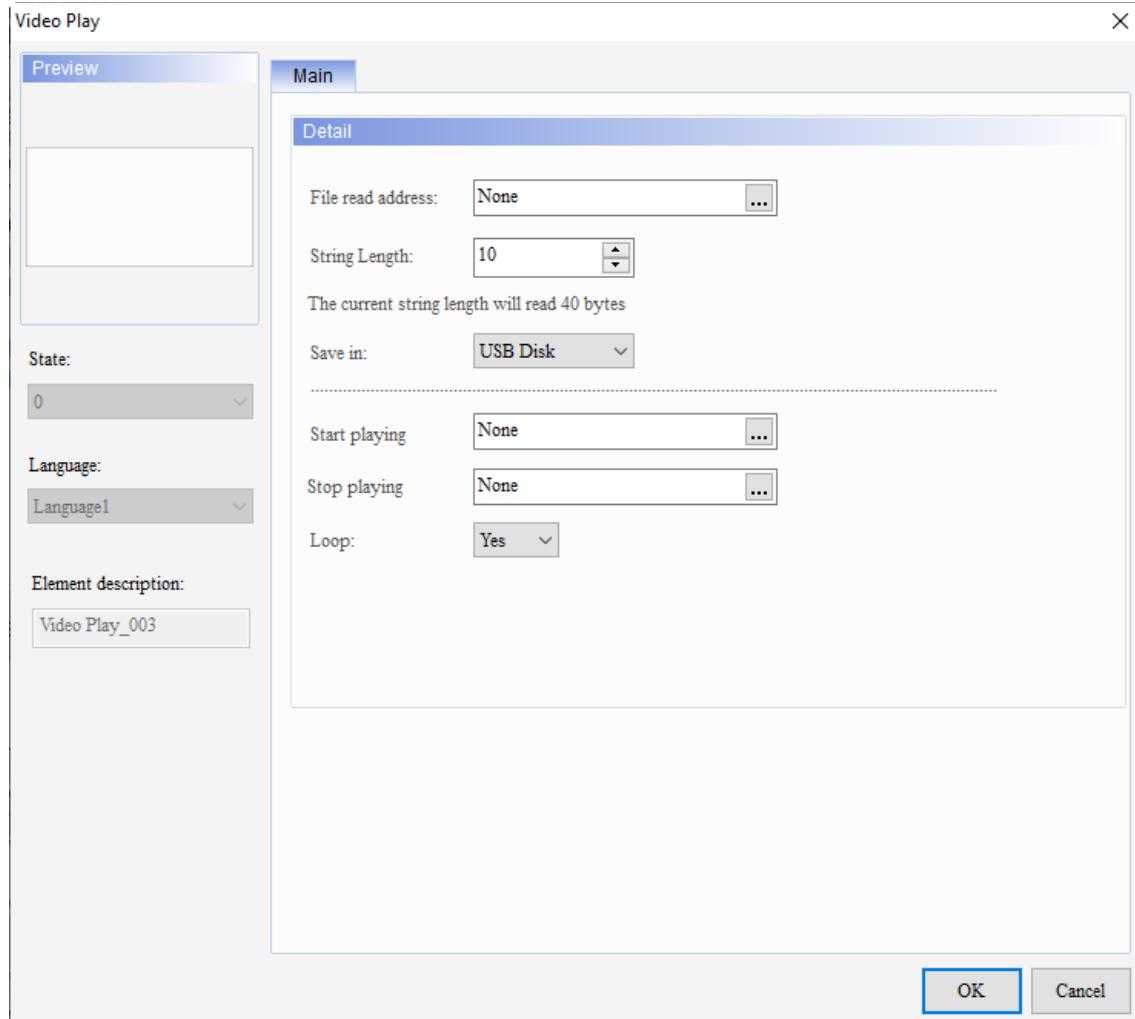


Figure 20.4.5 Properties of Video Play (display content on the right)

Table 20.4.4 Function page of Video Play (display content on the right)

Video Play element (display content on the right)	
Function page	Description
Main	Set the File read address, String Length, and Save in. Set Start playing, Stop playing, and Loop.

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## ■ Main

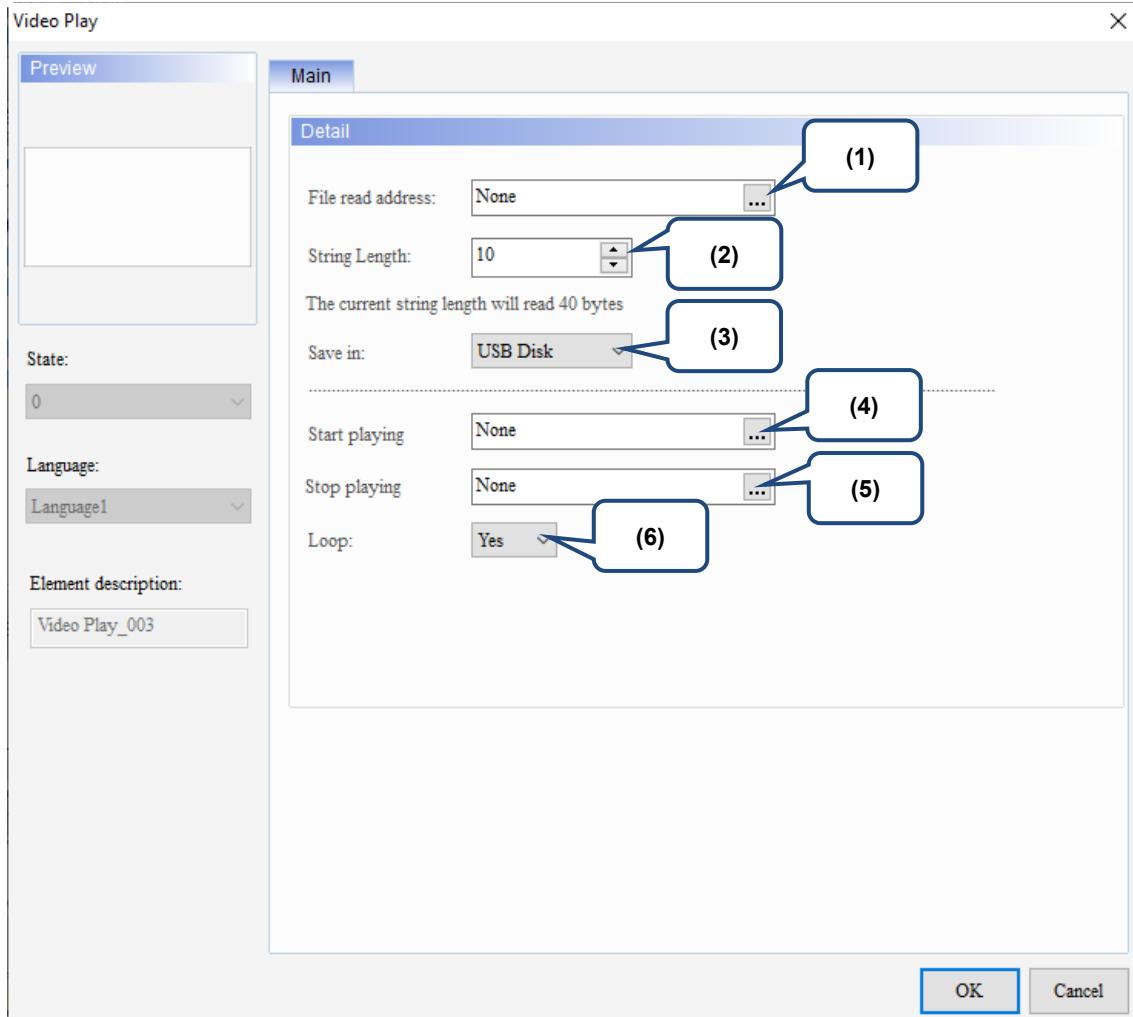


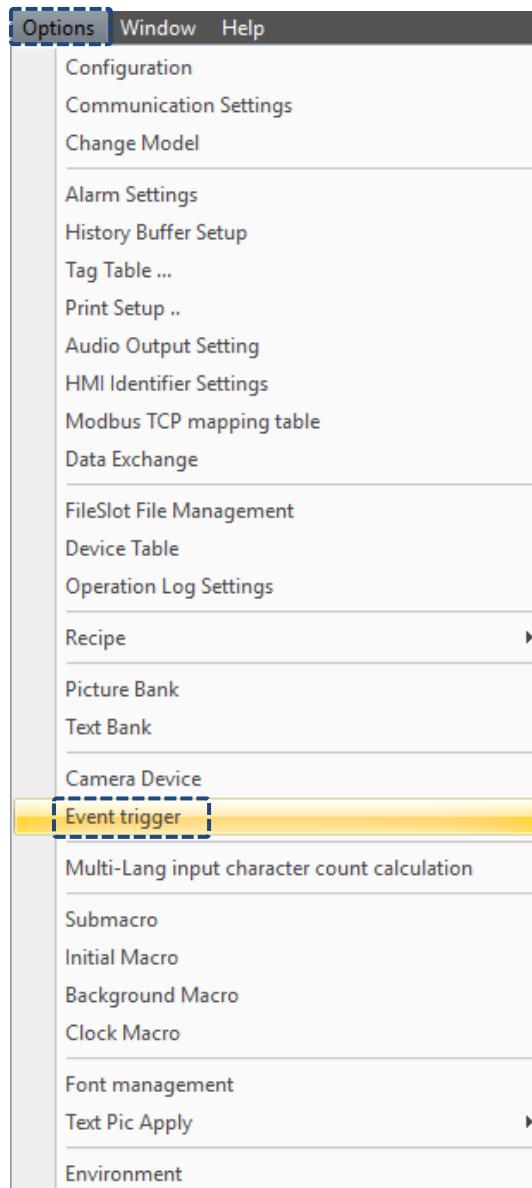
Figure 20.4.6 Main property page for the Video Play element (display content on the right)

No.	Property	Function description
(1)	File read address	You can directly read the file in the USB Disk or SD Card.
(2)	String Length	Set the length of the file name to be read.
(3)	Save in	The available options are USB Disk, SD, and MEDIA.
(4)	Start playing	Set the bit for starting playing the video.
(5)	Stop playing	Set the bit for stopping playing the video.
(6)	Loop	The default is Yes, so the video plays back continuously.

## 20.5 Event trigger

The Event trigger function is mainly used with the Camera display element. After the conditions set for the Event trigger function are met, the content captured by the camera at that time can be archived into an mpeg4 file.

Go to [Options] > [Event trigger] to set the triggering event.



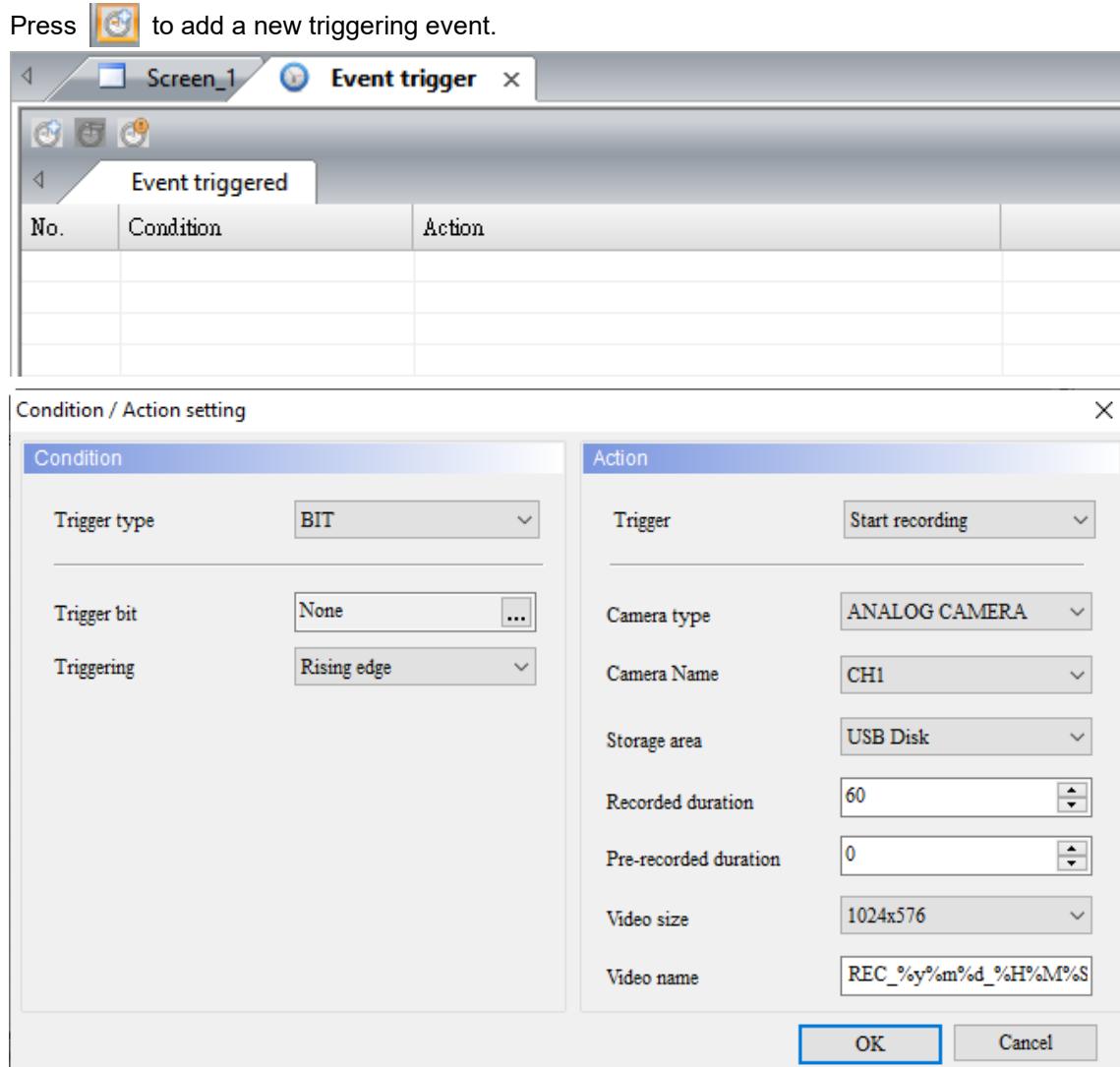


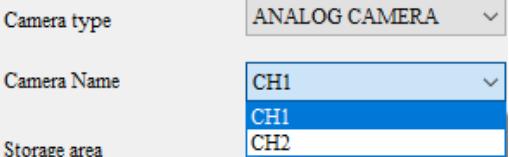
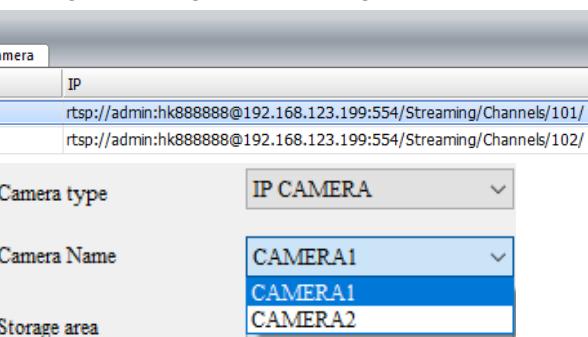
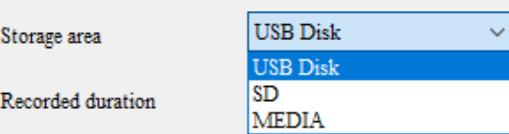
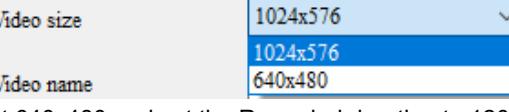
Figure 20.5.1 Event trigger

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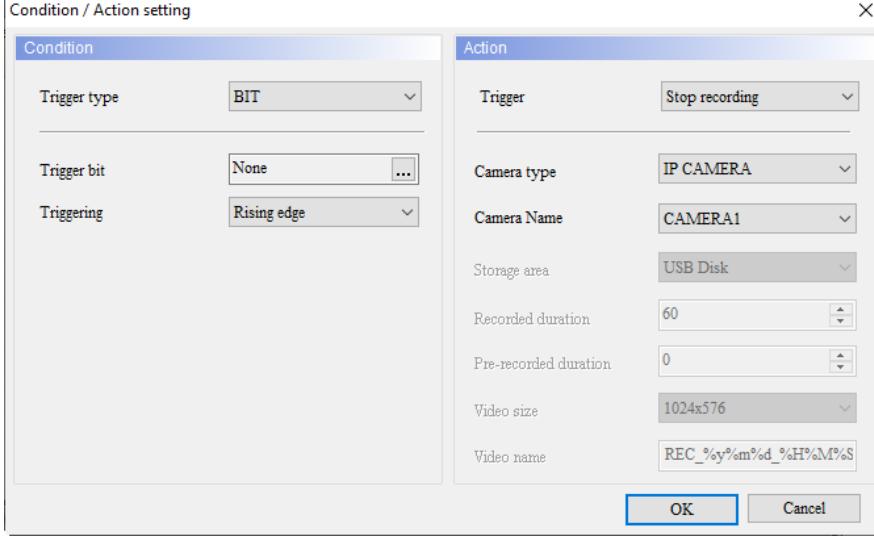
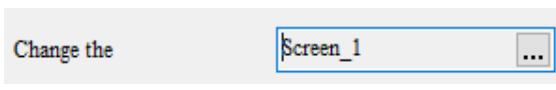
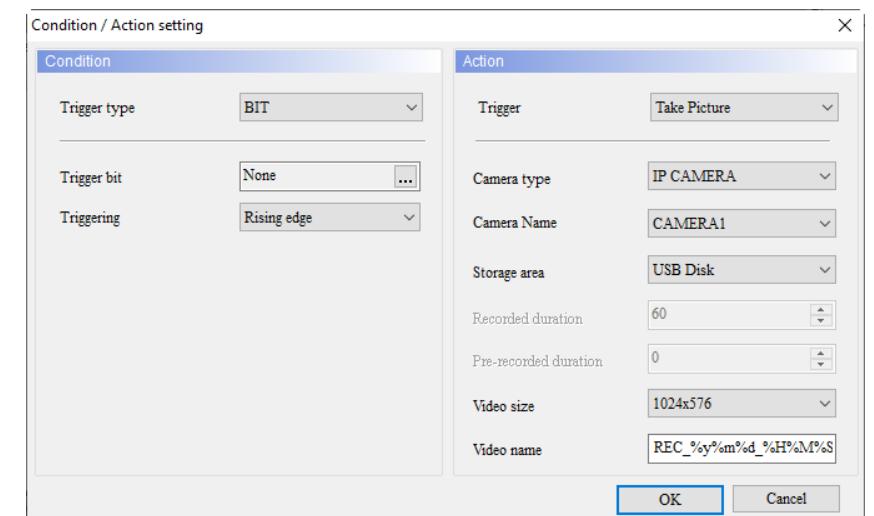
Table 20.5.1 Event trigger function description

Condition	
Trigger type	Currently only bit triggering is available.
Trigger bit	Set the address of the Trigger bit, which can be an external PLC memory address or an internal memory address.
Triggering	<ul style="list-style-type: none"> <li>■ Trigger conditions include Rising edge, Falling edge, and Rising or Falling.</li> </ul> <div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">Triggering</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f9f9f9;"> <span style="color: #0070C0;">Rising edge</span>   <span style="background-color: #0070C0; color: white; padding: 2px;">Rising edge</span>   <span>Falling edge</span>   <span>Rising or Falling</span> </div> </div> <ul style="list-style-type: none"> <li>■ Rising edge means the bit switches from On to Off.</li> <li>■ Falling edge means the bit switches from Off to On.</li> </ul>
Action	
<p>Trigger actions include Start recording, Stop recording, Goto screen, and Take Picture.</p> <div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">Trigger</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f9f9f9;"> <span style="color: #0070C0;">Start recording</span>   <span style="background-color: #0070C0; color: white; padding: 2px;">Start recording</span>   <span>Stop recording</span>   <span>Goto screen</span>   <span>Take Picture</span> </div> </div>	
Start recording	<p>Select Start recording and the interface is as follows:</p> <div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">Camera type</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f9f9f9;"> <span style="color: #0070C0;">ANALOG CAMERA</span> </div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <span style="margin-right: 10px;">Camera Name</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f9f9f9;"> <span>CH1</span> </div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <span style="margin-right: 10px;">Storage area</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f9f9f9;"> <span>USB Disk</span> </div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <span style="margin-right: 10px;">Recorded duration</span> <input style="width: 50px;" type="text" value="60"/> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <span style="margin-right: 10px;">Pre-recorded duration</span> <input style="width: 50px;" type="text" value="0"/> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <span style="margin-right: 10px;">Video size</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f9f9f9;"> <span>1024x576</span> </div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <span style="margin-right: 10px;">Video name</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f9f9f9;"> <span>REC_%y%m%d_%H%M%S</span> </div> </div>
	<p>Select ANALOG CAMERA or IP CAMERA.</p> <div style="display: flex; align-items: center;"> <span style="margin-right: 10px;">Camera type</span> <div style="border: 1px solid #ccc; padding: 5px; border-radius: 5px; background-color: #f9f9f9;"> <span style="color: #0070C0;">ANALOG CAMERA</span>   <span>IP CAMERA</span>   <span style="background-color: #0070C0; color: white; padding: 2px;">ANALOG CAMERA</span> </div> </div>

Action	
Start recording	<ul style="list-style-type: none"> <li>The options for Camera Name vary depending on the selected Camera type.</li> <li>If you select ANALOG CAMERA for the Camera type, the options for the Camera Name are CH1 and CH2.</li> </ul>  <ul style="list-style-type: none"> <li>If you select IP CAMERA for the Camera type, the Camera Name is the name set for the IP Camera. Go to [Options] &gt; [Camera Device] to set the names for the IP Camera as CAMERA1 and CAMERA2.</li> </ul> 
	<ul style="list-style-type: none"> <li>The options for Storage area include USB Disk, SD, and MEDIA.</li> </ul> 
	<ul style="list-style-type: none"> <li>MEDIA is a storage area in the HMI. If you select MEDIA to store the videos, only 2G of recorded videos can be stored in the HMI.</li> <li>If you select USB Disk or SD to store the videos, the storage capacity is determined by the selected USB Disk or SD Card. The supported format is FAT32.</li> </ul>
	<p>Recorded duration</p> <p>When the trigger bit condition is met, the camera records for the set duration (unit: seconds).</p>
	<ul style="list-style-type: none"> <li>The options for Video size include 1024x576 and 640x480.</li> </ul> 
Video name	<ul style="list-style-type: none"> <li>If you select 640x480 and set the Recorded duration to 120 seconds, the file size will be 30MB.</li> </ul>
	<ul style="list-style-type: none"> <li>The default of the video file name is REC_%y%m%d_%H%M%S. %Y: year; %m: month; %d: day; %H: hour; %M: minute; %S: second.</li> <li>You can name the file according to your requirements.</li> </ul>

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Action	<ul style="list-style-type: none"> <li>Select Stop recording and the interface is as follows:</li> </ul> 
Stop recording	<ul style="list-style-type: none"> <li>Select the type and name of the camera to stop recording.</li> </ul>
Goto screen	<ul style="list-style-type: none"> <li>Select Goto screen and the interface is as follows:</li> </ul>  <ul style="list-style-type: none"> <li>If you select Goto screen, the displaying screen switches to the screen of the specified screen number as soon as the trigger bit condition is met.</li> </ul>
Take Picture	<ul style="list-style-type: none"> <li>Select Take Picture and the interface is as follows:</li> </ul>  <ul style="list-style-type: none"> <li>The functions of Take Picture are the same as those of Start recording except for the functions of Recorded duration and Pre-recorded duration.</li> </ul>

# 21

## Basic Shape

This chapter provides the usage and setting details for the Basic Shape elements.

21.1	Rhombus .....	21-3
21.2	Right Triangle.....	21-9
21.3	Pentagon .....	21-16
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DOPSoft provides you with the function to draw basic shapes. The following describes the properties of each Basic Shape element.

# 21

Basic Shape element classification:

Basic Shape 		Rhombus
		Right Triangle
		Pentagon
		Pie Chart
		Arc
		Hexagon
		Star Shape
		Triangle
		Hollow Circle
		Stop Circle
		1/4 Arc

Table 21.1 Basic Shape element classification table

## 21.1 Rhombus

When you double-click the Rhombus element, the property page is shown as follows.

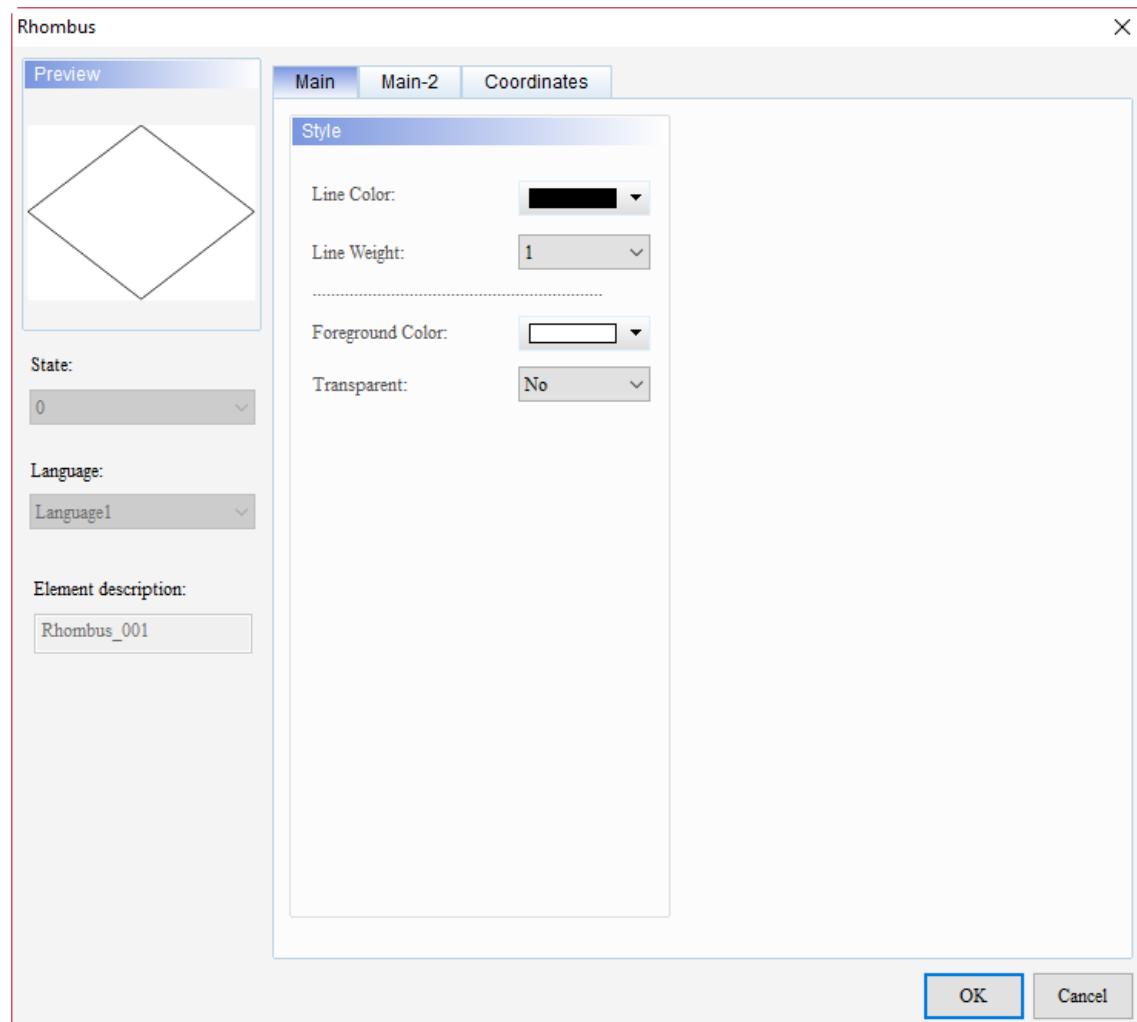


Figure 21.21.1 Properties of Rhombus

Table 21.1.1 Function page of Rhombus

Rhombus	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

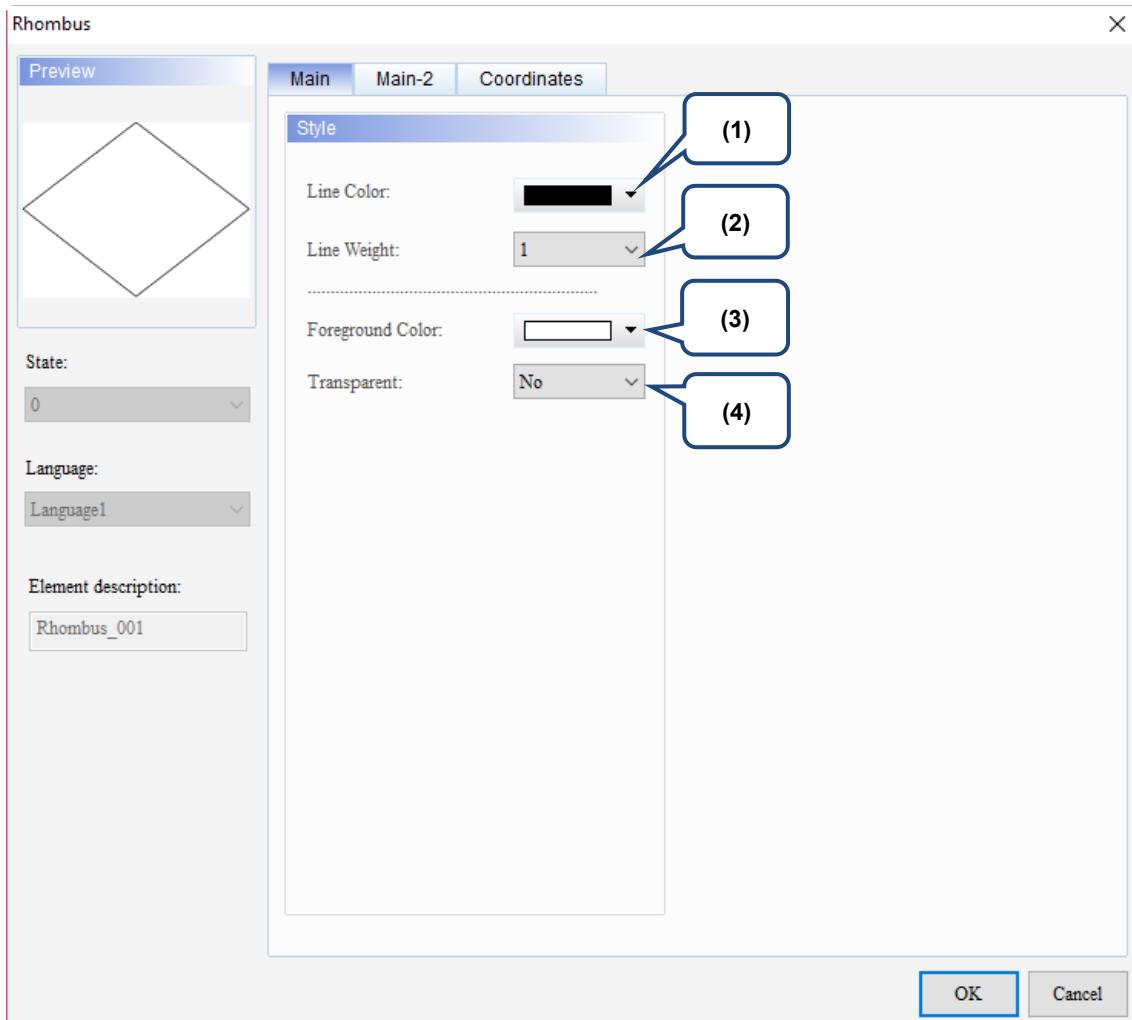
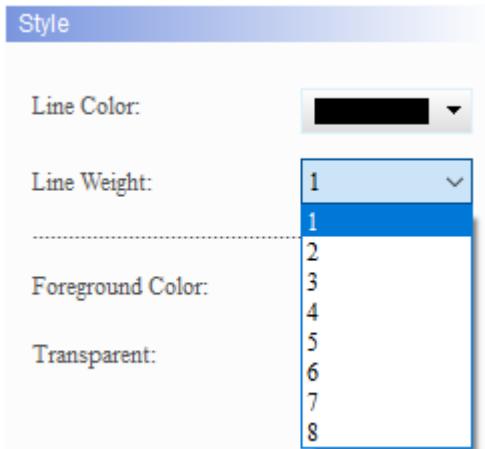
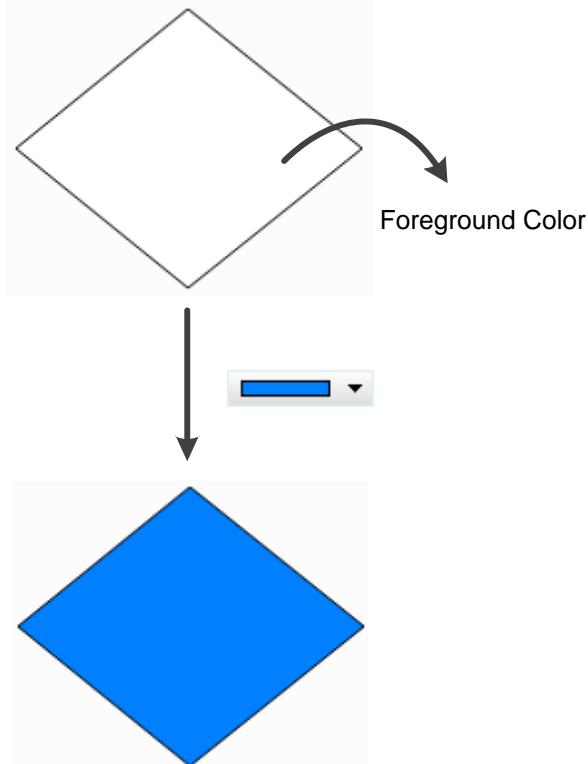
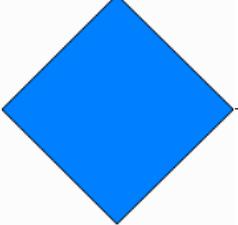
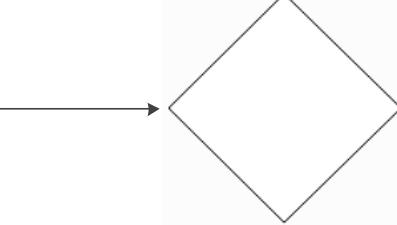
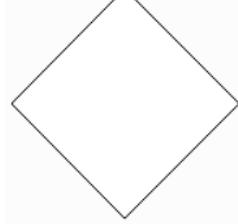
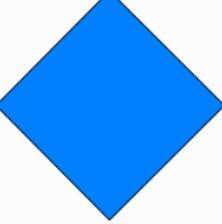
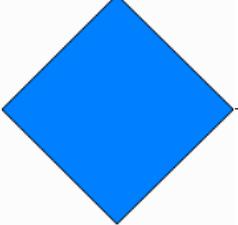
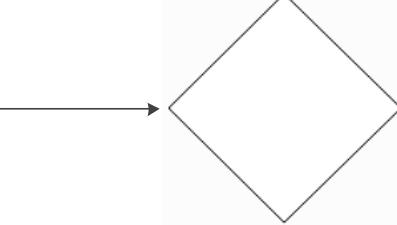
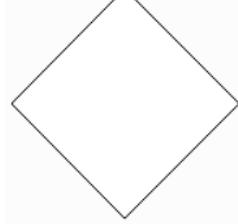
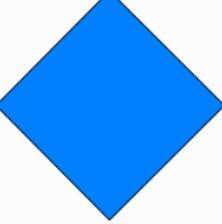
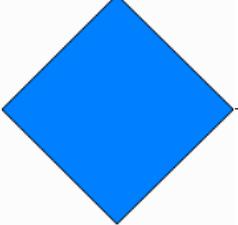
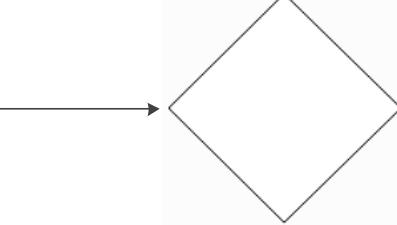
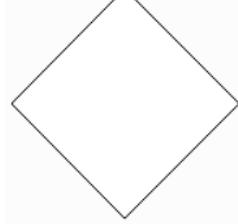
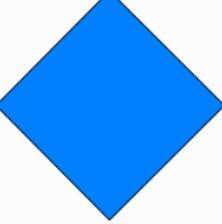


Figure 21.1.2 Main property page for the Rhombus element

No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p> <p>The color selection dialog box includes a grid of basic colors, a larger color picker, and numerical sliders for Hue(E), Sat(S), Lum(L), Red(R), Green(G), and Blue(B). There are also buttons for 'Color/Solid(O)', 'Add Custom Colors(A)', and 'OK/Cancel'.</p>

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p>  <p>Style</p> <p>Line Color:</p> <p>Line Weight:</p> <p>Foreground Color:</p> <p>Transparent:</p>
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

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No.	Property	Function description				
(4)	Transparent	<p>■ You can select Yes or No for this function.</p> <p style="background-color: #e0e0ff; padding: 5px; border-bottom: 1px dashed #ccc;">Style</p> <p>Line Color: <input type="color" value="#000"/></p> <p>Line Weight: <input type="text" value="1"/></p> <hr/> <p>Foreground Color: <input type="color"/></p> <p>Transparent: <input type="button" value="Yes"/> <input type="button" value="No"/> <input style="background-color: #0070C0; color: white; border: 1px solid #0070C0; border-radius: 5px; padding: 2px 10px; font-weight: bold; margin-left: 10px;" type="button" value="Yes"/></p> <p>■ If you select Yes, the foreground color of the Rhombus element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 10px; vertical-align: top;">Transparent is Yes</td> <td style="padding: 10px; vertical-align: top;">   </td> </tr> <tr> <td style="padding: 10px; vertical-align: top;">Transparent is No</td> <td style="padding: 10px; vertical-align: top;">   </td> </tr> </table>	Transparent is Yes	 	Transparent is No	 
Transparent is Yes	 					
Transparent is No	 					

## ■ Main-2

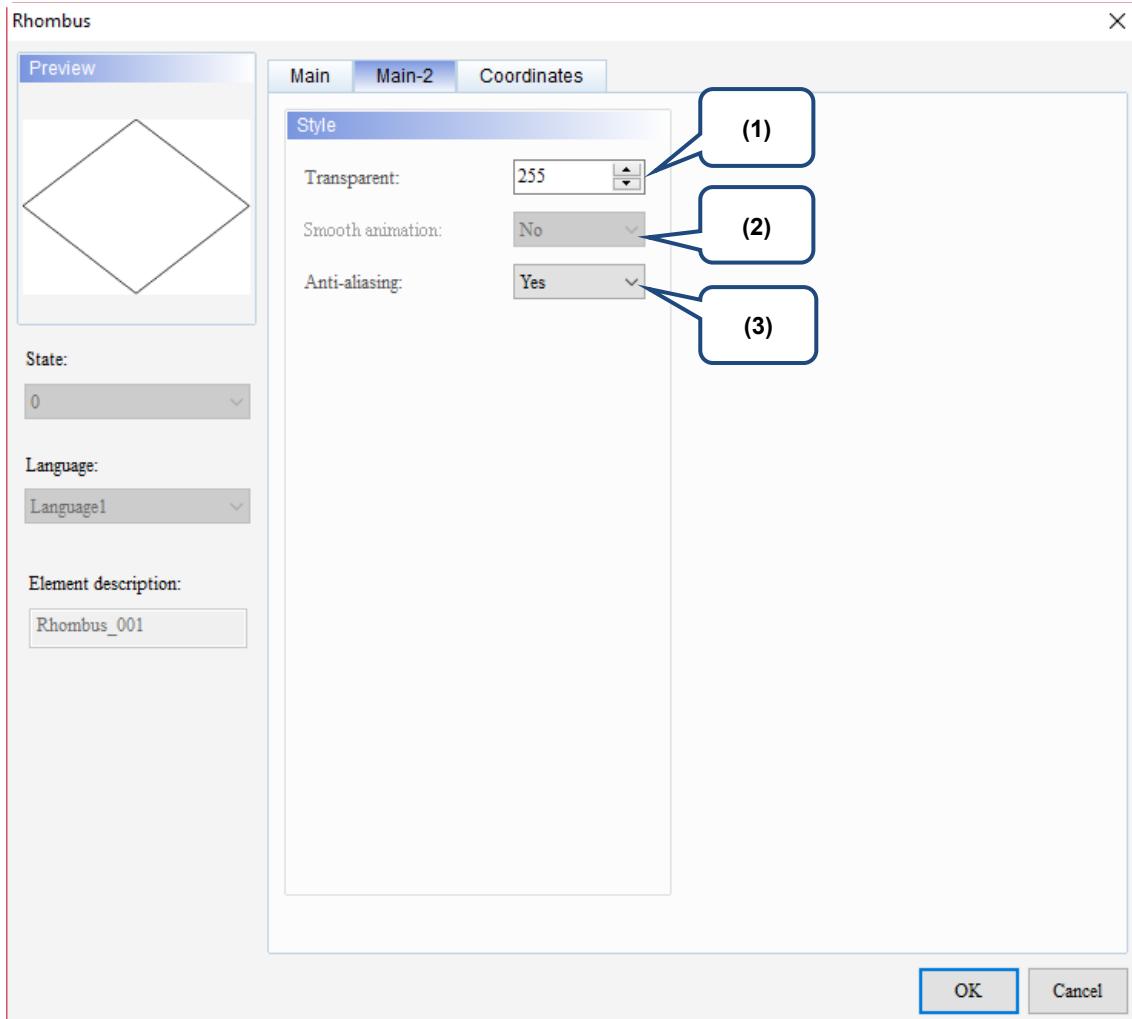
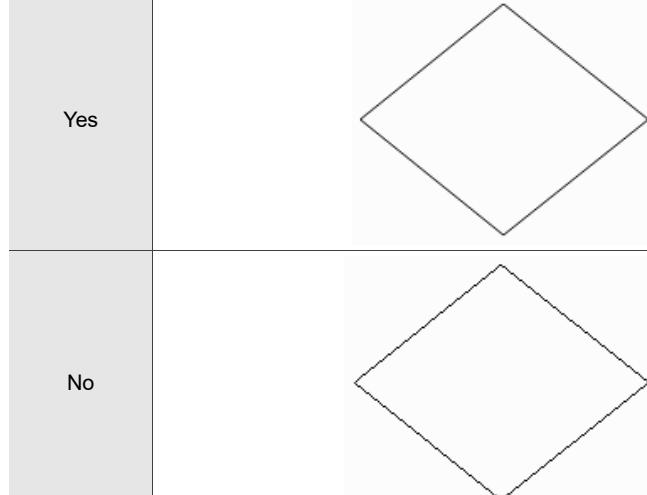


Figure 21.1.3 Main-2 property page for the Rhombus element

No.	Property	Function description	
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.	
(2)	Smooth animation	The Smooth animation function is not available for this element.	
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes. 	

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## ■ Coordinates

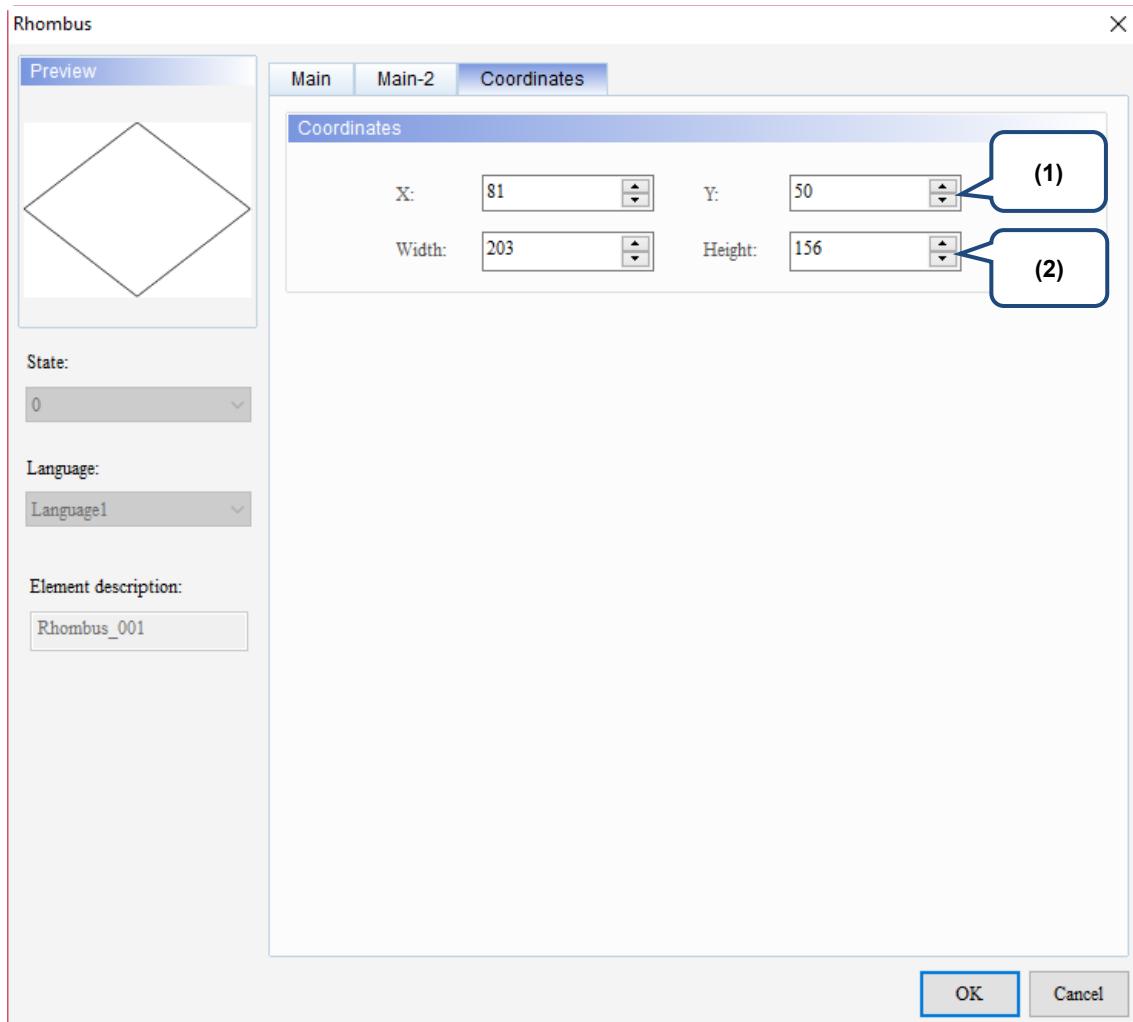


Figure 21.1.4 Coordinates property page for the Rhombus element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 21.2 Right Triangle

When you double-click the Right Triangle element, the property page is shown as follows.

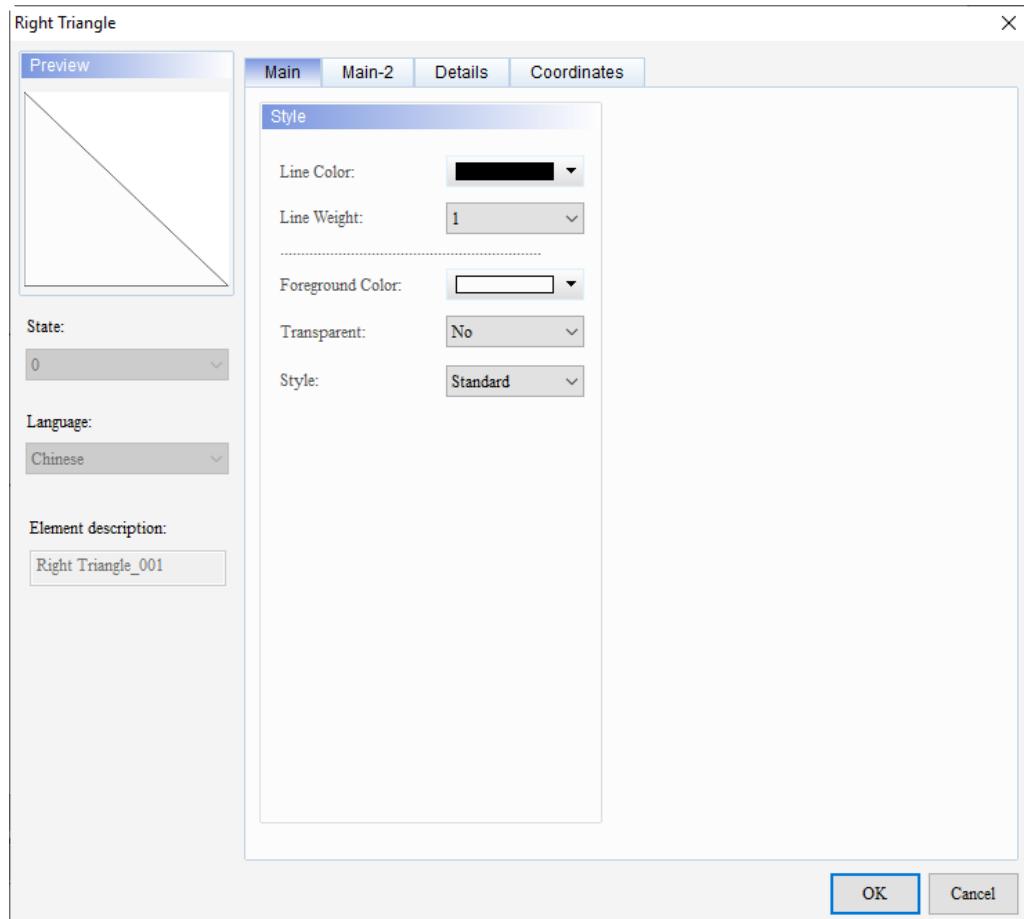


Figure 21.2.1 Properties of Right Triangle

Table 21.2.1 Function page of Right Triangle

Right Triangle	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, Transparent, and Style.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

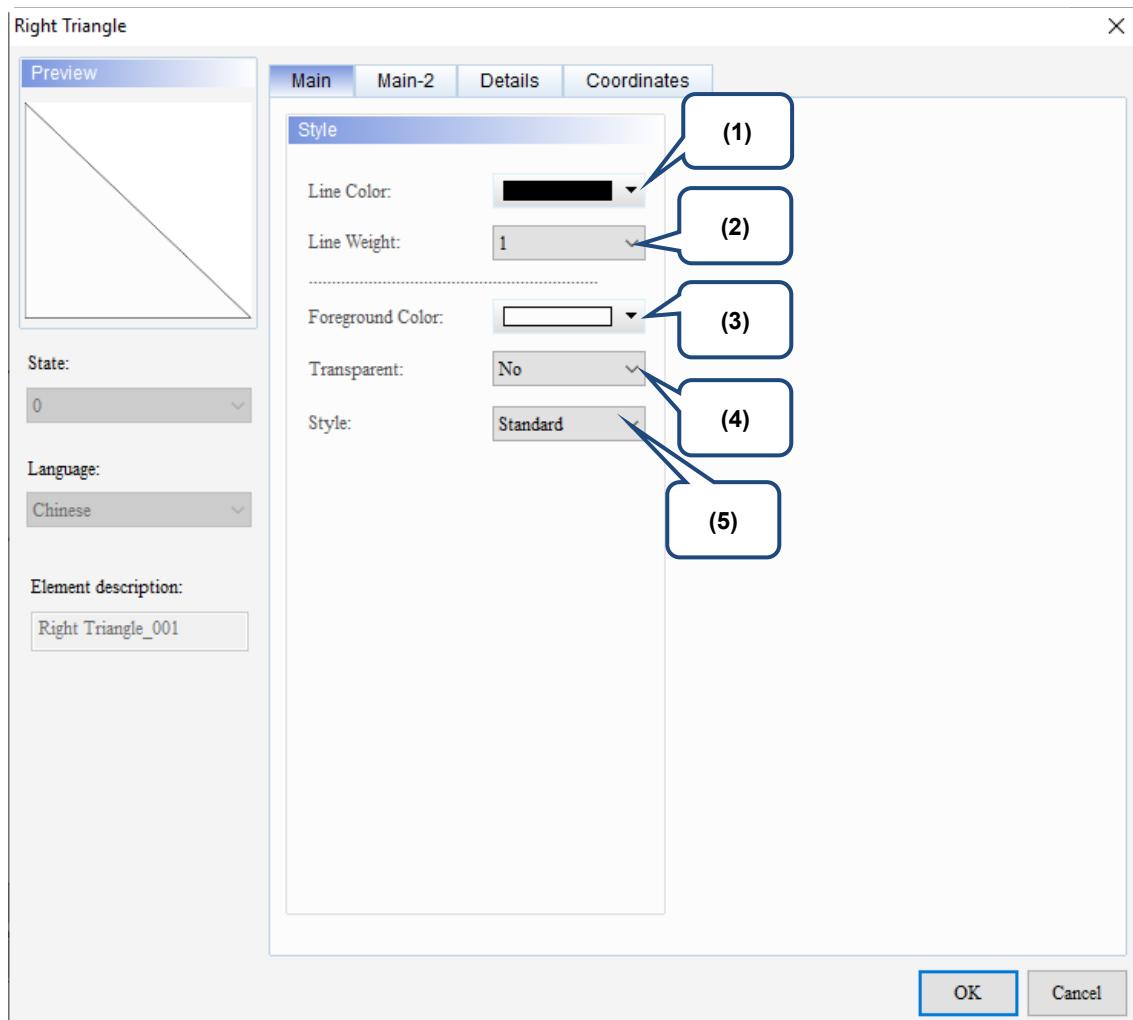
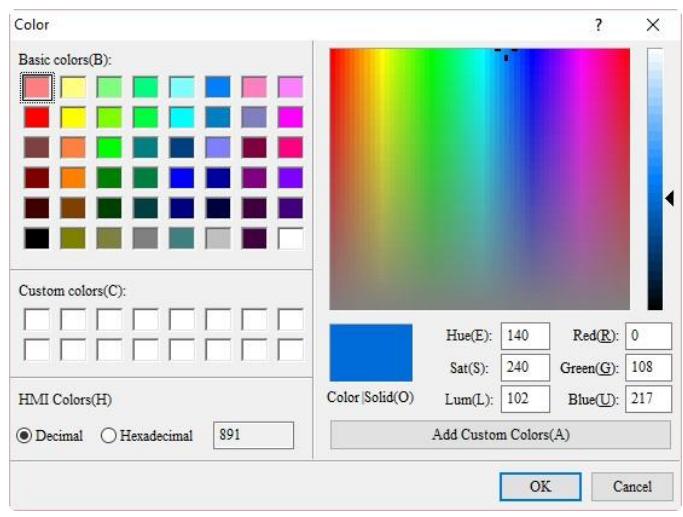
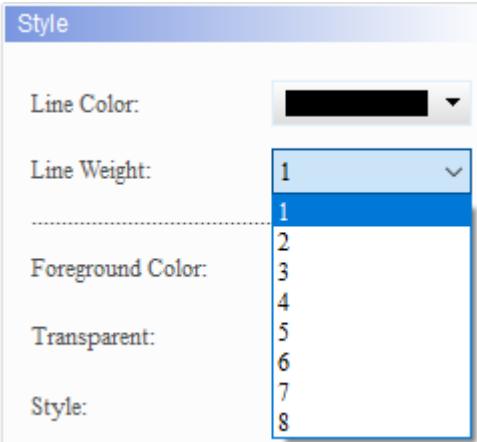
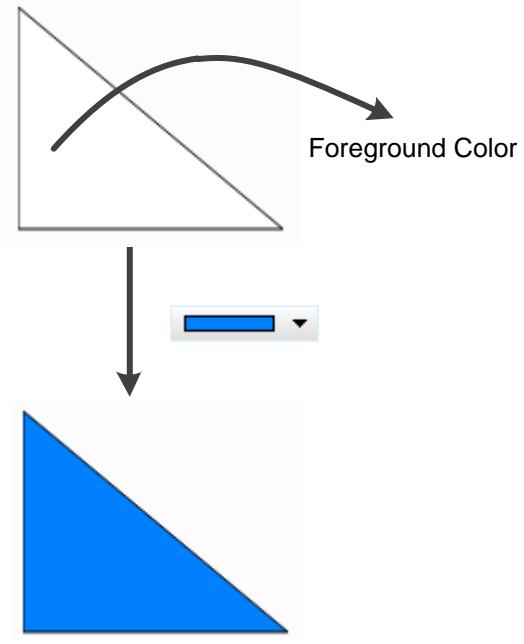


Figure 21.2.2 Main property page for the Right Triangle element

No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p> 

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p>  <p>Style</p> <p>Line Color: [Color Swatch]</p> <p>Line Weight: 1</p> <p>Foreground Color:</p> <p>Transparent:</p> <p>Style:</p>
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

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No.	Property	Function description								
		<ul style="list-style-type: none"> <li>You can select Yes or No for this function.</li> </ul> <p><b>Style</b></p> <p>Line Color: <input type="color" value="black"/></p> <p>Line Weight: 1</p> <p>Foreground Color: <input type="color" value="white"/></p> <p>Transparent: No No Yes</p> <p>Style:</p>								
(4)	Transparent	<ul style="list-style-type: none"> <li>If you select Yes, the foreground color of the Right Triangle element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</li> </ul> <table border="1"> <tr> <td>Transparent is Yes</td> <td></td> <td></td> </tr> <tr> <td>Transparent is No</td> <td></td> <td></td> </tr> </table>	Transparent is Yes			Transparent is No				
Transparent is Yes										
Transparent is No										
(5)	Style	<p>The available element styles are Standard, Rotation 90, Rotation 180, and Rotation 270.</p> <p><b>Style</b></p> <p>Line Color: <input type="color" value="black"/></p> <p>Line Weight: 1</p> <p>Foreground Color: <input type="color" value="white"/></p> <p>Transparent: No</p> <p>Style: Standard Standard Rotation 90 Rotation 180 Rotation 270</p> <table border="1"> <tr> <td>Standard</td> <td>Rotation 90</td> <td>Rotation 180</td> <td>Rotation 270</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Standard	Rotation 90	Rotation 180	Rotation 270				
Standard	Rotation 90	Rotation 180	Rotation 270							

## ■ Main-2

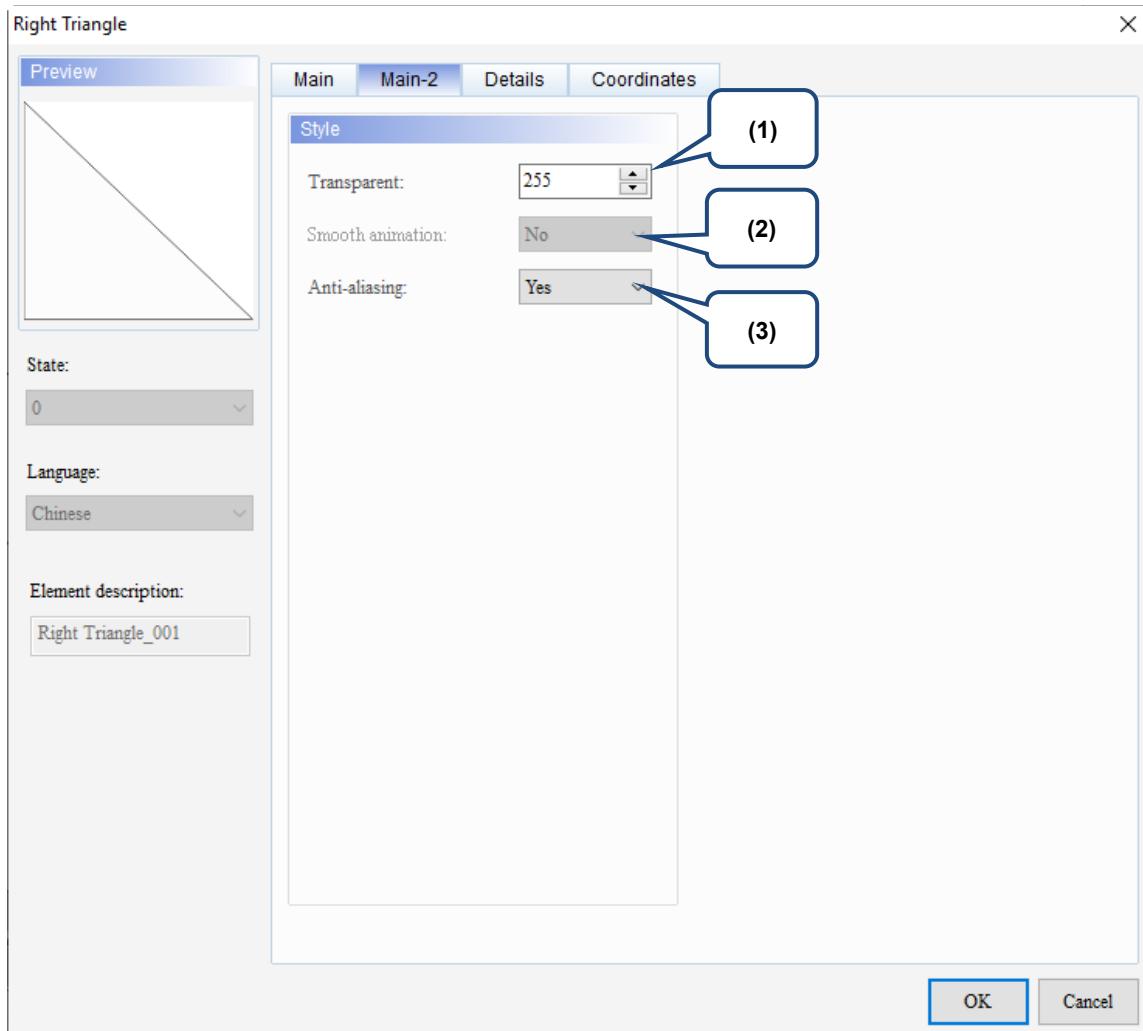


Figure 21.2.3 Main-2 property page for the Right Triangle element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

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## ■ Details

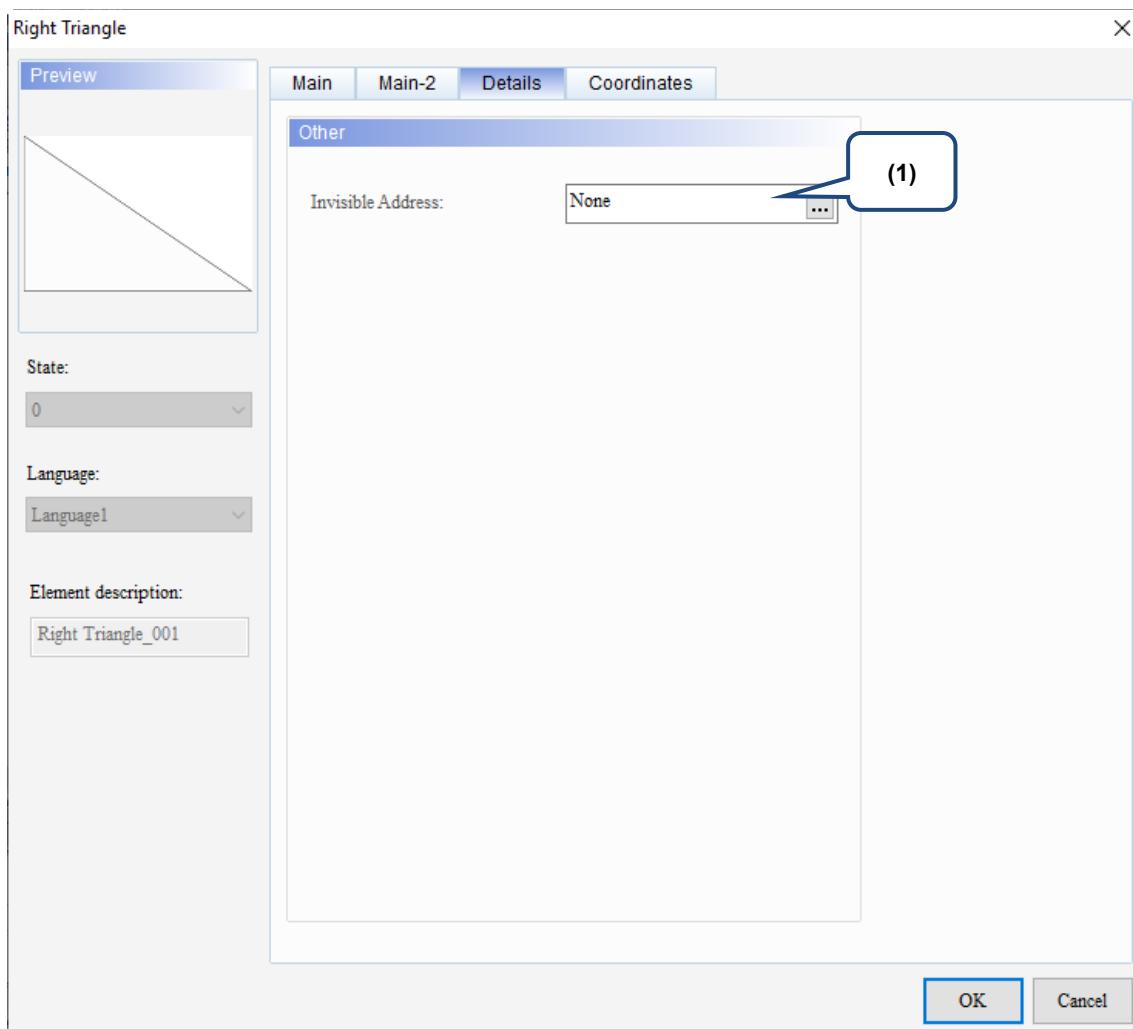


Figure 21.2.4 Details property page for the Right Triangle element

No.	Property	Function description						
(1)	Invisible Address	When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.						
		<table border="1"> <tr> <td>Invisible Address is Off</td> <td></td> <td>\$9.0 OFF</td> </tr> <tr> <td>Invisible Address is On</td> <td></td> <td>Element is invisible</td> </tr> </table>	Invisible Address is Off		\$9.0 OFF	Invisible Address is On		Element is invisible
Invisible Address is Off		\$9.0 OFF						
Invisible Address is On		Element is invisible						
		 <b>Right Triangle</b>	Main Main-2 Details Coordinates	Invisible Address: \$9.0 ...				

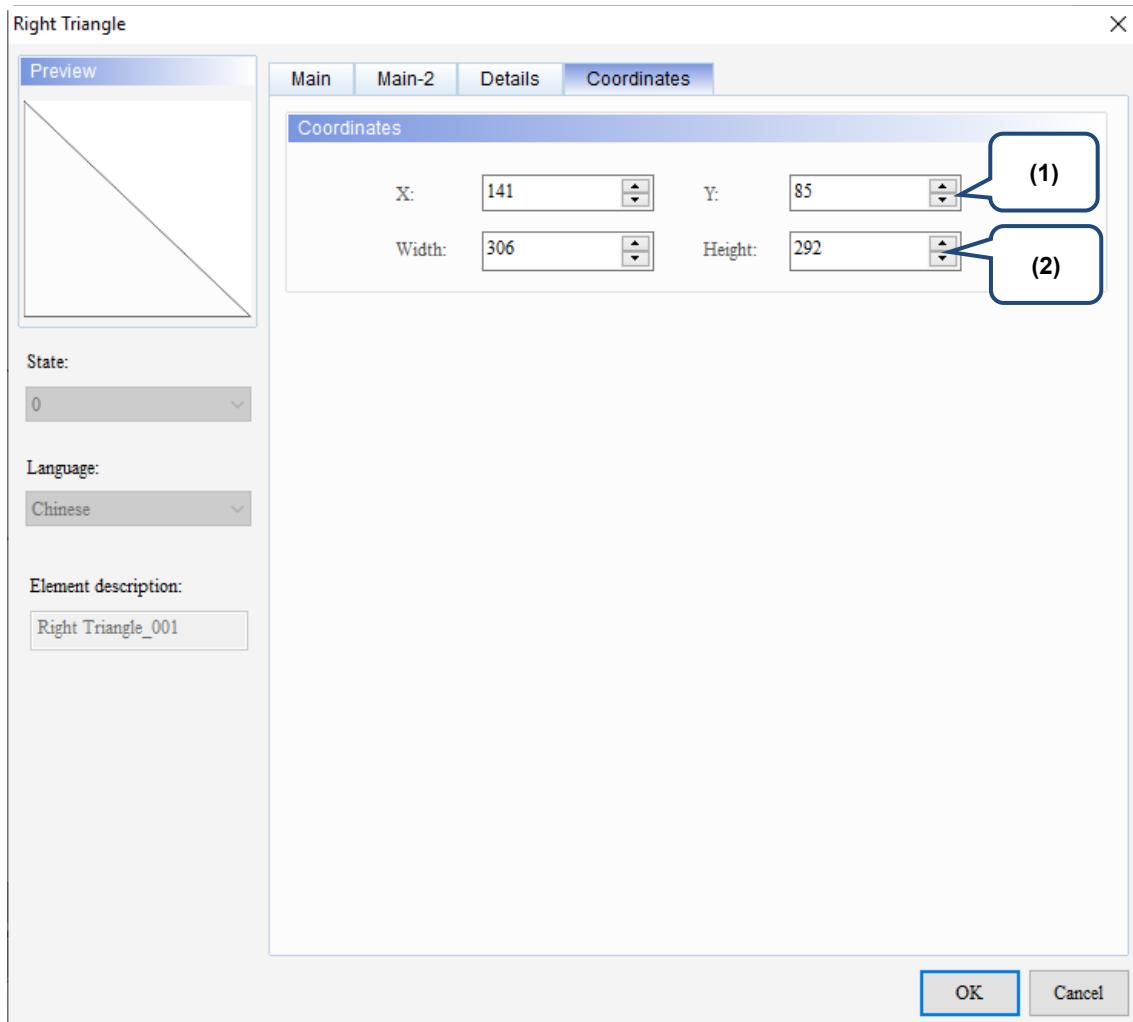
**■ Coordinates**

Figure 21.2.5 Coordinates property page for the Right Triangle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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## 21.3 Pentagon

When you double-click the Pentagon element, the property page is shown as follows.

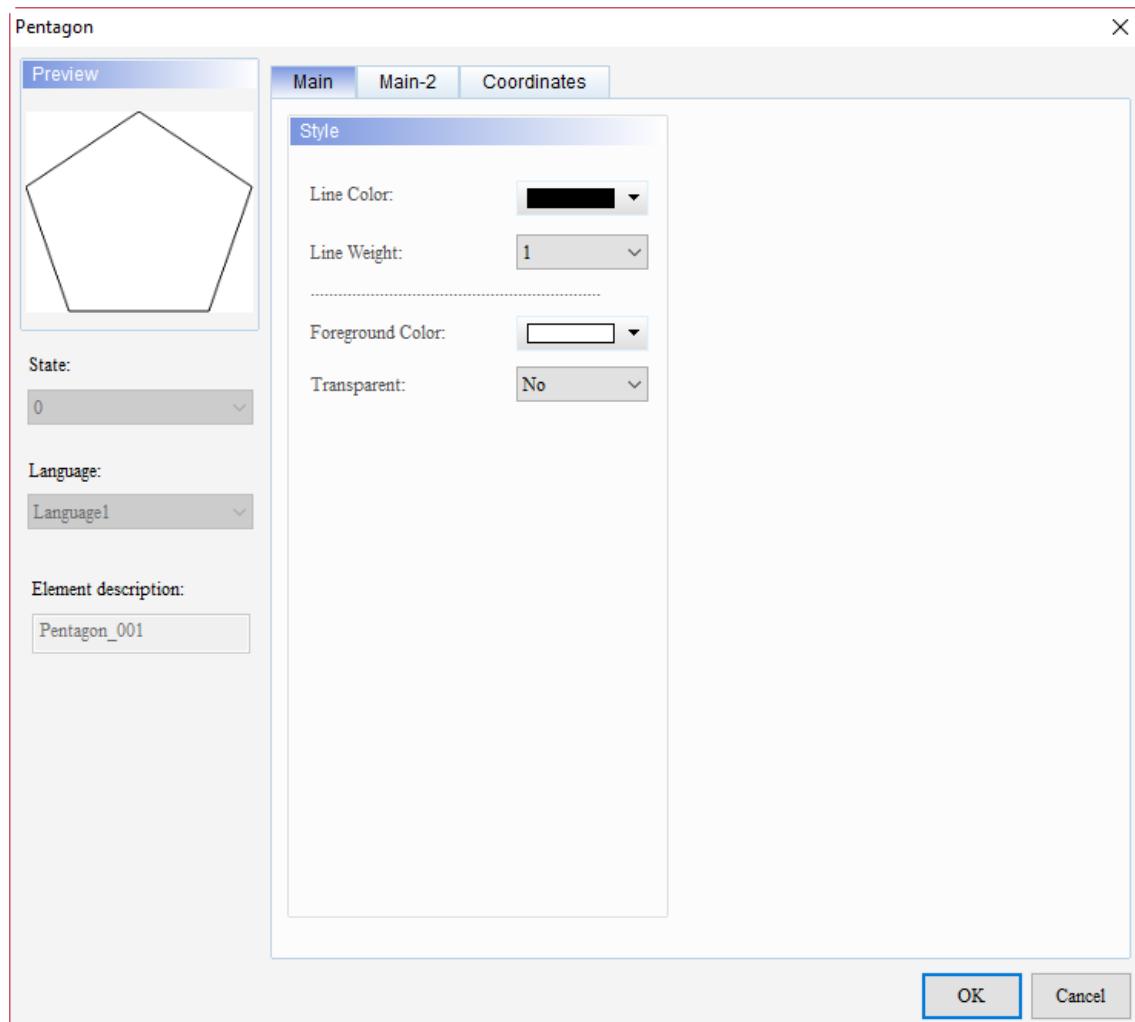


Figure 21.3.1 Properties of Pentagon

Table 21.3.1 Function page of Pentagon

Pentagon	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

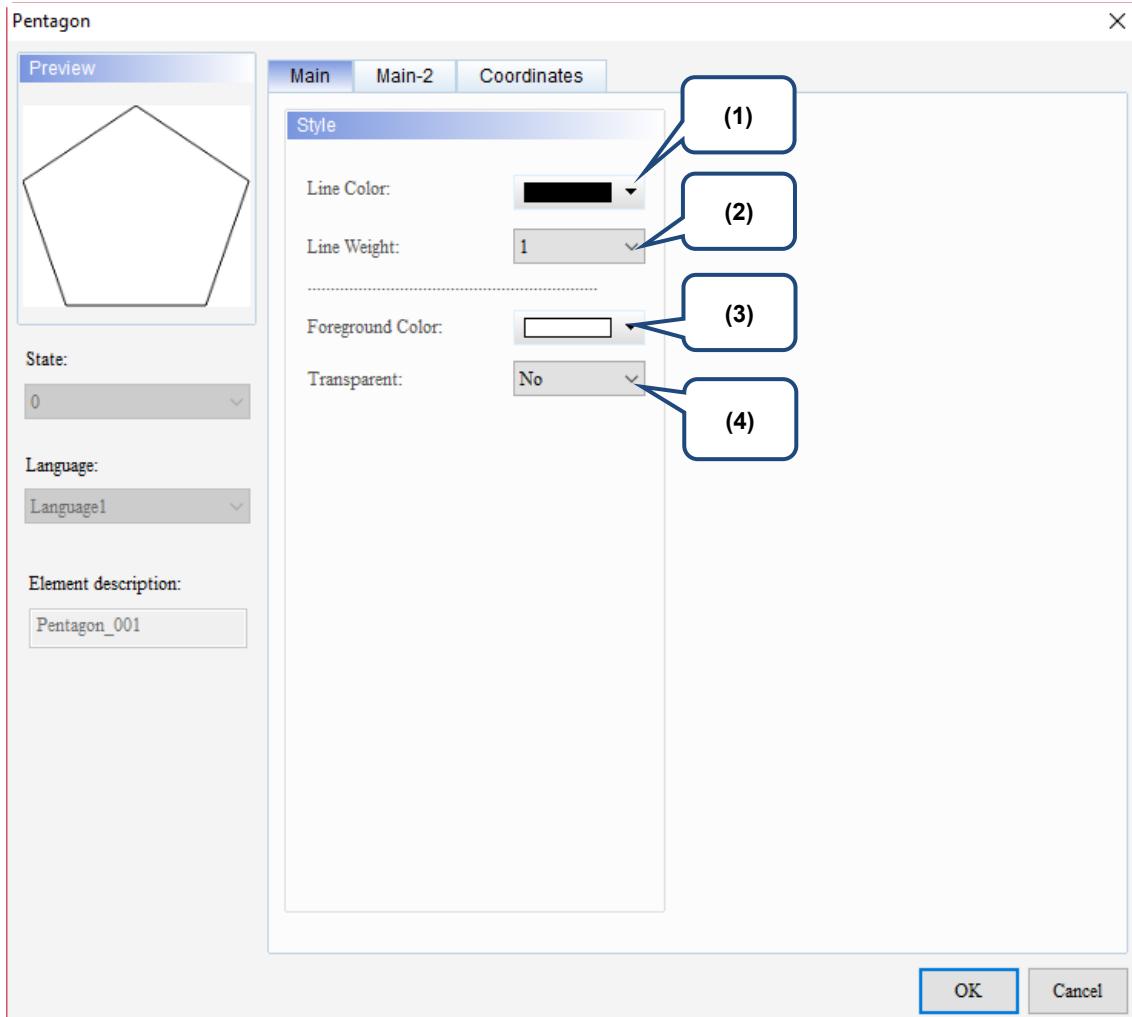
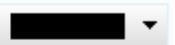
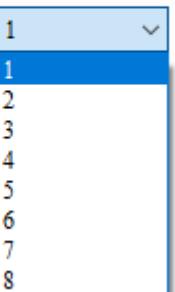
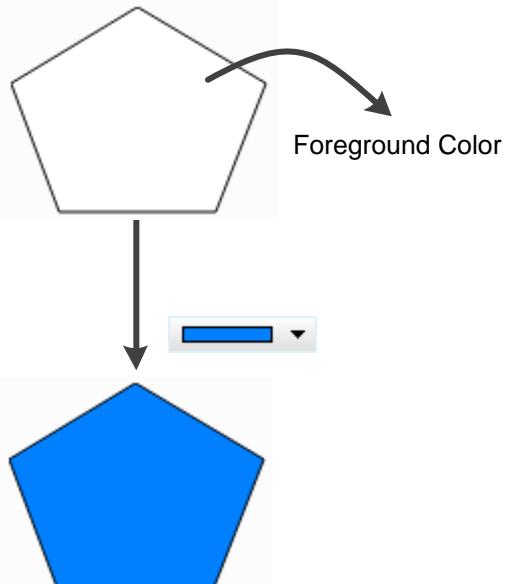


Figure 21.3.2 Main property page for the Pentagon element

No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p> <p>The color selection dialog includes:</p> <ul style="list-style-type: none"> <li><b>Basic colors(B):</b> A grid of 16 standard colors.</li> <li><b>Custom colors(C):</b> A grid of 16 user-defined color swatches.</li> <li><b>HMI Colors(H):</b> A list of color names.</li> <li><b>Color Solid(O):</b> A color swatch.</li> <li><b>Decimal (radio button):</b> Selected.</li> <li><b>Hexadecimal (radio button):</b> Unselected.</li> <li><b>891 (text input field):</b> The current color code.</li> <li><b>Detailed color picker:</b> Shows a color gradient with sliders for Hue(E), Sat(S), and Lum(L) on the left, and Red(R), Green(G), and Blue(U) on the right. Numerical values are also provided: Hue(E): 140, Red(R): 0, Sat(S): 240, Green(G): 108, Color Solid(O): Lum(L): 102, Blue(U): 217.</li> <li><b>Buttons:</b> 'OK' and 'Cancel' at the bottom right.</li> </ul>

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No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> <p>Style</p> <p>Line Color:</p>  <p>Line Weight:</p>  <p>Foreground Color:</p> <p>Transparent:</p>
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

No.	Property	Function description						
(4)	Transparent	<p>■ You can select Yes or No for this function.</p> <p>Style</p> <p>Line Color: </p> <p>Line Weight: 1</p> <p>Foreground Color: </p> <p>Transparent: </p> <p>■ If you select Yes, the foreground color of the Pentagon element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p> <table border="1"> <tr> <td>Transparent is Yes</td> <td></td> <td></td> </tr> <tr> <td>Transparent is No</td> <td></td> <td></td> </tr> </table>	Transparent is Yes			Transparent is No		
Transparent is Yes								
Transparent is No								

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## ■ Main-2

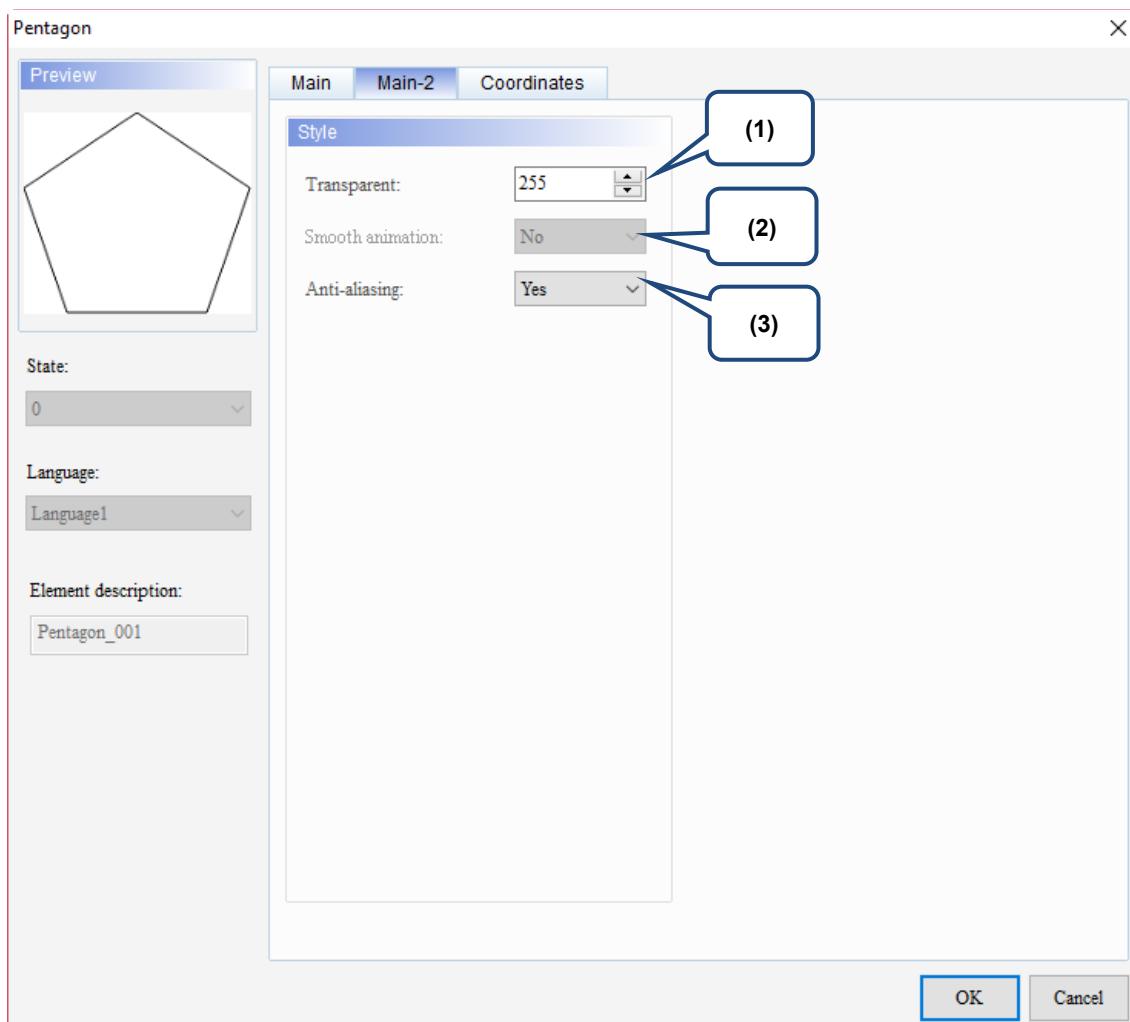


Figure 21.3.3 Main-2 property page for the Pentagon element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td style="text-align: center;">Yes</td> <td></td> </tr> <tr> <td style="text-align: center;">No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

## ■ Coordinates

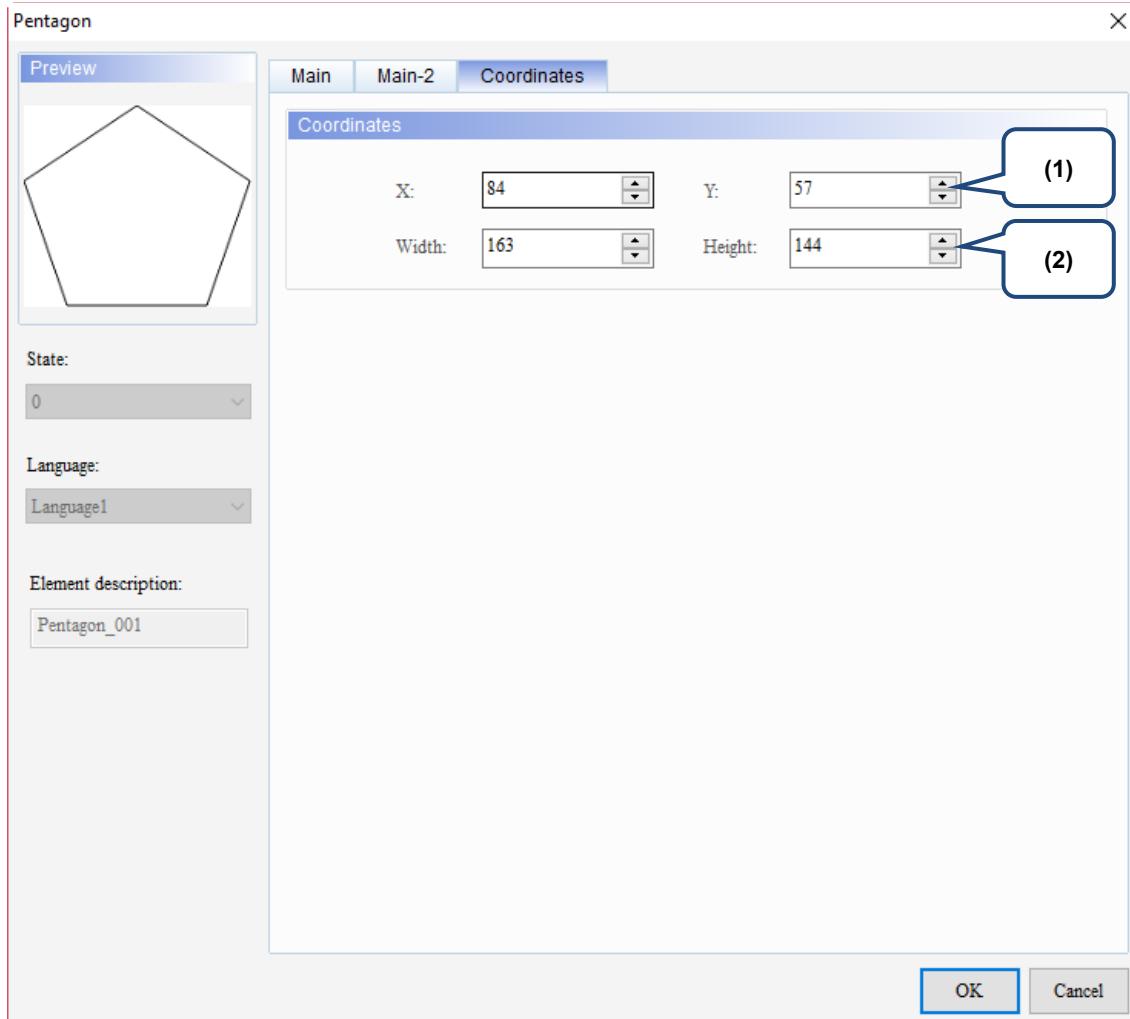


Figure 21.3.4 Coordinates property page for the Pentagon element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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## 21.4 Pie Chart

When you double-click the Pie Chart element, the property page is shown as follows.

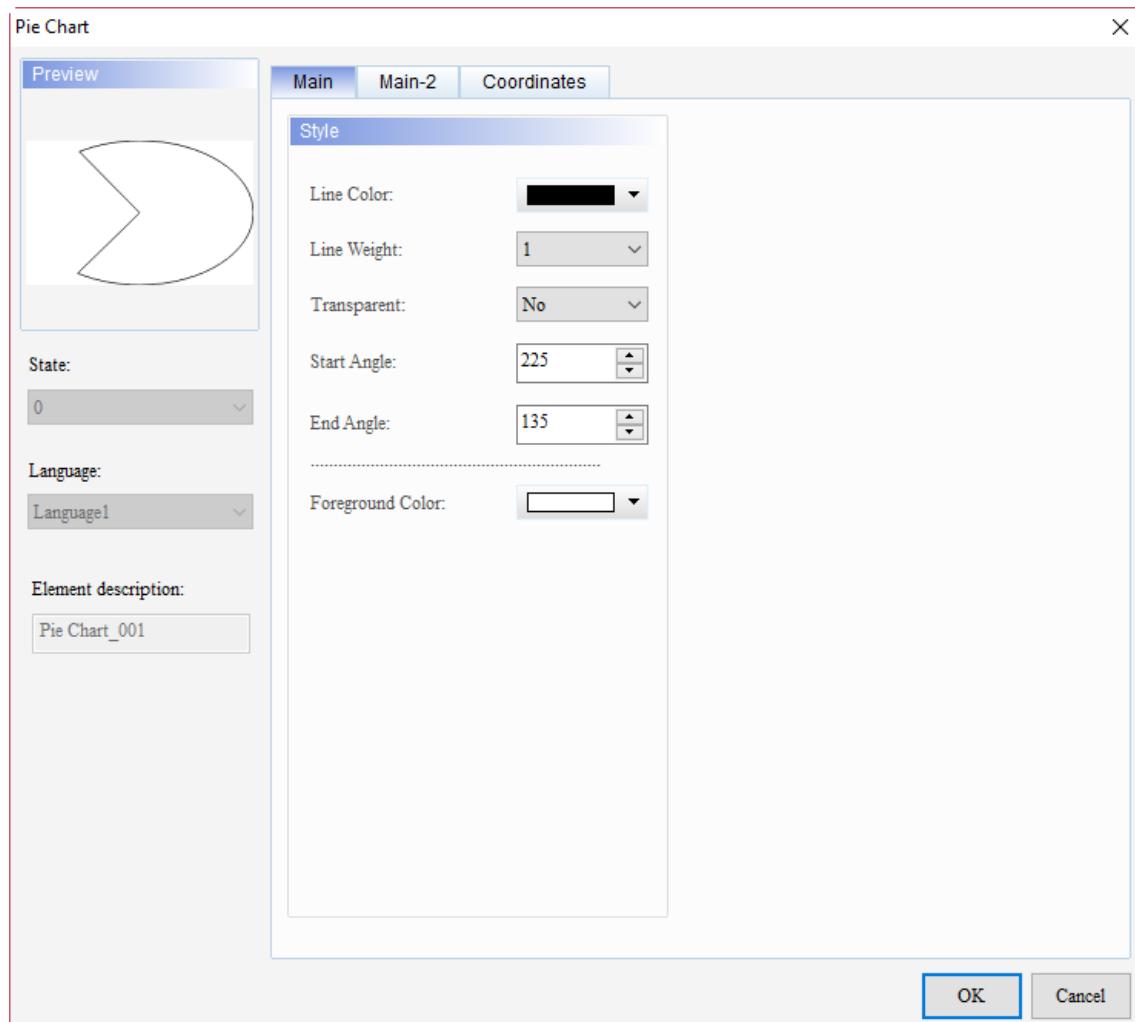


Figure 21.4.1 Properties of Pie Chart

Table 21.4.1 Function page of Pie Chart

Pie Chart	
Function page	Description
Main	Set the Line Color, Line Weight, Transparent, Start Angle, End Angle, and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

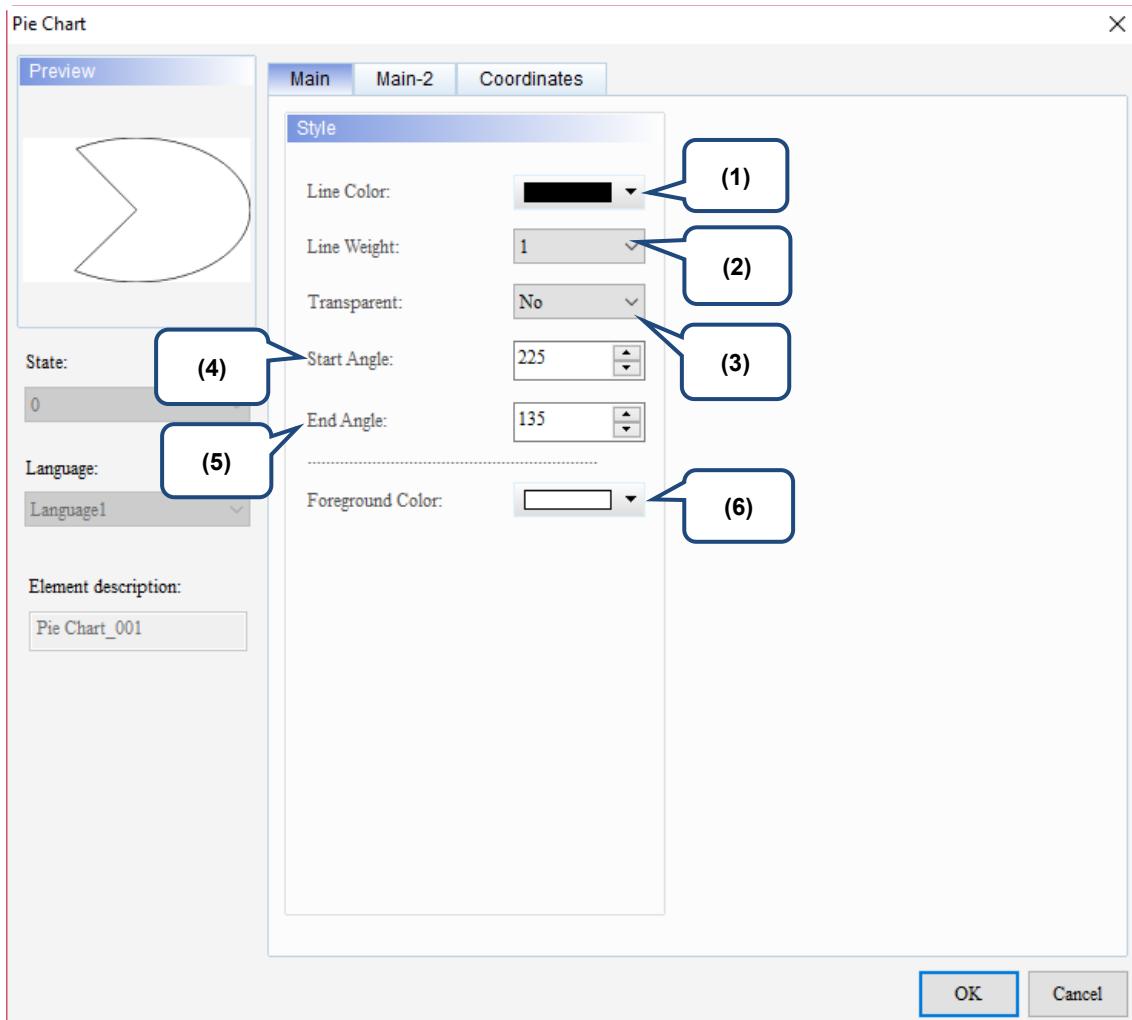
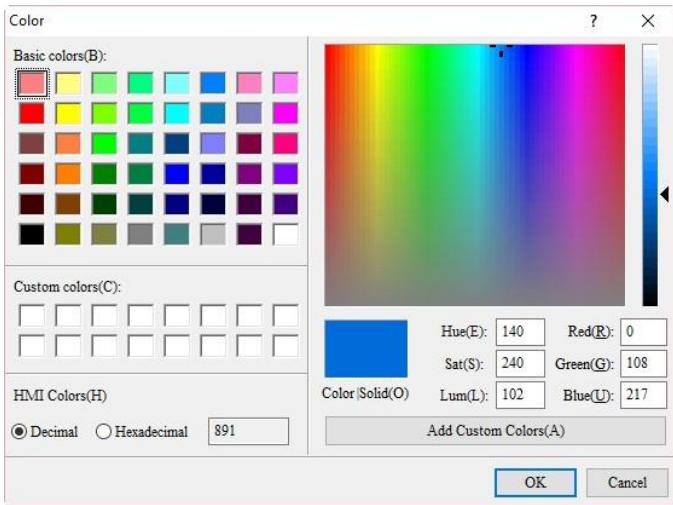
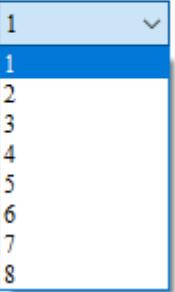
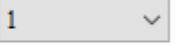
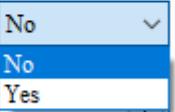
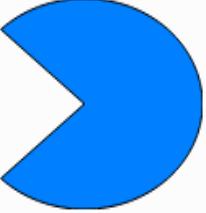
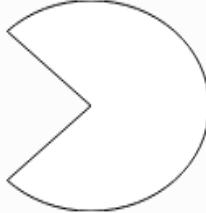
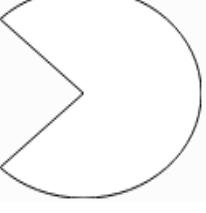
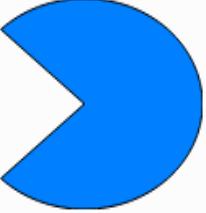
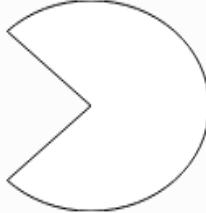
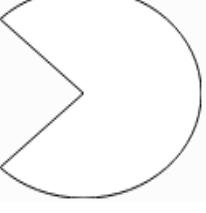
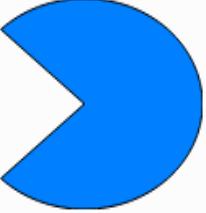
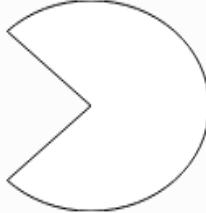
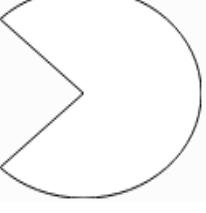
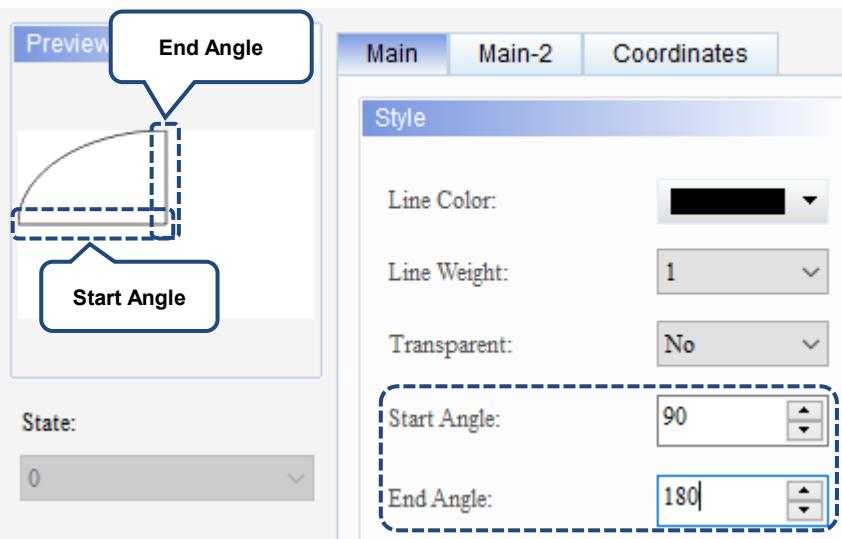
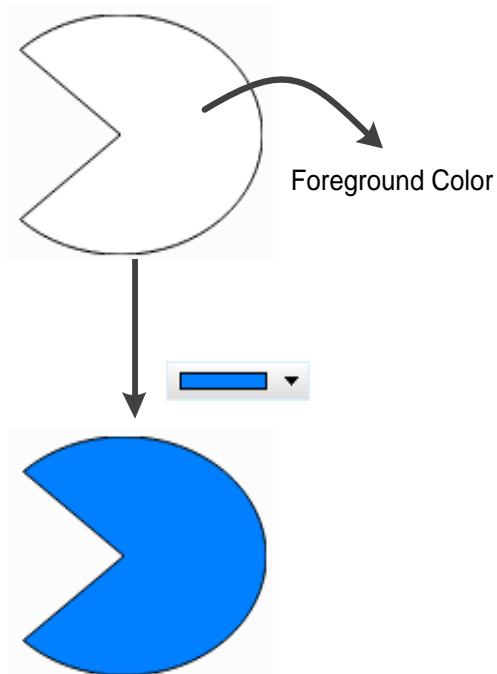


Figure 21.4.2 Main property page for the Pie Chart element

No.	Property	Function description
(1)	Line Color	You can set the line color for the element. 

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No.	Property	Function description						
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> <p style="text-align: center;"><b>Style</b></p> <p>Line Color: </p> <p>Line Weight: </p> <p>Transparent:</p> <p>Start Angle:</p> <p>End Angle:</p>						
(3)	Transparent	<ul style="list-style-type: none"> <li>You can select Yes or No for this function.</li> </ul> <p style="text-align: center;"><b>Style</b></p> <p>Line Color: </p> <p>Line Weight: </p> <p>Transparent: </p> <p>Start Angle:</p> <p>End Angle: </p> <ul style="list-style-type: none"> <li>If you select Yes, the foreground color of the Pie Chart element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 10px;">Transparent is Yes</td> <td style="padding: 10px; text-align: center;">  </td> <td style="padding: 10px; text-align: center;">  </td> </tr> <tr> <td style="padding: 10px;">Transparent is No</td> <td style="padding: 10px; text-align: center;">  </td> <td style="padding: 10px; text-align: center;">  </td> </tr> </table>	Transparent is Yes			Transparent is No		
Transparent is Yes								
Transparent is No								

No.	Property	Function description
(4)	Start Angle	You can set the opening angle for the Pie Chart with the Start Angle and End Angle settings. 
(5)	End Angle	Set the foreground color of the element. 
(6)	Foreground Color	

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## ■ Main-2

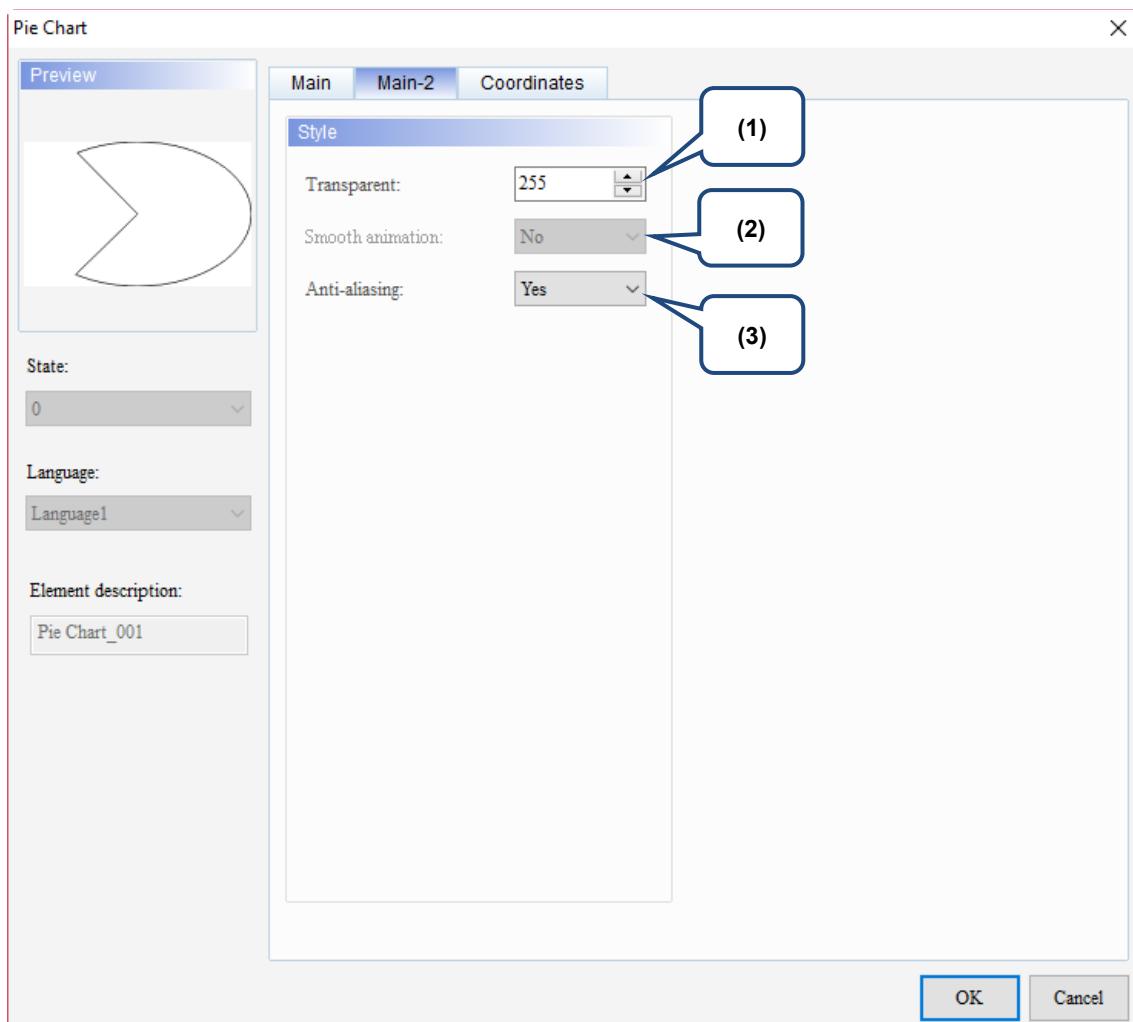
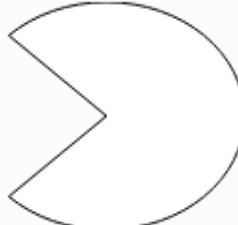
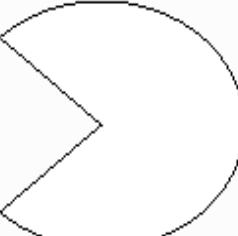


Figure 21.4.3 Main-2 property page for the Pie Chart element

No.	Property	Function description	
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.	
(2)	Smooth animation	The Smooth animation function is not available for this element.	
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.  	

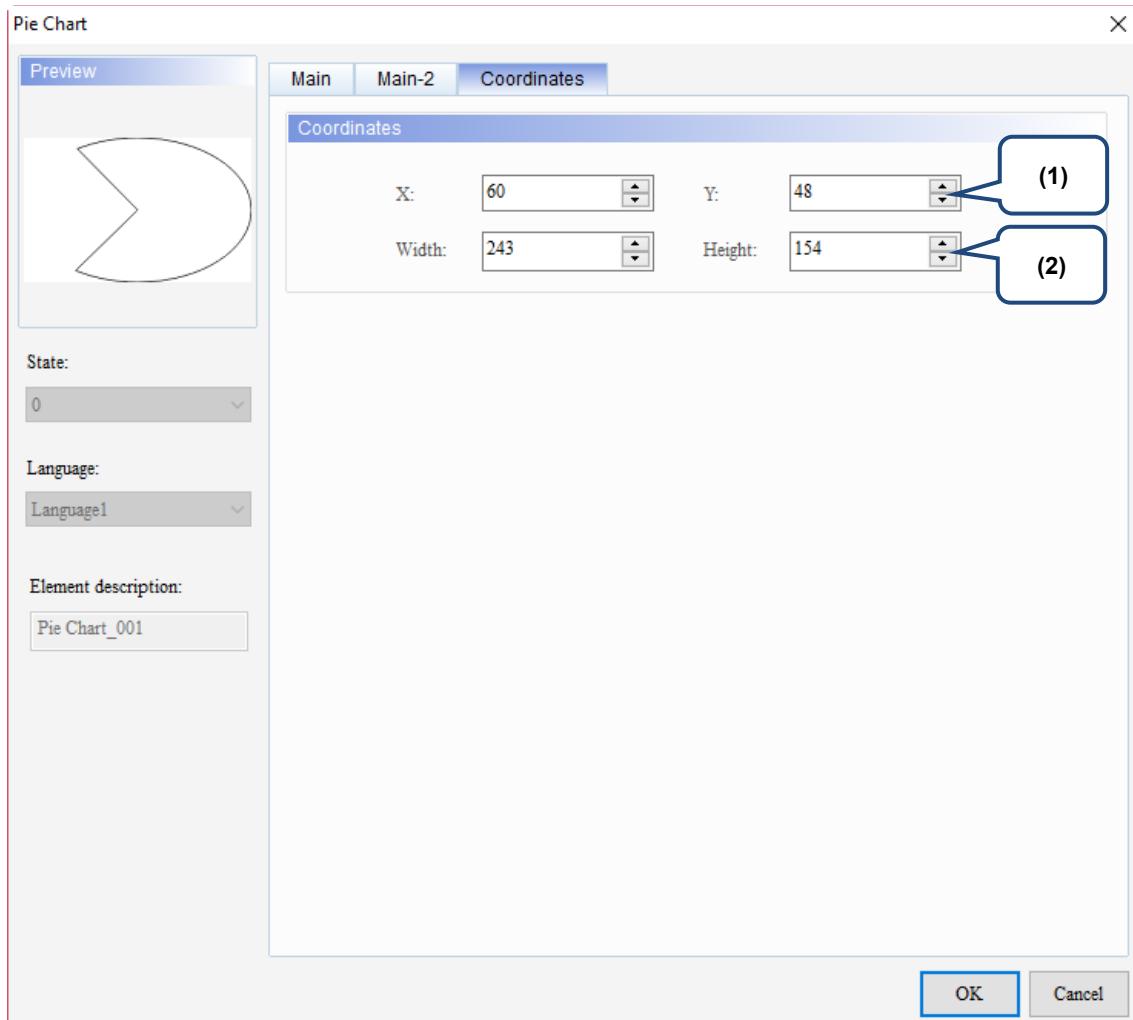
**■ Coordinates**

Figure 21.4.4 Coordinates property page for the Pie Chart element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 21.5 Arc

When you double-click the Arc element, the property page is shown as follows.

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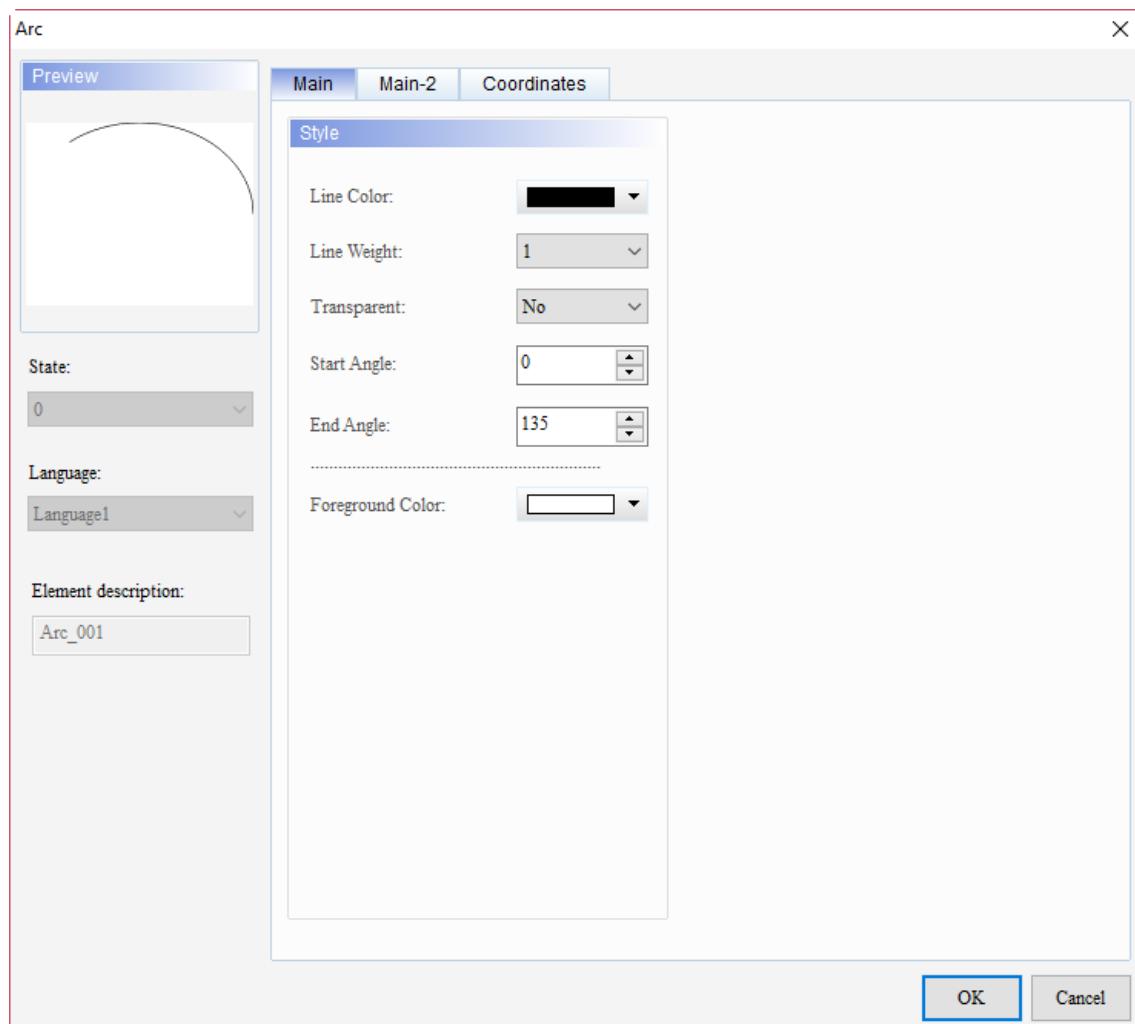
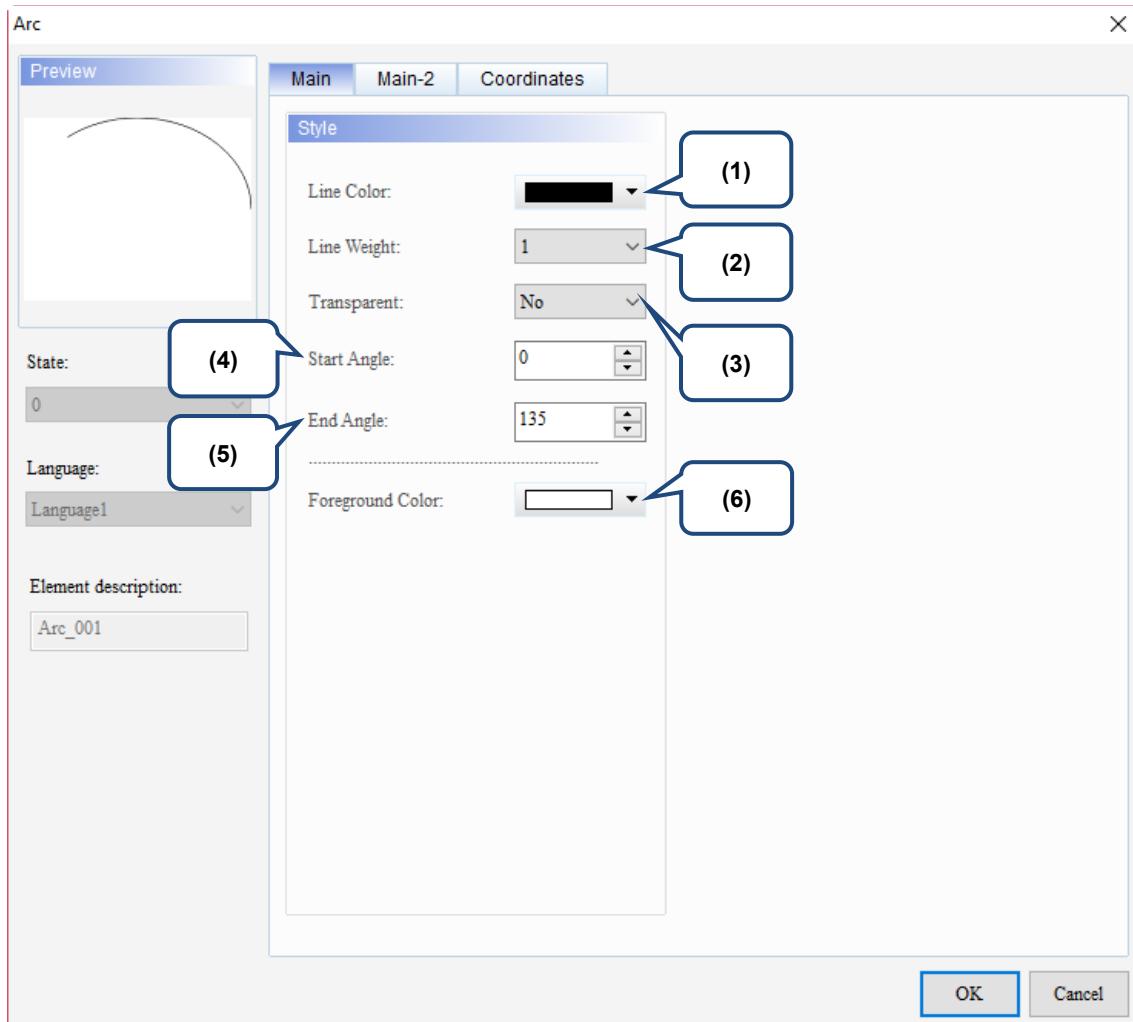


Figure 21.5.1 Properties of Arc

Table 21.5.1 Function page of Arc

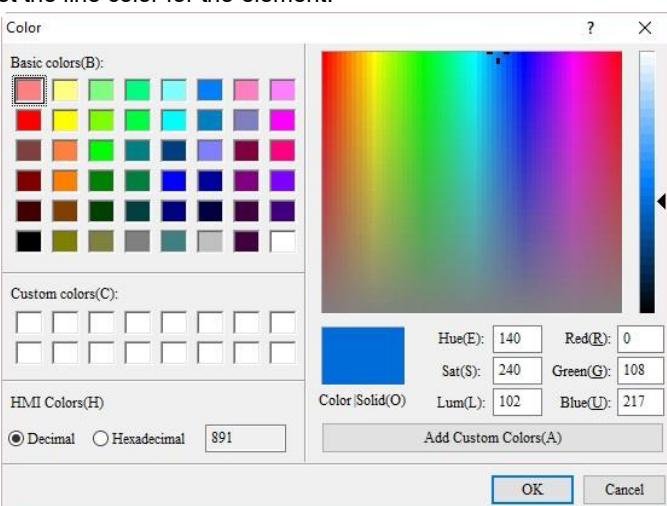
Arc	
Function page	Description
Main	Set the Line Color, Line Weight, Transparent, Start Angle, End Angle, and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

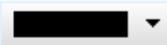
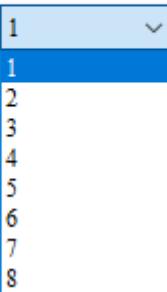
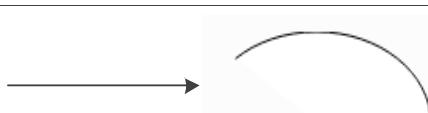
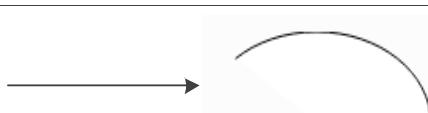
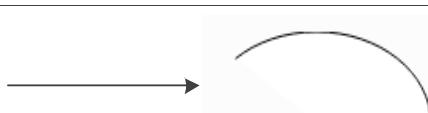


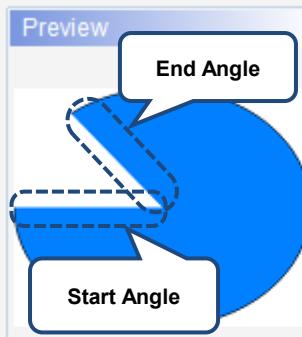
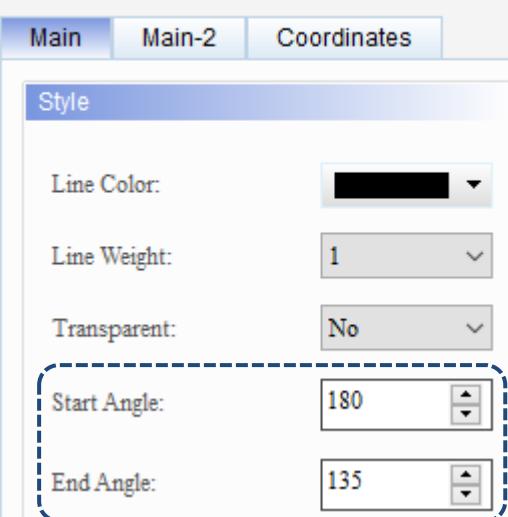
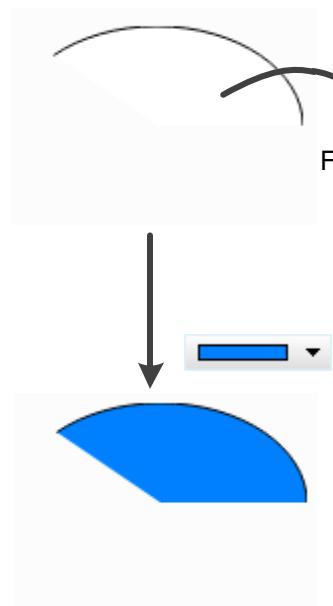
21

Figure 21.5.2 Main property page for the Arc element

No.	Property	Function description
(1)	Line Color	You can set the line color for the element. 

21

No.	Property	Function description						
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> <p style="background-color: #4f81bd; color: white; padding: 2px 5px;">Style</p> <p>Line Color: </p> <p>Line Weight: </p> <p>Transparent:</p> <p>Start Angle:</p> <p>End Angle:</p>						
(3)	Transparent	<ul style="list-style-type: none"> <li>You can select Yes or No for this function.</li> </ul> <p style="background-color: #4f81bd; color: white; padding: 2px 5px;">Style</p> <p>Line Color: </p> <p>Line Weight: 1</p> <p>Transparent: </p> <p>Start Angle:</p> <p>End Angle: 135</p> <ul style="list-style-type: none"> <li>If you select Yes, the foreground color of the Arc element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px; vertical-align: top;">Transparent is Yes</td> <td style="padding: 5px; vertical-align: top;">  </td> <td style="padding: 5px; vertical-align: top;">  </td> </tr> <tr> <td style="padding: 5px; vertical-align: top;">Transparent is No</td> <td style="padding: 5px; vertical-align: top;">  </td> <td style="padding: 5px; vertical-align: top;">  </td> </tr> </table>	Transparent is Yes			Transparent is No		
Transparent is Yes								
Transparent is No								

No.	Property	Function description
(4)	Start Angle	You can set the opening angle for the Arc with the Start Angle and End Angle settings. 
(5)	End Angle	
(6)	Foreground Color	Set the foreground color of the element. 

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## ■ Main-2

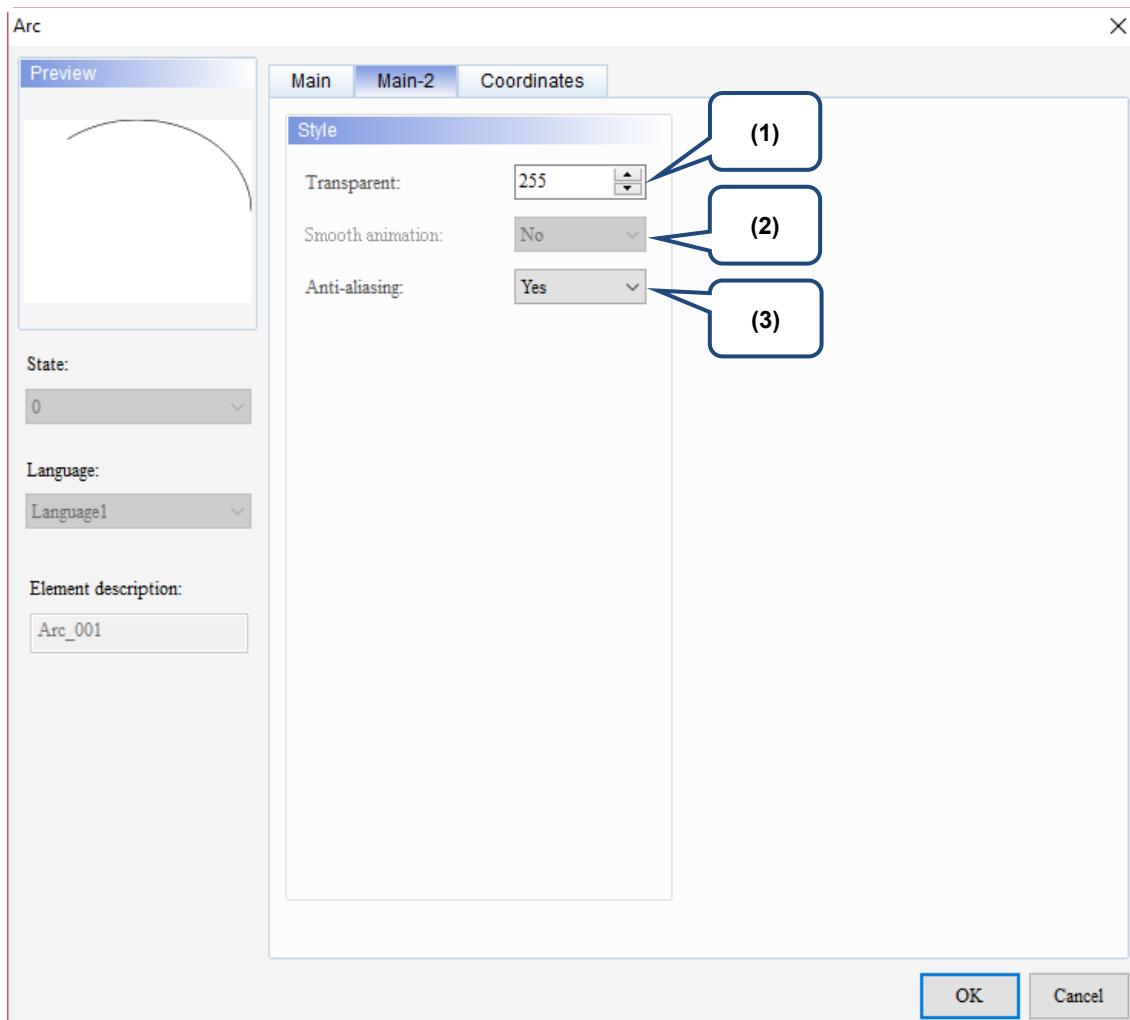


Figure 21.5.3 Main-2 property page for the Arc element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

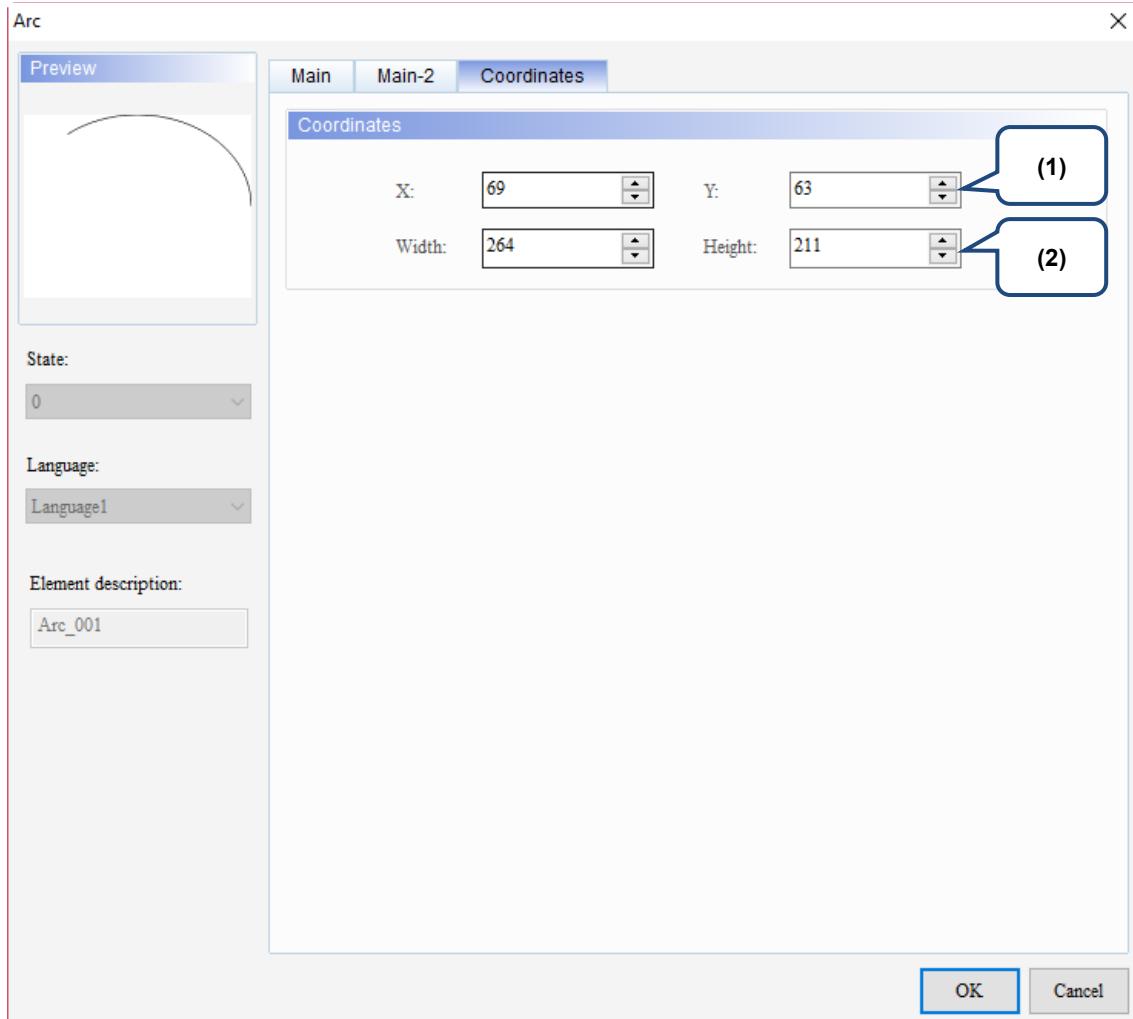
**■ Coordinates**

Figure 21.5.4 Coordinates property page for the Arc element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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## 21.6 Hexagon

When you double-click the Hexagon element, the property page is shown as follows.

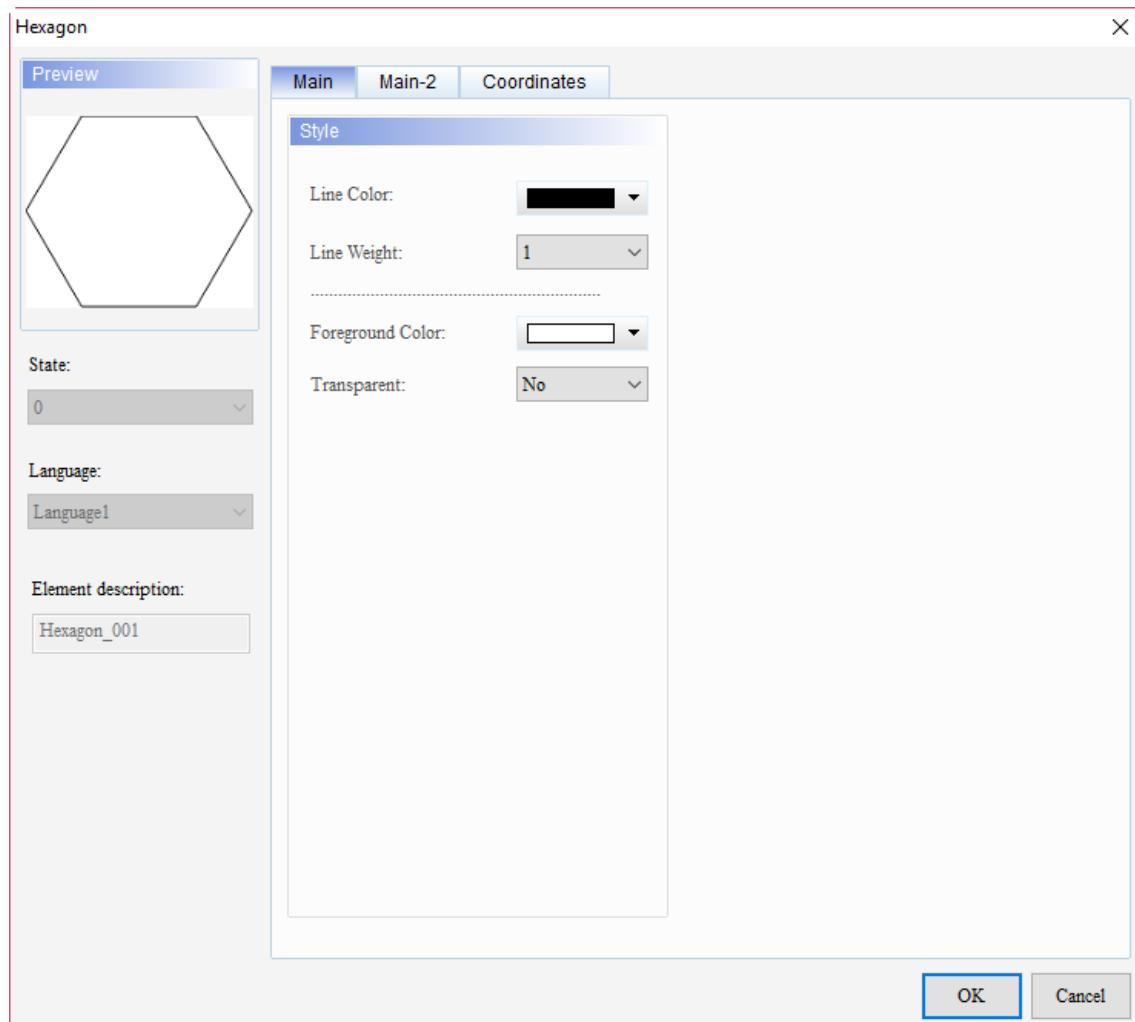


Figure 21.6.1 Properties of Hexagon

Table 21.6.1 Function page of Hexagon

Hexagon	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

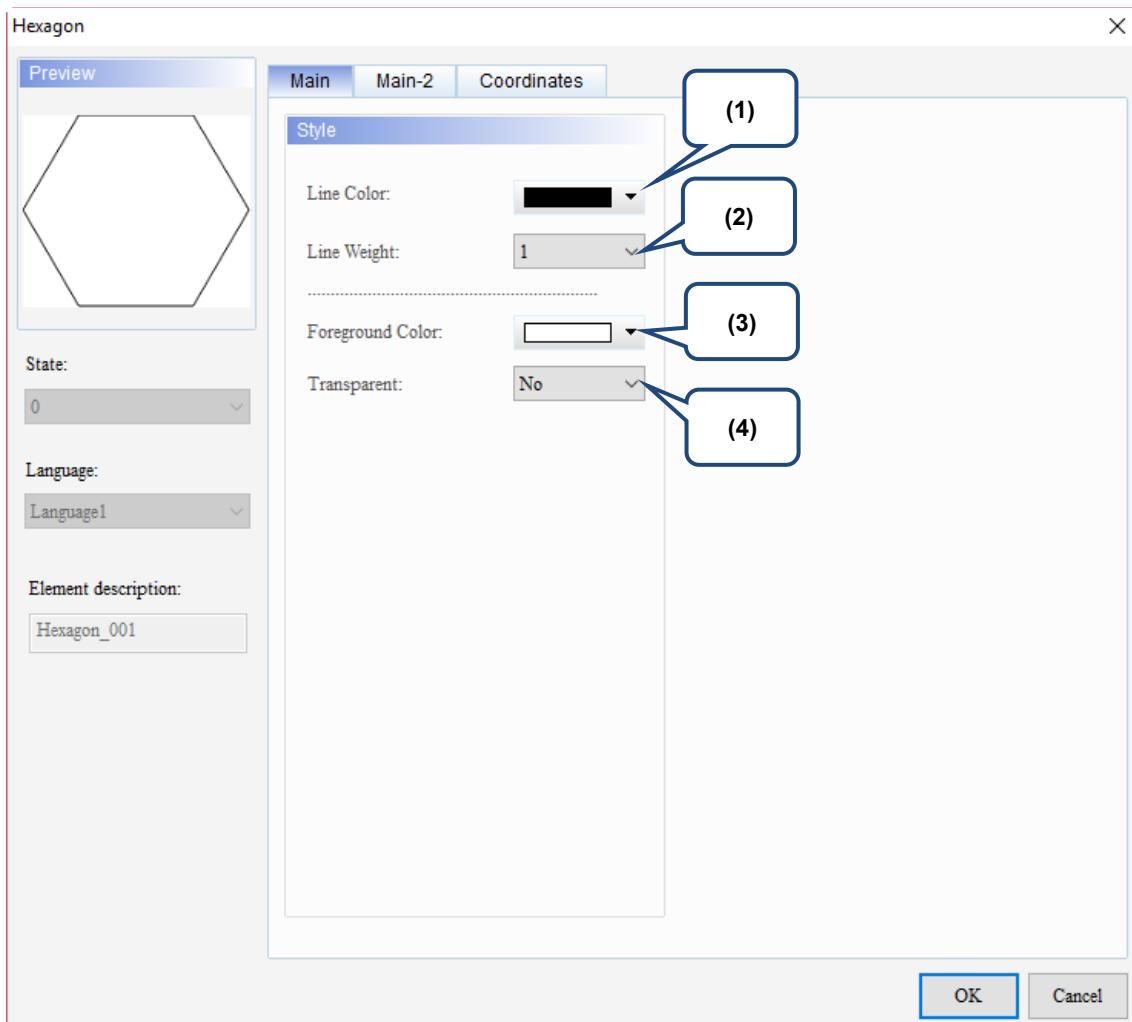
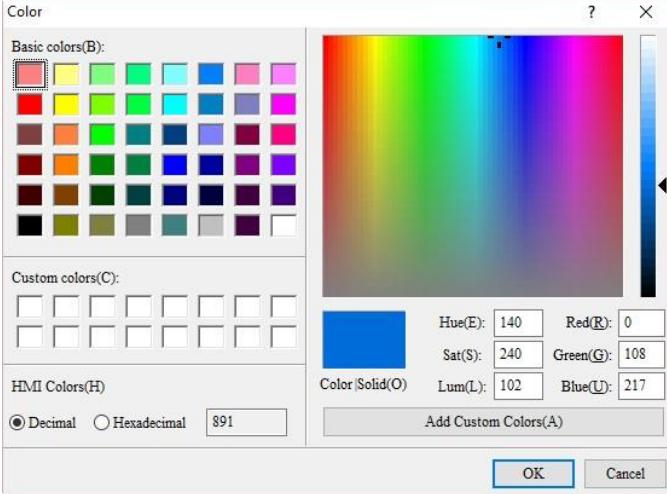
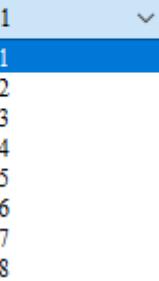
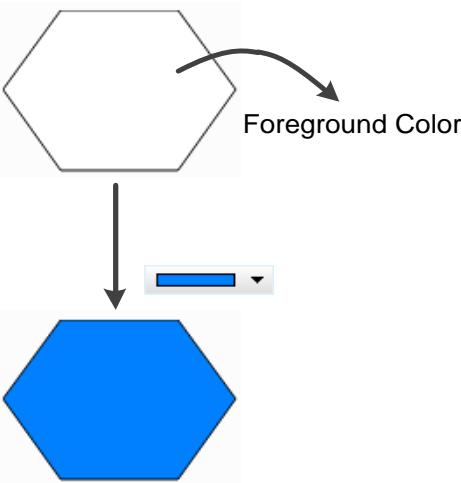
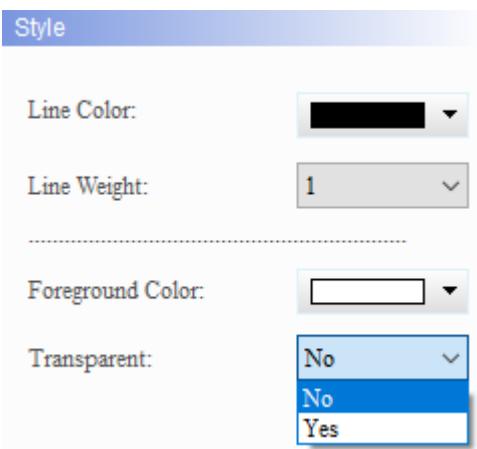


Figure 21.6.2 Main property page for the Hexagon element

No.	Property	Function description
(1)	Line Color	You can set the line color for the element. 

21

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> <p>Style</p> <p>Line Color: </p> <p>Line Weight:  1 2 3 4 5 6 7 8</p> <p>Foreground Color: Transparent:</p>
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

No.	Property	Function description						
(4)	Transparent	<p>■ You can select Yes or No for this function.</p> <p>Style</p>  <p>Line Color: <input type="color"/></p> <p>Line Weight: 1</p> <p>Foreground Color: <input type="color"/></p> <p>Transparent: <input type="button" value="No"/> <input checked="" type="button" value="Yes"/> <input type="button" value="Yes"/></p> <p>■ If you select Yes, the foreground color of the Hexagon element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p> <table border="1"> <tr> <td>Transparent is Yes</td> <td></td> <td></td> </tr> <tr> <td>Transparent is No</td> <td></td> <td></td> </tr> </table>	Transparent is Yes			Transparent is No		
Transparent is Yes								
Transparent is No								

21

## ■ Main-2

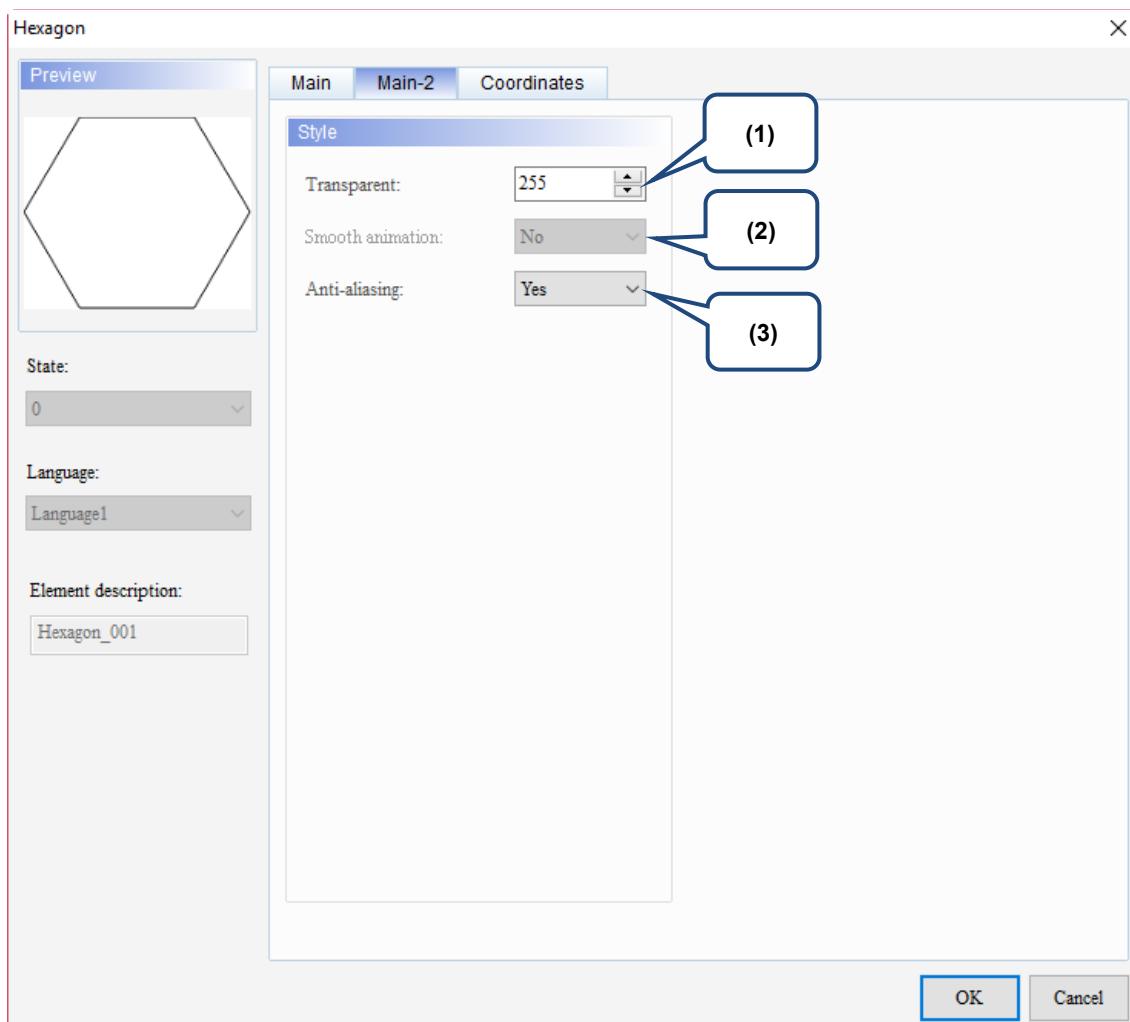


Figure 21.6.3 Main-2 property page for the Hexagon element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

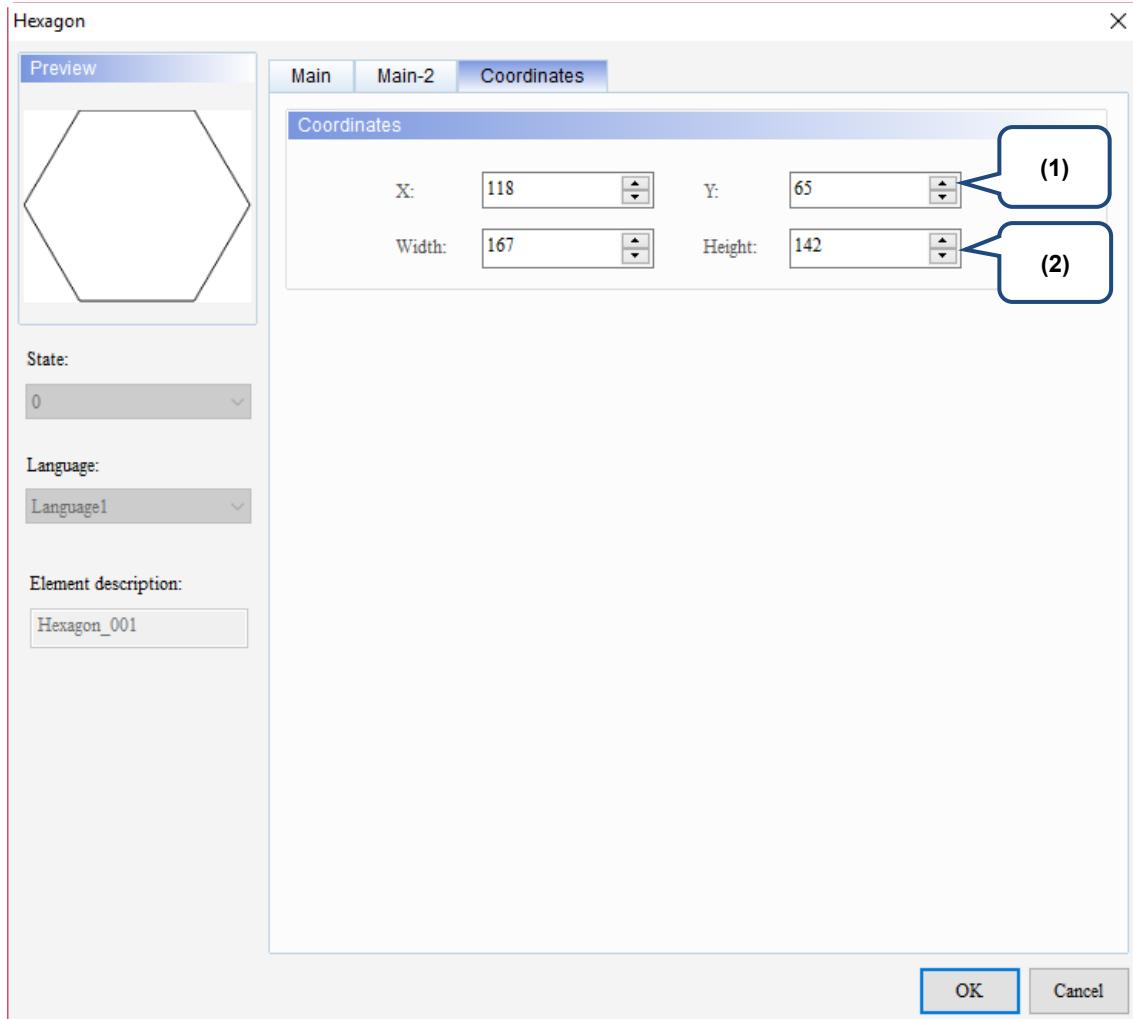
**■ Coordinates**

Figure 21.6.4 Coordinates property page for the Hexagon element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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## 21.7 Star Shape

When you double-click the Star Shape element, the property page is shown as follows.

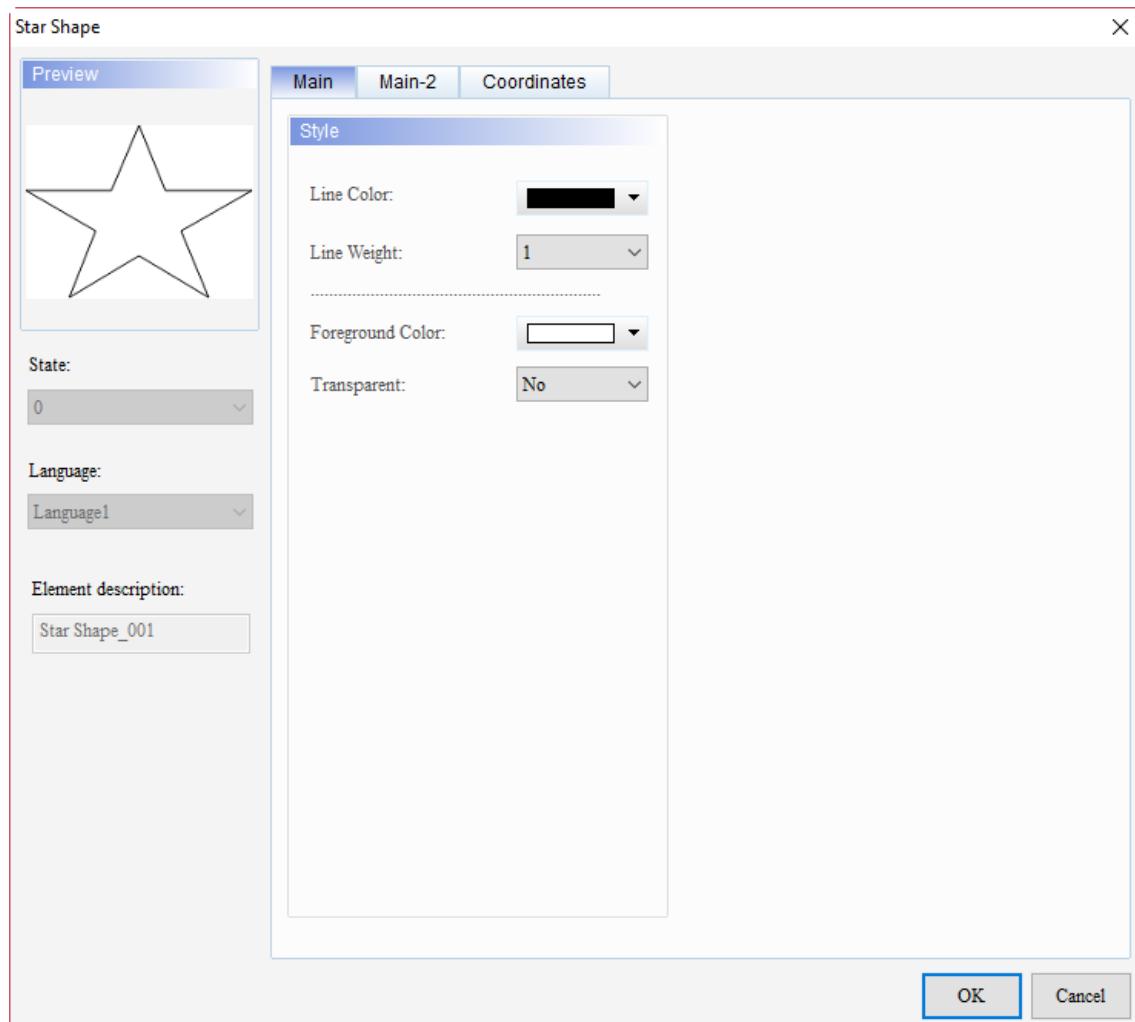


Figure 21.7.1 Properties of Star Shape

Table 21.7.1 Function page of Star Shape

Star Shape	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

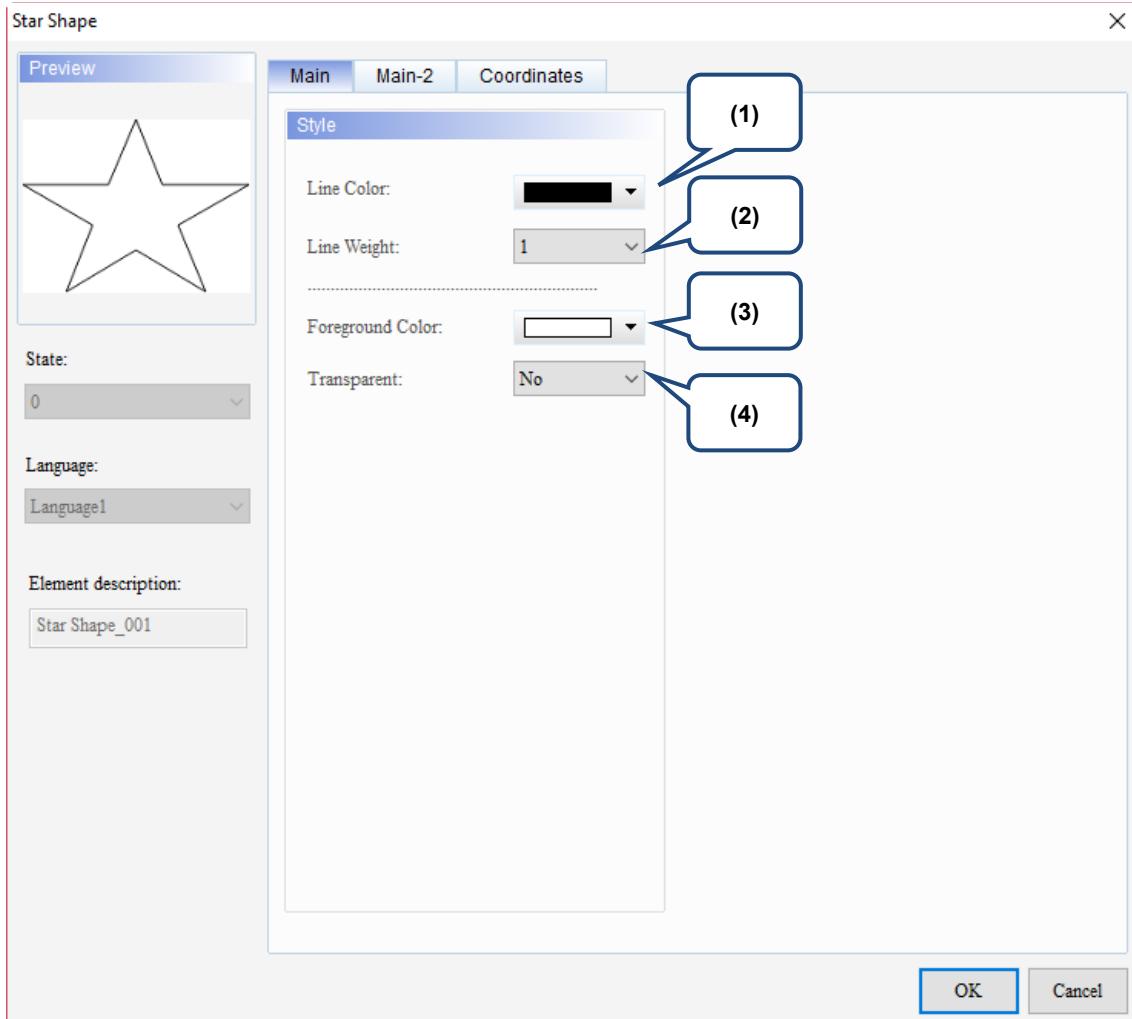
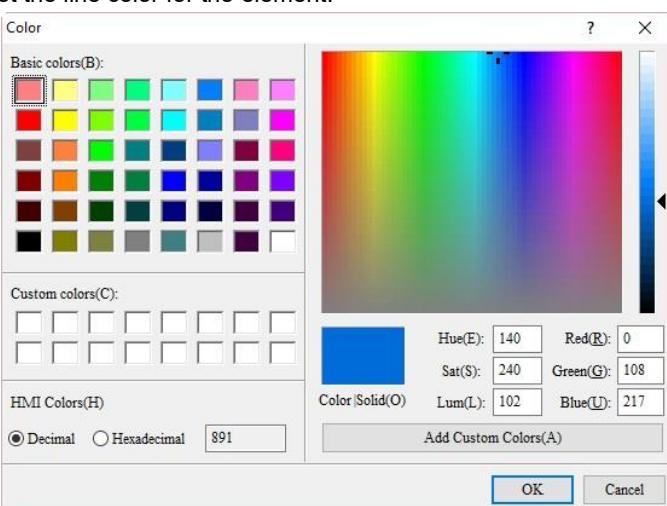
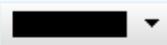
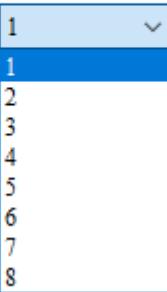
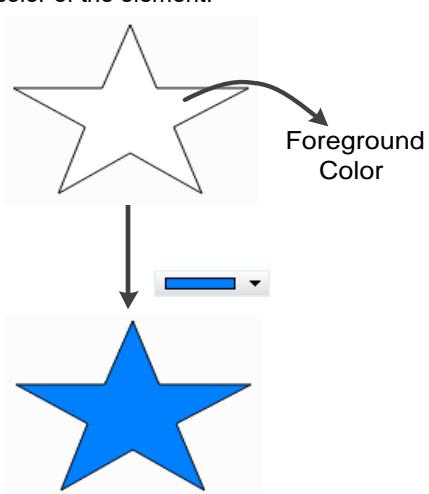
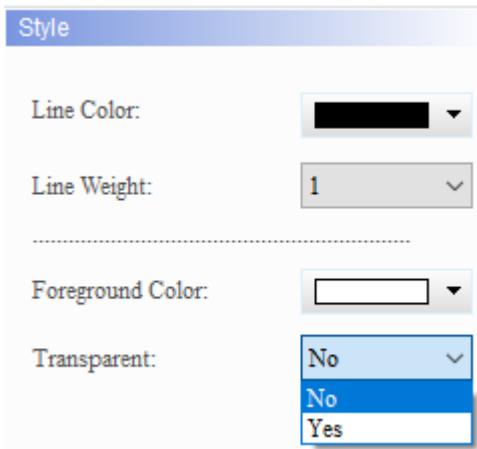


Figure 21.7.2 Main property page for the Star Shape element

No.	Property	Function description
(1)	Line Color	You can set the line color for the element. 

21

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> <p>Style</p> <p>Line Color: </p> <p>Line Weight:  1 2 3 4 5 6 7 8</p> <p>Foreground Color:</p> <p>Transparent:</p>
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

No.	Property	Function description						
		<p>■ You can select Yes or No for this function.</p> 						
(4)	Transparent	<p>■ If you select Yes, the foreground color of the Star Shape element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p> <table border="1"> <tr> <td>Transparent is Yes</td> <td></td> <td></td> </tr> <tr> <td>Transparent is No</td> <td></td> <td></td> </tr> </table>	Transparent is Yes			Transparent is No		
Transparent is Yes								
Transparent is No								

21

## ■ Main-2

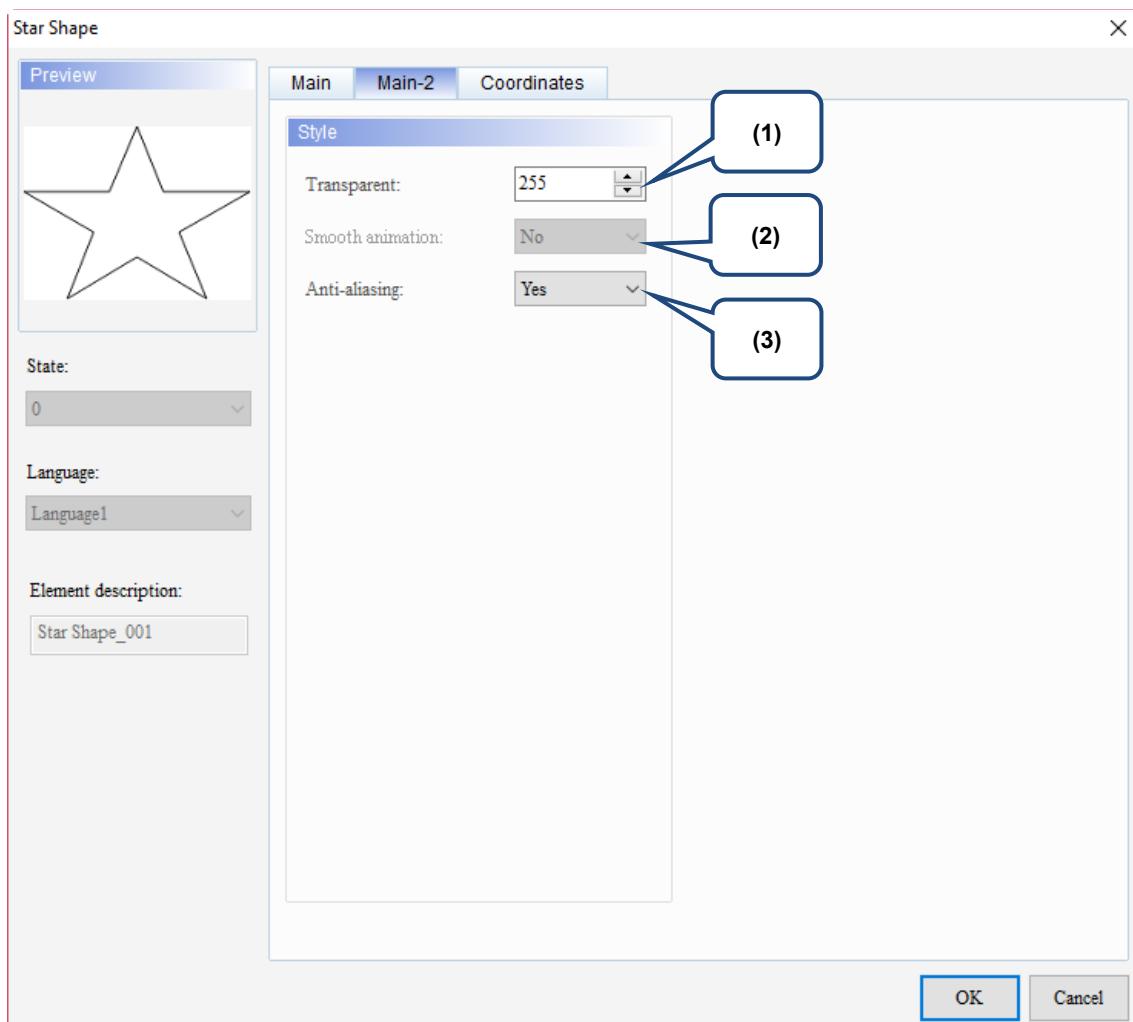


Figure 21.7.3 Main-2 property page for the Star Shape element

No.	Property	Function description	
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.	
(2)	Smooth animation	The Smooth animation function is not available for this element.	
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes.	
		Yes	
		No	

## ■ Coordinates

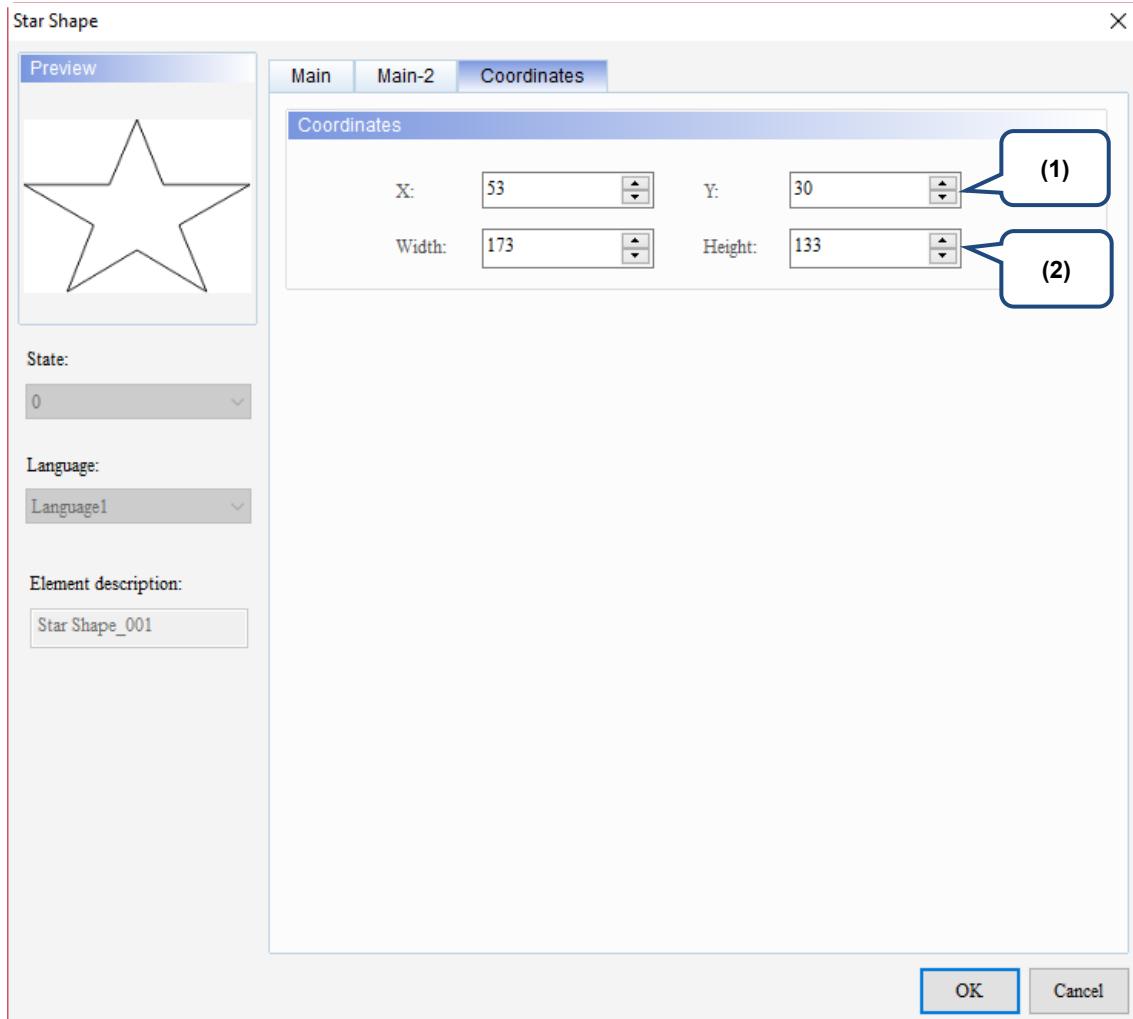


Figure 21.7.4 Coordinates property page for the Star Shape element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

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## 21.8 Triangle

When you double-click the Triangle element, the property page is shown as follows.

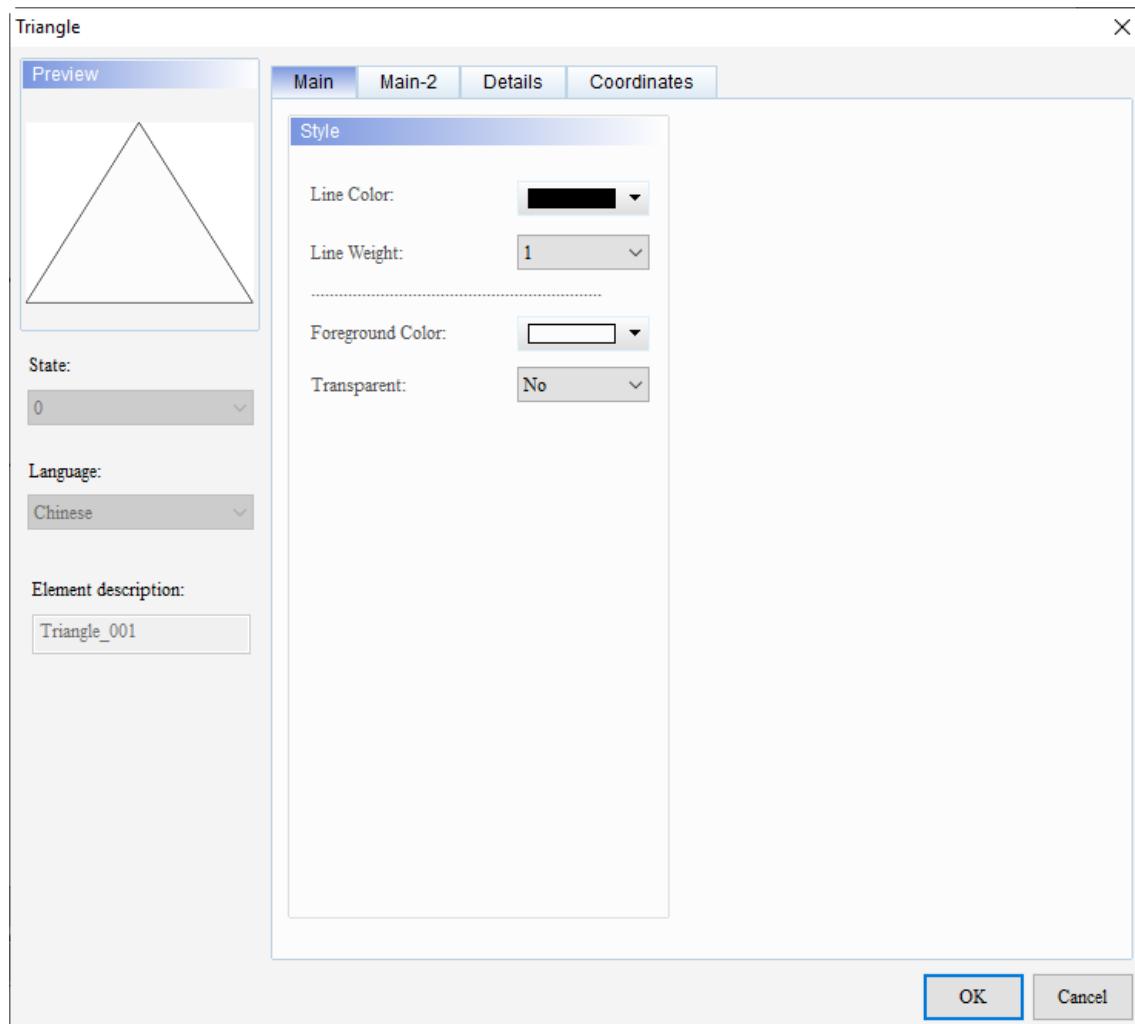


Figure 21.8.1 Properties of Triangle

Table 21.8.1 Function page of Triangle

Triangle	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

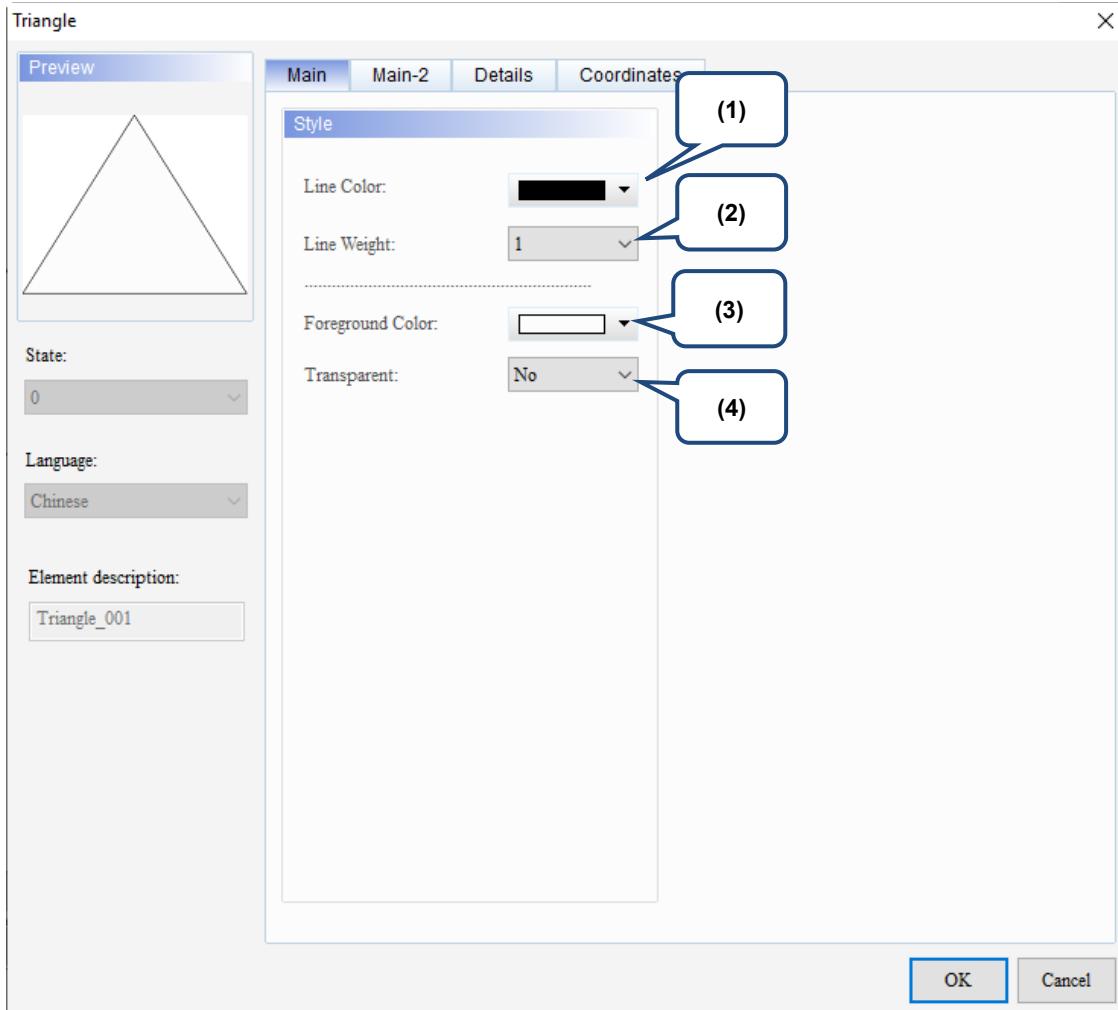
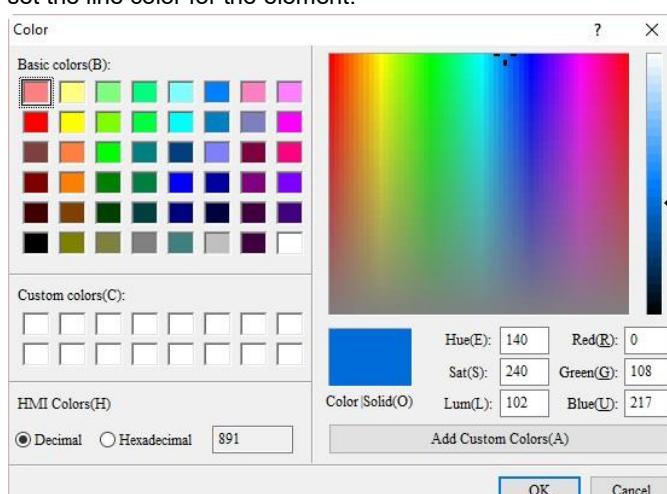
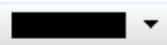
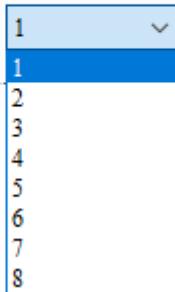
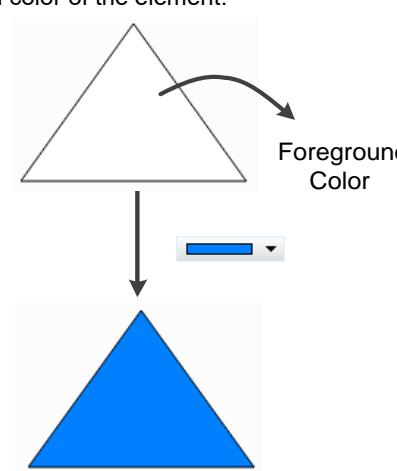
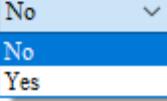
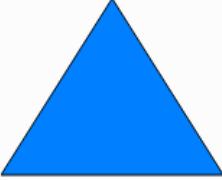
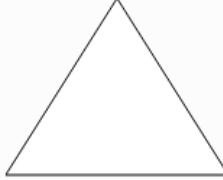
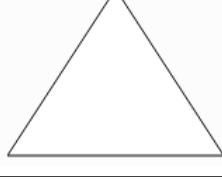
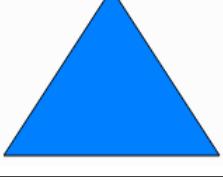
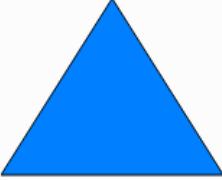
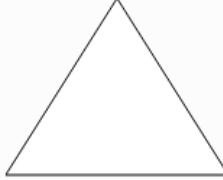
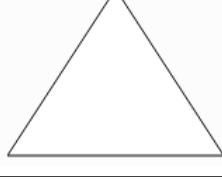
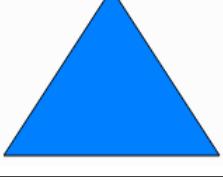
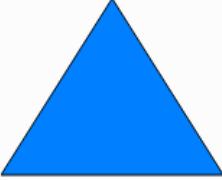
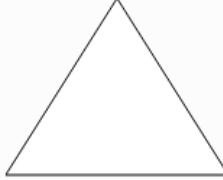
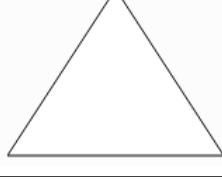
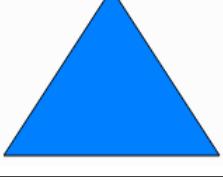


Figure 21.8.2 Main property page for the Triangle element

No.	Property	Function description
(1)	Line Color	You can set the line color for the element. 

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No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> <p>Style</p> <p>Line Color: </p> <p>Line Weight:  1 2 3 4 5 6 7 8</p> <p>Foreground Color:</p> <p>Transparent:</p>
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 

No.	Property	Function description						
		<p>■ You can select Yes or No for this function.</p> <p style="background-color: #e0e0ff; padding: 5px; border-radius: 5px;">Style</p> <p>Line Color: </p> <p>Line Weight: 1</p> <hr/> <p>Foreground Color: </p> <p>Transparent: </p>						
(4)	Transparent	<p>■ If you select Yes, the foreground color of the Triangle element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 10px; vertical-align: top;">Transparent is Yes</td> <td style="padding: 10px; vertical-align: top;"></td> <td style="padding: 10px; vertical-align: top;"></td> </tr> <tr> <td style="padding: 10px; vertical-align: top;">Transparent is No</td> <td style="padding: 10px; vertical-align: top;"></td> <td style="padding: 10px; vertical-align: top;"></td> </tr> </table>	Transparent is Yes			Transparent is No		
Transparent is Yes								
Transparent is No								

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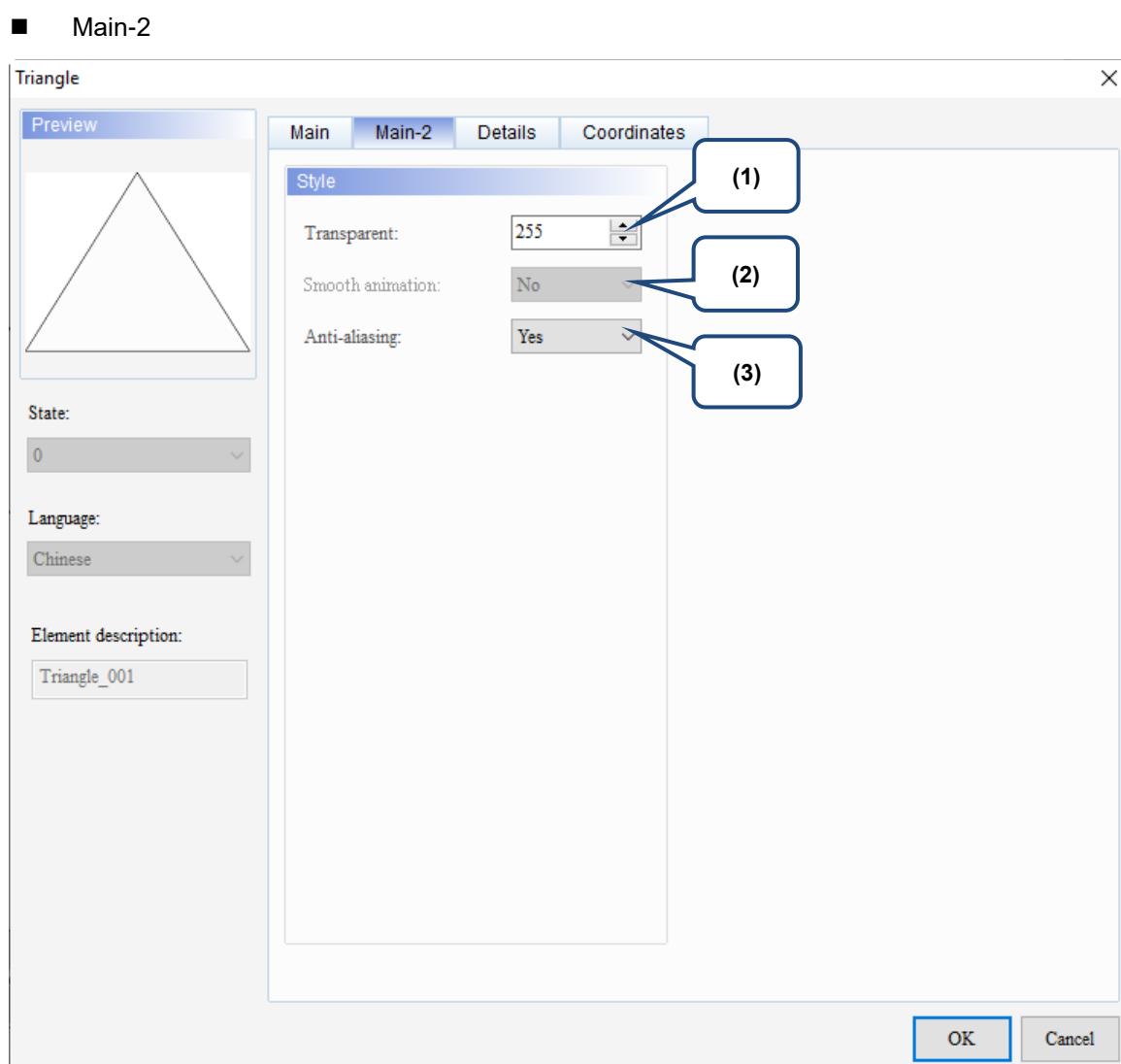


Figure 21.8.3 Main-2 property page for the Triangle element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

## ■ Details

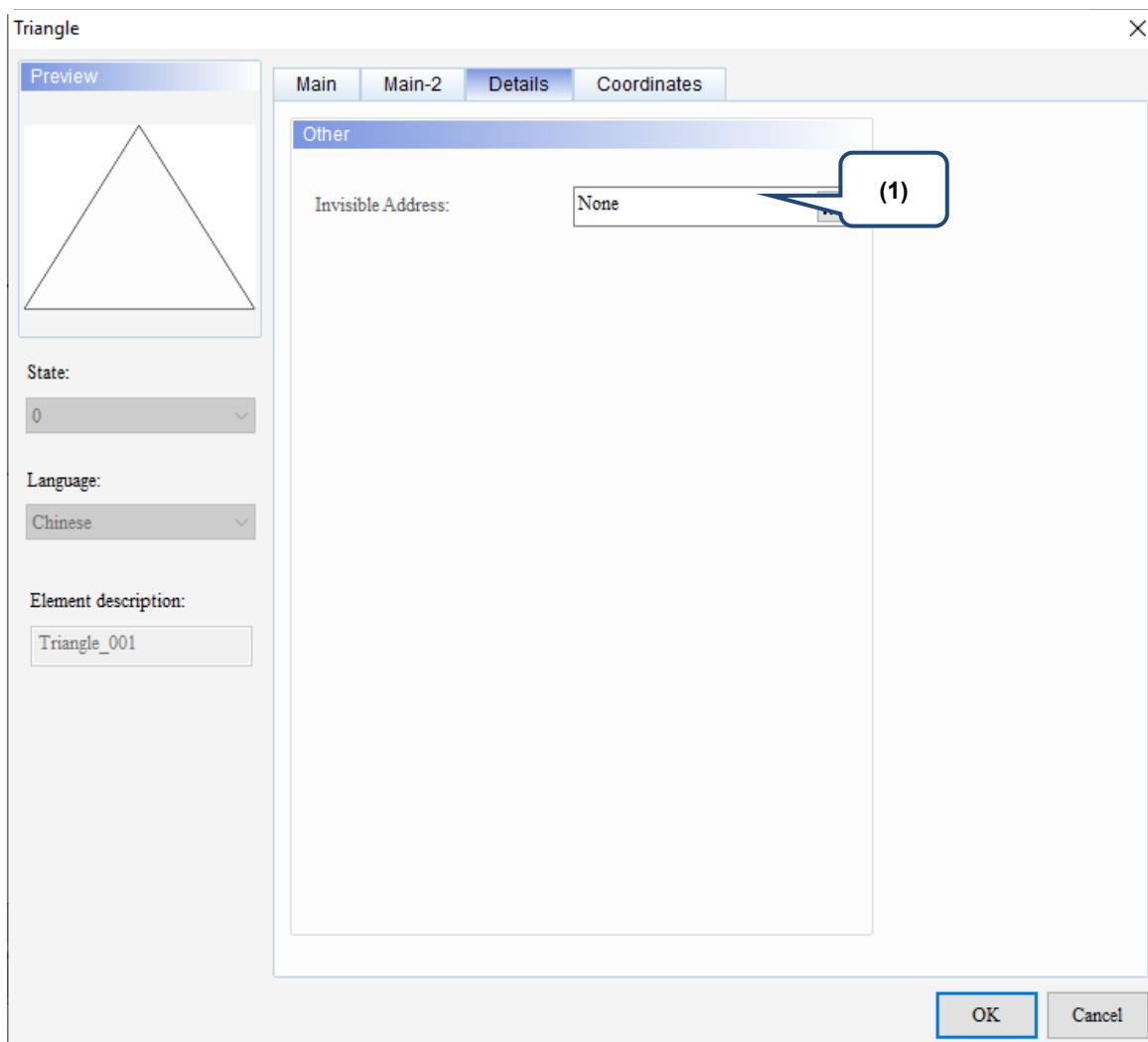


Figure 21.8.4 Details property page for the Triangle element

No.	Property	Function description						
(1)	Invisible Address	When the Invisible Address is set to On, the element is invisible and you cannot execute its set functions.						
		<table border="1"> <tr> <td>Invisible Address is Off</td> <td></td> <td>\$9.0 OFF</td> </tr> <tr> <td>Invisible Address is On</td> <td></td> <td>\$9.0 ON</td> </tr> </table>	Invisible Address is Off		\$9.0 OFF	Invisible Address is On		\$9.0 ON
Invisible Address is Off		\$9.0 OFF						
Invisible Address is On		\$9.0 ON						

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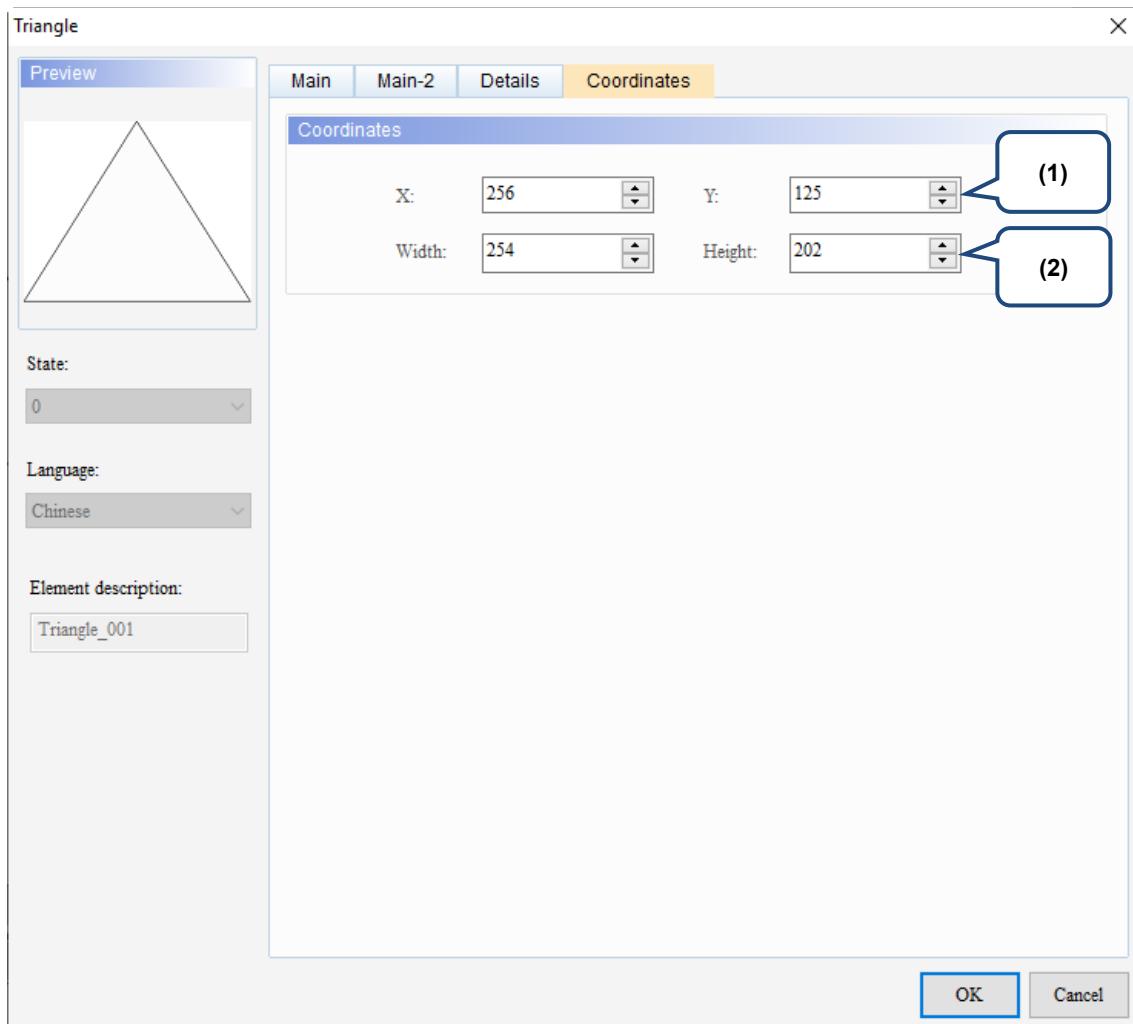
**■ Coordinates**

Figure 21.8.5 Coordinates property page for the Triangle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 21.9 Hollow Circle

When you double-click the Hollow Circle element, the property page is shown as follows.

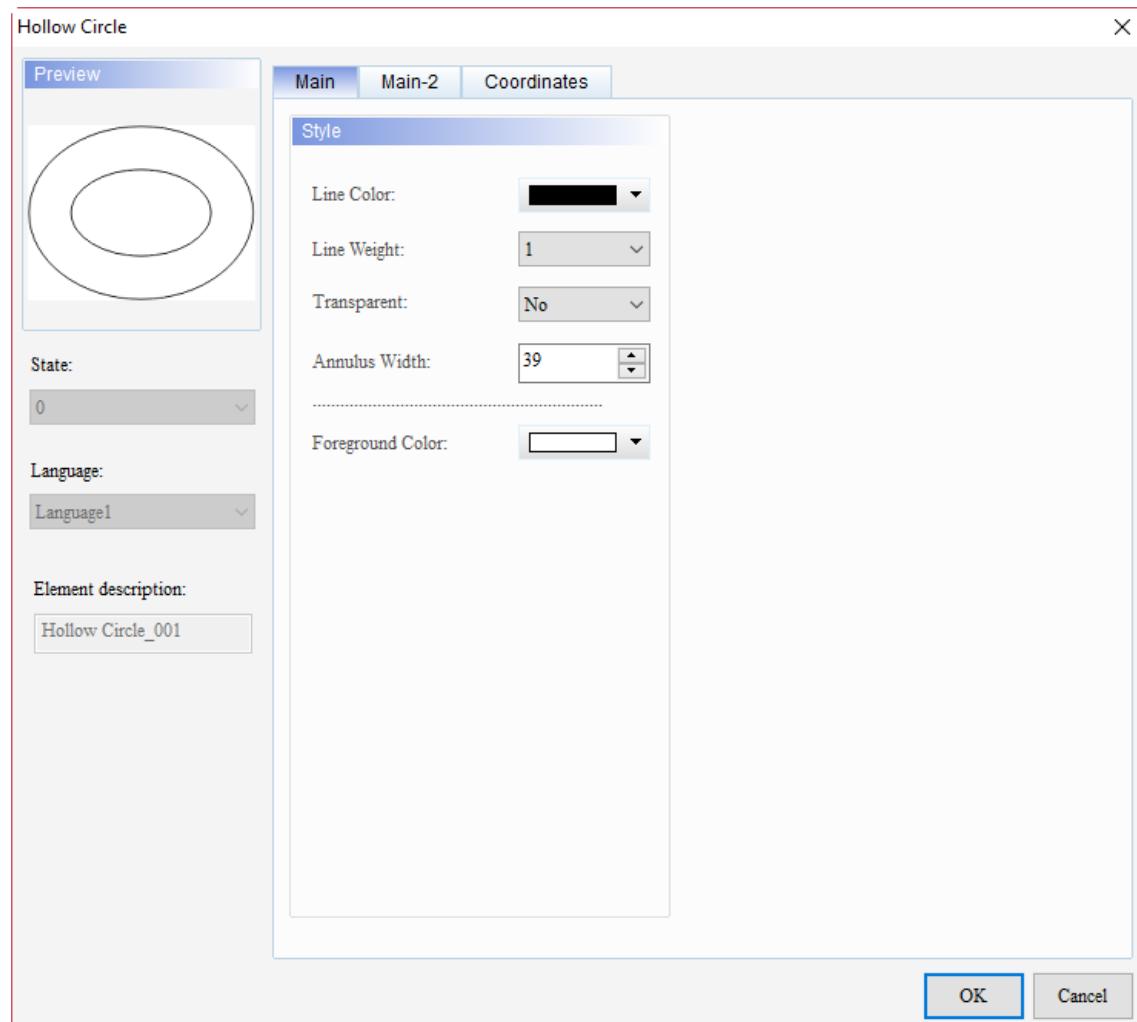


Figure 21.9.1 Properties of Hollow Circle

Table 21.9.1 Function page of Hollow Circle

Hollow Circle	
Function page	Description
Main	Set the Line Color, Line Weight, Transparent, Annulus Width, and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

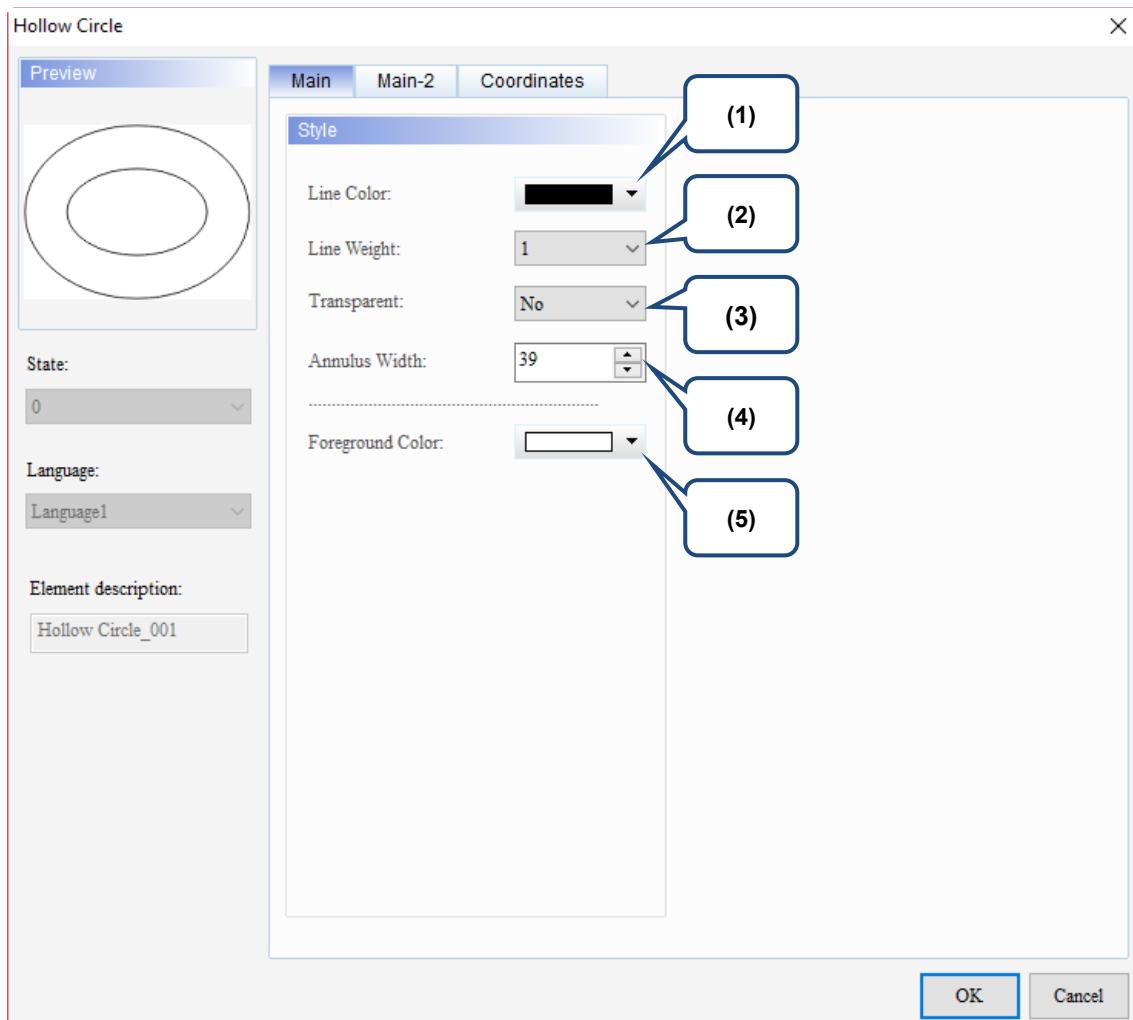
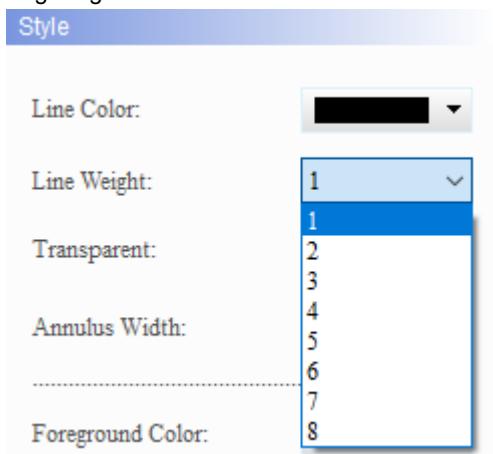
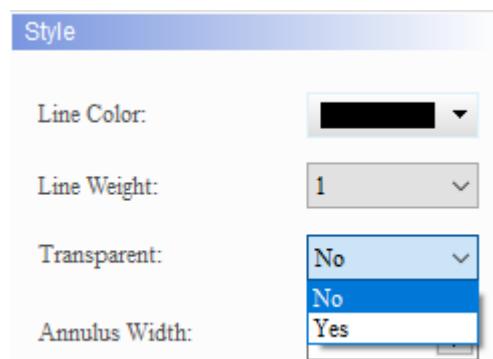
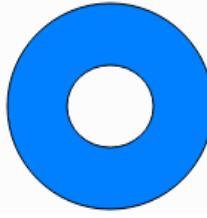
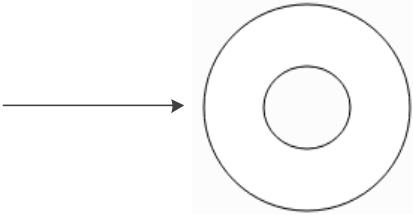
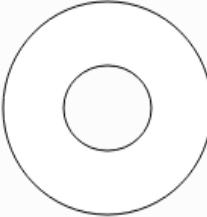
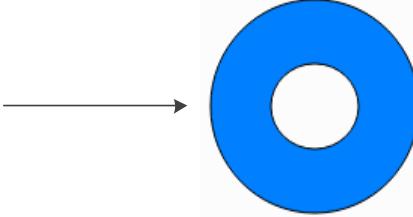
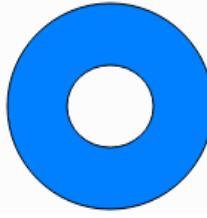
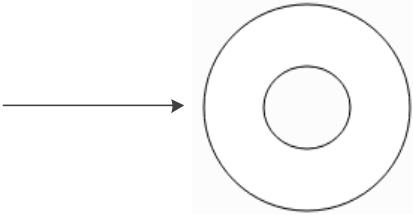
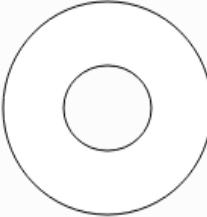
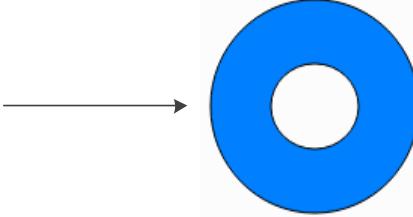
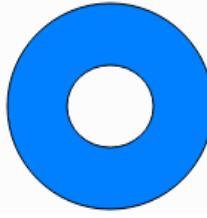
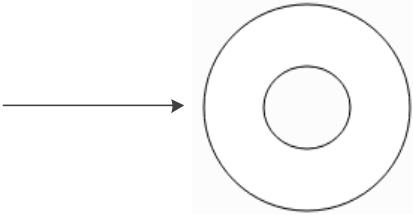
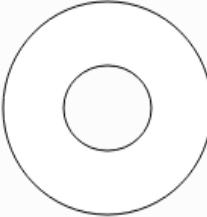
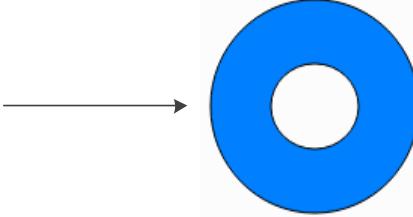


Figure 21.9.2 Main property page for the Hollow Circle element

No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p>

No.	Property	Function description						
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p>  <p>Style</p> <p>Line Color:</p> <p>Line Weight:</p> <p>Transparent:</p> <p>Annulus Width:</p> <p>Foreground Color:</p>						
(3)	Transparent	<p>■ You can select Yes or No for this function.</p>  <p>Style</p> <p>Line Color:</p> <p>Line Weight:</p> <p>Transparent:</p> <p>Annulus Width:</p> <p>■ If you select Yes, the foreground color of the Hollow Circle element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</p> <table border="1"> <tr> <td>Transparent is Yes</td> <td></td> <td></td> </tr> <tr> <td>Transparent is No</td> <td></td> <td></td> </tr> </table>	Transparent is Yes			Transparent is No		
Transparent is Yes								
Transparent is No								

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No.	Property	Function description
(4)	Annulus Width	<p>The maximum of the Annulus Width is determined by taking the minimum value of the element's width and height, and dividing it by 2.</p> <p><b>Hollow Circle</b></p> <p>Line Color: <input type="color"/></p> <p>Line Weight: 1</p> <p>Transparent: No</p> <p>Annulus Width: 78</p> <p>Foreground C</p> <p>Take the minimum value of the element's width and height, and divide it by 2, which is the maximum of the Annulus Width.</p> <p>Coordinates tab showing X: 54, Y: 34, Width: 205, Height: 158.</p>
(5)	Foreground Color	<p>Set the foreground color of the element.</p>

## ■ Main-2

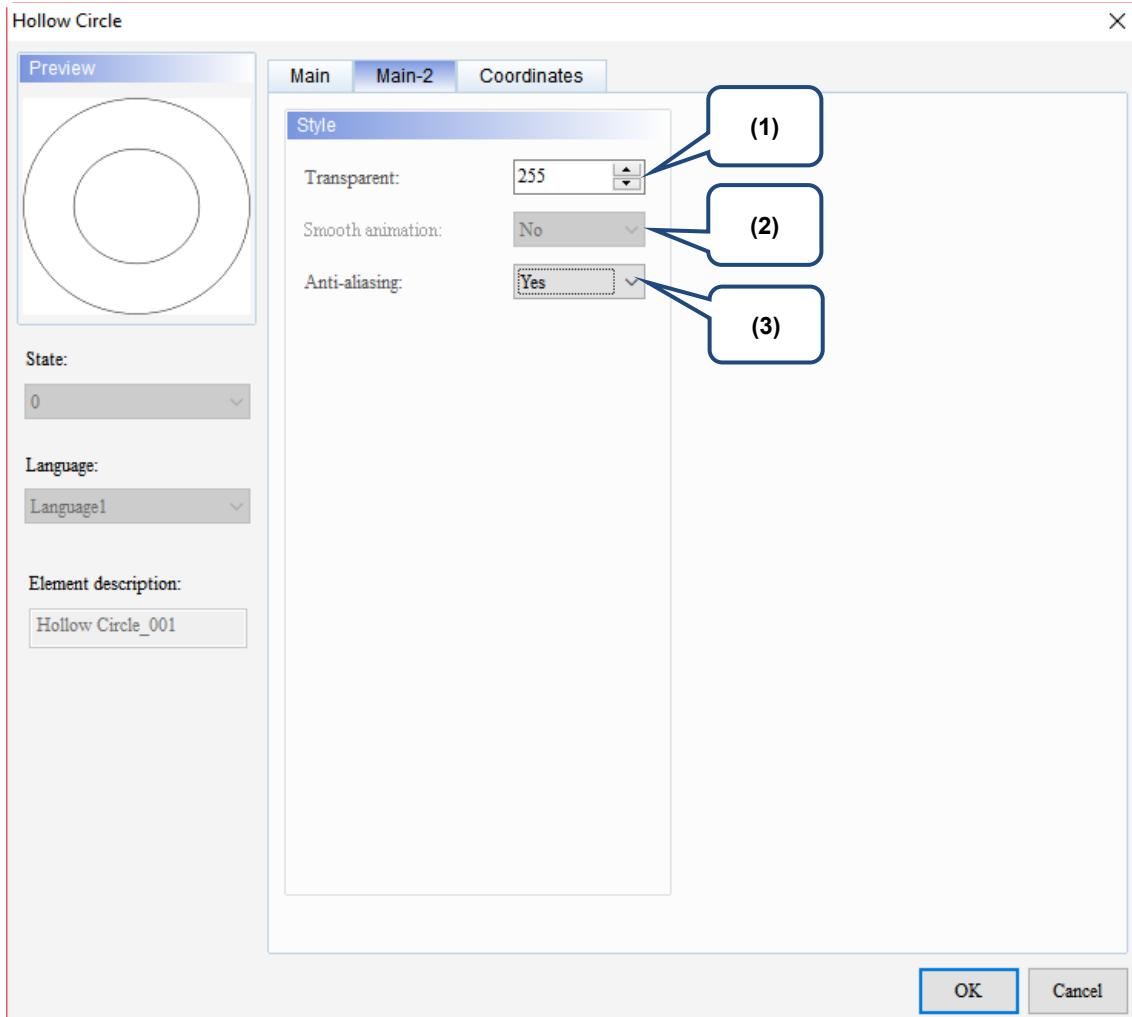


Figure 21.9.3 Main-2 property page for the Hollow Circle element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

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## ■ Coordinates

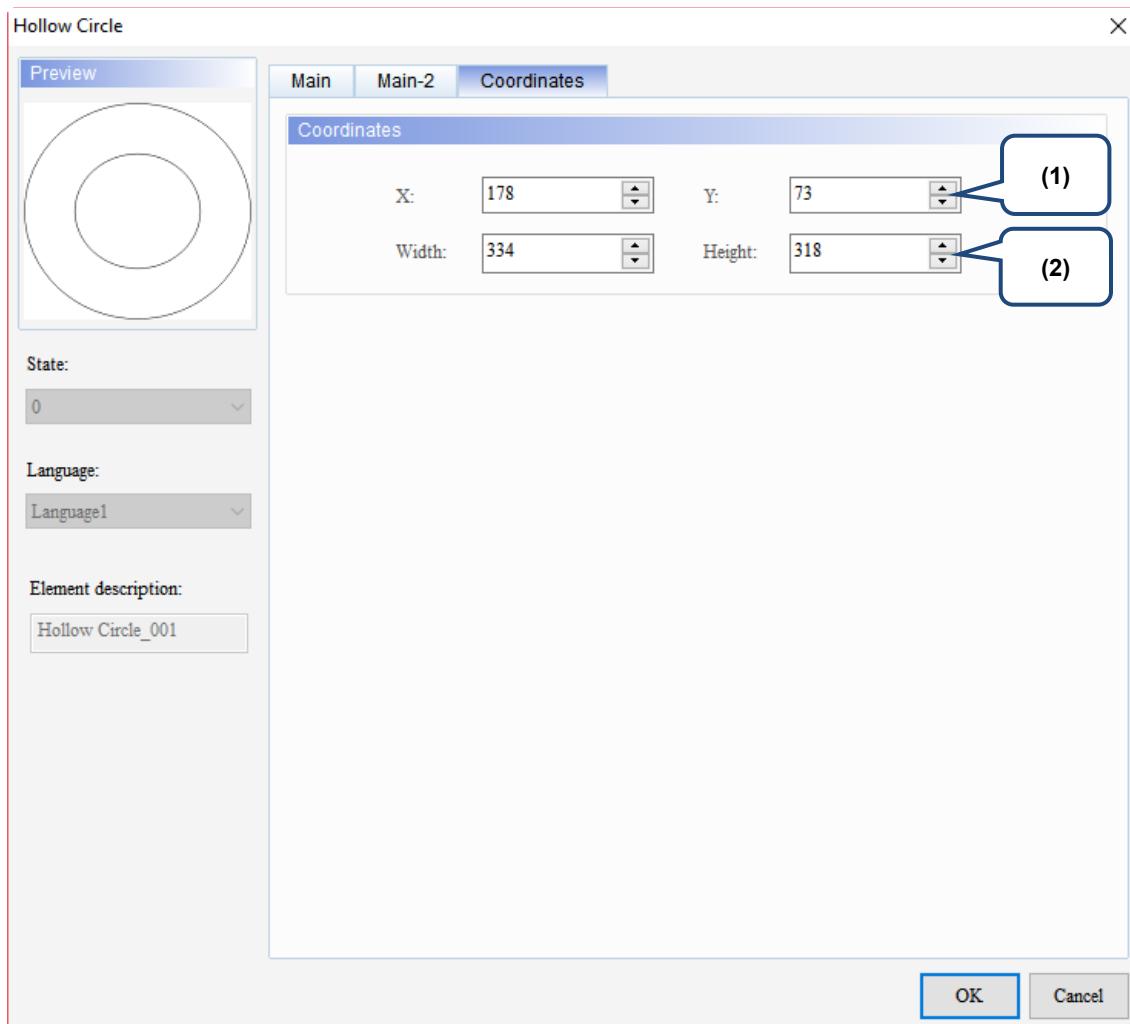


Figure 21.9.4 Coordinates property page for the Hollow Circle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 21.10 Stop Circle

When you double-click the Stop Circle element, the property page is shown as follows.

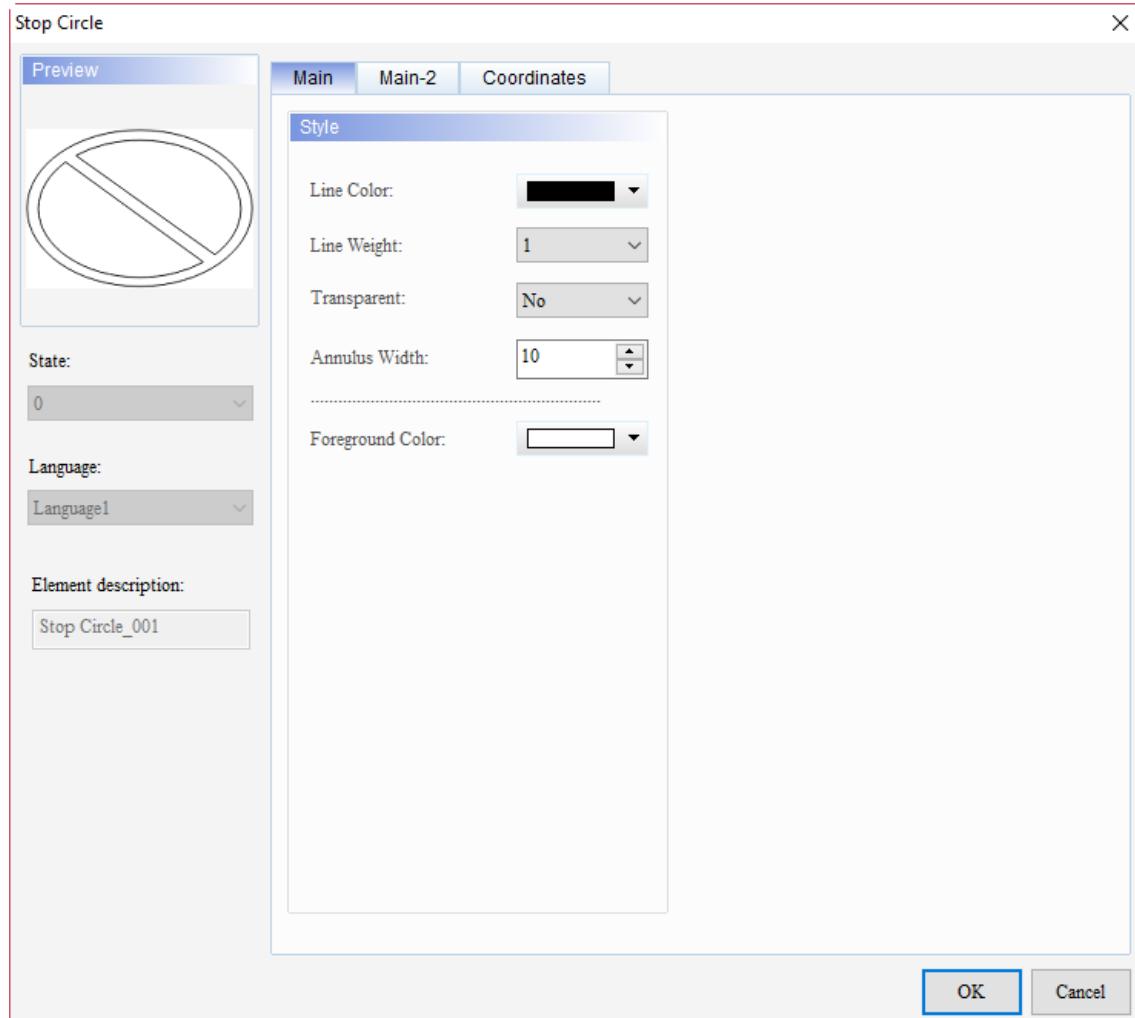


Figure 21.10.1 Properties of Stop Circle

Table 21.10.1 Function page of Stop Circle

Stop Circle	
Function page	Description
Main	Set the Line Color, Line Weight, Transparent, Annulus Width, and Foreground Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

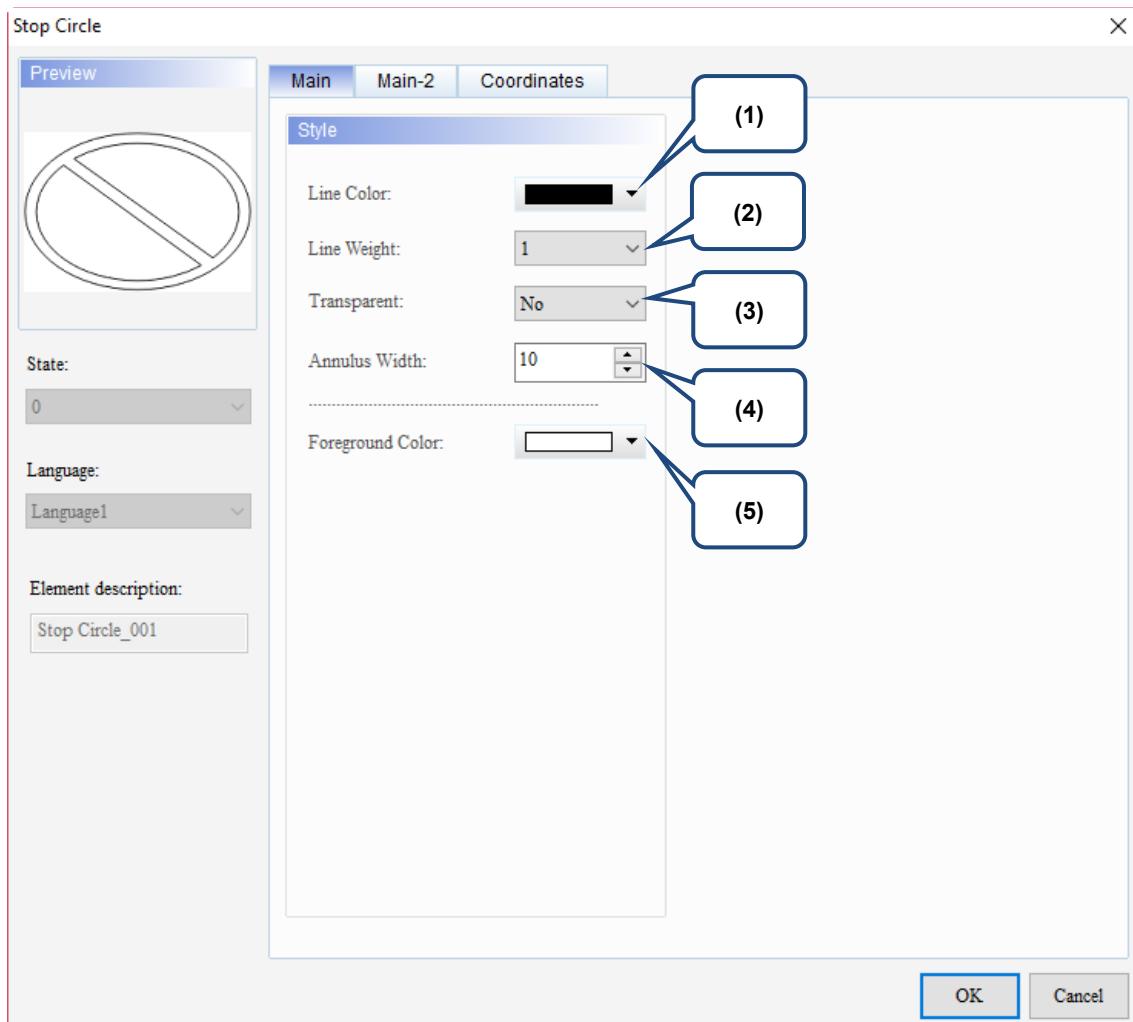
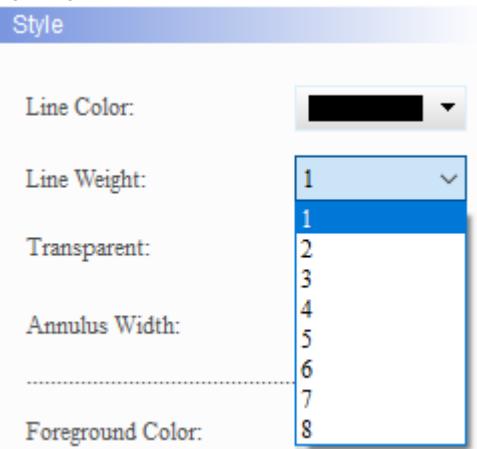
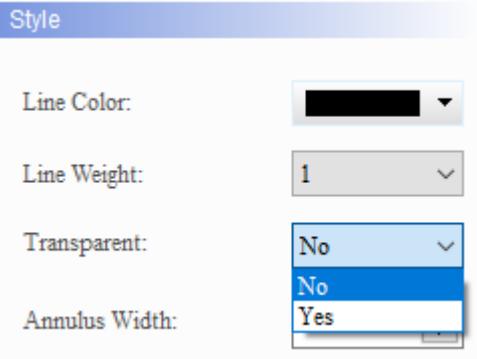
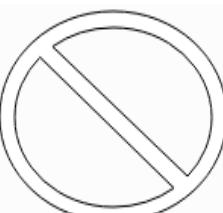
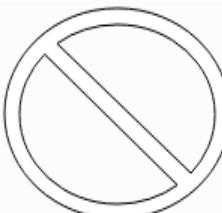
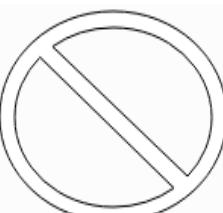
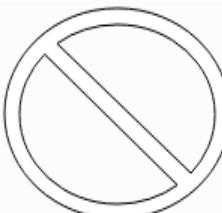
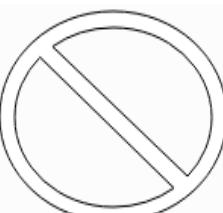
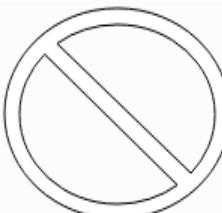
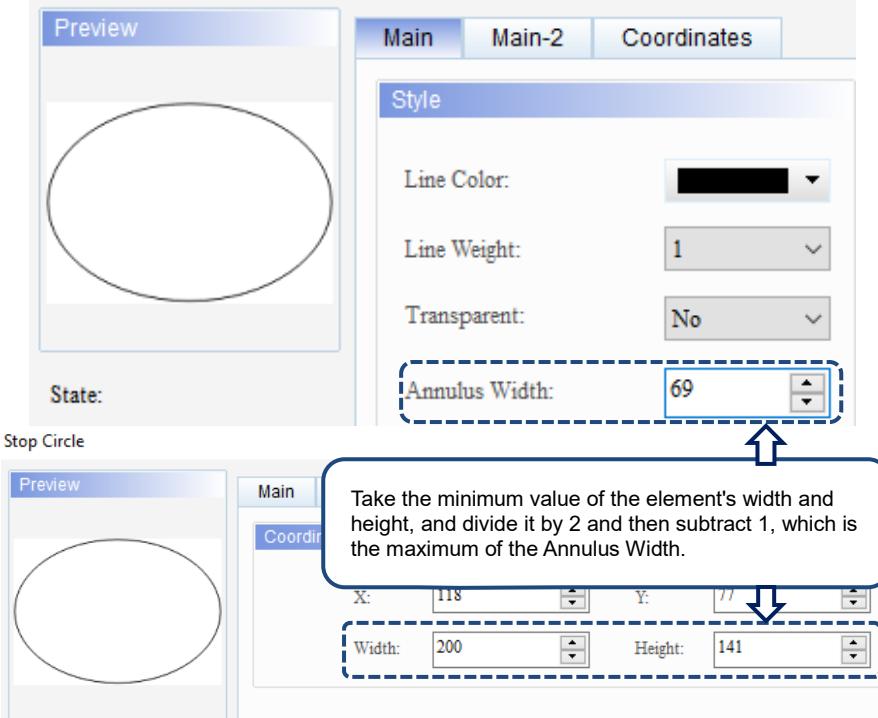
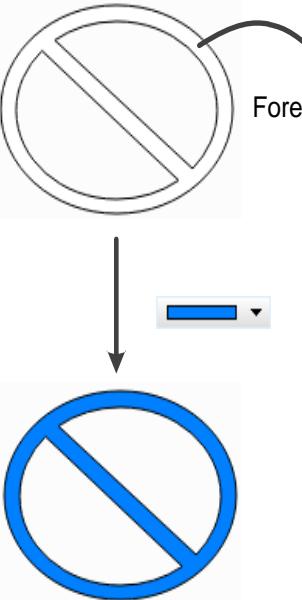


Figure 21.10.2 Main property page for the Stop Circle element

No.	Property	Function description
(1)	Line Color	You can set the line color for the element. <p>The color selection dialog includes a grid of basic colors, a larger color picker, and input fields for Hue(E), Sat(S), Lum(L) and Red(R), Green(G), Blue(B) values. There are also buttons for 'Add Custom Colors(A)' and 'OK/Cancel'.</p>

No.	Property	Function description								
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 								
(3)	Transparent	<ul style="list-style-type: none"> <li>You can select Yes or No for this function.</li> </ul>  <ul style="list-style-type: none"> <li>If you select Yes, the foreground color of the Stop Circle element is transparent and only the border color is displayed; if you select No, the foreground color of the element is displayed.</li> </ul> <table border="1"> <tr> <td>Transparent is Yes</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Transparent is No</td> <td></td> <td></td> <td></td> </tr> </table>	Transparent is Yes				Transparent is No			
Transparent is Yes										
Transparent is No										

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No.	Property	Function description
(4)	Annulus Width	<p>The maximum of the Annulus Width is determined by taking the minimum value of the element's width and height, and dividing it by 2 and then subtracting 1. The reason for subtracting 1 is that the Annulus Width minimum value of the Stop Circle is 1, not 0.</p> <p><b>Stop Circle</b></p>  <p>Stop Circle</p> <p>Style</p> <p>Line Color: <input type="color"/></p> <p>Line Weight: 1</p> <p>Transparent: No</p> <p>Annulus Width: 69</p> <p>State:</p> <p>Main Main-2 Coordinates</p> <p>Preview</p> <p>Stop Circle</p> <p>Main</p> <p>Coordinates</p> <p>Style</p> <p>Line Color: <input type="color"/></p> <p>Line Weight: 1</p> <p>Transparent: No</p> <p>Annulus Width: 69</p> <p>State:</p> <p>Take the minimum value of the element's width and height, and divide it by 2 and then subtract 1, which is the maximum of the Annulus Width.</p> <p>X: 118 Y: 111</p> <p>Width: 200 Height: 141</p>
(5)	Foreground Color	<p>Set the foreground color of the element.</p> 

## ■ Main-2

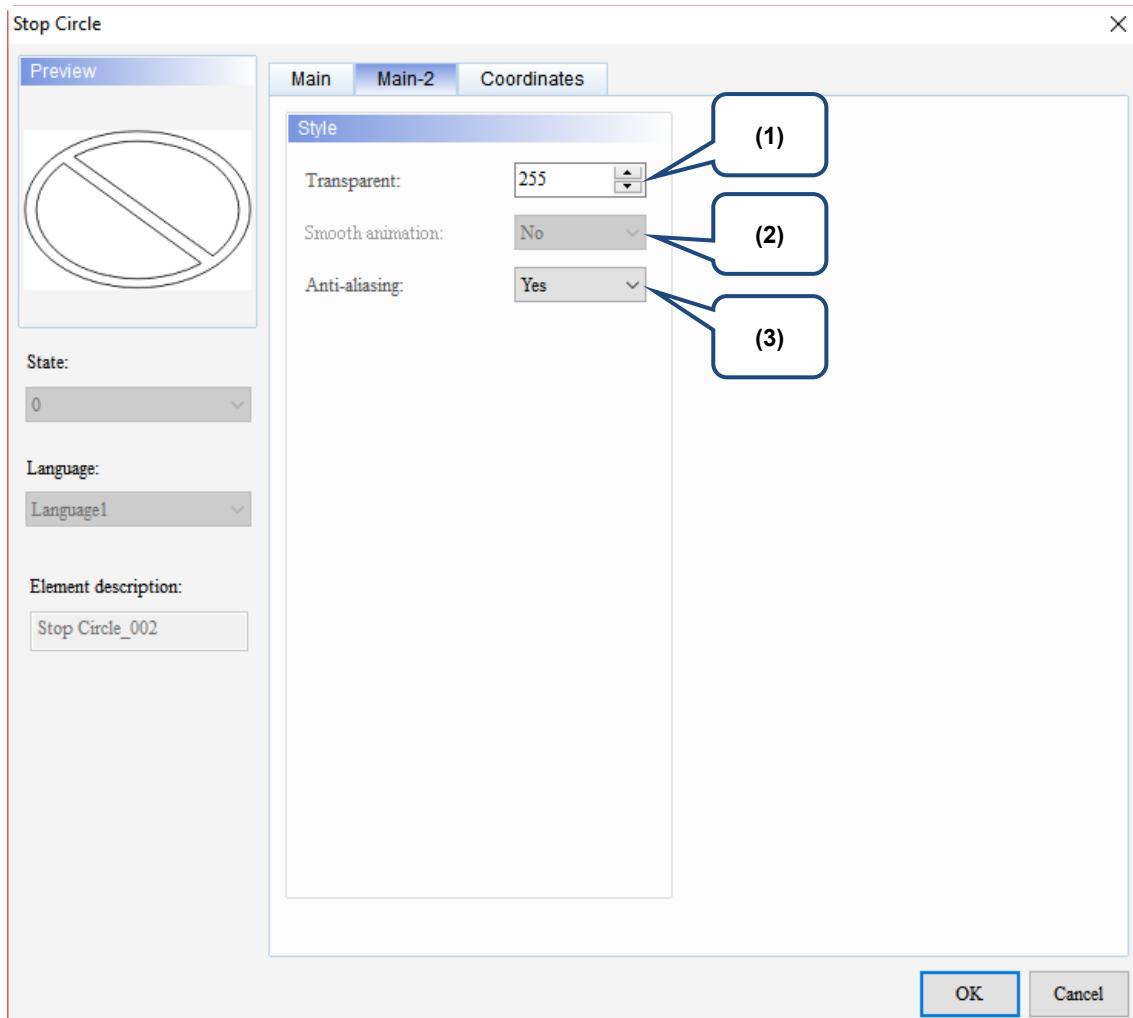


Figure 21.10.3 Main-2 property page for the Stop Circle element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

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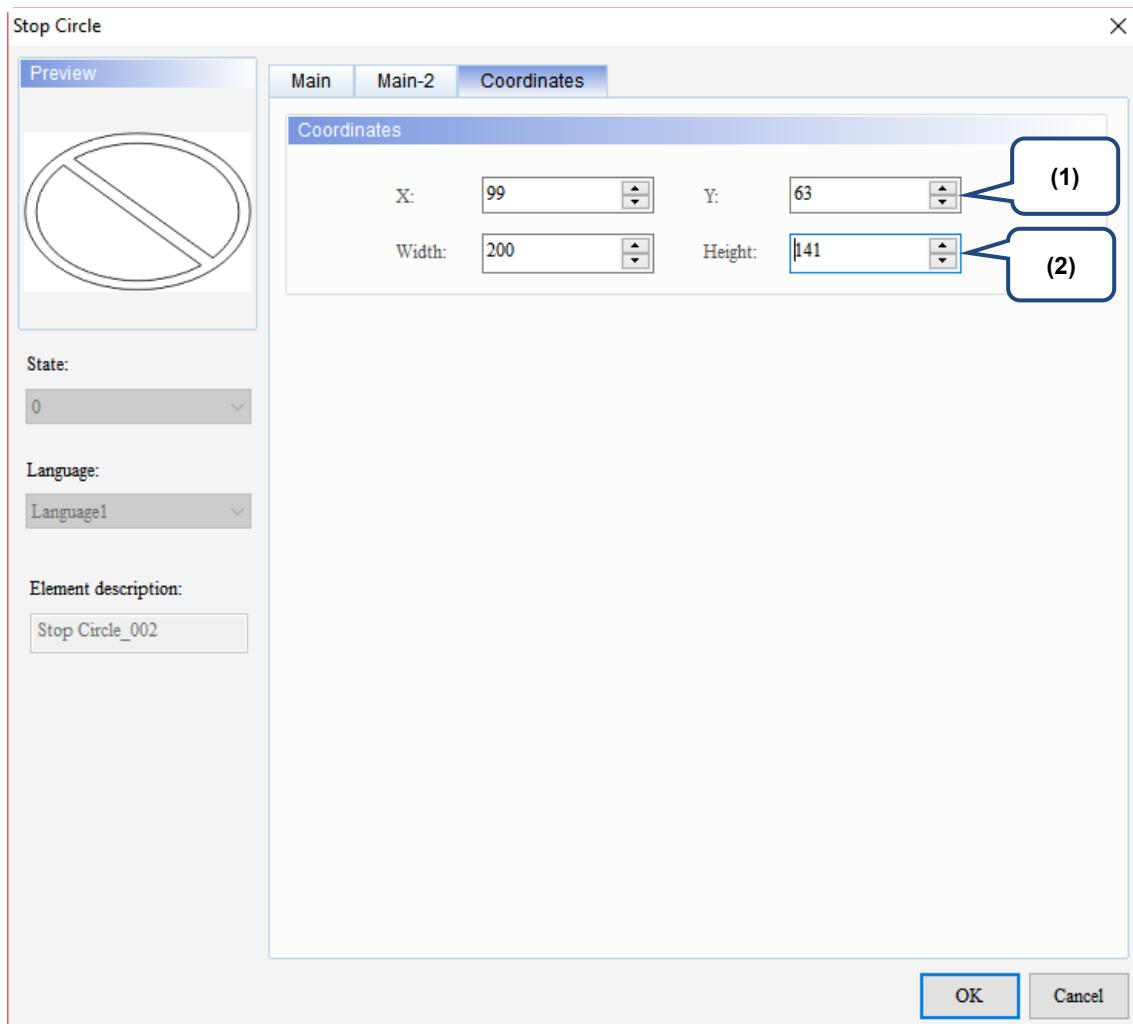
**■ Coordinates**

Figure 21.10.4 Coordinates property page for the Stop Circle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 21.11 1/4 Arc

When you double-click the 1/4 Arc element, the property page is shown as follows.

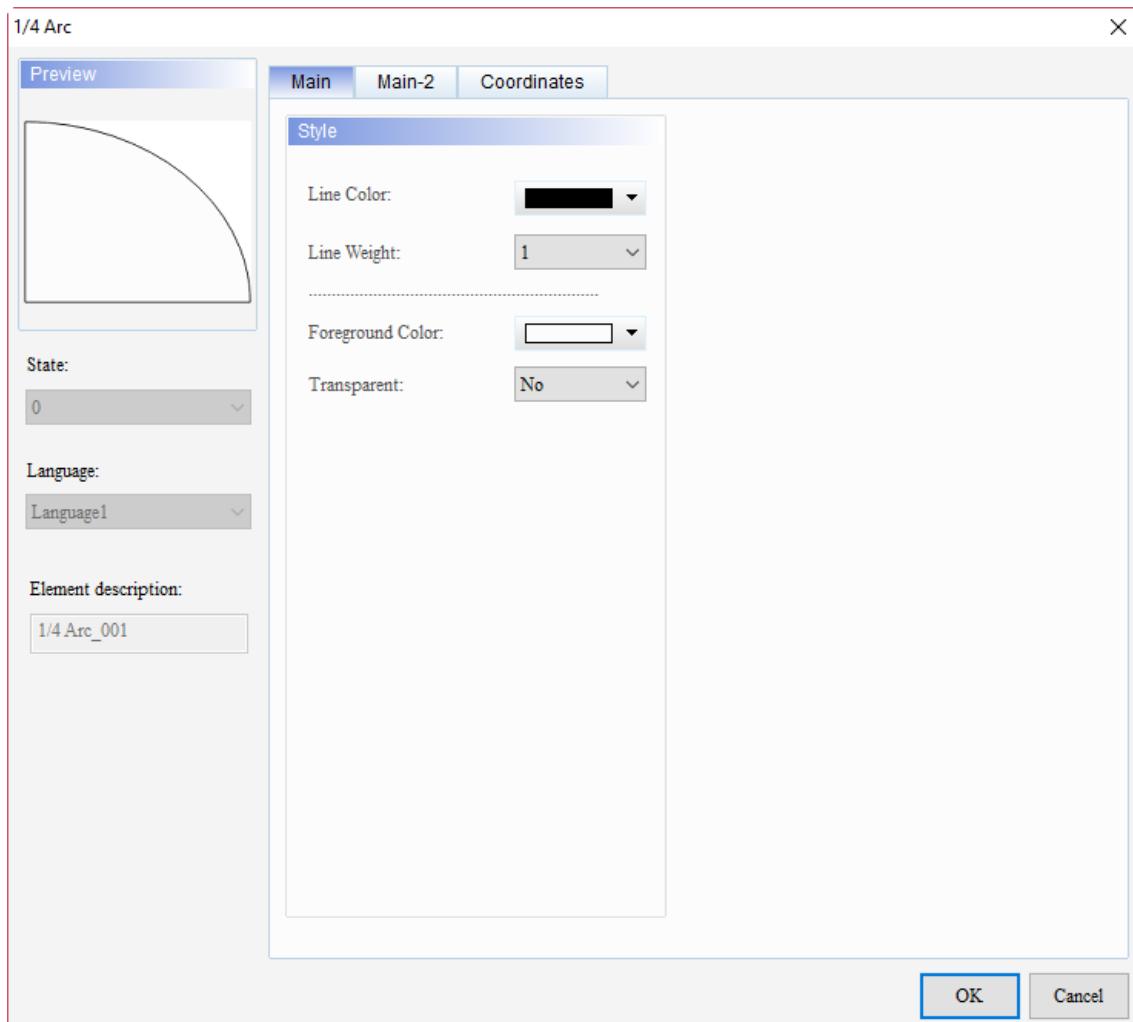


Figure 21.11.1 Properties of 1/4 Arc

Table 21.11.1 Function page of 1/4 Arc

1/4 Arc	
Function page	Description
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

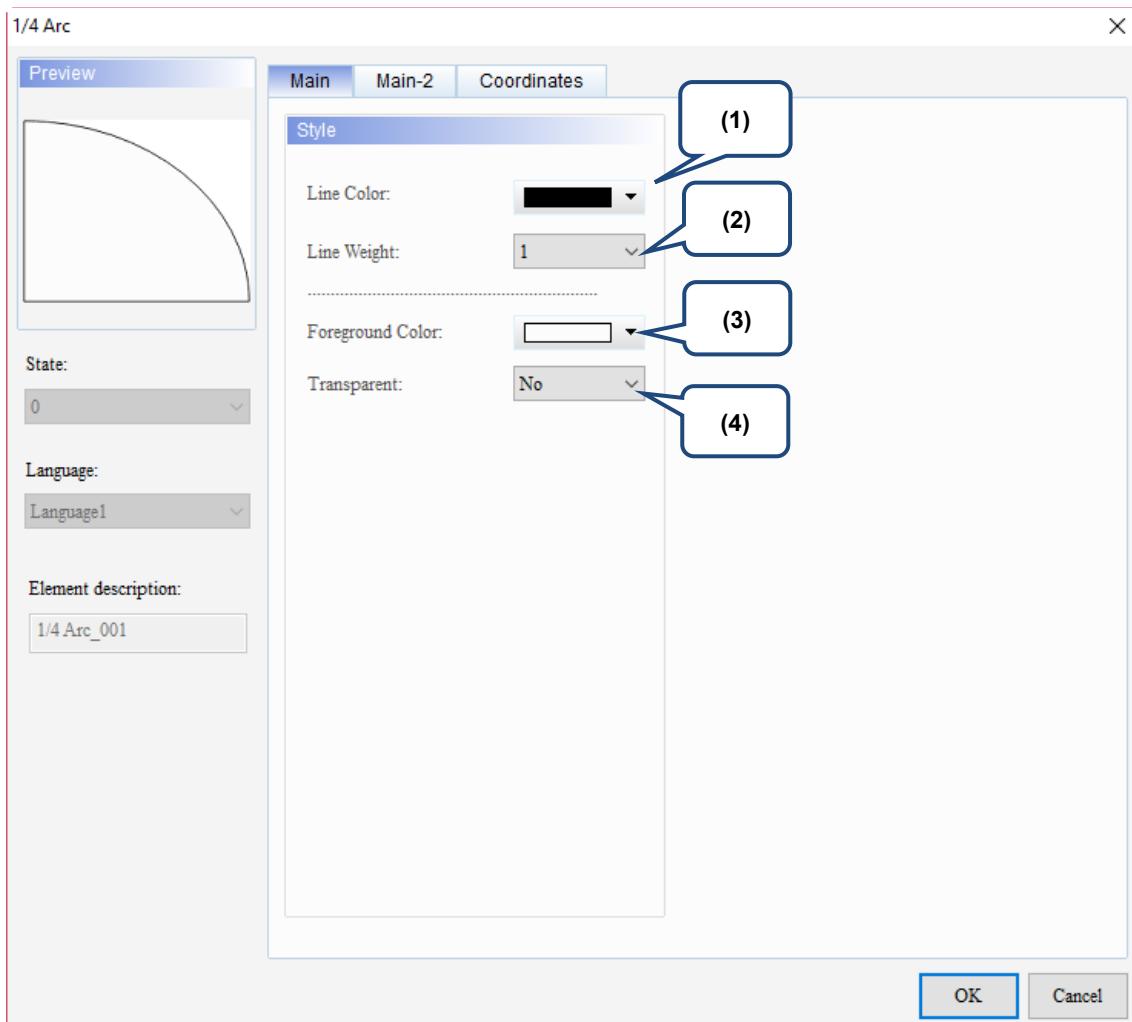
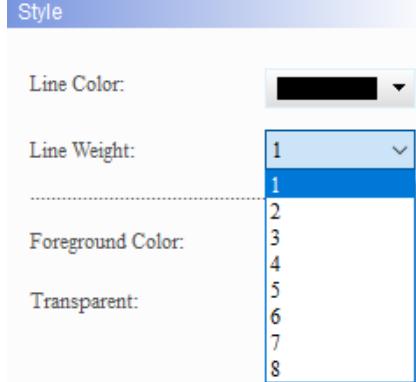
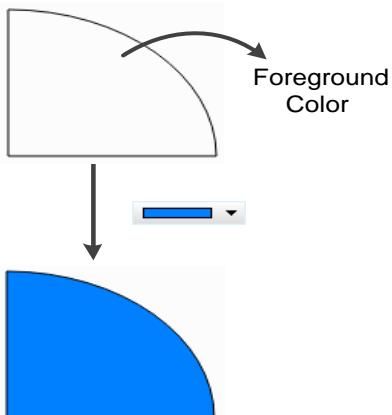
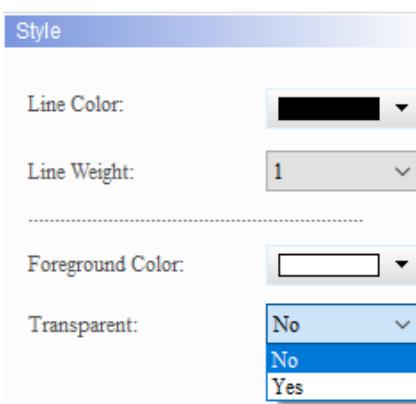
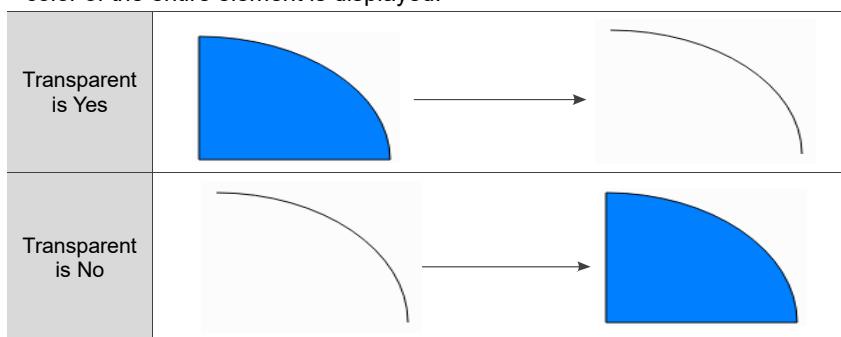


Figure 21.11.2 Main property page for the 1/4 Arc element

No.	Property	Function description
(1)	Line Color	<p>You can set the line color for the element.</p> <p>Color selection dialog details:</p> <ul style="list-style-type: none"> <li>Basic colors(B): A grid of 24 standard colors.</li> <li>Custom colors(C): A grid of 16 empty color boxes.</li> <li>HMI Colors(H): A grid of 16 color boxes.</li> <li>Inputs: Hue(E): 140, Sat(S): 240, Color Solid(O): 891, Lum(L): 102; Red(R): 0, Green(G): 108, Blue(U): 217.</li> <li>Buttons: OK, Cancel.</li> </ul>

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 
(4)	Transparent	<ul style="list-style-type: none"> <li>You can select Yes or No for this function.</li> </ul>  <ul style="list-style-type: none"> <li>If you select Yes, the foreground color of the 1/4 Arc element is transparent and only the border color of the arc part is displayed; if you select No, the foreground color of the entire element is displayed.</li> </ul> 

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## ■ Main-2

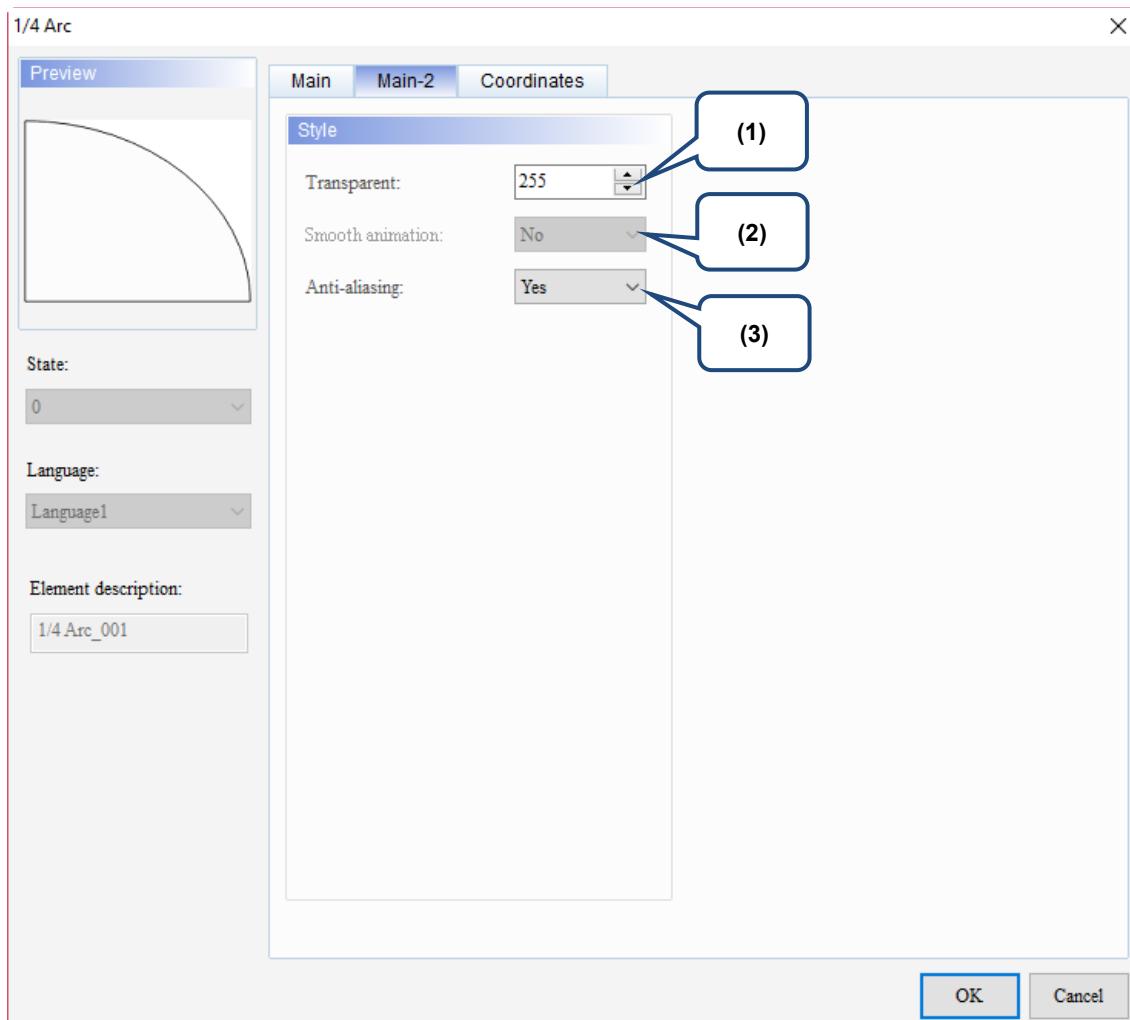


Figure 21.11.3 Main-2 property page for the 1/4 Arc element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td style="text-align: center;">Yes</td> <td></td> </tr> <tr> <td style="text-align: center;">No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

## ■ Coordinates

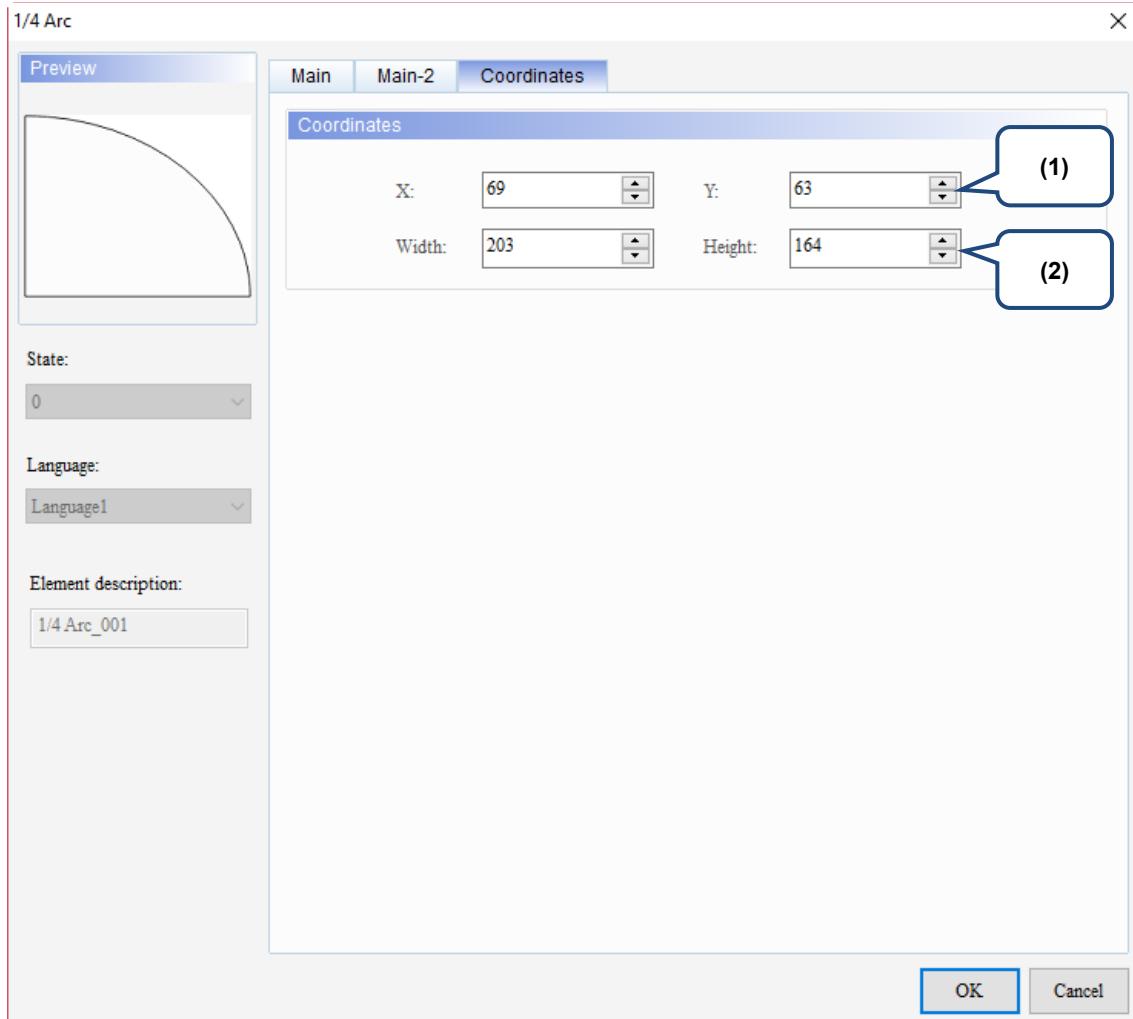


Figure 21.11.4 Coordinates property page for the 1/4 Arc element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

(This page is intentionally left blank.)

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# Drawing

# 22

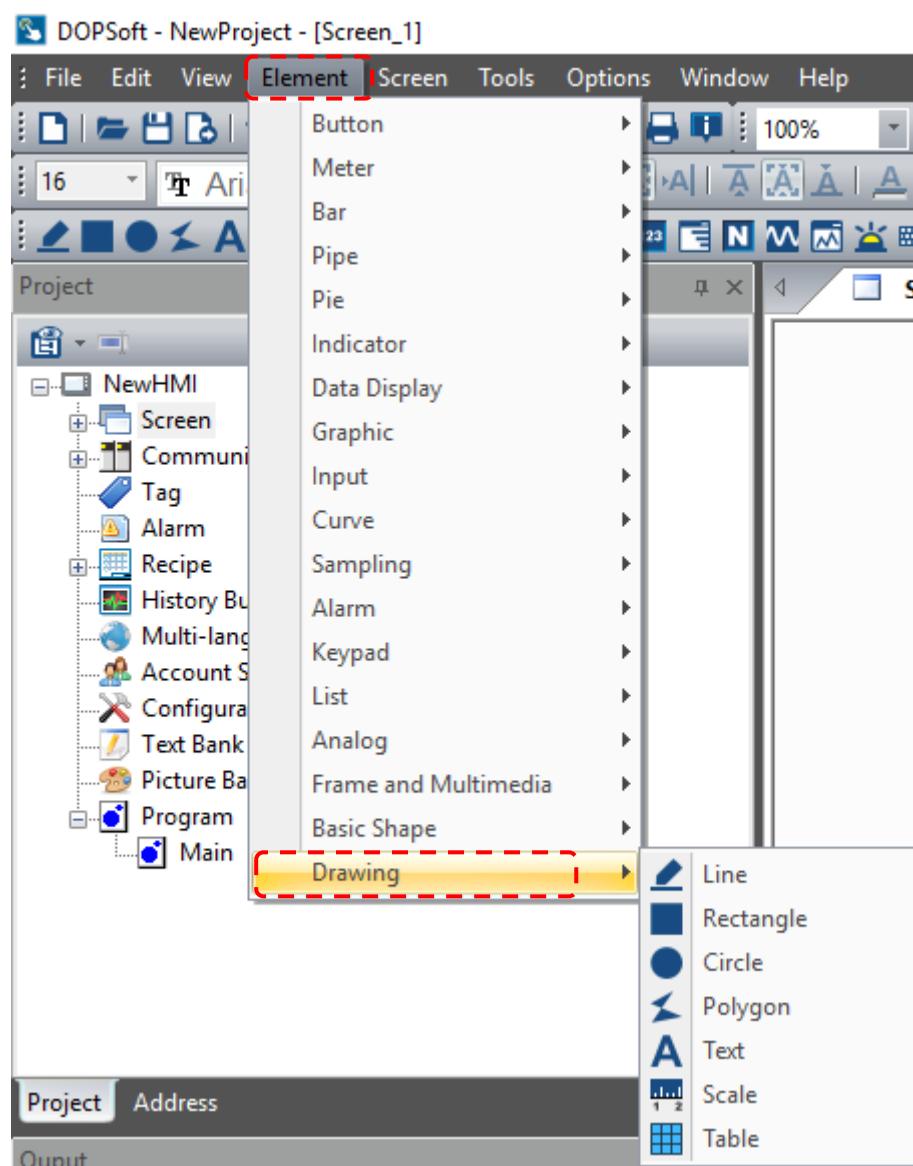
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This chapter provides the usage and setting details for the Drawing elements.

22.1	Line .....	22-3
22.2	Rectangle.....	22-10
22.3	Circle .....	22-24
22.4	Polygon .....	22-33
22.5	Text.....	22-39
22.6	Scale.....	22-49
22.7	Table .....	22-57

To create a Drawing element, go to [Element] > [Drawing] and click on the desired element, or click on the toolbar on the far left side of the window screen and select the Drawing element.

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## 22.1 Line

When using the Line element, press and hold the mouse button to decide on the starting point of the line. Drag the mouse to the desired length and release the mouse button to create a straight line. When you click on this line, a rectangle shaped range appears to help you easily adjust the size of this line. You can also change the width and color of this line.

In addition, you can use the set Read Address to control the moving position, color, blinking, and other functions of the line.

When you double-click the Line, the property page is shown as follows.

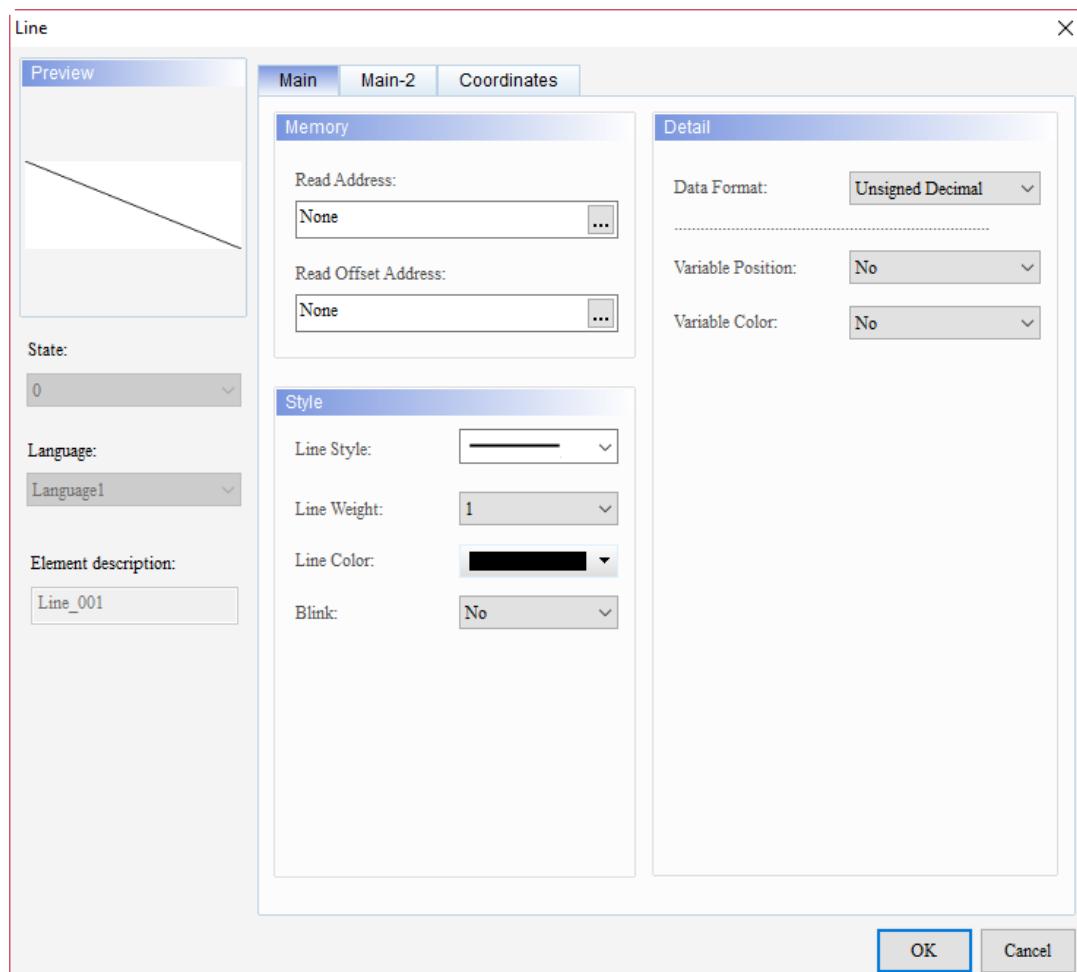


Figure 22.1.1 Properties of Line

Table 22.1.1 Function page of the Line element

Line	
Function page	Description
Preview	The Line element does not support multiple state values and multi-language display.
Main	Set the Read Address, Read Offset Address, Line Style, Line Weight, Line Color, and Blink. Set the Data Format, Variable Position, and Variable Color.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width and height of the elements.

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## ■ Main

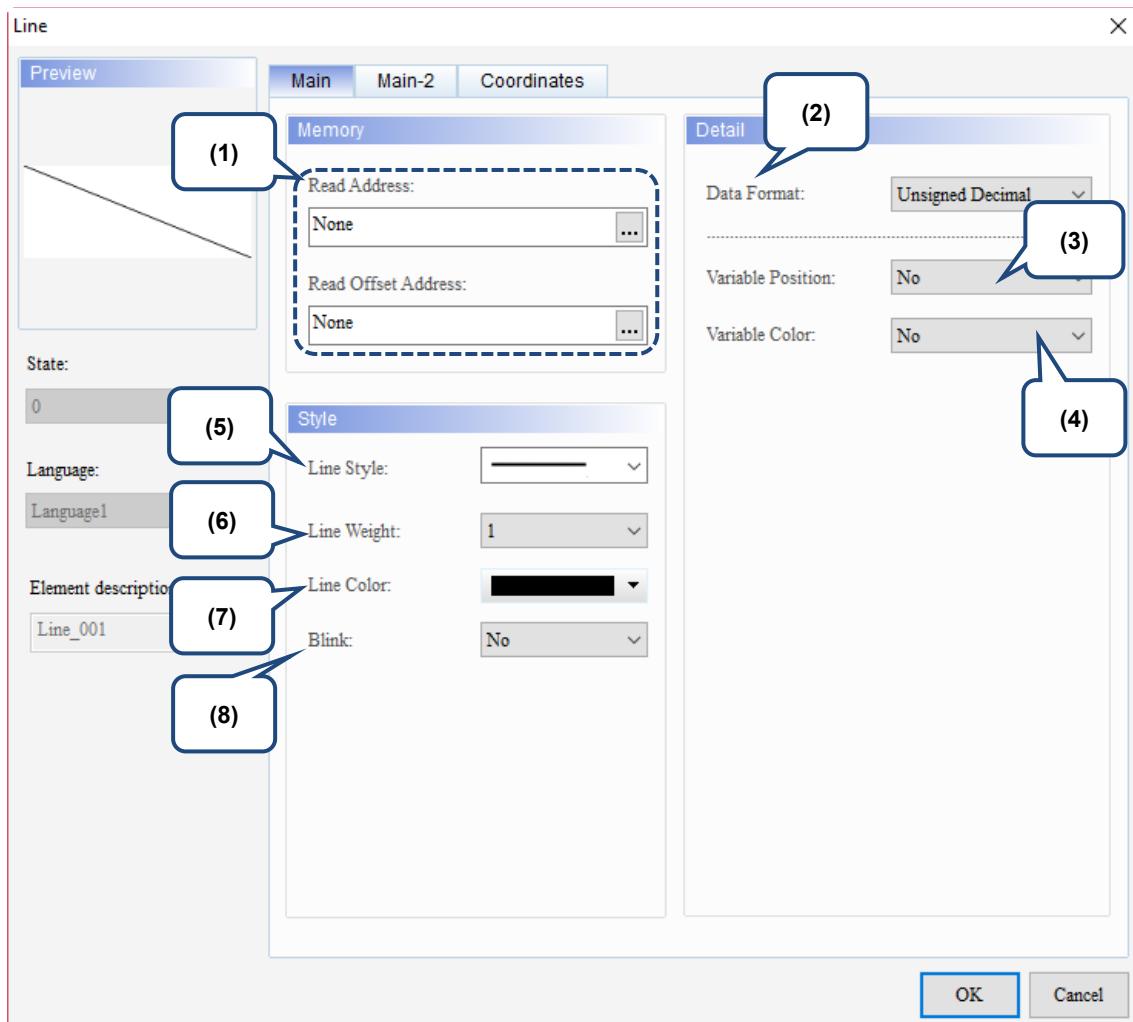
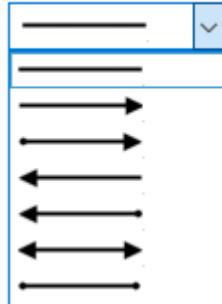
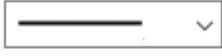
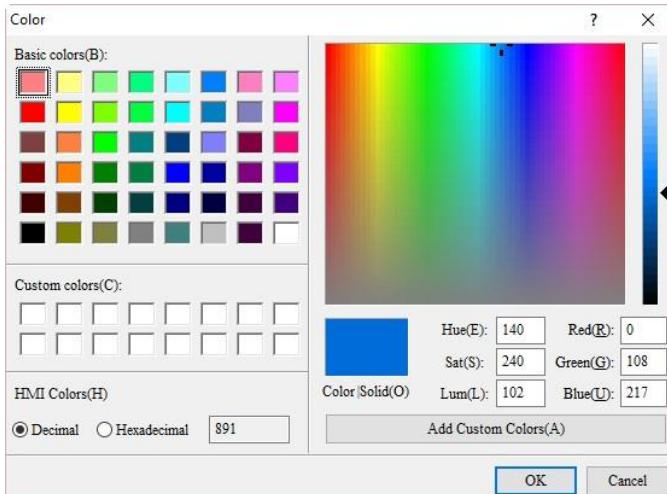
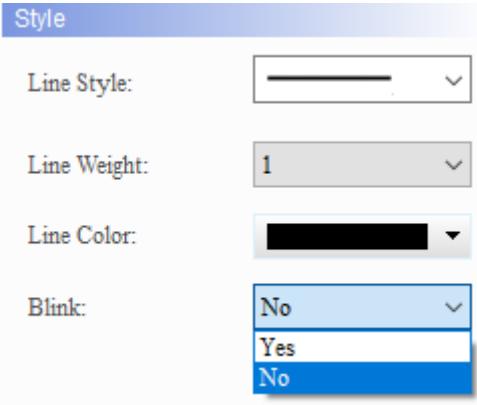


Figure 22.1.2 Main property page for the Line element

No.	Property	Function description										
(1)	Read Address	<ul style="list-style-type: none"> <li>■ Available options are internal memory and controller register address.</li> <li>■ When Variable Position is set to Yes, the value of the Read Address is regarded as the X coordinate for the starting point of the dynamic Line.</li> <li>■ When Variable Position is set to Yes, the value of [Read Address+1] is regarded as the Y coordinate for the starting point of the dynamic Line.</li> <li>■ When Variable Position is set to Yes, the value of [Read Address+2] is regarded as the X coordinate for the ending point of the dynamic Line.</li> <li>■ When Variable Position is set to Yes, the value of [Read Address+3] is regarded as the Y coordinate for the ending point of the dynamic Line.</li> <li>■ When Variable Color is set to Yes, the value of [Read Address+4] is regarded as the color for the dynamic Line. Its value ranges from 0 to 65535.</li> <li>■ When Blink is set to Yes, the value of [Read Address+5] determines whether the dynamic Line blinks or not. When its value is greater than 1, the dynamic Line element is displayed as blinking; when the value is 0, it does not blink.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <span><input type="checkbox"/> Variable Position</span> <span><input type="checkbox"/> Variable Color</span> <span><input type="checkbox"/> Blink</span> </div> <div style="margin-top: 20px;"> <pre> graph TD     N[N] --&gt; X_start["X coordinate for the starting point of the line"]     N_plus_1[N+1] --&gt; Y_start["Y coordinate for the starting point of the line"]     N_plus_2[N+2] --&gt; X_end["X coordinate for the ending point of the line"]     N_plus_3[N+3] --&gt; Y_end["Y coordinate for the ending point of the line"]     N_plus_4[N+4] --&gt; Line_color["Line color"]     N_plus_5[N+5] --&gt; Line_blinks["Line blinks or not"]   </pre> </div> <p>■ Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</p>										
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.										
(2)	Data Format	<p>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p> <p><b>Detail</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Data Format:</td> <td style="padding: 2px;"><input style="background-color: #e0f2e0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Unsigned Decimal"/></td> </tr> <tr> <td style="padding: 2px;">Variable Position:</td> <td style="padding: 2px;"><input style="background-color: #d0e0d0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="BCD"/></td> </tr> <tr> <td style="padding: 2px;">Variable Color:</td> <td style="padding: 2px;"><input style="background-color: #d0e0d0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Signed Decimal"/></td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"><input style="background-color: #e0f2e0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Unsigned Decimal"/></td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;"><input style="background-color: #d0e0d0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Hexadecimal"/></td> </tr> </table>	Data Format:	<input style="background-color: #e0f2e0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Unsigned Decimal"/>	Variable Position:	<input style="background-color: #d0e0d0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="BCD"/>	Variable Color:	<input style="background-color: #d0e0d0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Signed Decimal"/>		<input style="background-color: #e0f2e0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Unsigned Decimal"/>		<input style="background-color: #d0e0d0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Hexadecimal"/>
Data Format:	<input style="background-color: #e0f2e0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Unsigned Decimal"/>											
Variable Position:	<input style="background-color: #d0e0d0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="BCD"/>											
Variable Color:	<input style="background-color: #d0e0d0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Signed Decimal"/>											
	<input style="background-color: #e0f2e0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Unsigned Decimal"/>											
	<input style="background-color: #d0e0d0; border: 1px solid #80c080; width: 150px; height: 20px; font-size: 10px; font-weight: bold; text-align: center; color: black; outline: none; border-radius: 5px; font-family: sans-serif;" type="button" value="Hexadecimal"/>											

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No.	Property	Function description
(3)	Variable Position	<p>You can select Yes or No for Variable Position. When you select Yes, the position of the dynamic Line can be changed; when you select No, the dynamic Line element cannot be moved.</p> <p><b>Detail</b></p> <p>Data Format: Unsigned Decimal</p> <p>Variable Position: No</p> <p>Variable Color: No</p>
(4)	Variable Color	<p>You can select Yes or No for Variable Color. When you select Yes, the color of the dynamic Line can be changed; when you select No, the color of the dynamic Line cannot be changed. Its value ranges from 0 to 65535.</p> <p><b>Detail</b></p> <p>Data Format: Unsigned Decimal</p> <p>Variable Position: No</p> <p>Variable Color: No</p>
(5)	Line Style	<p>The following seven types of line styles are available for selection.</p> <p><b>Style</b></p> <p>Line Style:</p>  <p>Line Weight:</p> <p>Line Color:</p> <p>Blink:</p>
(6)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> <p><b>Style</b></p> <p>Line Style:</p>  <p>Line Weight: 1</p> <p>Line Color:</p> <p>Blink:</p>

No.	Property	Function description
(7)	Line Color	<p>You can set the line color for the element.</p> 
(8)	Blink	<p>You can select Yes or No for Blink. When you select Yes, the dynamic Line can be displayed as blinking. When the value of the corresponding Read Address is greater than 1, the dynamic Line is displayed as blinking; when the value is 0, it does not blink. When you select No, the dynamic Line does not blink.</p> <p><b>Style</b></p> 

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## ■ Main-2

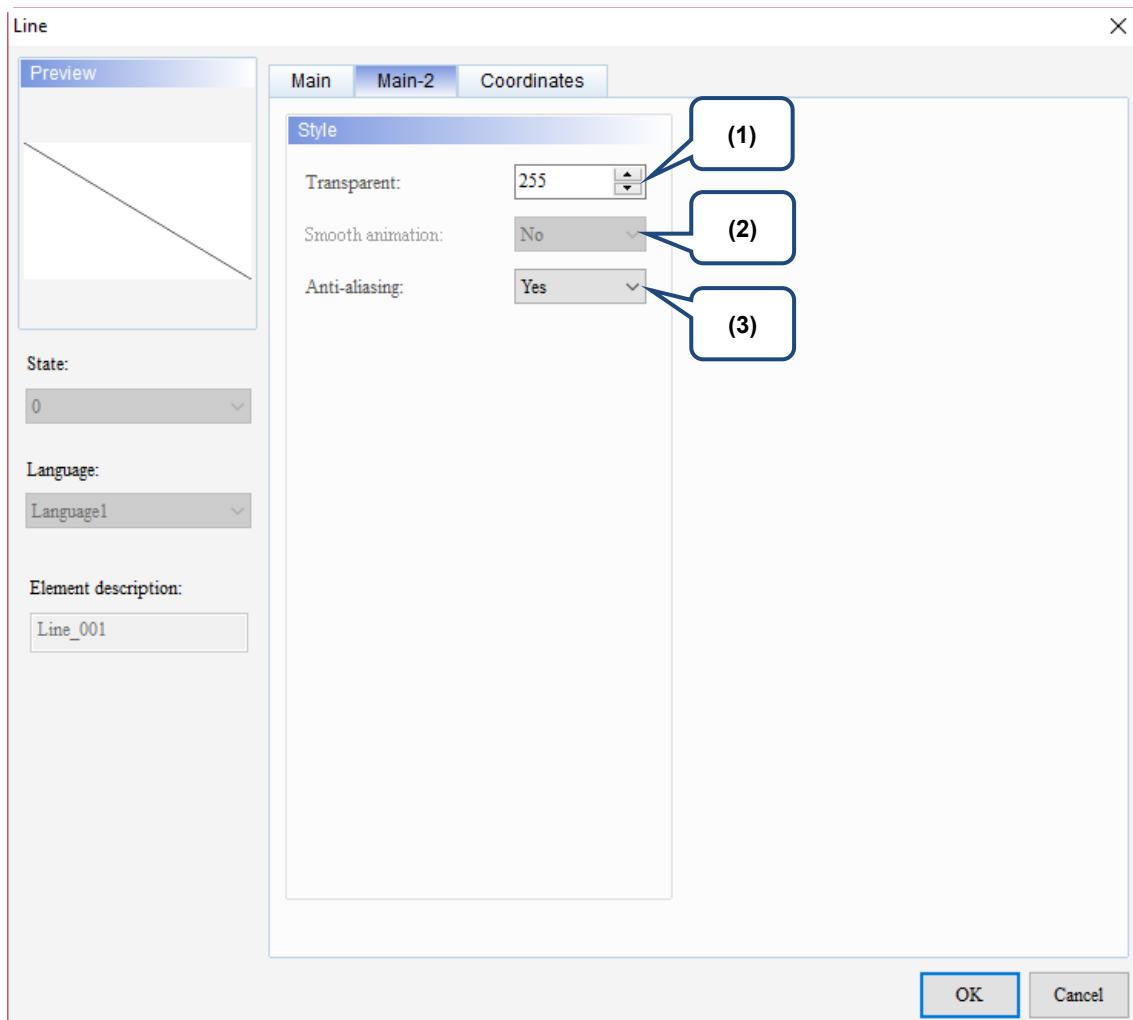
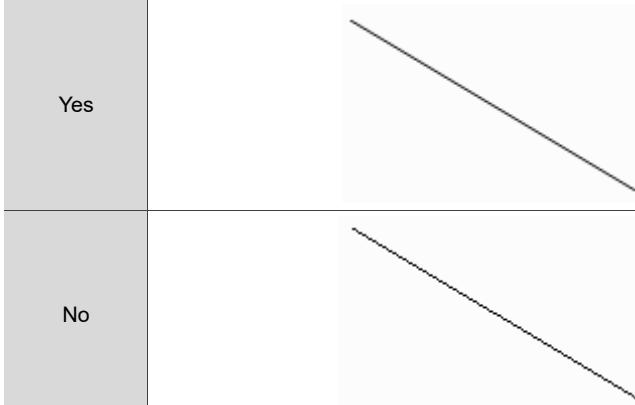


Figure 22.1.3 Main-2 property page for the Line element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> 

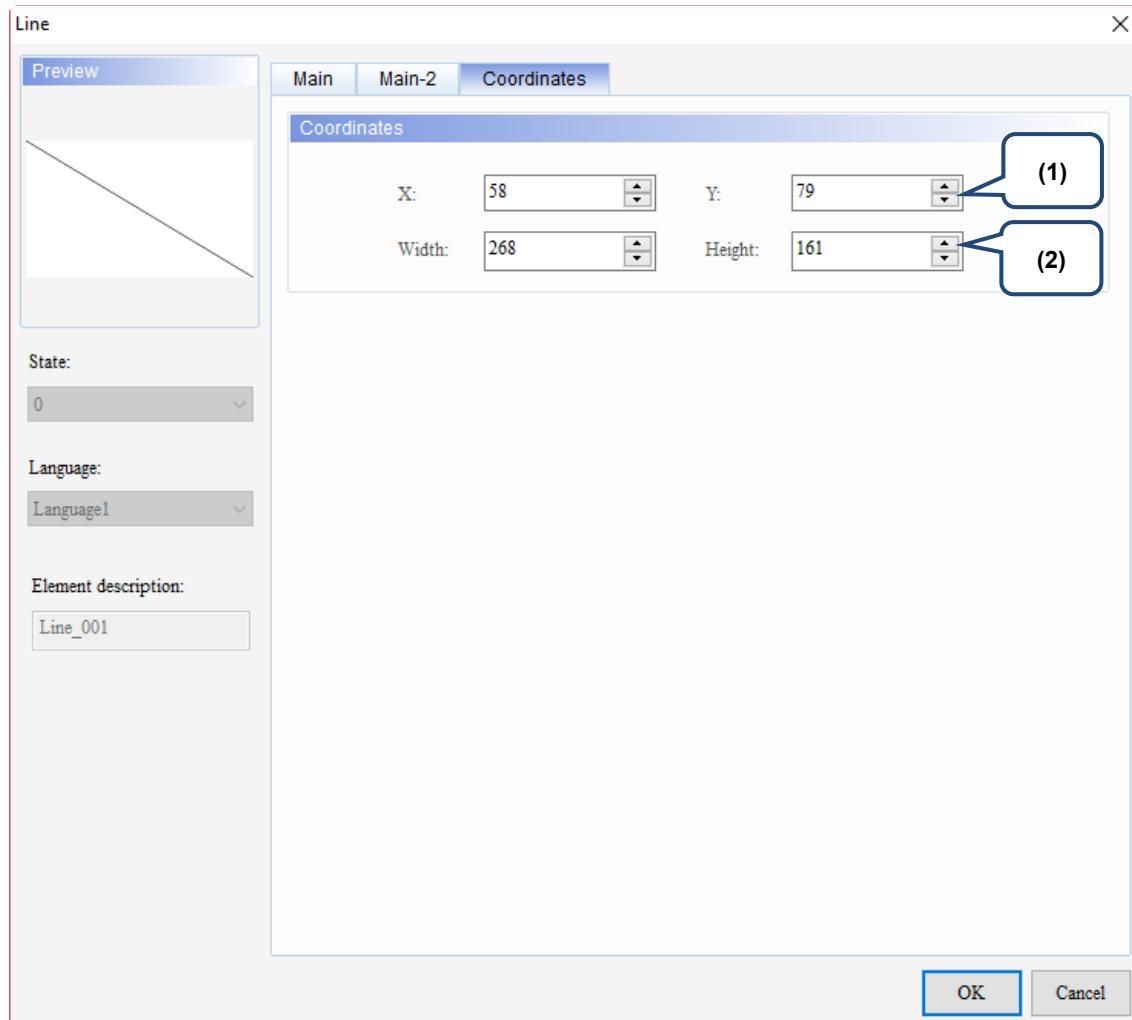
**■ Coordinates**

Figure 22.1.4 Coordinates property page for the Line element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 22.2 Rectangle

Apart from drawing rectangular graphs, the Rectangle element allows you to import graphs from the Picture Bank. The Invisible Address function is also provided by this element for covering the entire editing screen with a Rectangle element, and after you triggered this Invisible Address, the editing screen under the Rectangle element is displayed. In addition, you can use the set Read Address to control the moving position, color, size, and blinking of the rectangle.

When you double-click the Rectangle, the property page is shown as follows.

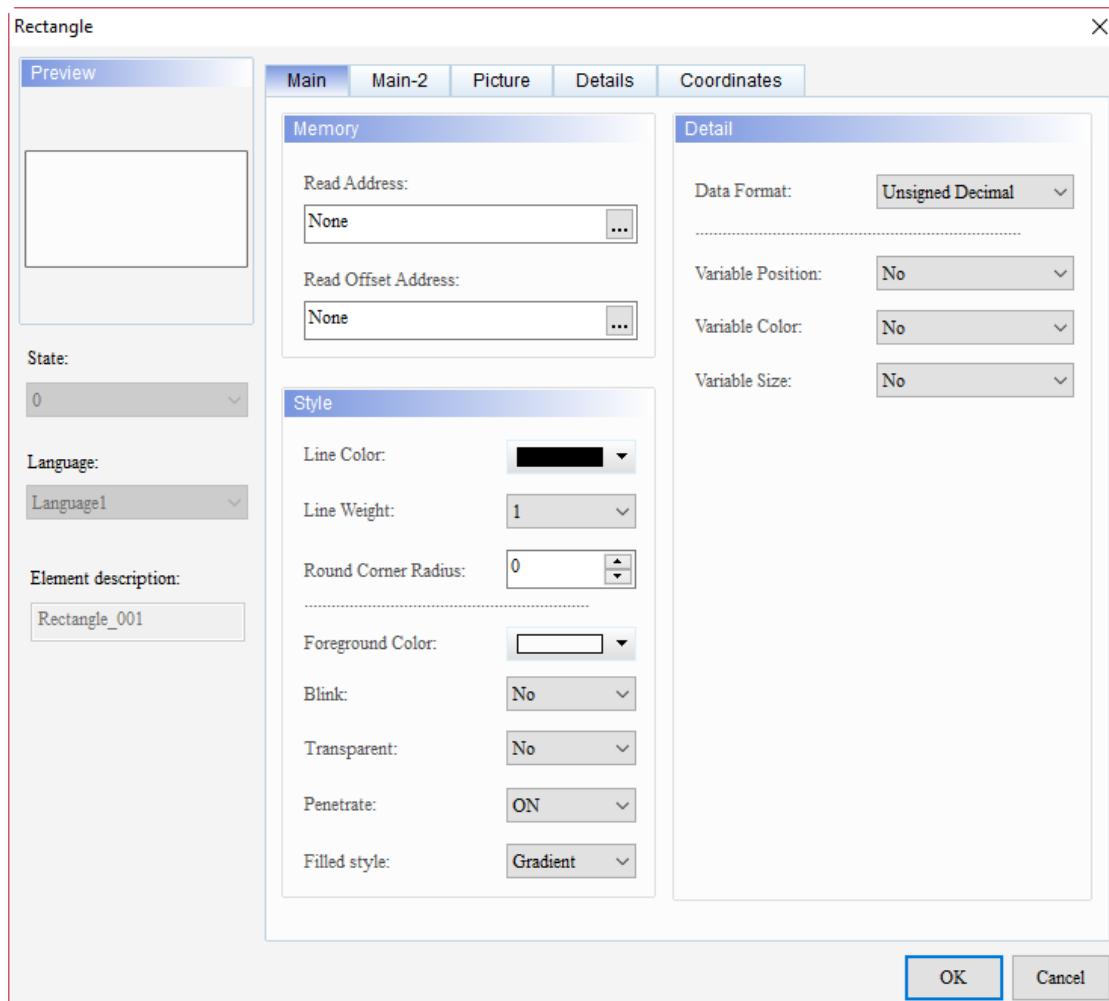
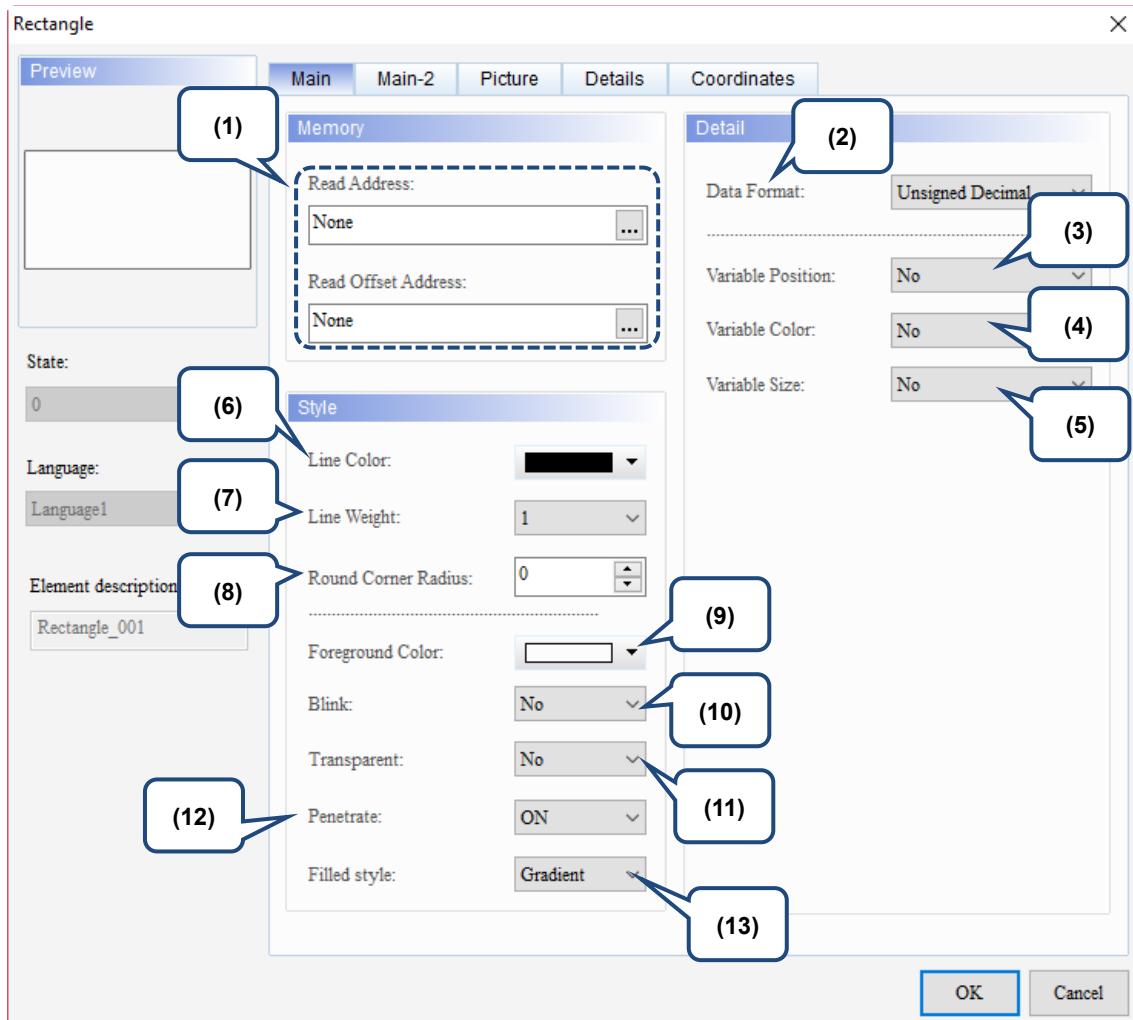


Figure 22.2.1 Properties of Rectangle

Table 22.2.1 Function page of the Rectangle element

Rectangle	
Function page	Description
Preview	The Rectangle element does not support multiple state values and multi-language display.
Main	Set the Read Address, Read Offset Address, Line Color, Line Weight, Round Corner Radius, Foreground Color, Blink, Transparent, Penetrate, and Filled style. Set the Data Format, Variable Position, Variable Color, and Variable Size.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Picture	Set the Picture Bank Name, Alignment, Stretch Mode, and Transparent Color.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

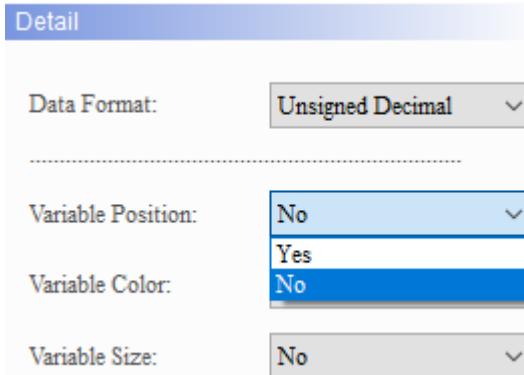
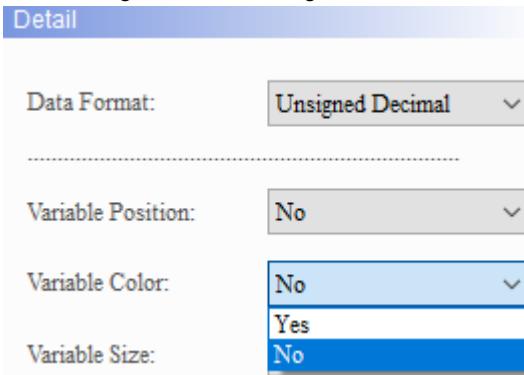
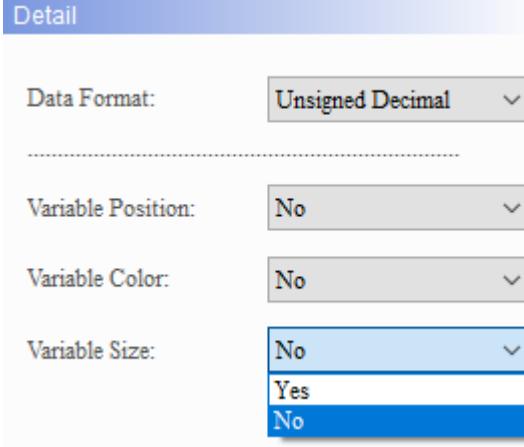


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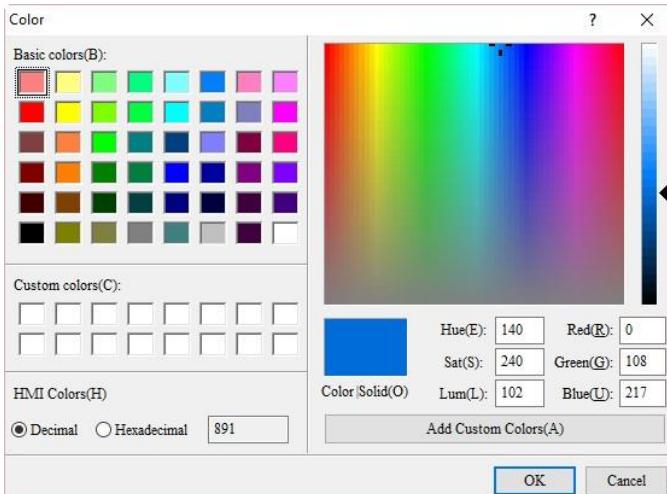
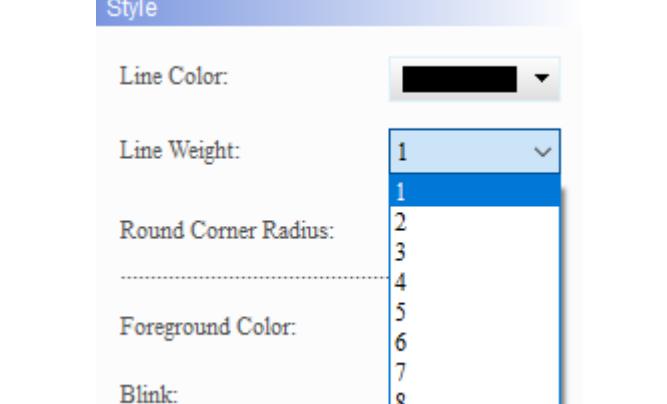
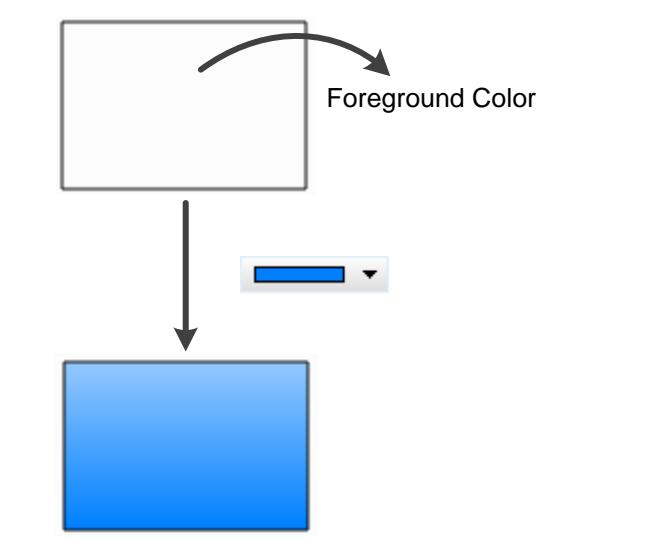
Figure 22.2.2 Main property page for the Rectangle element

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No.	Property	Function description
(1)	Read Address	<ul style="list-style-type: none"> <li>■ Available options are internal memory and controller register address.</li> <li>■ When Variable Position is set to Yes, the value of the Read Address is regarded as the X coordinate of the horizontal axis for the upper left corner of the dynamic Rectangle.</li> <li>■ When Variable Position is set to Yes, the value of [Read Address+1] is regarded as the Y coordinate of the vertical axis for the upper left corner of the dynamic Rectangle.</li> <li>■ When Variable Size is set to Yes, the value of [Read Address+2] is regarded as the width for the dynamic Rectangle.</li> <li>■ When Variable Size is set to Yes, the value of [Read Address+3] is regarded as the height for the dynamic Rectangle.</li> <li>■ When Variable Color is set to Yes, the value of [Read Address+4] is regarded as the color for the dynamic Rectangle. Its value ranges from 0 to 65535.</li> <li>■ When Blink is set to Yes, the value of [Read Address+5] determines whether the dynamic Rectangle blinks or not. When its value is greater than 1, the dynamic Rectangle element is displayed as blinking; when the value is 0, it does not blink.</li> <li>■ Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</li> <li>■ When Variable Position is set to No, the corresponding memory addresses are automatically filled in.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <input type="checkbox"/> Variable Position    <input type="checkbox"/> Variable Color  <input type="checkbox"/> Variable Size    <input type="checkbox"/> Blink         </div> <div style="text-align: center;"> <input type="checkbox"/> Variable Position    <input type="checkbox"/> Variable Color  <input type="checkbox"/> Variable Size    <input type="checkbox"/> Blink         </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <span>N</span>    X coordinate of the horizontal axis for the upper left corner of the Rectangle  <span>N+1</span>    Y coordinate of the vertical axis for the upper left corner of the Rectangle  <span>N+2</span>    X coordinate of the horizontal axis for the lower right corner of the Rectangle  <span>N+3</span>    Y coordinate of the vertical axis for the lower right corner of the Rectangle  <span>N+4</span>    Rectangle color  <span>N+5</span>    Rectangle blinks or not         </div> <div style="text-align: center;"> <span>N</span>    X coordinate of the horizontal axis for the lower right corner of the Rectangle  <span>N+1</span>    Y coordinate of the vertical axis for the lower right corner of the Rectangle  <span>N+2</span>    Foreground Color of the Rectangle  <span>N+3</span>    Rectangle blinks or not         </div> </div>
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.
(2)	Data Format	<p>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p> <div style="background-color: #e0f2ff; padding: 5px; border-radius: 5px; text-align: center;"> <span style="border: 1px solid #ccc; padding: 2px;">Detail</span> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"> <div style="width: 45%;"> <p>Data Format:</p> <div style="border: 1px solid #ccc; padding: 2px; width: 100%; background-color: #f0f0f0; position: relative;"> <span style="position: absolute; right: -5px; top: -5px; font-size: 10px; border: 1px solid #ccc; padding: 2px;">▼</span> </div> <p>BCD</p> <p>Signed Decimal</p> <p>Unsigned Decimal</p> <p>Hexadecimal</p> </div> <div style="width: 45%;"> <p>Variable Position:</p> <div style="border: 1px solid #ccc; padding: 2px; width: 100%; background-color: #f0f0f0; position: relative;"> <span style="position: absolute; right: -5px; top: -5px; font-size: 10px; border: 1px solid #ccc; padding: 2px;">▼</span> </div> </div> <div style="width: 45%;"> <p>Variable Color:</p> <div style="border: 1px solid #ccc; padding: 2px; width: 100%; background-color: #f0f0f0; position: relative;"> <span style="position: absolute; right: -5px; top: -5px; font-size: 10px; border: 1px solid #ccc; padding: 2px;">▼</span> </div> </div> <div style="width: 45%;"> <p>Variable Size:</p> <div style="border: 1px solid #ccc; padding: 2px; width: 100%; background-color: #f0f0f0; position: relative;"> <span style="position: absolute; right: -5px; top: -5px; font-size: 10px; border: 1px solid #ccc; padding: 2px;">▼</span> </div> </div> </div>

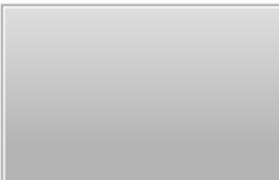
No.	Property	Function description
(3)	Variable Position	<p>You can select Yes or No for Variable Position. When you select Yes, the position of the dynamic Rectangle can be changed; when you select No, though the dynamic Rectangle element cannot be moved, the size of the Rectangle element can still be changed.</p> <p><b>Detail</b></p>  <p>Data Format: Unsigned Decimal</p> <p>Variable Position: No</p> <p>Variable Color: No</p> <p>Variable Size: No</p>
(4)	Variable Color	<p>You can select Yes or No for Variable Color. When you select Yes, the color of the dynamic Rectangle can be changed; when you select No, the color of the dynamic Rectangle cannot be changed. Its value ranges from 0 to 65535.</p> <p><b>Detail</b></p>  <p>Data Format: Unsigned Decimal</p> <p>Variable Position: No</p> <p>Variable Color: Yes</p> <p>Variable Size: No</p>
(5)	Variable Size	<p>You can select Yes or No for Variable Size. When you select Yes, you can change the size of the dynamic Rectangle element by changing its coordinates at the lower right corner; when you select No, the size of the Rectangle element cannot be changed.</p> <p><b>Detail</b></p>  <p>Data Format: Unsigned Decimal</p> <p>Variable Position: No</p> <p>Variable Color: No</p> <p>Variable Size: Yes</p>

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No.	Property	Function description
(6)	Line Color	<p>You can set the line color for the element.</p> 
(7)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(8)	Round Corner Radius	<p>The size of this radius is determined by the width and height of the Rectangle element. Take the smaller value among width/2 and height/2 of the Rectangle element. This is the maximum value that can be set for the radius.</p>
(9)	Foreground Color	<p>Set the Foreground Color of the element.</p> 

No.	Property	Function description				
(10)	Blink	<p>You can select Yes or No for Blink. When you select Yes, the dynamic Rectangle can be displayed as blinking. When the value of the corresponding Read Address is greater than 1, the dynamic Rectangle is displayed as blinking; when the value is 0, it does not blink. When you select No, the dynamic Rectangle does not blink.</p> <p>Foreground Color: <input type="color"/></p> <p>Blink: <input type="button" value="No"/> <input type="button" value="Yes"/> <input type="button" value="No"/></p> <p>Transparent:</p>				
(11)	Transparent	<p>You can select Yes or No for Transparent. When you select Yes, the dynamic Rectangle element displays only the rectangle border line with the middle shown in transparent color; when you select No, the foreground color of the element is displayed.</p> <p>Foreground Color: <input type="color"/></p> <p>Blink: <input type="button" value="No"/></p> <p>Transparent: <input type="button" value="No"/> <input type="button" value="No"/> <input type="button" value="Yes"/></p> <p>Penetrate:</p>				
(12)	Penetrate	<ul style="list-style-type: none"> <li>■ When an element overlaps with the Rectangle, this function allows you to click on that element.</li> <li>■ Refer to the following example. Create a Numeric Entry element and then create a Rectangle element that overlaps on top of the Numeric Entry element.</li> </ul> <table border="1"> <tr> <td style="background-color: #cccccc; padding: 10px;">Penetrate is ON</td> <td> <p>You can click on the Numeric Entry element under the rectangle.</p>  </td> </tr> <tr> <td style="background-color: #cccccc; padding: 10px;">Penetrate is OFF</td> <td> <p>You cannot click on the Numeric Entry element under the rectangle.</p>  <div style="border: 2px dashed black; padding: 10px; margin-left: 20px;"> <p>The keypad does not appear when you click on the rectangle.</p> </div> </td> </tr> </table>	Penetrate is ON	<p>You can click on the Numeric Entry element under the rectangle.</p> 	Penetrate is OFF	<p>You cannot click on the Numeric Entry element under the rectangle.</p>  <div style="border: 2px dashed black; padding: 10px; margin-left: 20px;"> <p>The keypad does not appear when you click on the rectangle.</p> </div>
Penetrate is ON	<p>You can click on the Numeric Entry element under the rectangle.</p> 					
Penetrate is OFF	<p>You cannot click on the Numeric Entry element under the rectangle.</p>  <div style="border: 2px dashed black; padding: 10px; margin-left: 20px;"> <p>The keypad does not appear when you click on the rectangle.</p> </div>					

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No.	Property	Function description	
(13)	Filled style	Gradient	
		Fixed (Solid)	

## ■ Main-2

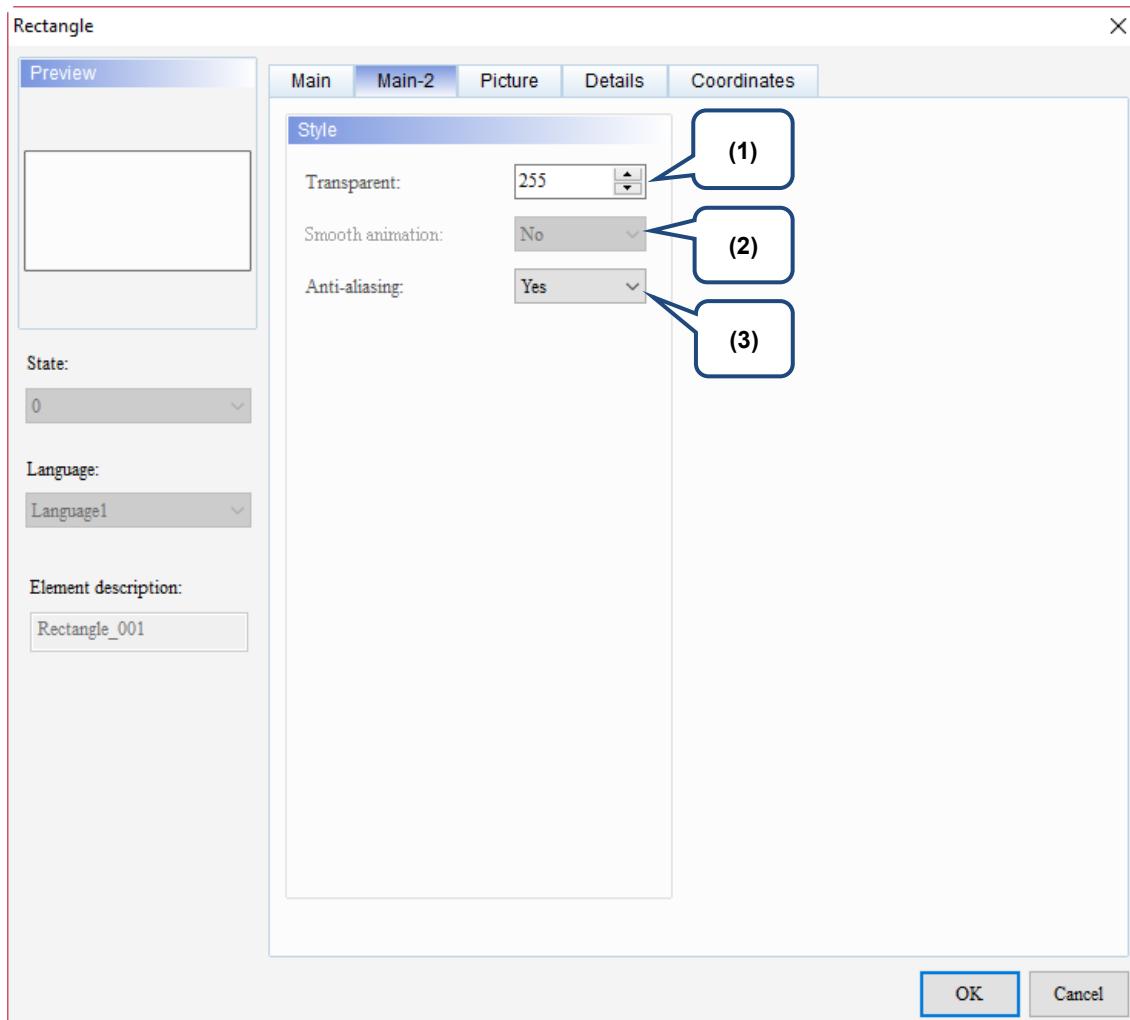


Figure 22.2.3 Main-2 property page for the Rectangle element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is available for this element and the default is Yes. <p>The table shows two rows for the Anti-aliasing property. The first row, labeled 'Yes', displays a rectangle with smooth edges. The second row, labeled 'No', displays a rectangle with a more pixelated or jagged appearance at its edges.</p>

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## ■ Picture

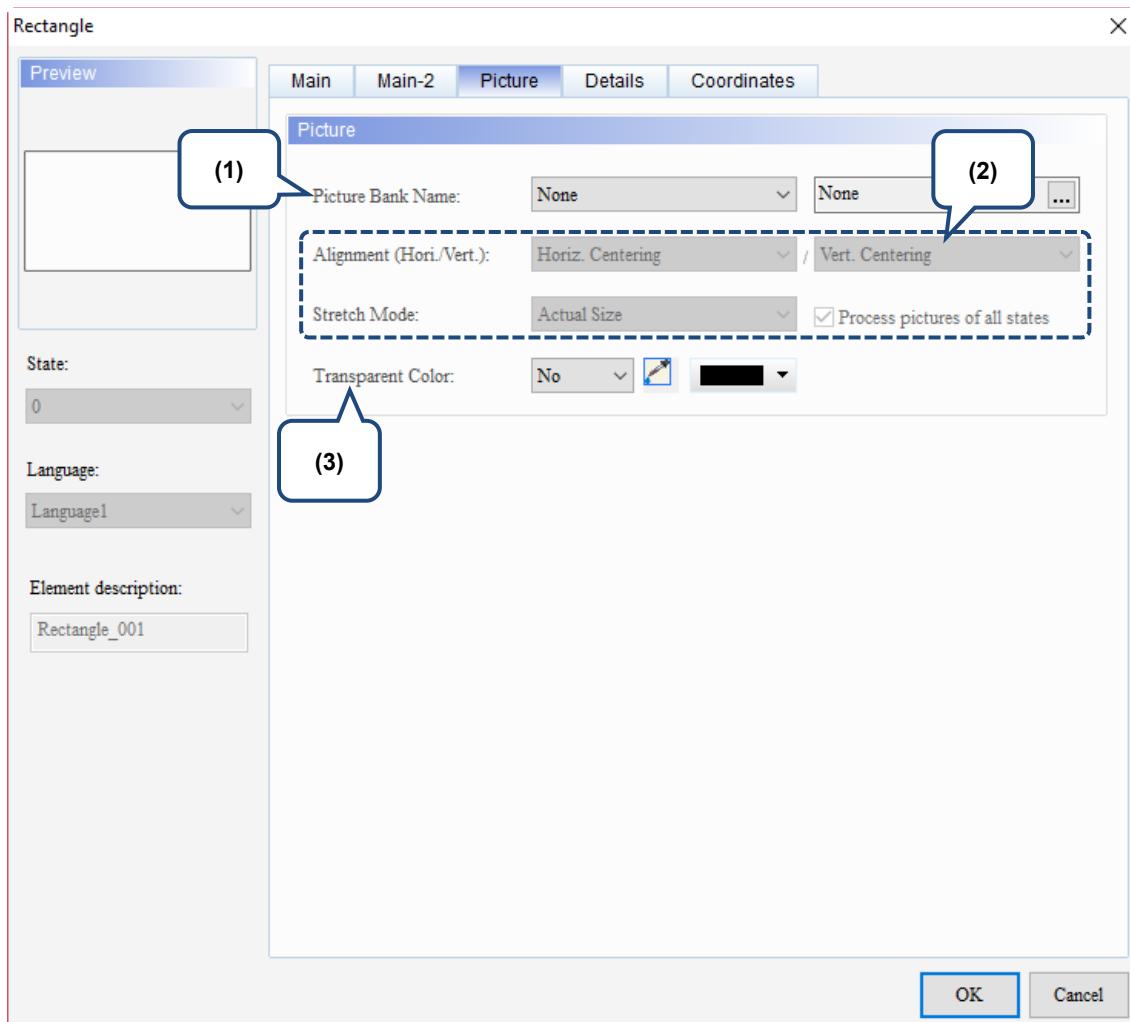
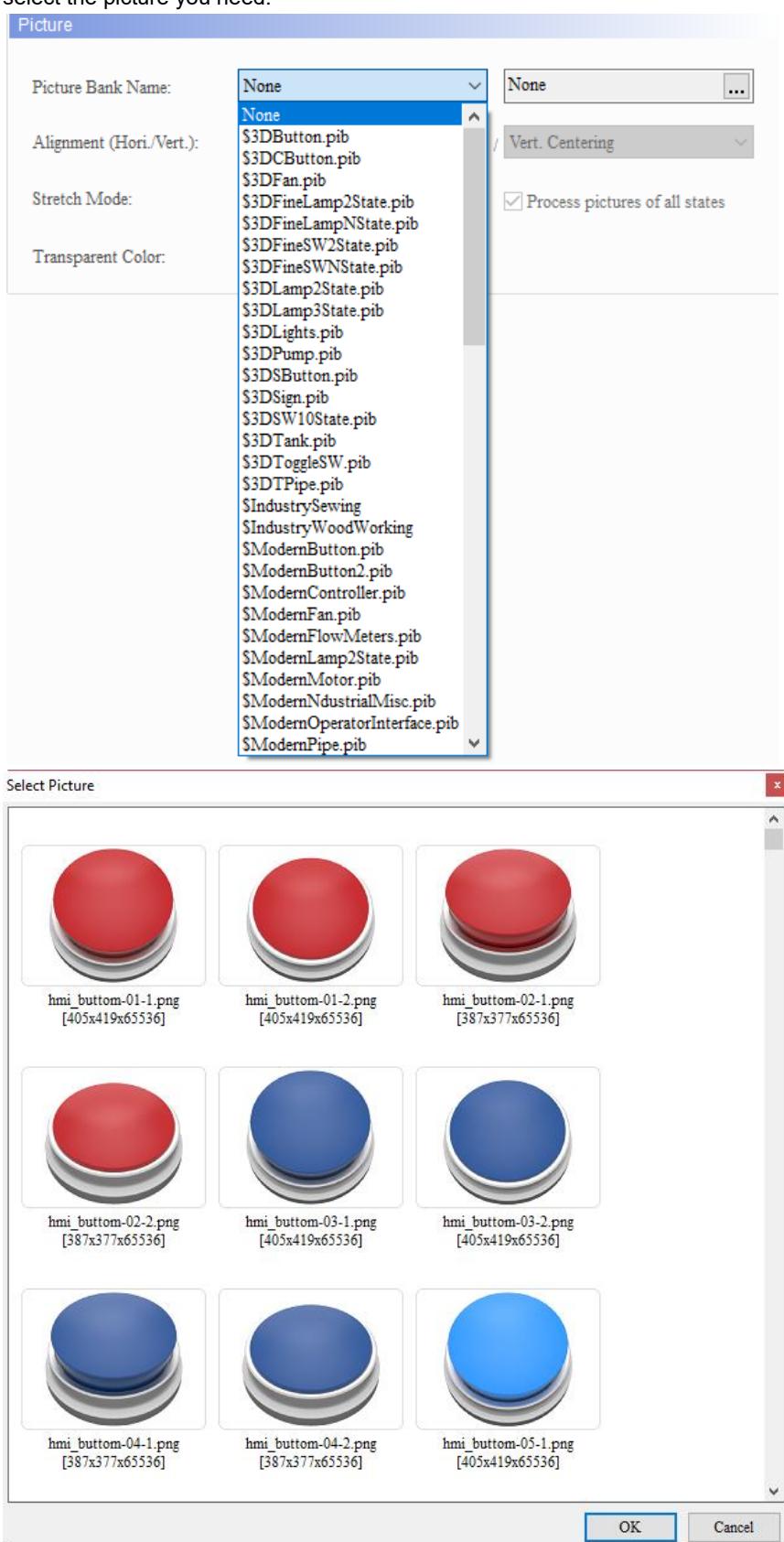
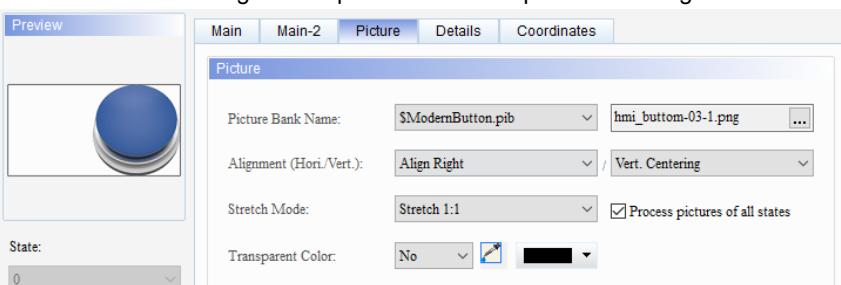


Figure 22.2.4 Picture property page for the Rectangle element

No.	Property	Function description
(1)	Picture Bank Name	<p>The Picture Bank Name default is None. To set the picture display, use the drop-down list box to select the picture bank provided by the software and then select the picture you need.</p> 

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No.	Property	Function description								
(2)	Alignment	<ul style="list-style-type: none"> <li>You can use the Alignment options to set how pictures are aligned.</li> </ul>  <p>The screenshot shows the 'Picture' tab of the Properties dialog. It includes fields for 'Picture Bank Name' (\$ModernButton.pib), 'hmi_button-03-1.png', 'Alignment (Hori./Vert.)' (Align Right / Vert. Centering), 'Stretch Mode' (Stretch 1:1), and 'Transparent Color' (No). A preview window shows a blue button icon.</p>								
	Stretch Mode	<ul style="list-style-type: none"> <li>The Stretch Mode options include Stretch All, Stretch 1:1, and Actual Size.</li> </ul> <table border="1"> <thead> <tr> <th>Stretch All</th> <th>Stretch 1:1</th> <th>Actual Size</th> </tr> </thead> <tbody> <tr> <td>If you select Stretch All, the picture fills the full element display area.</td> <td>If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.</td> <td>If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Assuming that the elements have multiple states and some pictures do not fill the full element display area, if you select the <b>Process pictures of all states</b> check box, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.</li> </ul> <p><input checked="" type="checkbox"/> Process pictures of all states</p>	Stretch All	Stretch 1:1	Actual Size	If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.		
Stretch All	Stretch 1:1	Actual Size								
If you select Stretch All, the picture fills the full element display area.	If you select Stretch 1:1, the picture displays in 1:1 size based on the element width and length.	If you select Actual Size, regardless of the element size, the picture displays in its actual size in the element display area.								
										
(3)	Transparent Color	<p>Specify a color in the picture and turn this color into transparent.  is for selecting the transparent color. If you select the white part in the calendar, the software changes the white part into transparent, which becomes identical to the element foreground color.</p> <p>Foreground Color: </p> 								

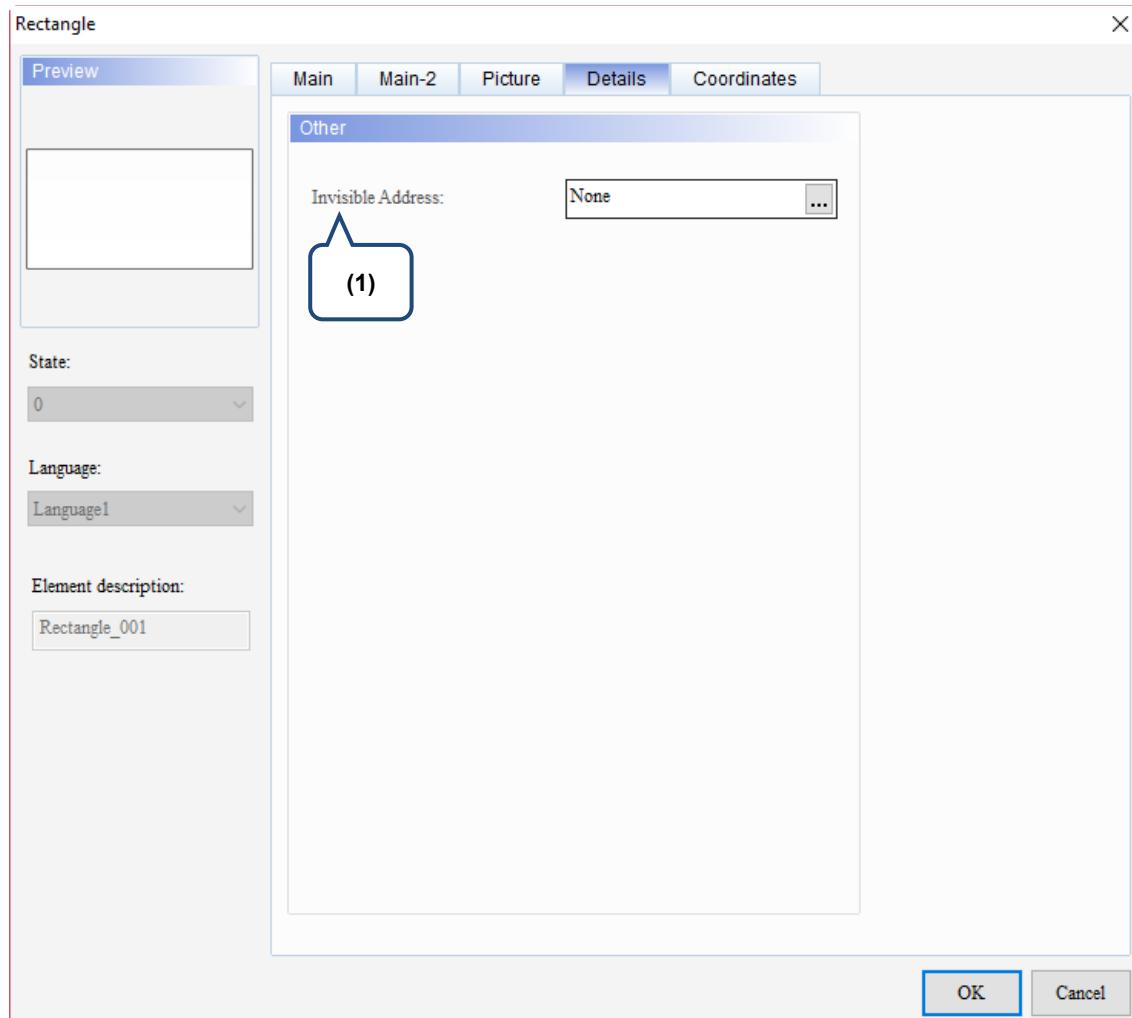
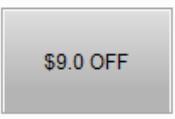
**■ Details**

Figure 22.2.5 Details property page for the Rectangle element

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No.	Property	Function description	
(1)	Invisible Address	When Invisible Address is set to On, the element is invisible and you cannot execute its set functions.	
		Invisible Address is Off 	\$9.0 OFF 
			

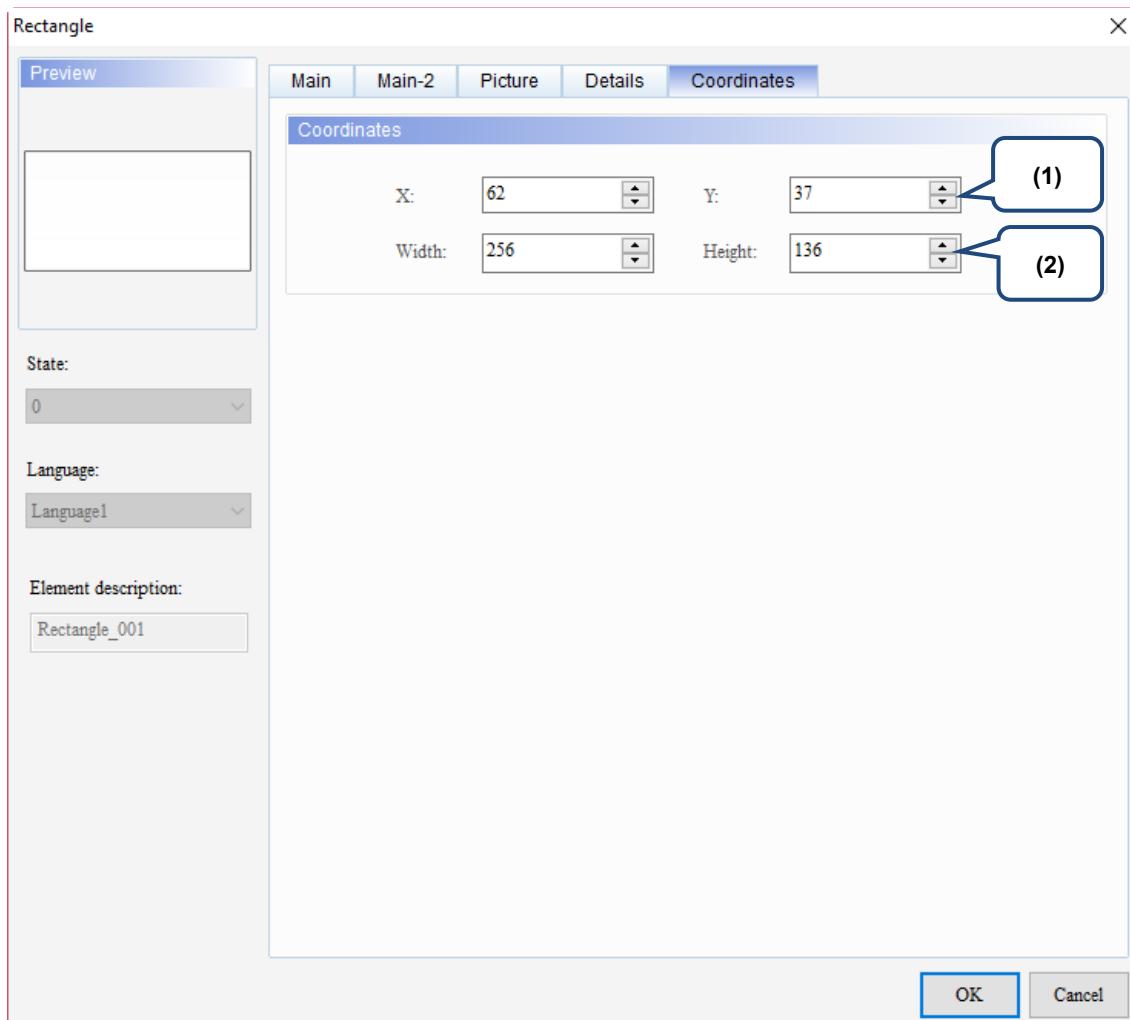
**■ Coordinates**

Figure 22.2.6 Coordinates property page for the Rectangle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

# 22

## 22.3 Circle

Press and drag the mouse to form a circle. If the length is equal to the width, the created graph becomes a circle; if not equal, it becomes an oval. You can also use the set Read Address to control the moving position, color, size, and blinking of the circle.

When you double-click the Circle, the property page is shown as follows.

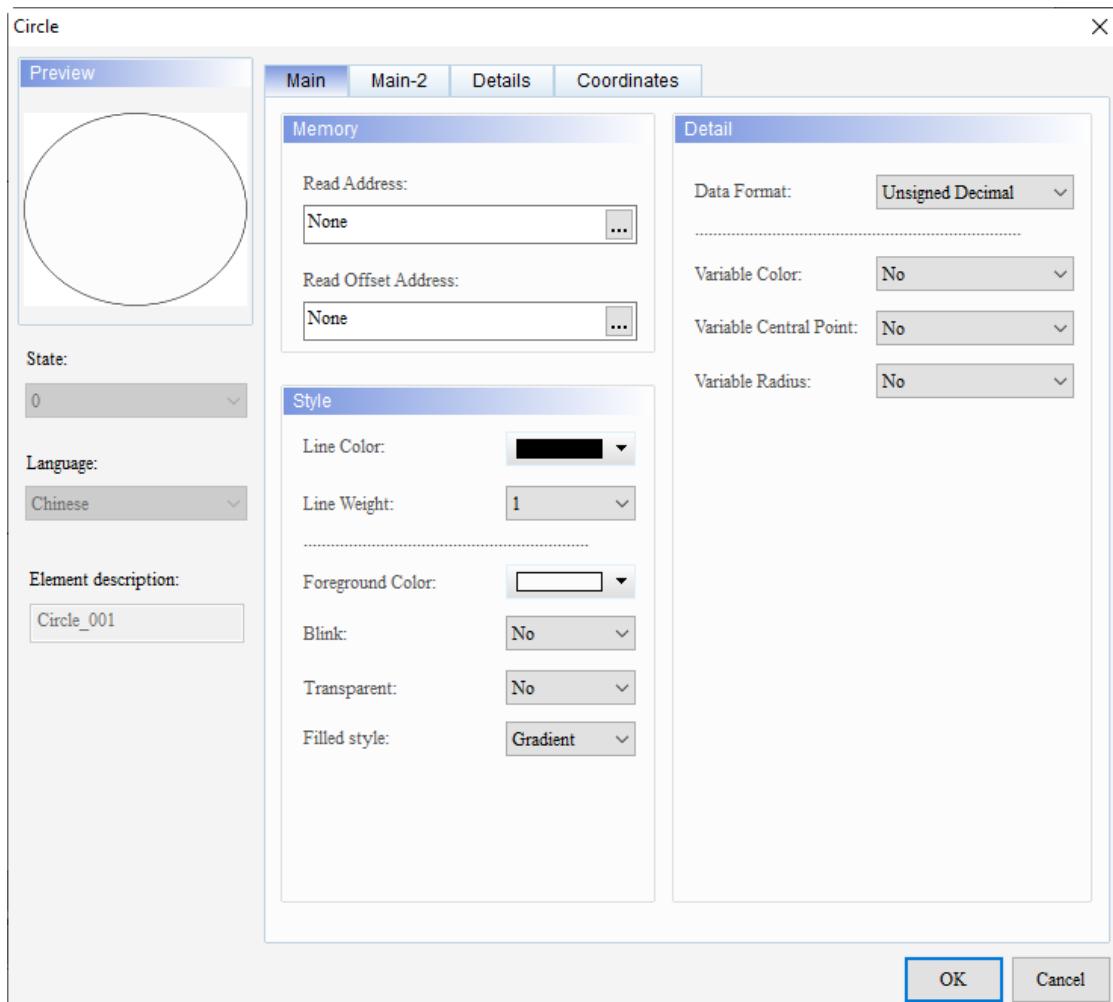


Figure 22.3.1 Properties of Circle

Table 22.3.1 Function page of the Circle element

Circle	
Function page	Description
Preview	The Circle element does not support multiple state values and multi-language display.
Main	Set the Read Address, Read Offset Address, Line Color, Line Weight, Foreground Color, Blink, Transparent, and Filled style. Set the Data Format, Variable Color, Variable Central Point, and Variable Radius.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

## ■ Main

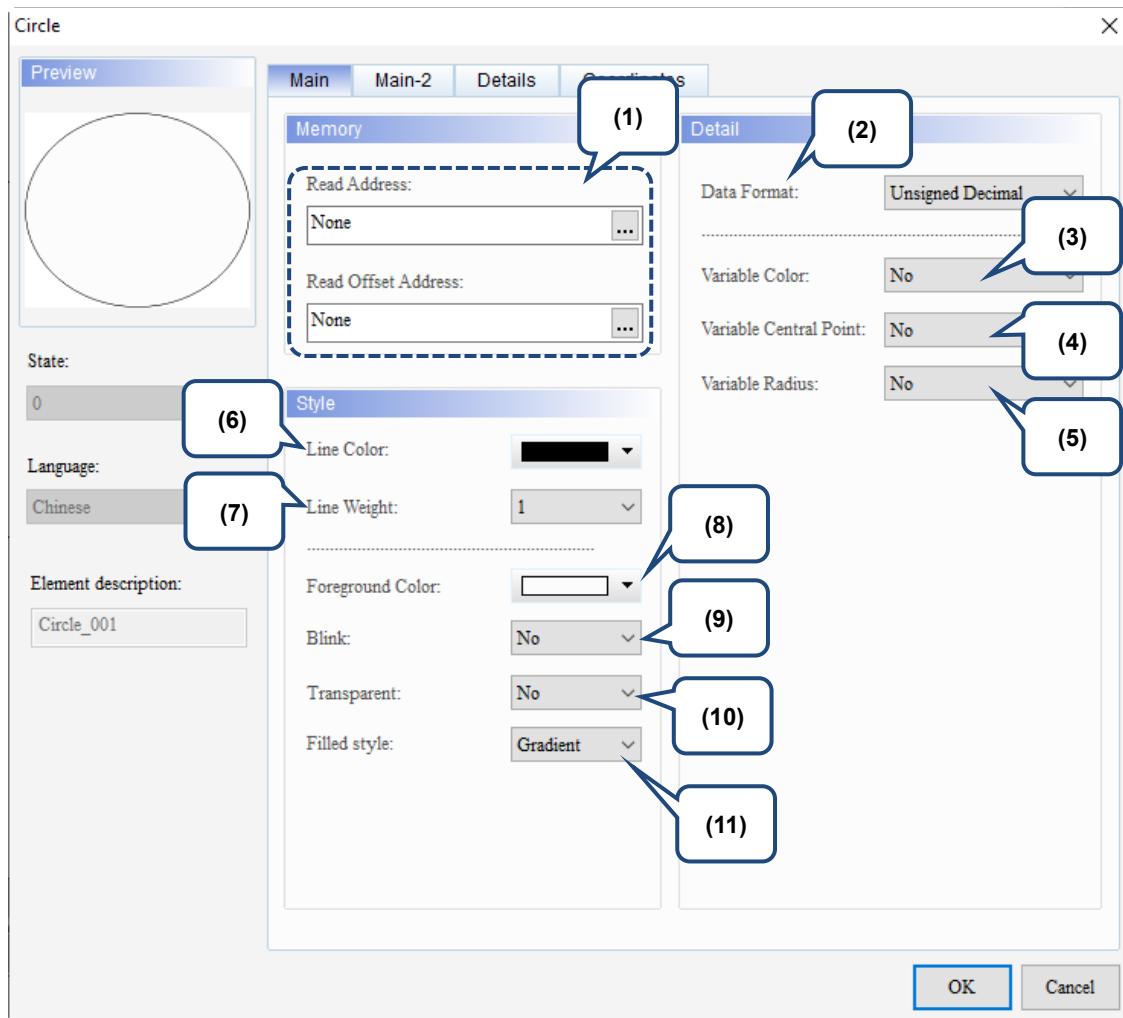
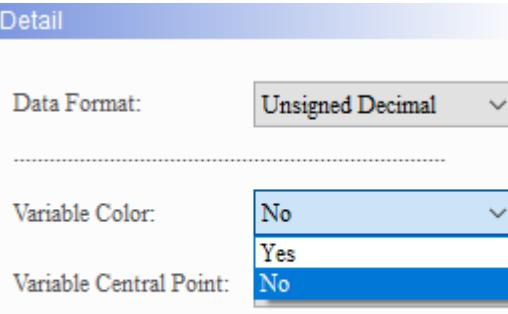
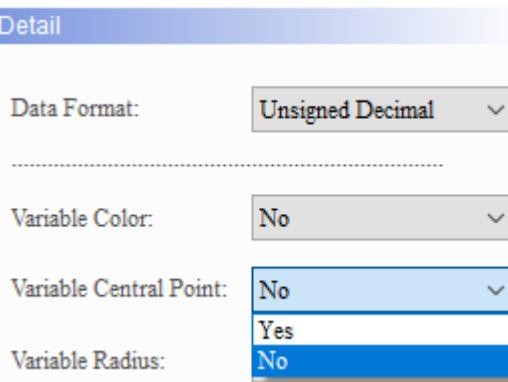
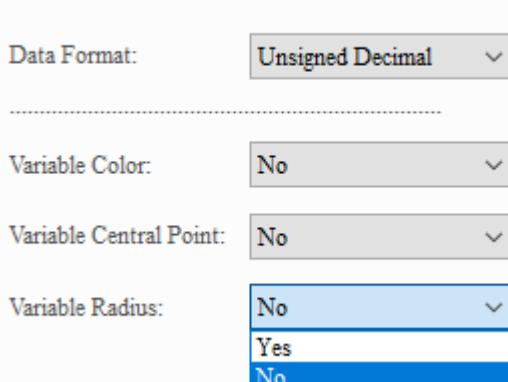


Figure 22.3.2 Main property page for the Circle element

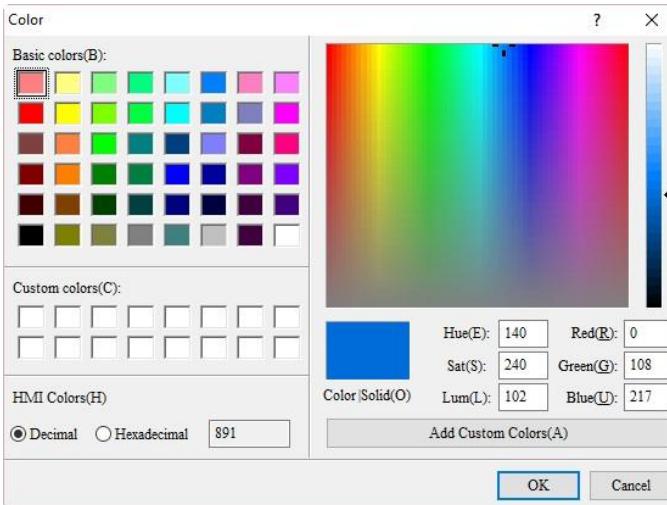
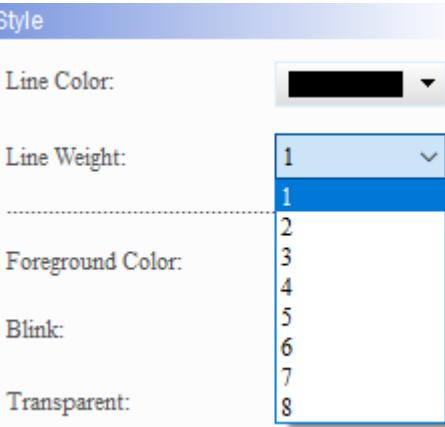
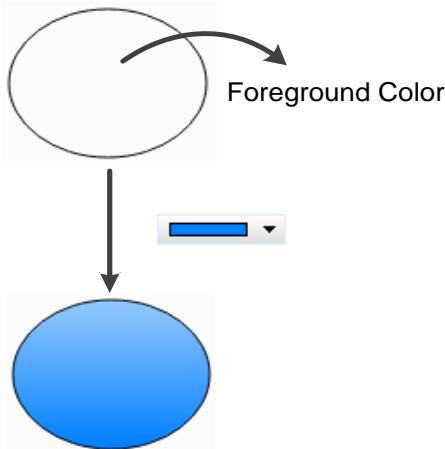
22

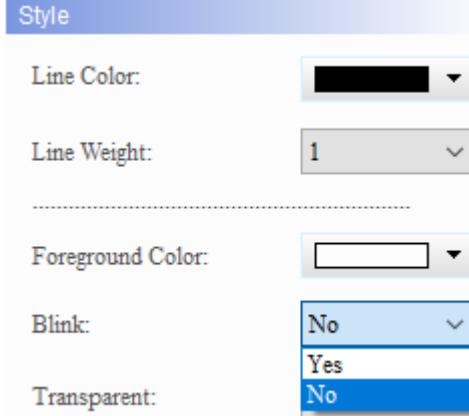
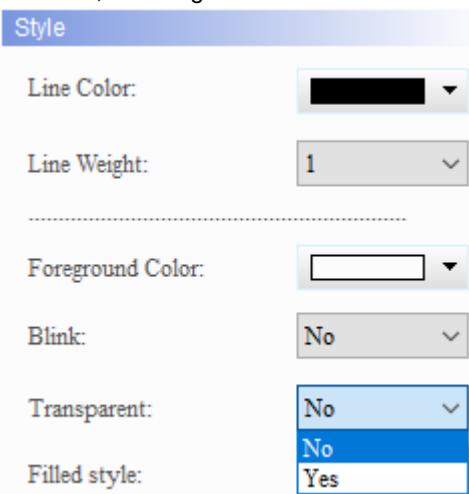
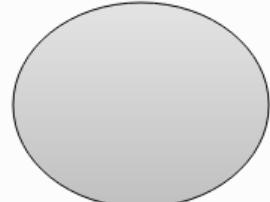
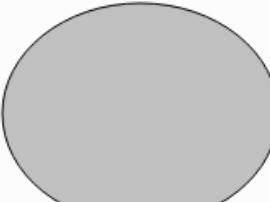
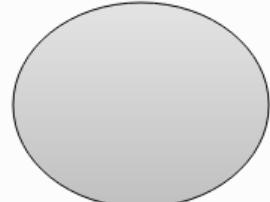
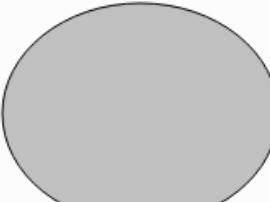
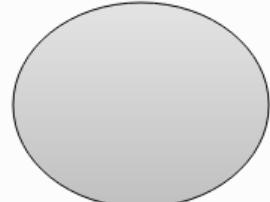
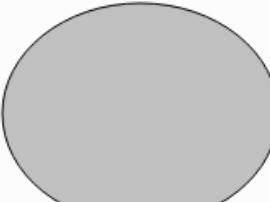
# 22

No.	Property	Function description																																
(1)	Read Address	<p>■ Available options are internal memory and controller register address.</p> <p>■ When Variable Central Point is set to Yes, the value of the Read Address is regarded as the X coordinate of the horizontal axis for the center point of the circle.</p> <p>■ When Variable Central Point is set to Yes, the value of [Read Address+1] is regarded as the Y coordinate of the vertical axis for the center point of the circle.</p> <p>■ When Variable Radius is set to Yes, the value of [Read Address+2] is regarded as the extension of the horizontal axis for the center point of the circle which is the width.</p> <p>■ When Variable Radius is set to Yes, the value of [Read Address+3] is regarded as the extension of the vertical axis for the center point of the circle which is the height.</p> <p>■ When Variable Color is set to Yes, the value of [Read Address+4] is regarded as the color for the Circle. Its value ranges from 0 to 65535.</p> <p>■ When Blink is set to Yes, the value of [Read Address+5] determines whether the Circle blinks or not. When its value is greater than 1, the Circle element is displayed as blinking; when the value is 0, it does not blink.</p> <p>■ Select Link Name or Device Type. Refer to Chapter 5 Buttons for details.</p> <p>■ When Variable Central Point is set to No, the corresponding memory addresses are automatically filled in.</p> <table border="0"> <tr> <td style="text-align: center;"><input type="checkbox"/> Variable Central Point</td> <td style="text-align: center;"><input type="checkbox"/> Variable Color</td> <td style="text-align: center;"><input type="checkbox"/> Variable Central Point</td> <td style="text-align: center;"><input type="checkbox"/> Variable Color</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/> Variable Radius</td> <td style="text-align: center;"><input type="checkbox"/> Blink</td> <td style="text-align: center;"><input type="checkbox"/> Variable Radius</td> <td style="text-align: center;"><input type="checkbox"/> Blink</td> </tr> <tr> <td style="text-align: center;"><b>N</b></td> <td>X coordinate of the horizontal axis for the center point of the circle</td> <td style="text-align: center;"><b>N</b></td> <td>Radius of the horizontal axis for the circle</td> </tr> <tr> <td style="text-align: center;"><b>N+1</b></td> <td>Y coordinate of the vertical axis for the center point of the circle</td> <td style="text-align: center;"><b>N+1</b></td> <td>Radius of the vertical axis for the circle</td> </tr> <tr> <td style="text-align: center;"><b>N+2</b></td> <td>Extension of the horizontal axis for the center point of the circle which is the width</td> <td style="text-align: center;"><b>N+2</b></td> <td>Foreground Color of the circle</td> </tr> <tr> <td style="text-align: center;"><b>N+3</b></td> <td>Extension of the vertical axis for the center point of the circle which is the height</td> <td style="text-align: center;"><b>N+3</b></td> <td>Circle blinks or not</td> </tr> <tr> <td style="text-align: center;"><b>N+4</b></td> <td>Circle color</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;"><b>N+5</b></td> <td>Circle blinks or not</td> <td></td> <td></td> </tr> </table>	<input type="checkbox"/> Variable Central Point	<input type="checkbox"/> Variable Color	<input type="checkbox"/> Variable Central Point	<input type="checkbox"/> Variable Color	<input type="checkbox"/> Variable Radius	<input type="checkbox"/> Blink	<input type="checkbox"/> Variable Radius	<input type="checkbox"/> Blink	<b>N</b>	X coordinate of the horizontal axis for the center point of the circle	<b>N</b>	Radius of the horizontal axis for the circle	<b>N+1</b>	Y coordinate of the vertical axis for the center point of the circle	<b>N+1</b>	Radius of the vertical axis for the circle	<b>N+2</b>	Extension of the horizontal axis for the center point of the circle which is the width	<b>N+2</b>	Foreground Color of the circle	<b>N+3</b>	Extension of the vertical axis for the center point of the circle which is the height	<b>N+3</b>	Circle blinks or not	<b>N+4</b>	Circle color			<b>N+5</b>	Circle blinks or not		
<input type="checkbox"/> Variable Central Point	<input type="checkbox"/> Variable Color	<input type="checkbox"/> Variable Central Point	<input type="checkbox"/> Variable Color																															
<input type="checkbox"/> Variable Radius	<input type="checkbox"/> Blink	<input type="checkbox"/> Variable Radius	<input type="checkbox"/> Blink																															
<b>N</b>	X coordinate of the horizontal axis for the center point of the circle	<b>N</b>	Radius of the horizontal axis for the circle																															
<b>N+1</b>	Y coordinate of the vertical axis for the center point of the circle	<b>N+1</b>	Radius of the vertical axis for the circle																															
<b>N+2</b>	Extension of the horizontal axis for the center point of the circle which is the width	<b>N+2</b>	Foreground Color of the circle																															
<b>N+3</b>	Extension of the vertical axis for the center point of the circle which is the height	<b>N+3</b>	Circle blinks or not																															
<b>N+4</b>	Circle color																																	
<b>N+5</b>	Circle blinks or not																																	
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.																																
(2)	Data Format	<p>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p> <p><b>Detail</b></p> <table border="0"> <tr> <td style="vertical-align: top;">Data Format:</td> <td style="border: 1px solid #ccc; padding: 2px; width: 150px;"> <input style="width: 100%; border: none; background-color: #f0f0f0; font-weight: bold; margin-bottom: 5px;" type="button" value="Unsigned Decimal"/> <input style="width: 100%; border: none; background-color: #f0f0f0; margin-bottom: 5px;" type="button" value="BCD"/> <input style="width: 100%; border: none; background-color: #f0f0f0; margin-bottom: 5px;" type="button" value="Signed Decimal"/> <input style="width: 100%; border: none; background-color: #f0f0f0; font-weight: bold; margin-bottom: 5px;" type="button" value="Unsigned Decimal"/> <input style="width: 100%; border: none; background-color: #f0f0f0; margin-bottom: 5px;" type="button" value="Hexadecimal"/> </td> </tr> <tr> <td style="vertical-align: top;">Variable Color:</td> <td style="border: 1px solid #ccc; padding: 2px; width: 150px;"></td> </tr> <tr> <td style="vertical-align: top;">Variable Central Point:</td> <td style="border: 1px solid #ccc; padding: 2px; width: 150px; text-align: center;">No</td> </tr> <tr> <td style="vertical-align: top;">Variable Radius:</td> <td style="border: 1px solid #ccc; padding: 2px; width: 150px; text-align: center;">No</td> </tr> </table>	Data Format:	<input style="width: 100%; border: none; background-color: #f0f0f0; font-weight: bold; margin-bottom: 5px;" type="button" value="Unsigned Decimal"/> <input style="width: 100%; border: none; background-color: #f0f0f0; margin-bottom: 5px;" type="button" value="BCD"/> <input style="width: 100%; border: none; background-color: #f0f0f0; margin-bottom: 5px;" type="button" value="Signed Decimal"/> <input style="width: 100%; border: none; background-color: #f0f0f0; font-weight: bold; margin-bottom: 5px;" type="button" value="Unsigned Decimal"/> <input style="width: 100%; border: none; background-color: #f0f0f0; margin-bottom: 5px;" type="button" value="Hexadecimal"/>	Variable Color:		Variable Central Point:	No	Variable Radius:	No																								
Data Format:	<input style="width: 100%; border: none; background-color: #f0f0f0; font-weight: bold; margin-bottom: 5px;" type="button" value="Unsigned Decimal"/> <input style="width: 100%; border: none; background-color: #f0f0f0; margin-bottom: 5px;" type="button" value="BCD"/> <input style="width: 100%; border: none; background-color: #f0f0f0; margin-bottom: 5px;" type="button" value="Signed Decimal"/> <input style="width: 100%; border: none; background-color: #f0f0f0; font-weight: bold; margin-bottom: 5px;" type="button" value="Unsigned Decimal"/> <input style="width: 100%; border: none; background-color: #f0f0f0; margin-bottom: 5px;" type="button" value="Hexadecimal"/>																																	
Variable Color:																																		
Variable Central Point:	No																																	
Variable Radius:	No																																	

No.	Property	Function description
(3)	Variable Color	<p>You can select Yes or No for Variable Color. When you select Yes, the color of the Circle can be changed; when you select No, the color of the Circle cannot be changed. Its value ranges from 0 to 65535.</p> <p><b>Detail</b></p>  <p>Data Format: Unsigned Decimal</p> <p>Variable Color: No</p> <p>Variable Central Point: No</p> <p>Variable Radius: No</p>
(4)	Variable Central Point	<p>You can select Yes or No for Variable Central Point. When you select Yes, the position of the center point of the circle can be changed; when you select No, though the Circle element cannot be moved, you can extend the size of the Circle element.</p> <p><b>Detail</b></p>  <p>Data Format: Unsigned Decimal</p> <p>Variable Color: No</p> <p>Variable Central Point: No</p> <p>Variable Radius: Yes</p>
(5)	Variable Radius	<p>You can select Yes or No for Variable Radius. When you select Yes, the size of the Circle element can be extended; when you select No, the size of the Circle element cannot be extended.</p> <p><b>Detail</b></p>  <p>Data Format: Unsigned Decimal</p> <p>Variable Color: No</p> <p>Variable Central Point: No</p> <p>Variable Radius: Yes</p>

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No.	Property	Function description
(6)	Line Color	<p>You can set the line color for the element.</p> 
(7)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(8)	Foreground Color	<p>Set the foreground color of the element.</p> 

No.	Property	Function description				
(9)	Blink	<p>You can select Yes or No for Blink. When you select Yes, the Circle can be displayed as blinking. When the value of the corresponding Read Address is greater than 1, the Circle element is displayed as blinking; when the value is 0, it does not blink. When you select No, the Circle does not blink.</p> <p><b>Style</b></p> 				
(10)	Transparent	<p>You can select Yes or No for Transparent. When you select Yes, the Circle element displays only the circle border line with the middle shown in transparent color; when you select No, the foreground color of the element is displayed.</p> <p><b>Style</b></p> 				
(11)	Filled style	<p>The default fill style for the elements on the DOP-100 series models is Gradient. When you open the DOP-B project on a DOP-100 series model, the elements are displayed in solid color, which is the same as opening the project on a DOP-B series model.</p> <table border="1"> <tr> <td style="text-align: center;">Gradient</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;">Fixed (Solid)</td> <td style="text-align: center;"></td> </tr> </table>	Gradient		Fixed (Solid)	
Gradient						
Fixed (Solid)						

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## ■ Main-2

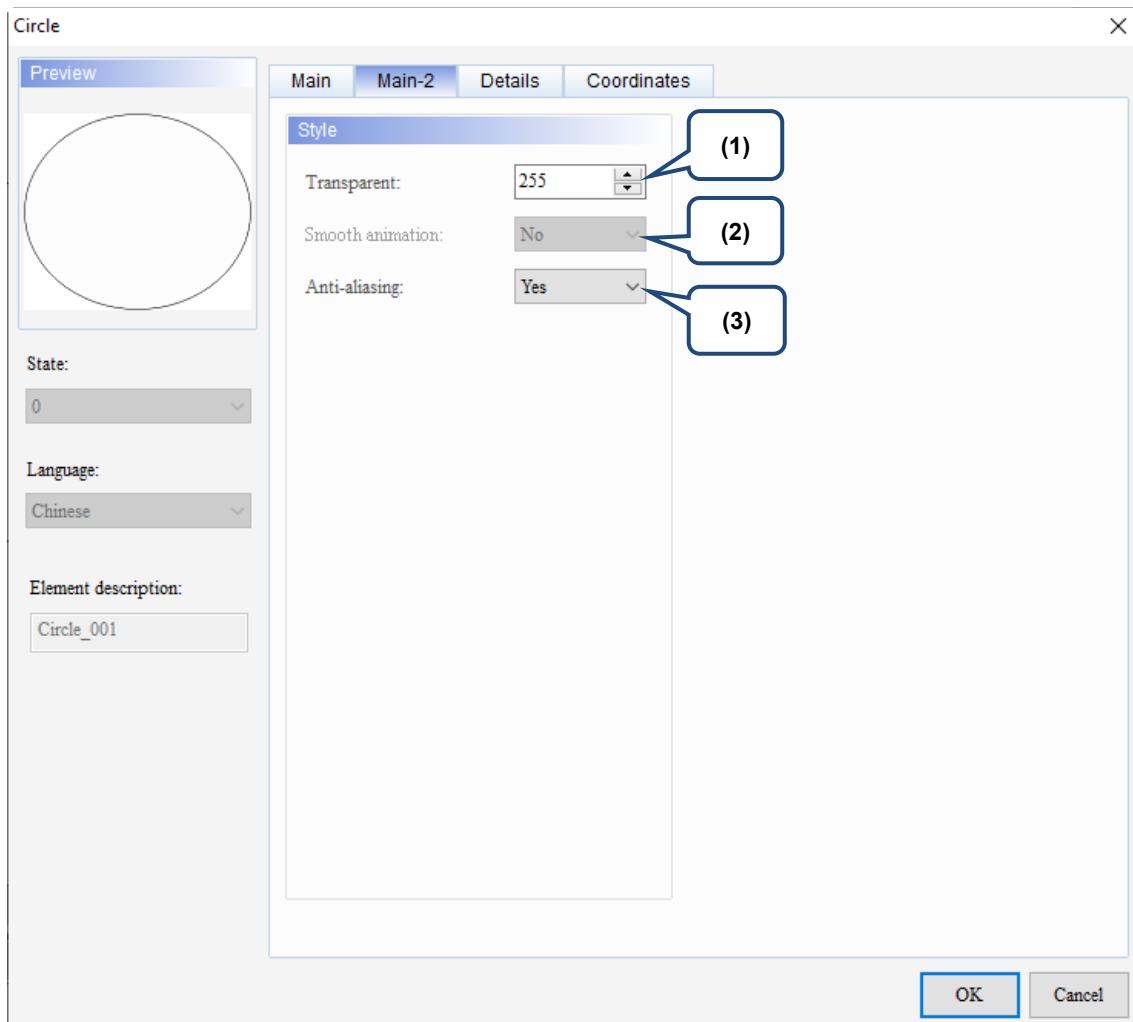
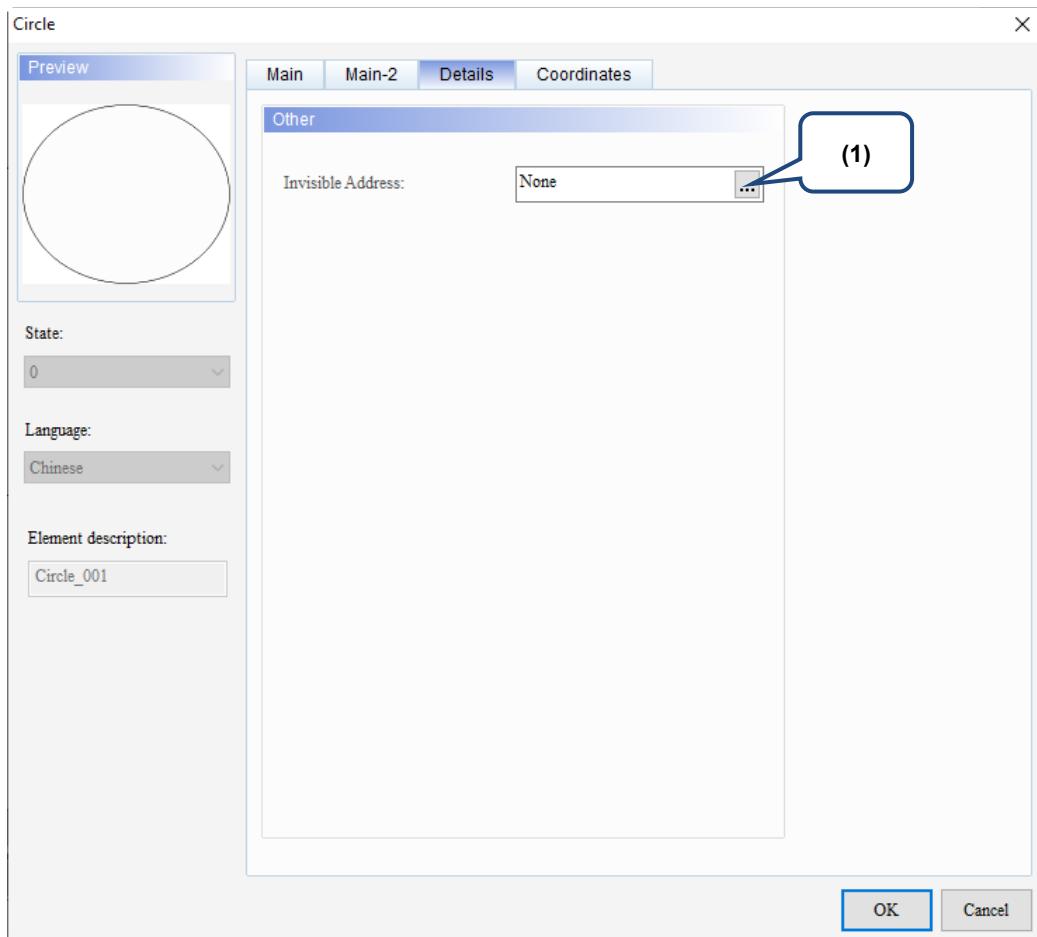


Figure 22.3.3 Main-2 property page for the Circle element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

## ■ Details



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Figure 22.3.4 Details property page for the Circle element

No.	Property	Function description		
(1)	Invisible Address	Invisible Address is Off		\$9.0 OFF
		Invisible Address is On		\$9.0 ON

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## ■ Coordinates

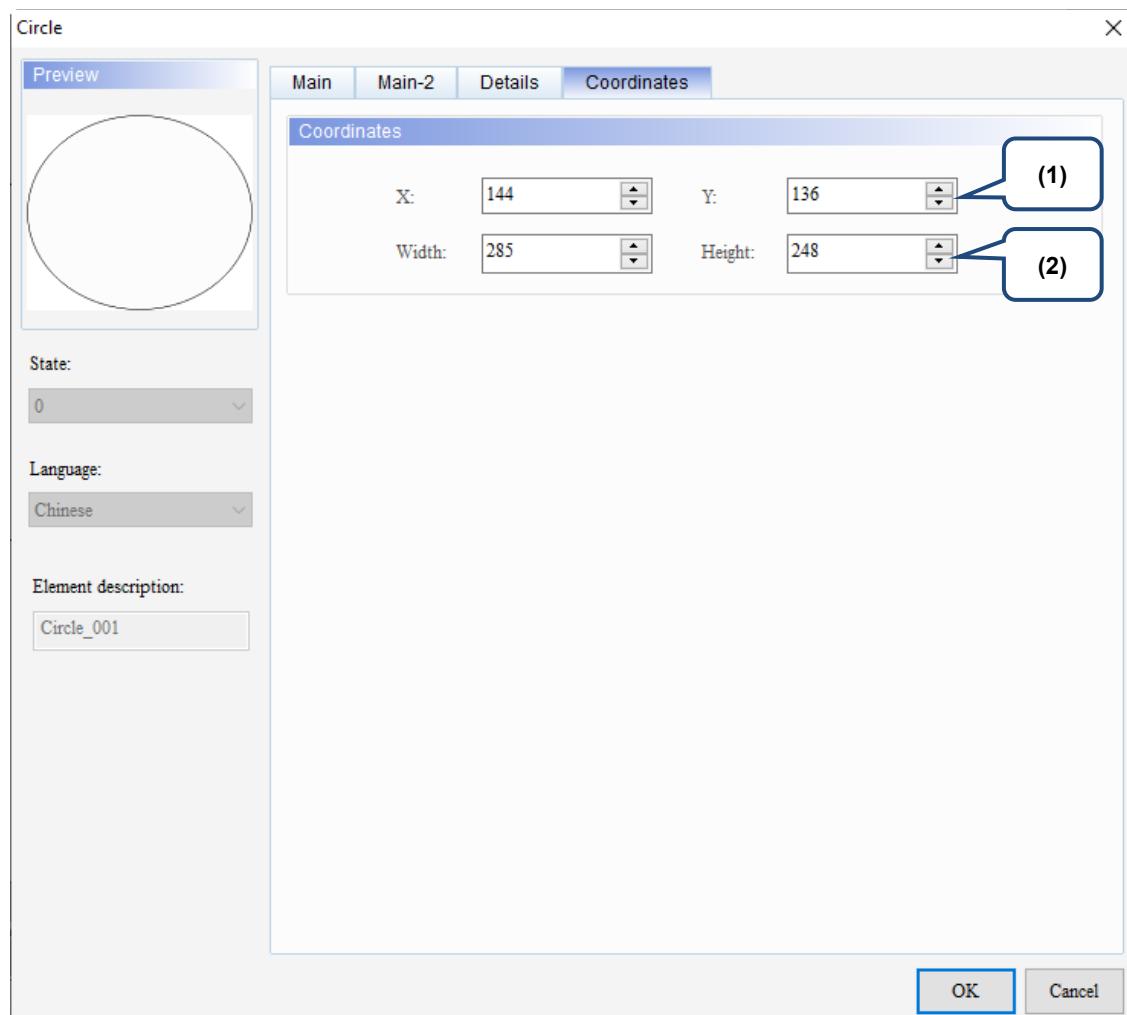


Figure 22.3.5 Coordinates property page for the Circle element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 22.4 Polygon

You can press the left mouse key to set each point for the polygon. When all the points are set, press the right mouse key to form a polygon.

When you double-click the Polygon, the property page is shown as follows.

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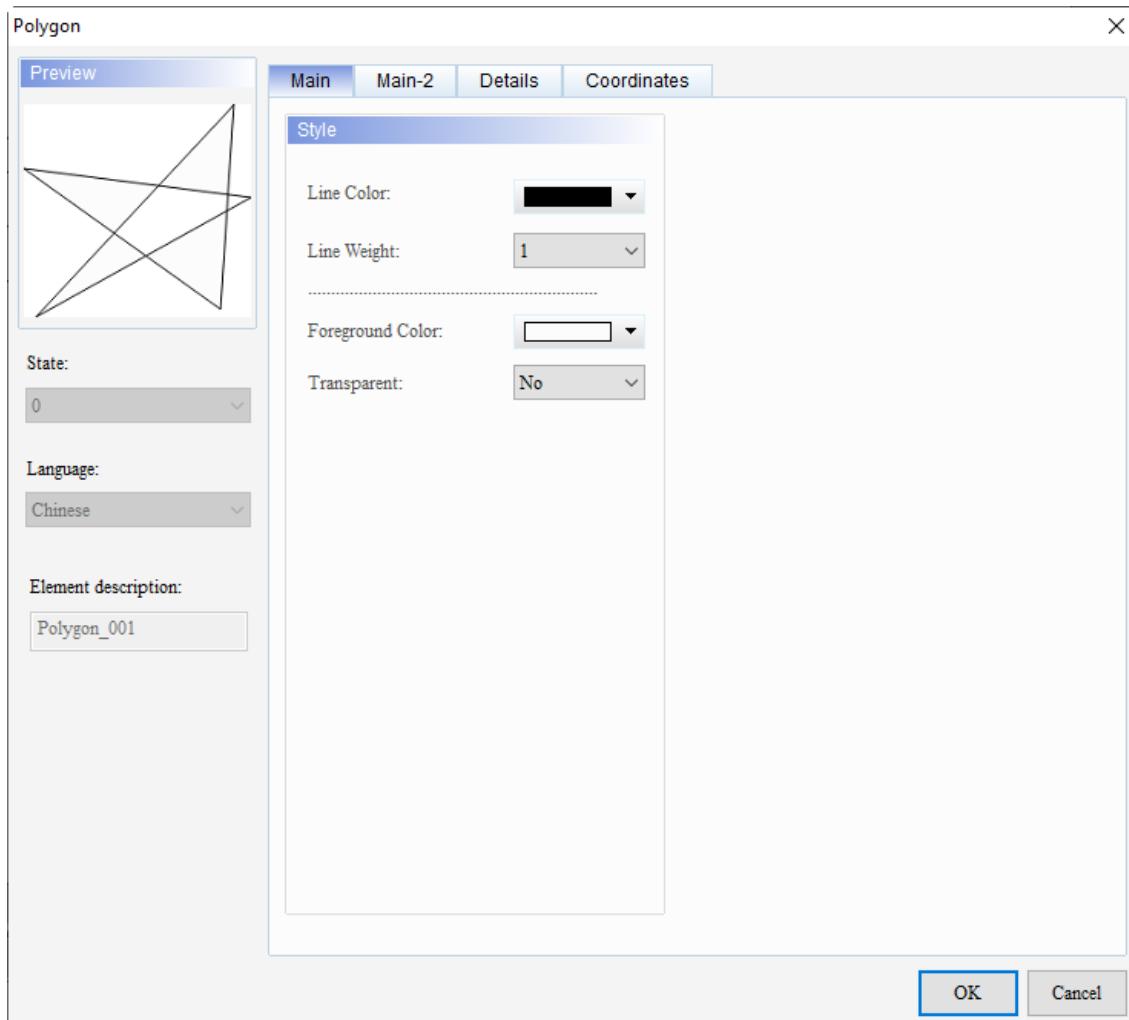


Figure 22.4.1 Properties of Polygon

Table 22.4.1 Function page of the Polygon element

Polygon	
Function page	Description
Preview	The Polygon element does not support multiple state values and multi-language display.
Main	Set the Line Color, Line Weight, Foreground Color, and Transparent.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

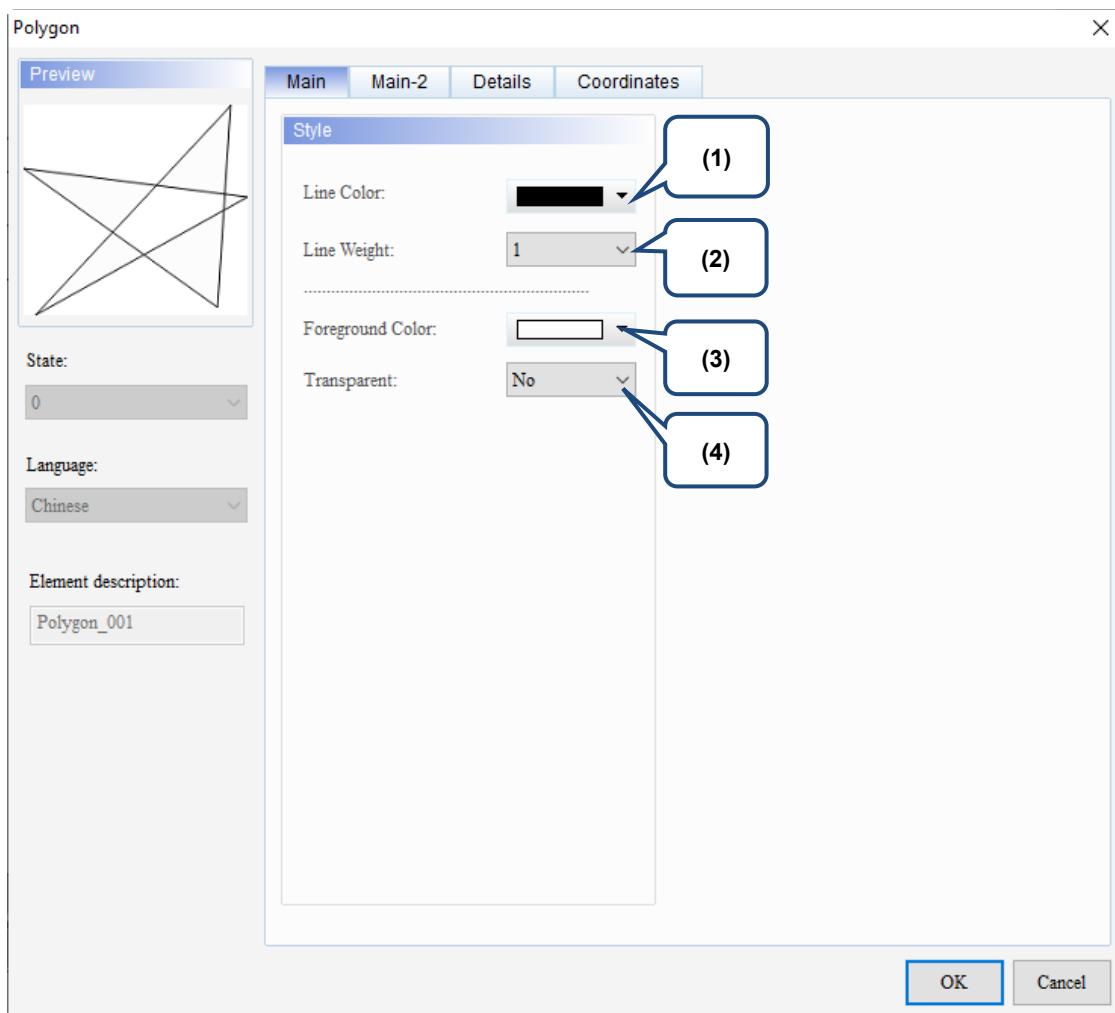
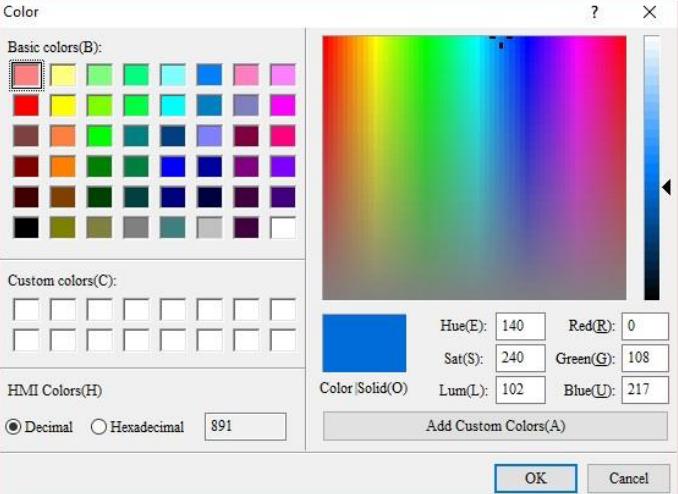
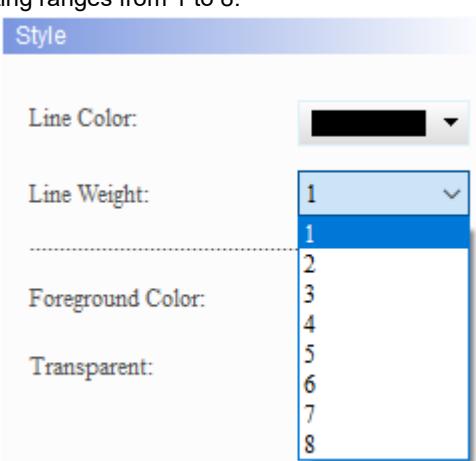
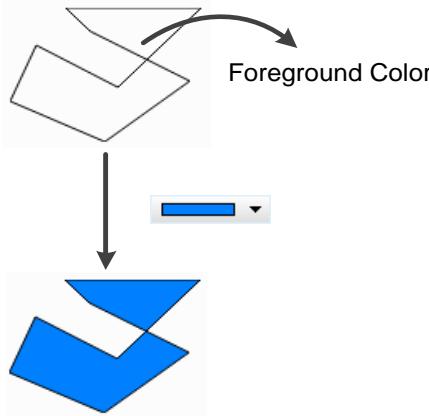
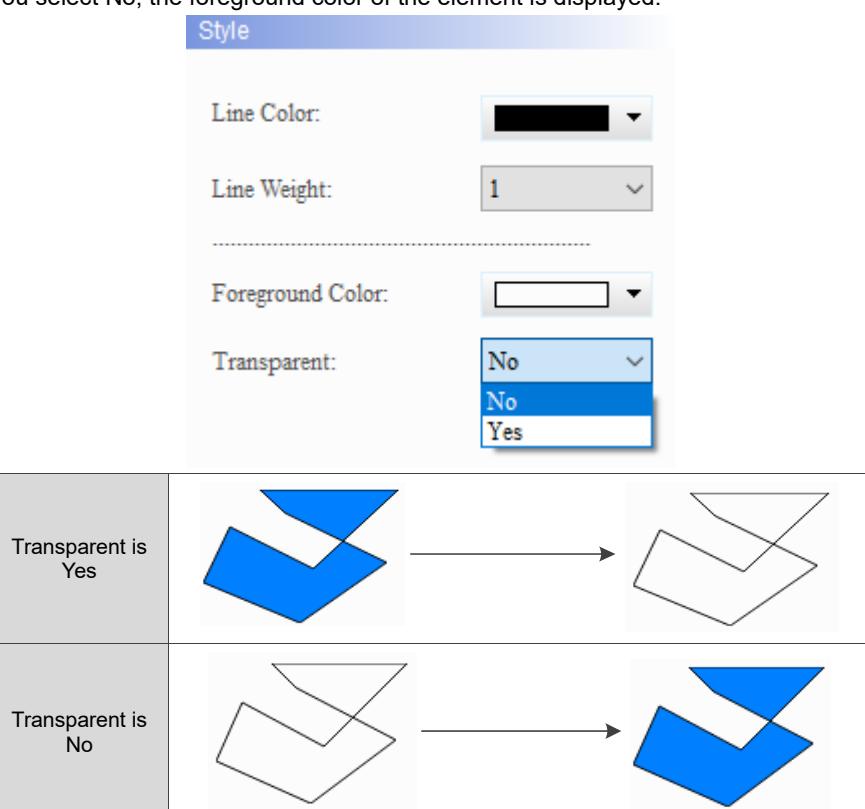


Figure 22.4.2 Main property page for the Polygon element

No.	Property	Function description
(1)	Line Color	You can set the line color for the element. 

No.	Property	Function description
(2)	Line Weight	<p>The line width setting ranges from 1 to 8.</p> 
(3)	Foreground Color	<p>Set the foreground color of the element.</p> 
(4)	Transparent	<p>You can select Yes or No for Transparent. When you select Yes, the foreground color of the Polygon is transparent and only the border color is displayed; when you select No, the foreground color of the element is displayed.</p> 

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## ■ Main-2

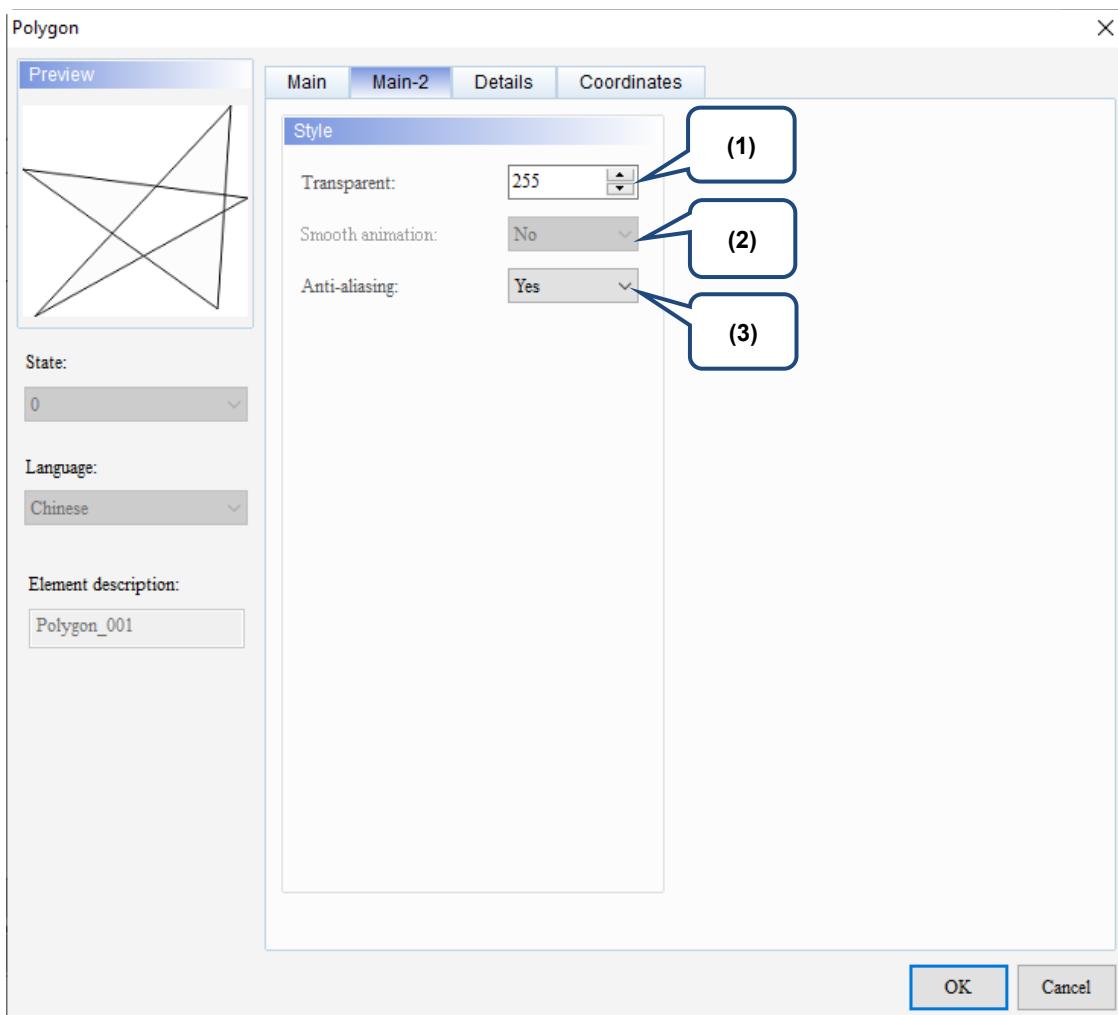


Figure 22.4.3 Main-2 property page for the Polygon element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

## ■ Details

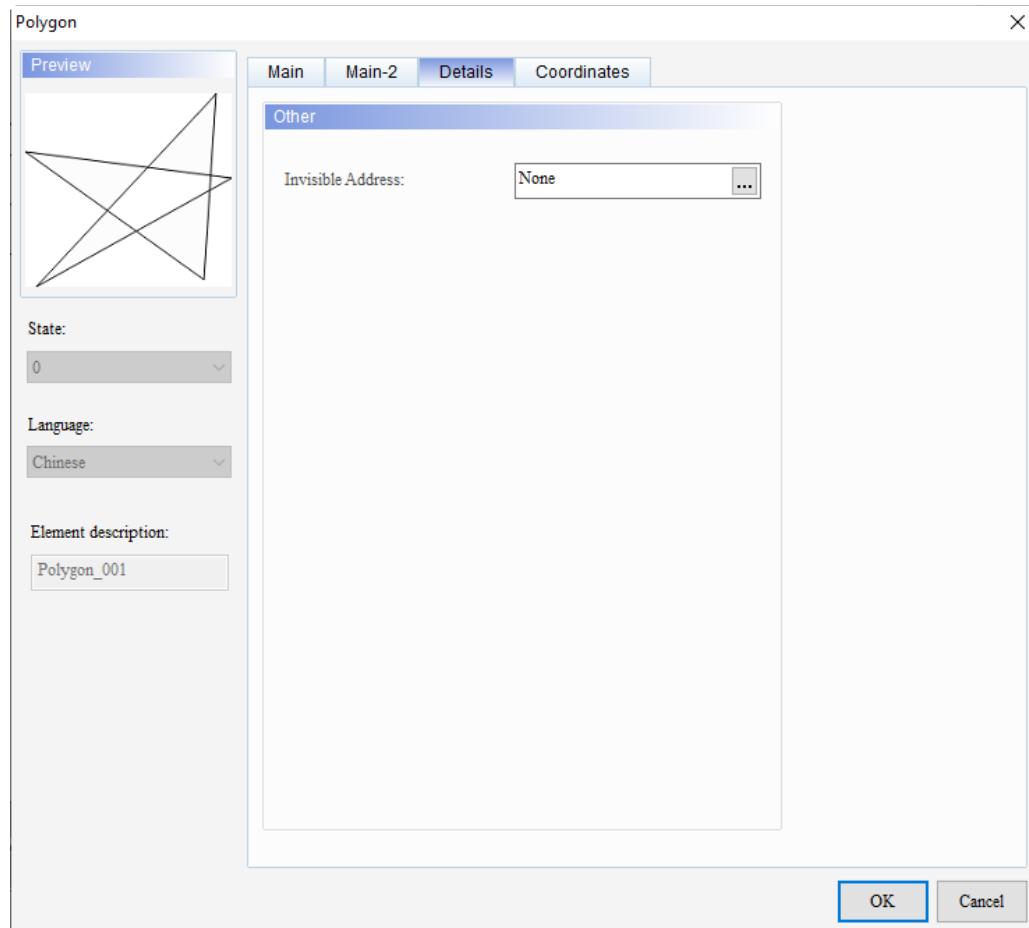


Figure 22.4.4 Details property page for the Polygon element

No.	Property	Function Description		
(1)	Invisible Address	Invisible Address is Off		\$9.0 OFF
		Invisible Address is On		\$9.0 ON
		<b>Polygon</b>		

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## ■ Coordinates

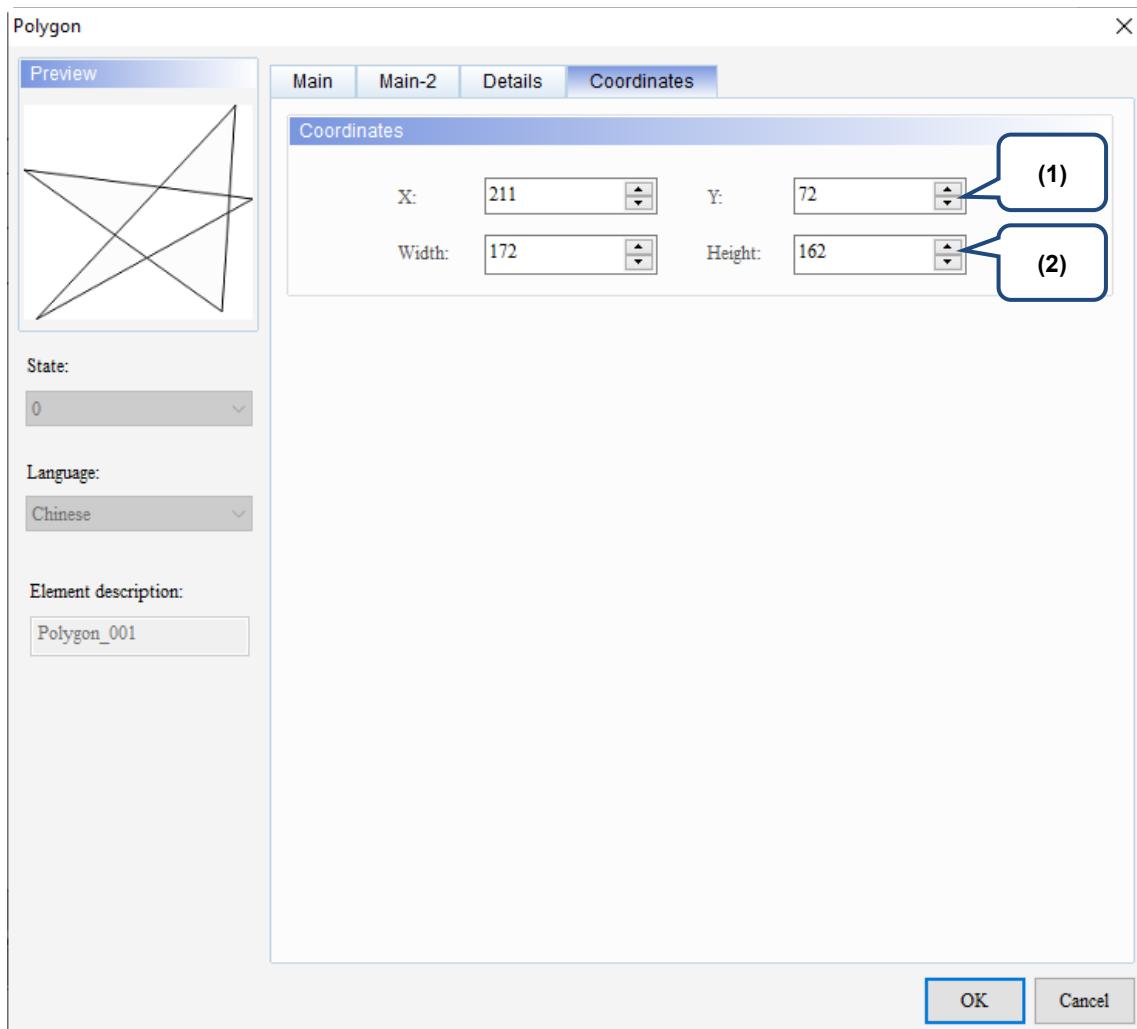


Figure 22.4.5 Coordinates property page for the Polygon element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 22.5 Text

You can use the Text element to enter the text for display.

When you double-click the Text, the property page is shown as follows.

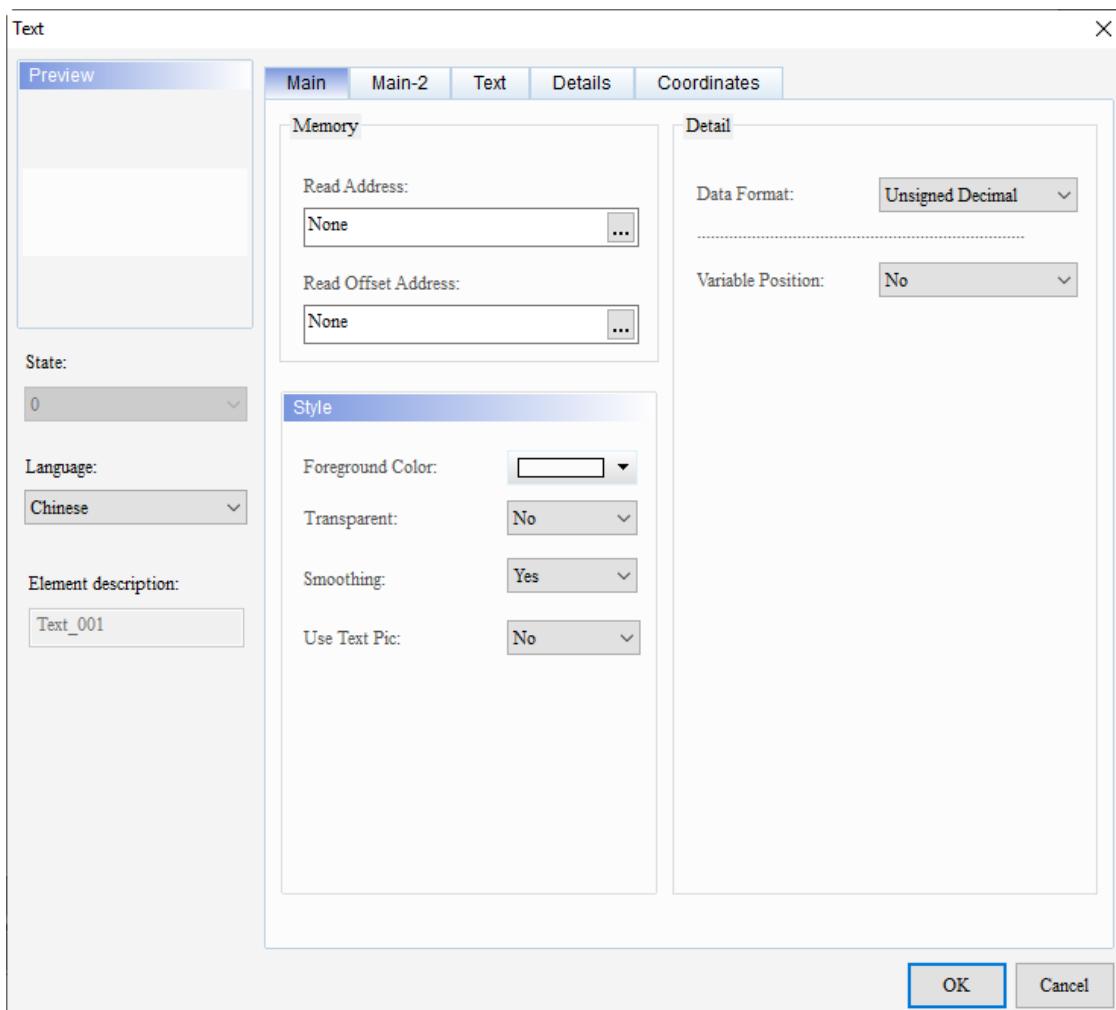


Figure 22.5.1 Properties of Text

Table 22.5.1 Function page of the Text element

Text	
Function page	Description
Preview	The Text element does not support multiple state values, but the multi-language display can be edited.
Main	Set the Read Address, Read Offset Address, Foreground Color, Transparent, Smoothing, and Use Text Pic function. Set the Data Format and Variable Position.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the text content, font, size, color, format, zoom, and alignment options.
Details	Set the Invisible Address.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

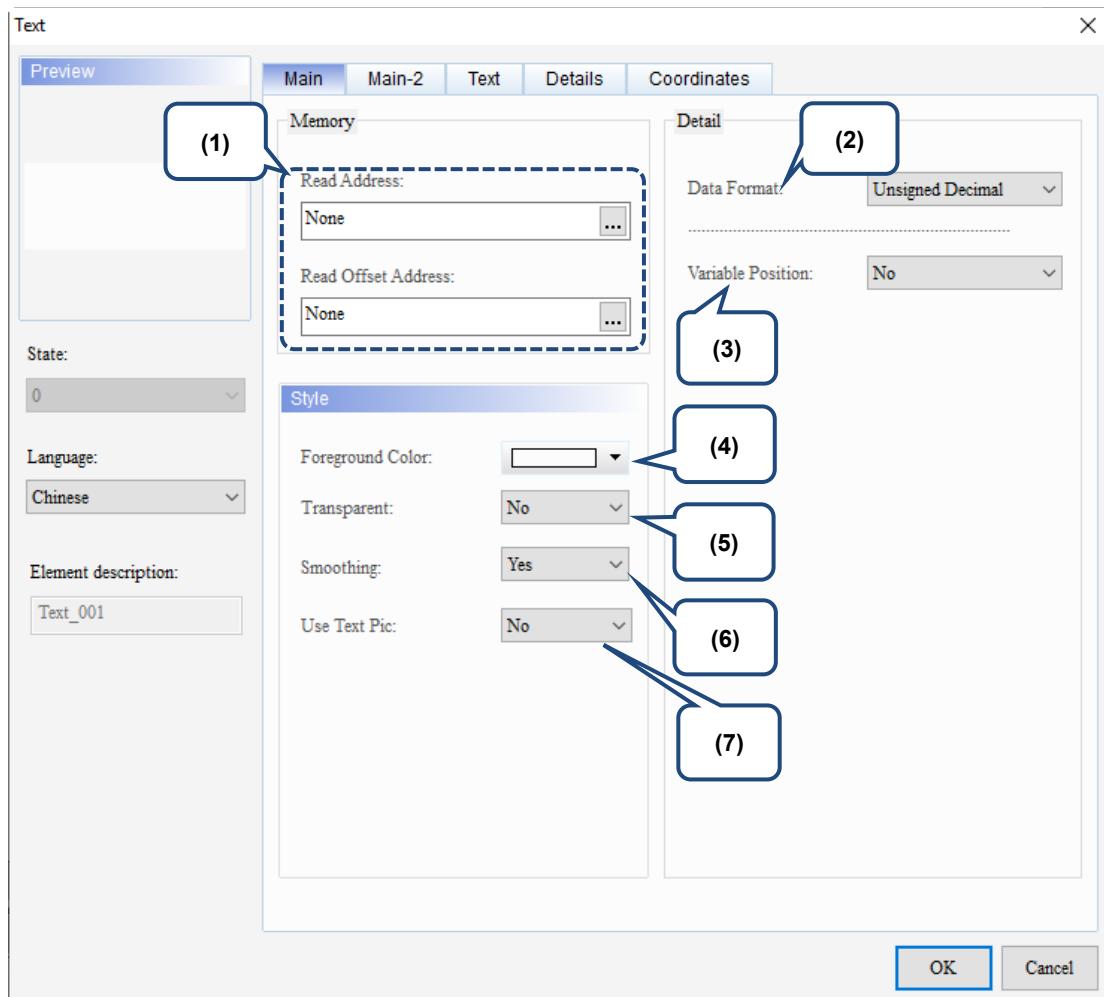
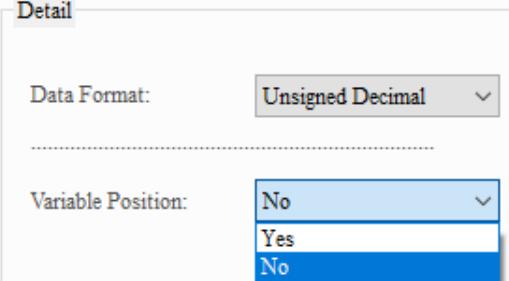
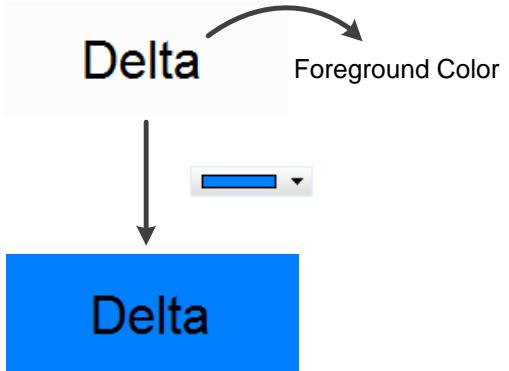
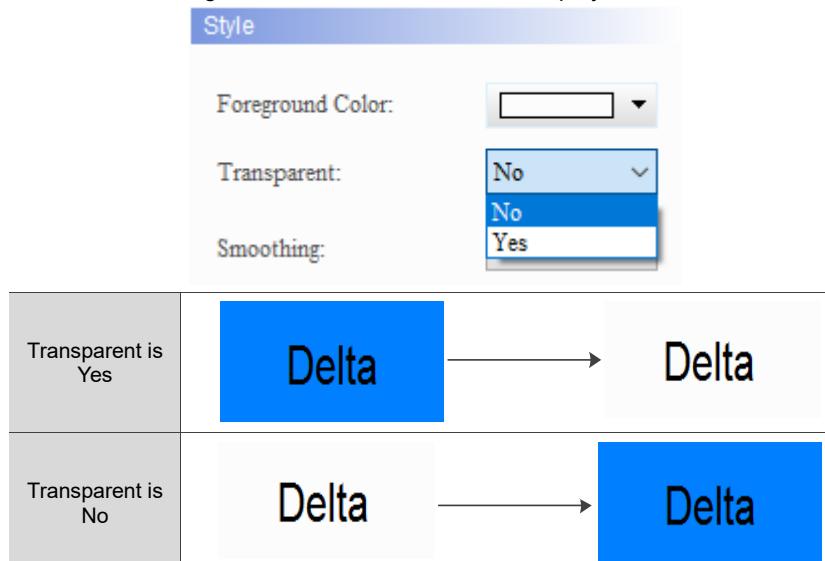


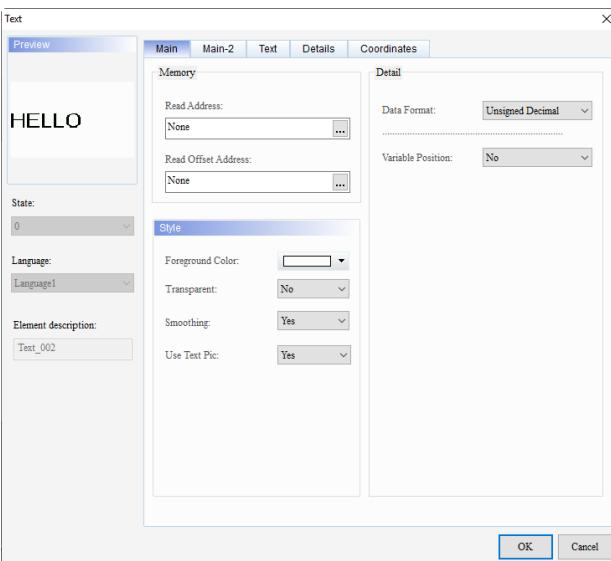
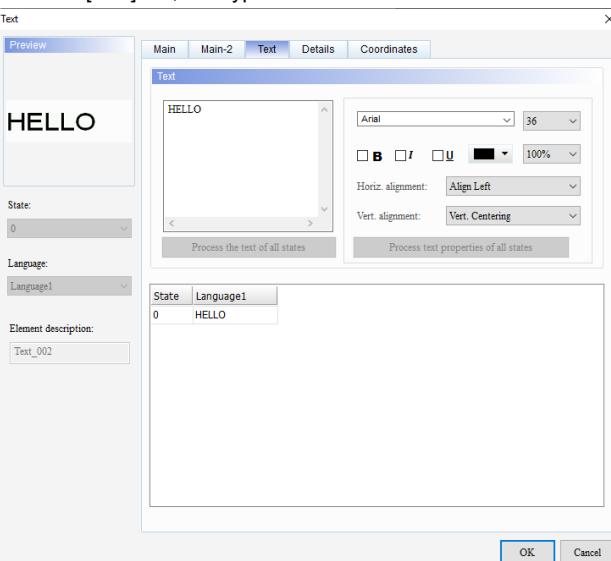
Figure 22.5.2 Main property page for the Text element

No.	Property	Function description										
(1)	Read Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>When Variable Position is set to Yes, the value of the Read Address is regarded as the X coordinate for the horizontal axis of the Text.</li> <li>When Variable Position is set to Yes, the value of [Read Address+1] is regarded as the Y coordinate for the vertical axis of the Text.</li> </ul>										
	Read Offset Address	Refer to Appendix D for instructions on writing and reading the offset address.										
(2)	Data Format	<p>There are four types of Data Format: BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal.</p> <p>Detail</p> <table border="1"> <tr> <td>Data Format:</td> <td>Unsigned Decimal</td> </tr> <tr> <td></td> <td>BCD</td> </tr> <tr> <td></td> <td>Signed Decimal</td> </tr> <tr> <td></td> <td>Unsigned Decimal</td> </tr> <tr> <td></td> <td>Hexadecimal</td> </tr> </table>	Data Format:	Unsigned Decimal		BCD		Signed Decimal		Unsigned Decimal		Hexadecimal
Data Format:	Unsigned Decimal											
	BCD											
	Signed Decimal											
	Unsigned Decimal											
	Hexadecimal											

No.	Property	Function description
(3)	Variable Position	<p>You can select Yes or No for Variable Position. When you select Yes, the position of the Text can be changed; when you select No, the position of the Text cannot be changed.</p> 
(4)	Foreground Color	<p>Set the foreground color of the element.</p> 
(5)	Transparent	<p>You can select Yes or No for Transparent. When you select Yes, the foreground color of the Text is transparent with only the text color displayed; when you select No, the foreground color of the element is displayed.</p> 

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No.	Property	Function description
(6)	Smoothing	<p>You can select Yes or No for Smoothing. When you select Yes, the font is displayed without jagged edges and is smoother; when you select No, the font is displayed with jagged edges and is not smooth.</p> <p><b>Style</b></p> <p>Foreground Color: <input type="color"/></p> <p>Transparent: <input type="button" value="No"/></p> <p>Smoothing: <input type="button" value="Yes"/> <input type="button" value="Yes"/> <input type="button" value="No"/></p> <p>Smoothing is Yes</p> <p>Smoothing is No</p> <p>Delta</p> <p>Delta</p>

No.	Property	Function description				
(7)	Use Text Pic	<p>Unlike the DOP-B series models using pictures to present all texts, the DOP-100 series models present directly with the texts. Therefore, if the language you use for the element is not yet supported by the PC, it is possible to cause missing characters and garbled texts when the element is displayed on the HMI. To have the text display effect be the same as that on the DOP-B projects, the Use Text Pic function is added for the Text, Button, and General Message Display elements. Refer to the following examples.</p> <p style="text-align: center;"><b>Use Text Pic</b></p> <p>■ Create a Text element and go to the [Main] tab to set the Use Text Pic function.</p>  <p>Note: if you use DOPSoft 4.00.06 version to open a DOP-B project, the Use Text Pic function is enabled (Yes) by default. If you add a DOP-100 project, then the Use Text Pic function is disabled (No) by default.</p> <p>■ Go to the [Text] tab, and type the text and set its font.</p>  <p>■ After creating the element, download it to the HMI.</p> <p>■ The following table shows the results of using and not using the Use Text Pic function.</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">Use Text Pic is Yes</td> <td style="width: 50%;">Use Text Pic is No</td> </tr> <tr> <td><b>HELLO</b></td> <td><b>HELLO</b></td> </tr> </table>	Use Text Pic is Yes	Use Text Pic is No	<b>HELLO</b>	<b>HELLO</b>
Use Text Pic is Yes	Use Text Pic is No					
<b>HELLO</b>	<b>HELLO</b>					
	Execution result					

## ■ Main-2

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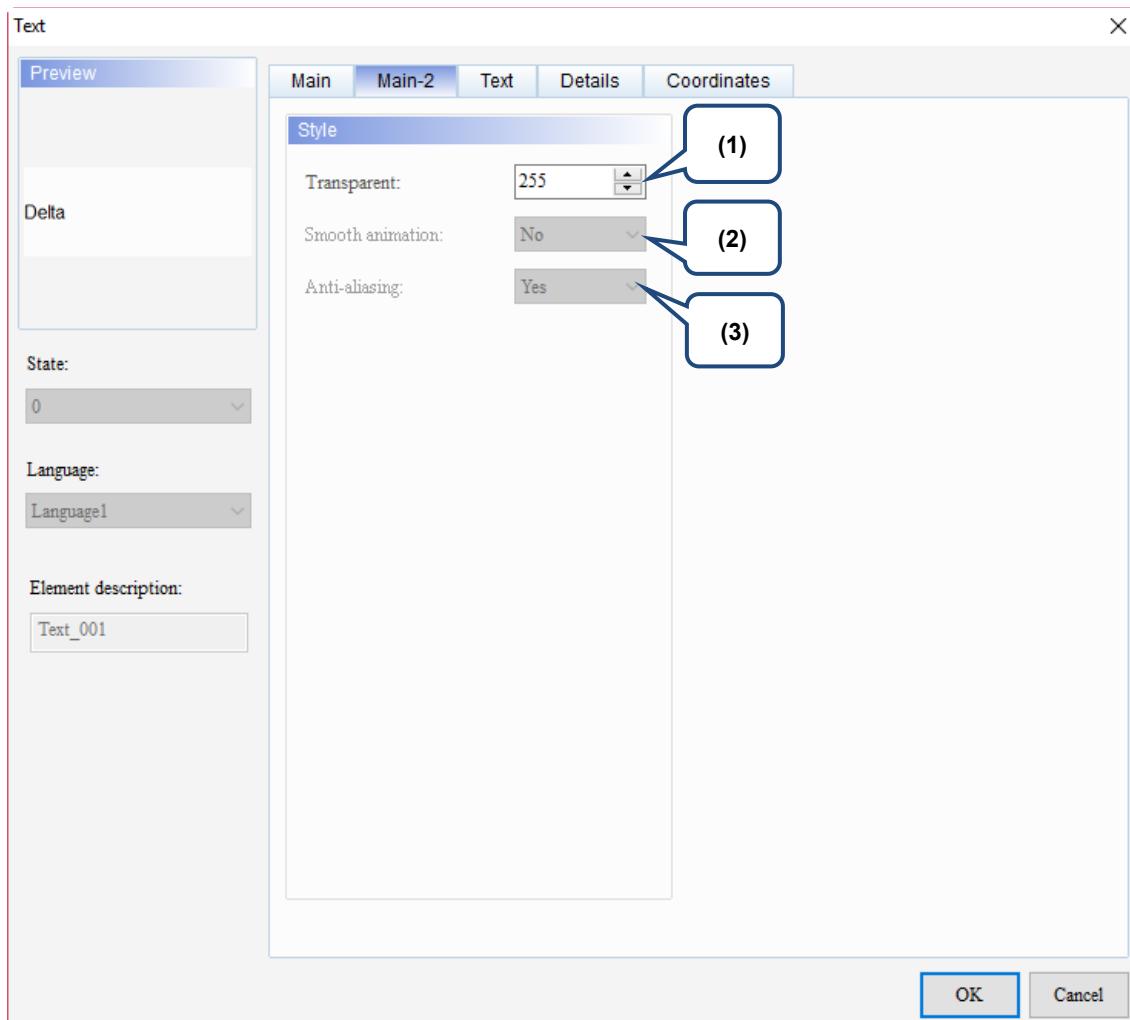
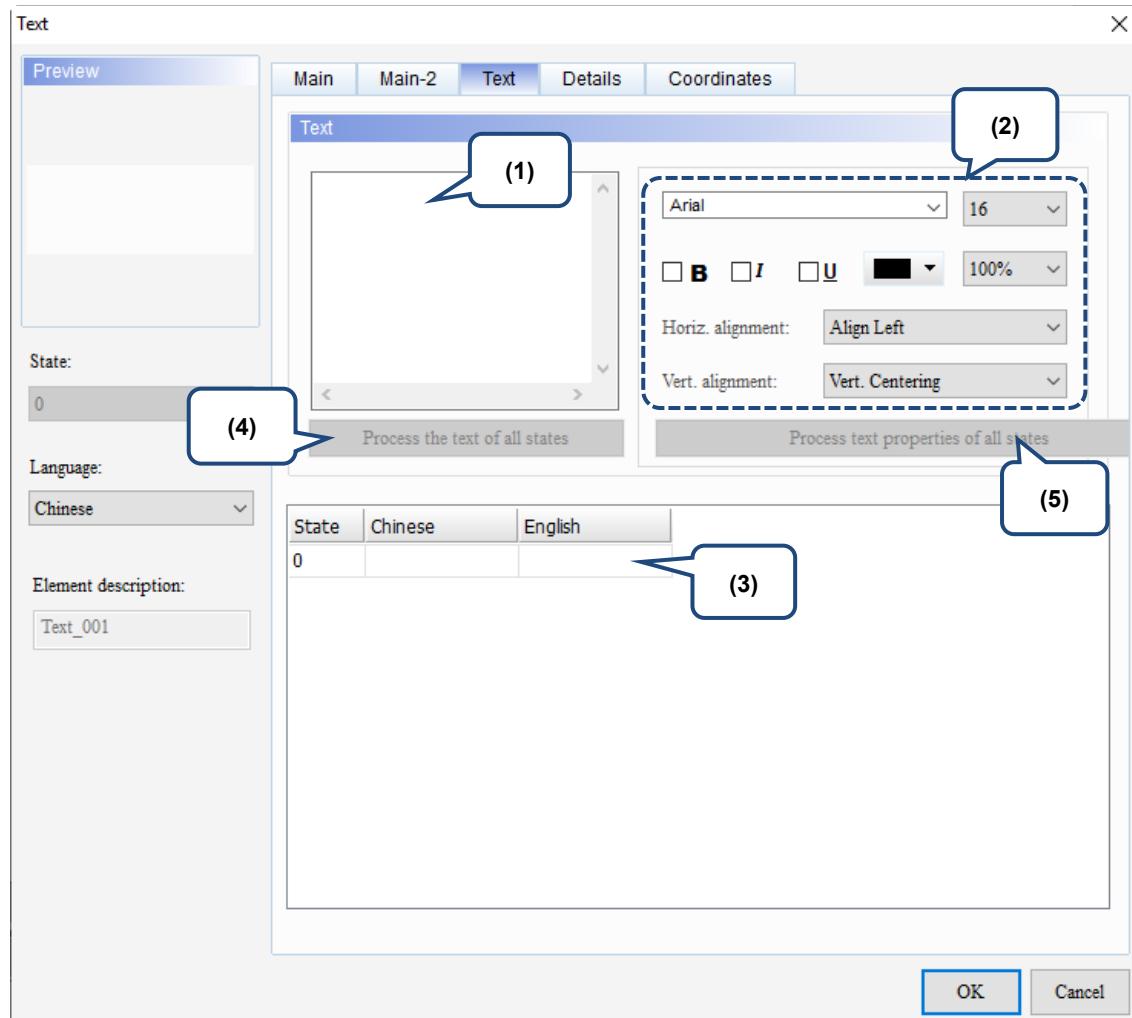


Figure 22.5.3 Main-2 property page for the Text element

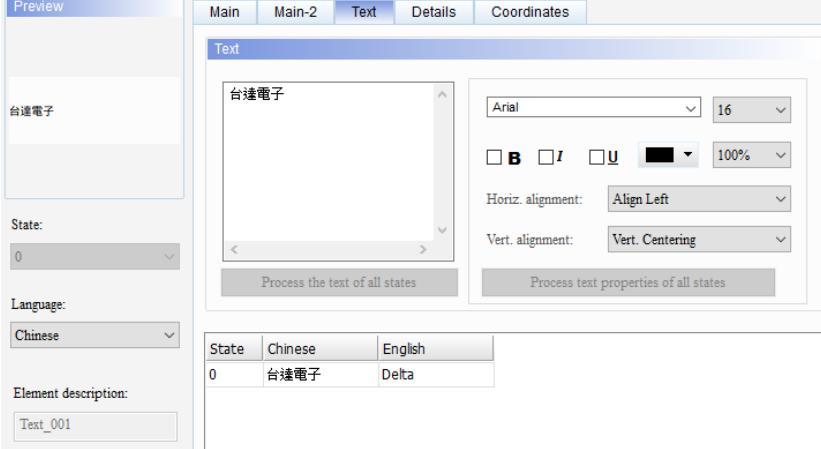
No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text



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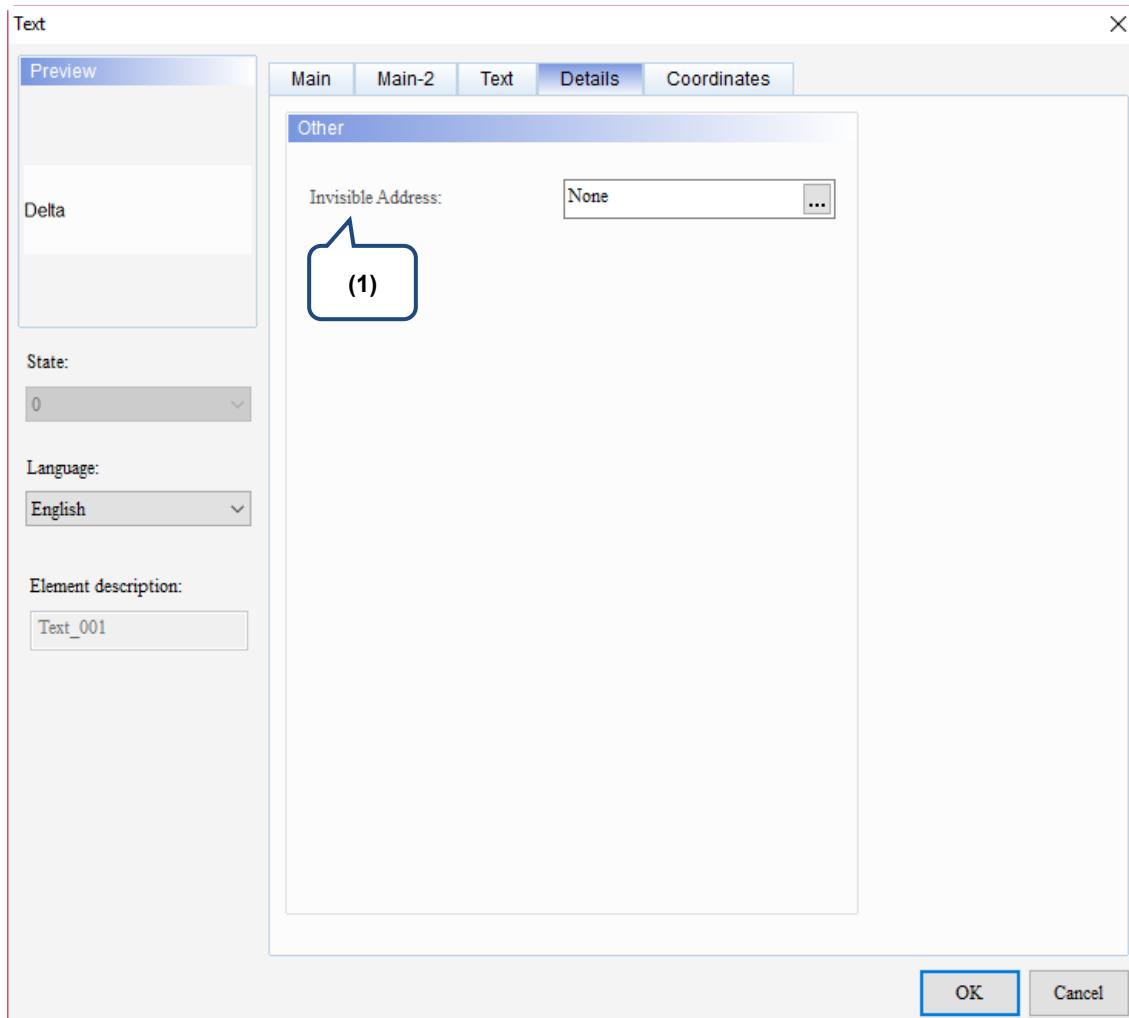
Figure 22.5.4 Text property page for the Text element

No.	Property	Function description
(1)	Text	<p>■ You can enter the text to display in this box.</p>  <p>■ As long as the element allows text input, you can click the element and press the space key to start editing the text.</p>
(2)	Text property	<p>Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the preceding figure for the Text property setting results.</p>

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No.	Property	Function description
(3)	Edit multi-language text	If you have added multi-language text, the Text page allows you to edit the multi-language data.
(4)	Process the text of all states	This element does not support multi-state functions.
(5)	Process text properties of all states	This element does not support multi-state functions.

## ■ Details



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Figure 22.5.5 Details property page for the Text element

No.	Property	Function description								
(1)	Invisible Address	<p>When Invisible Address is set to On, the element is invisible and you cannot execute its set functions.</p> <table border="1"> <tr> <td>Invisible Address is Off</td> <td><b>Delta</b></td> <td>\$9.0 OFF</td> </tr> <tr> <td>Invisible Address is On</td> <td>Element is invisible</td> <td>\$9.0 ON</td> </tr> </table>	Invisible Address is Off	<b>Delta</b>	\$9.0 OFF	Invisible Address is On	Element is invisible	\$9.0 ON		
Invisible Address is Off	<b>Delta</b>	\$9.0 OFF								
Invisible Address is On	Element is invisible	\$9.0 ON								

## ■ Coordinates

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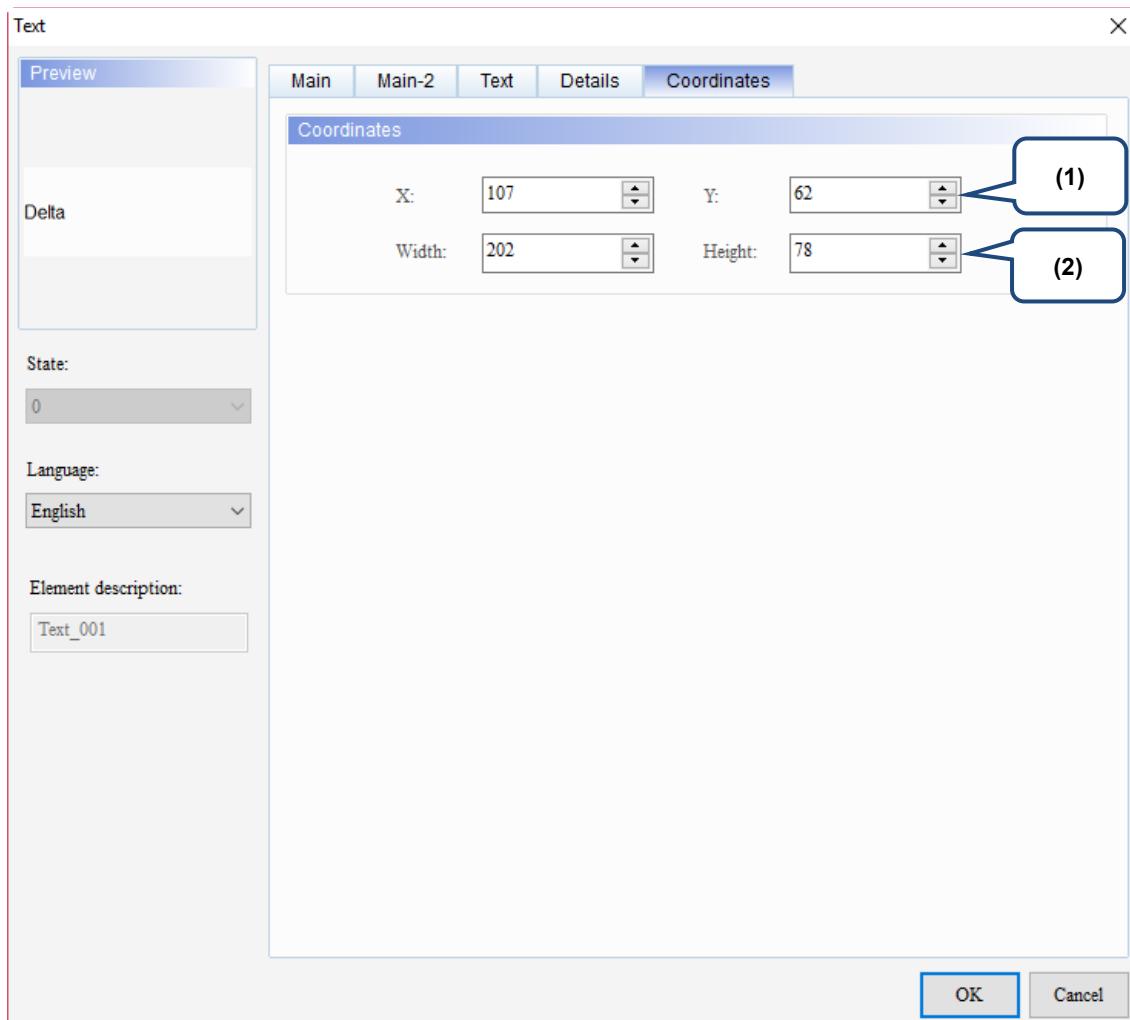


Figure 22.5.6 Coordinates property page for the Text element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 22.6 Scale

You can use the Scale element to indicate the curve value for the History Trend Graph. In the Scale element property page, you can set the Scale Mark Number and Subscale Mark Number, as well as Data Type, Data Format, Maximum, and Minimum to be displayed. You can also decide whether to display the marked value or only to display the scale.

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When you double-click the Scale, the property page is shown as follows.

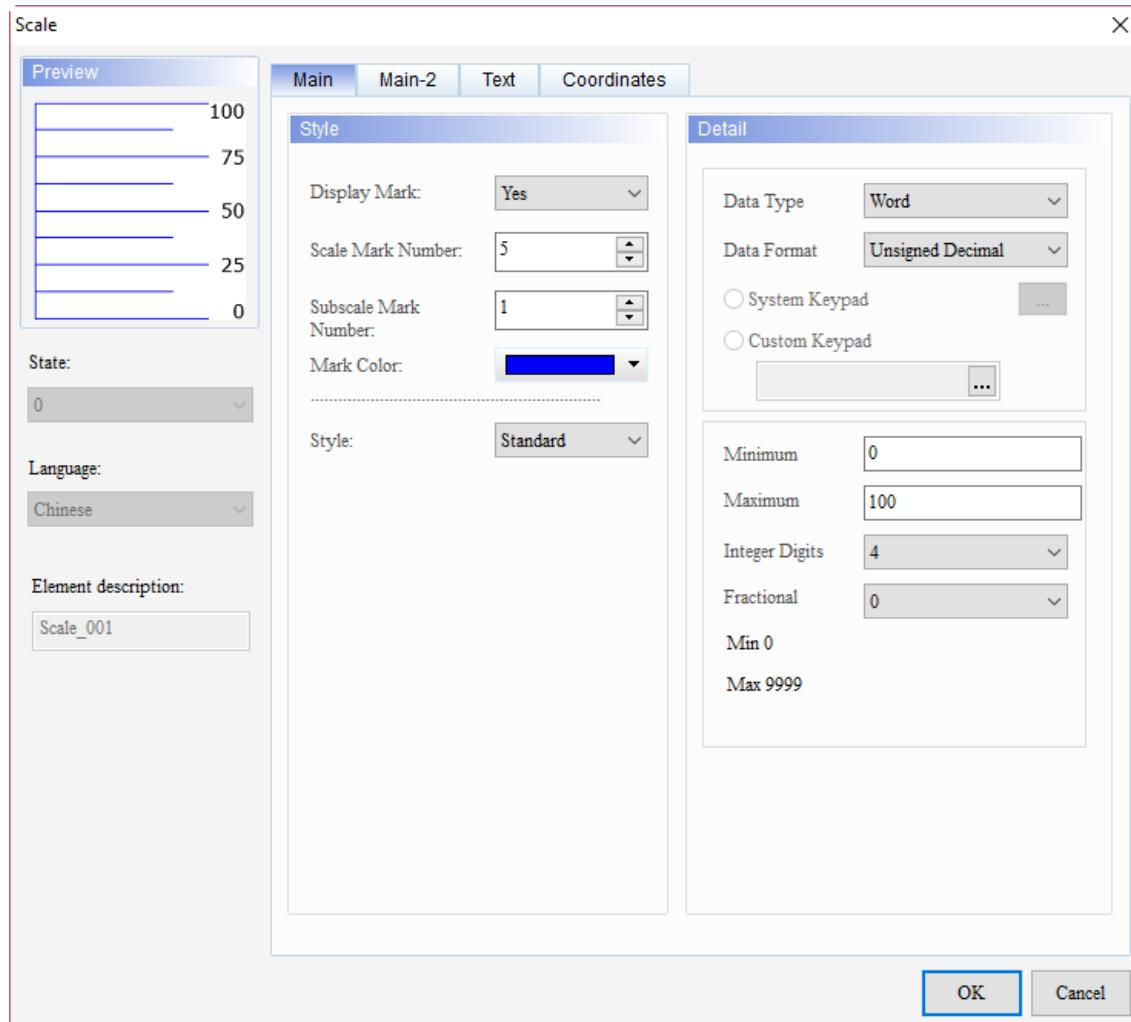


Figure 22.6.1 Properties of Scale

Table 22.6.1 Function page of the Scale element

Scale	
Function page	Description
Preview	The Scale element does not support multiple state values and multi-language display.
Main	Set the Display Mark, Scale Mark Number, Subscale Mark Number, Mark Color, and Style. Set the Data Type, Data Format, Minimum, Maximum, Integer Digits, and Fractional (Digits).
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Text	Set the font, size, and color of the text to display.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

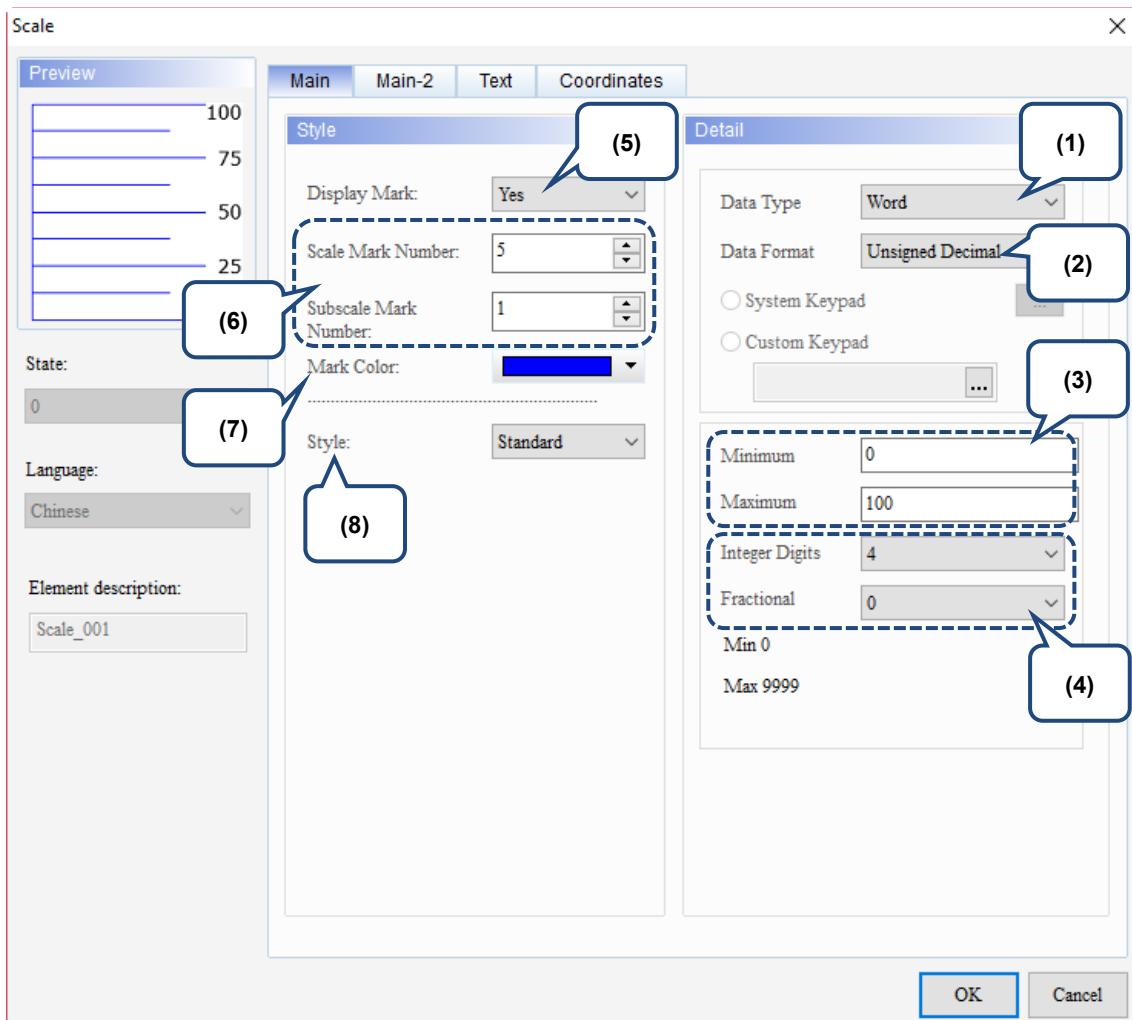
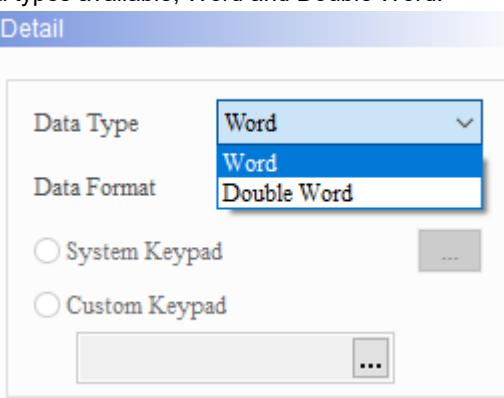
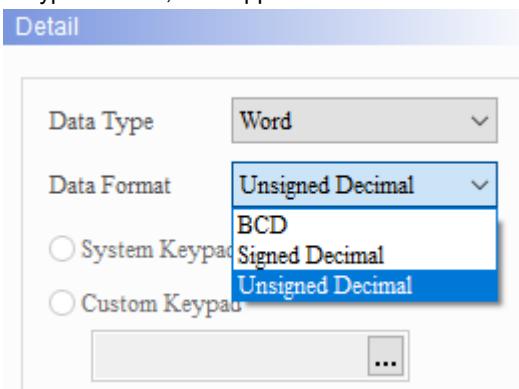
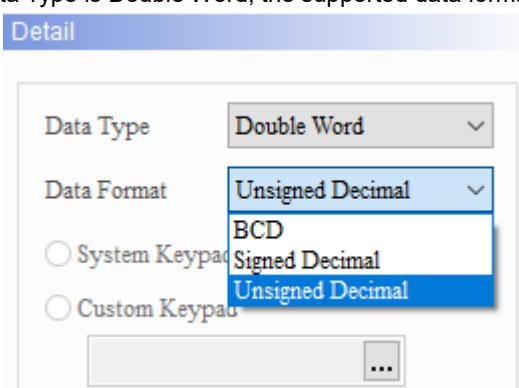
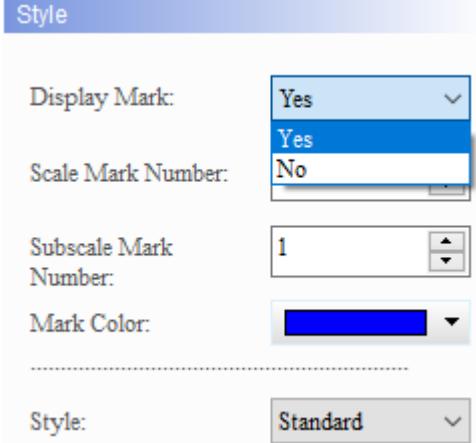
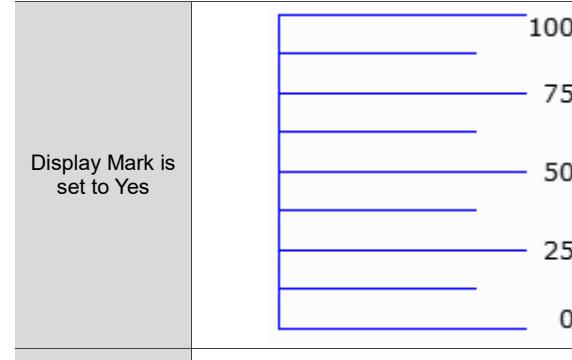
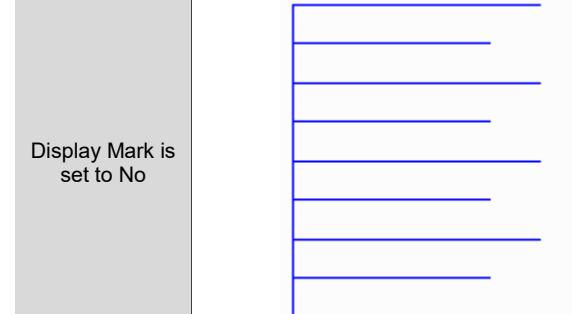
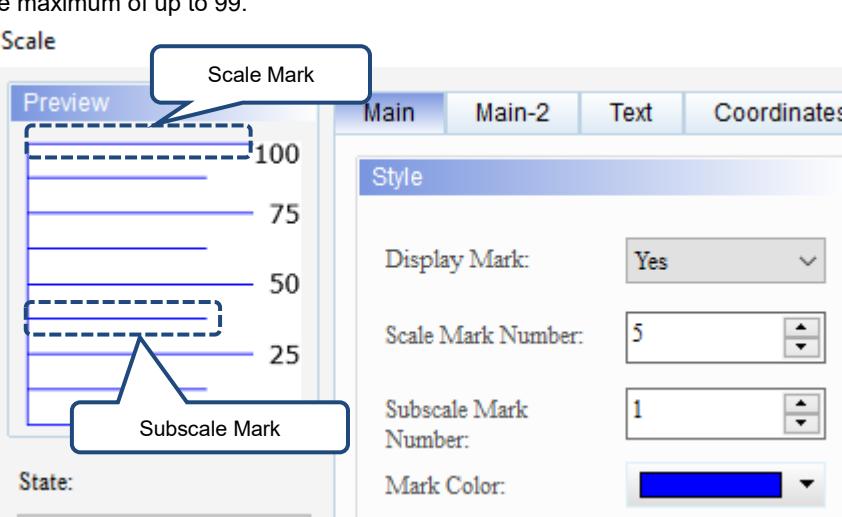


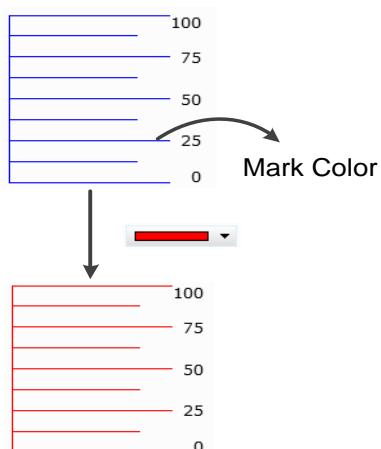
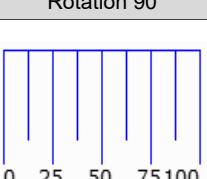
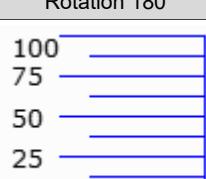
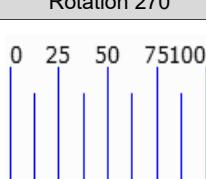
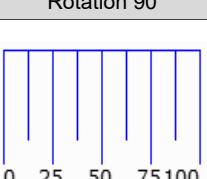
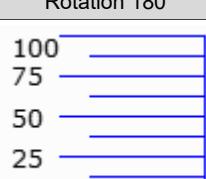
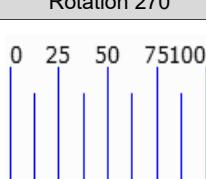
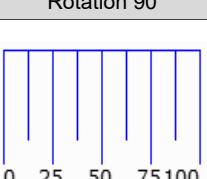
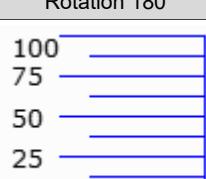
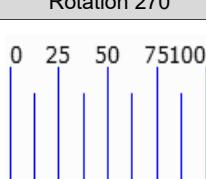
Figure 22.6.2 Main property page for the Scale element

No.	Property	Function description
(1)	Data Type	<p>There are two data types available, Word and Double Word.</p> 

No.	Property	Function description																															
(2)	Data Format	<p>■ When the Data Type is Word, the supported data formats are as follows:</p>  <p>■ When the Data Type is Double Word, the supported data formats are as follows:</p> 																															
(3)	Minimum / Maximum value	<p>The allowable ranges for the Minimum and Maximum values vary based on the selected Data Type, Integer Digits, and Fractional (Digits). The following table is based on the example with no Fractional (Digits) set.</p> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Data Format</th> <th>Allowable range</th> <th>Integer Digits</th> <th>Fractional (Digits)</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Word</td> <td>BCD</td> <td>0 to 9999</td> <td>4</td> <td>0</td> </tr> <tr> <td>Signed Decimal</td> <td>-3278 to +32767</td> <td>5</td> <td>0</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 65535</td> <td>5</td> <td>0</td> </tr> <tr> <td rowspan="3">Double Word</td> <td>BCD</td> <td>0 to 99999999</td> <td>8</td> <td>0</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648 to +2147483647</td> <td>10</td> <td>0</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0 to 4294697295</td> <td>10</td> <td>0</td> </tr> </tbody> </table>	Data Type	Data Format	Allowable range	Integer Digits	Fractional (Digits)	Word	BCD	0 to 9999	4	0	Signed Decimal	-3278 to +32767	5	0	Unsigned Decimal	0 to 65535	5	0	Double Word	BCD	0 to 99999999	8	0	Signed Decimal	-2147483648 to +2147483647	10	0	Unsigned Decimal	0 to 4294697295	10	0
Data Type	Data Format	Allowable range	Integer Digits	Fractional (Digits)																													
Word	BCD	0 to 9999	4	0																													
	Signed Decimal	-3278 to +32767	5	0																													
	Unsigned Decimal	0 to 65535	5	0																													
Double Word	BCD	0 to 99999999	8	0																													
	Signed Decimal	-2147483648 to +2147483647	10	0																													
	Unsigned Decimal	0 to 4294697295	10	0																													
(4)	Integer Digits / Fractional (Digits)	You can set the number of displayed integer and fractional digits.																															

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No.	Property	Function description
(5)	Display Mark	<p>You can select Yes or No for Display Mark. When you select Yes, the value on the Scale is displayed; when you select No, the value on the Scale is not displayed and only the scale is displayed.</p>  <p>Style</p> <p>Display Mark: Yes</p> <p>Scale Mark Number: Yes</p> <p>Subscale Mark Number: 1</p> <p>Mark Color:</p> <hr/> <p>Style: Standard</p>  <p>Display Mark is set to Yes</p>  <p>Display Mark is set to No</p>
(6)	Scale Mark Number Subscale Mark Number	<p>You can set the number of marks to display for scale mark and subscale mark with the maximum of up to 99.</p>  <p>Scale</p> <p>Preview</p> <p>Main Main-2 Text Coordinates</p> <p>Style</p> <p>Display Mark: Yes</p> <p>Scale Mark Number: 5</p> <p>Subscale Mark Number: 1</p> <p>Mark Color:</p>

No.	Property	Function description								
(7)	Mark Color	<p>You can customize the color displayed for the scale.</p> 								
(8)	Style	<ul style="list-style-type: none"> <li>■ The available element styles are Standard, Rotation 90, Rotation 180, and Rotation 270.</li> <li>■ You can change the appearance of the element with this setting.</li> </ul> <table border="1"> <thead> <tr> <th>Standard</th> <th>Rotation 90</th> <th>Rotation 180</th> <th>Rotation 270</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Standard	Rotation 90	Rotation 180	Rotation 270				
Standard	Rotation 90	Rotation 180	Rotation 270							
										

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## ■ Main-2

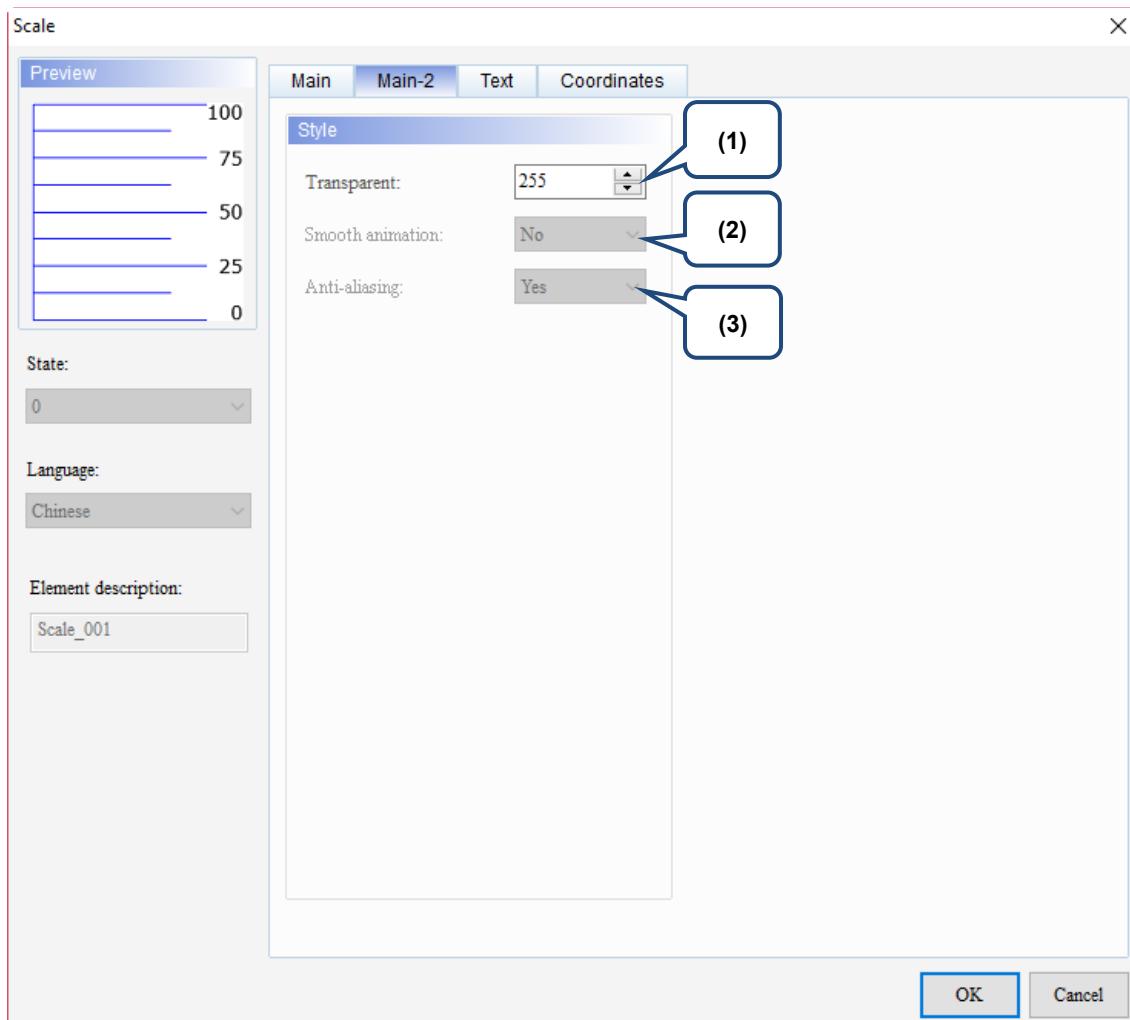


Figure 22.6.3 Main-2 property page for the Scale element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Smooth animation	The Smooth animation function is not available for this element.
(3)	Anti-aliasing	The Anti-aliasing function is not available for this element.

## ■ Text

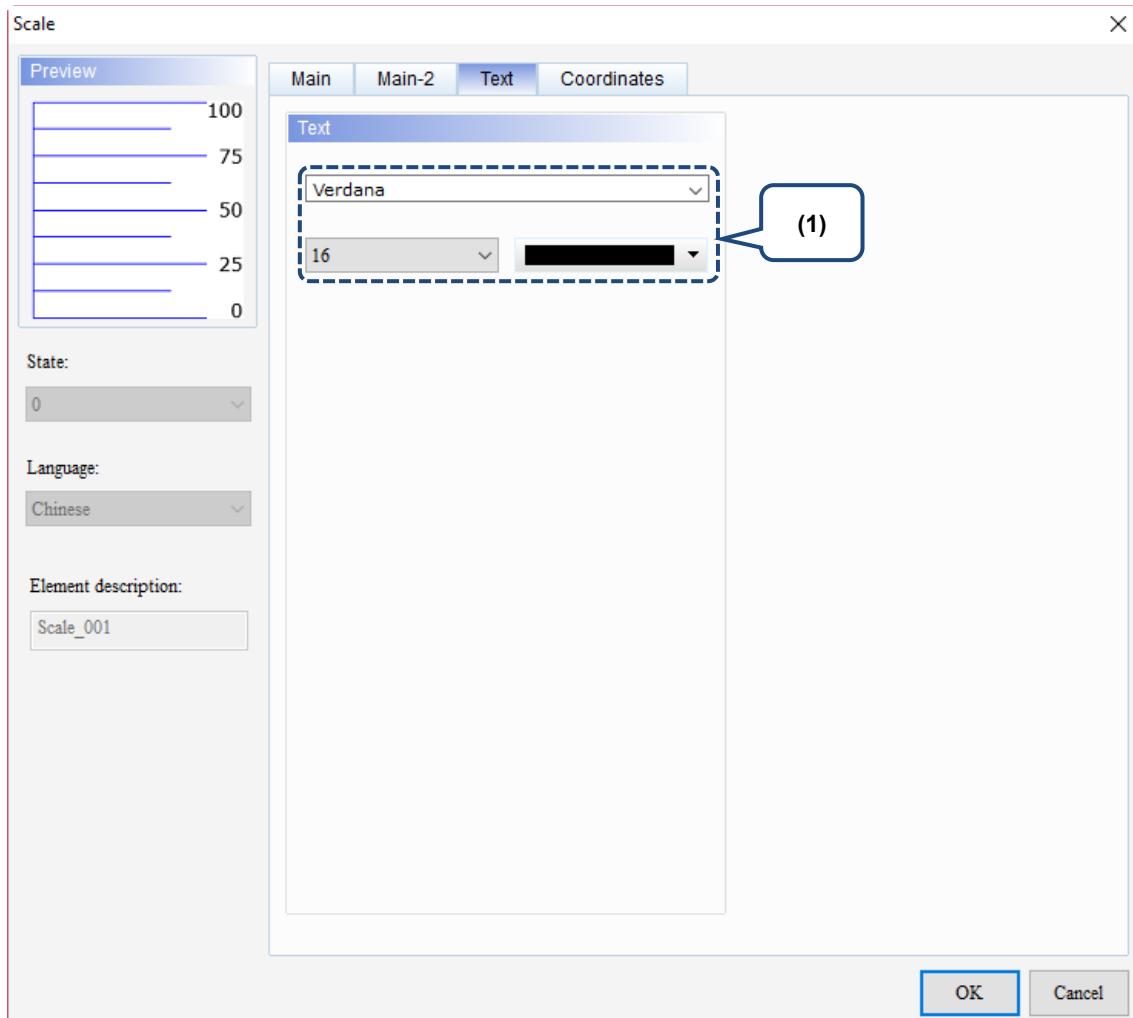


Figure 22.6.4 Text property page for the Scale element

No.	Property	Function description
(1)	Text property	Set the text properties, including font, size, and color.

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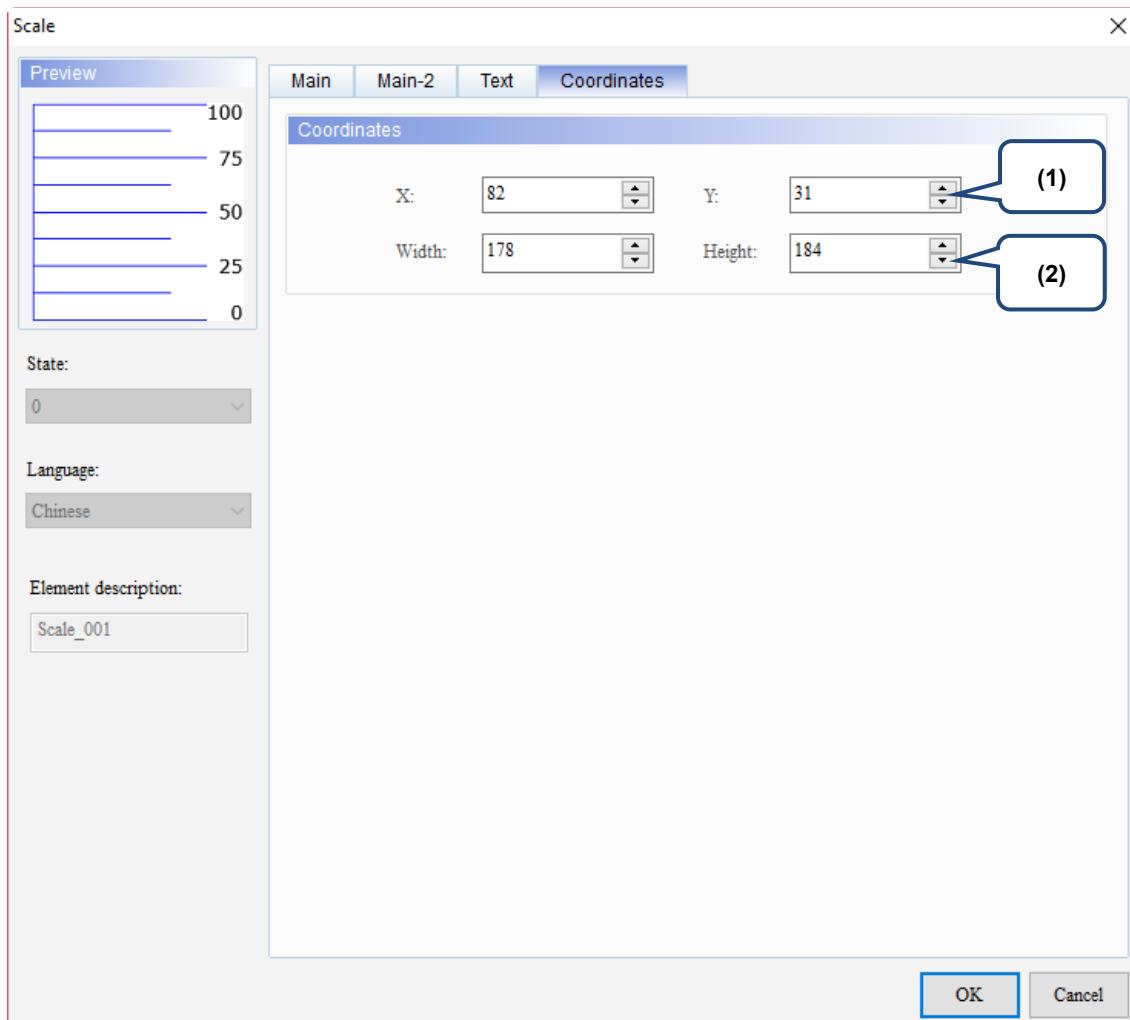
**■ Coordinates**

Figure 22.6.5 Coordinates property page for the Scale element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

## 22.7 Table

The Table element offers the same functions as those in the Windows Office editing programs, enabling users to add rows and columns. You can also set the colors for the rows and columns which adds more variety to the appearance of the tables.

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When you double-click the Table, the property page is shown as follows.

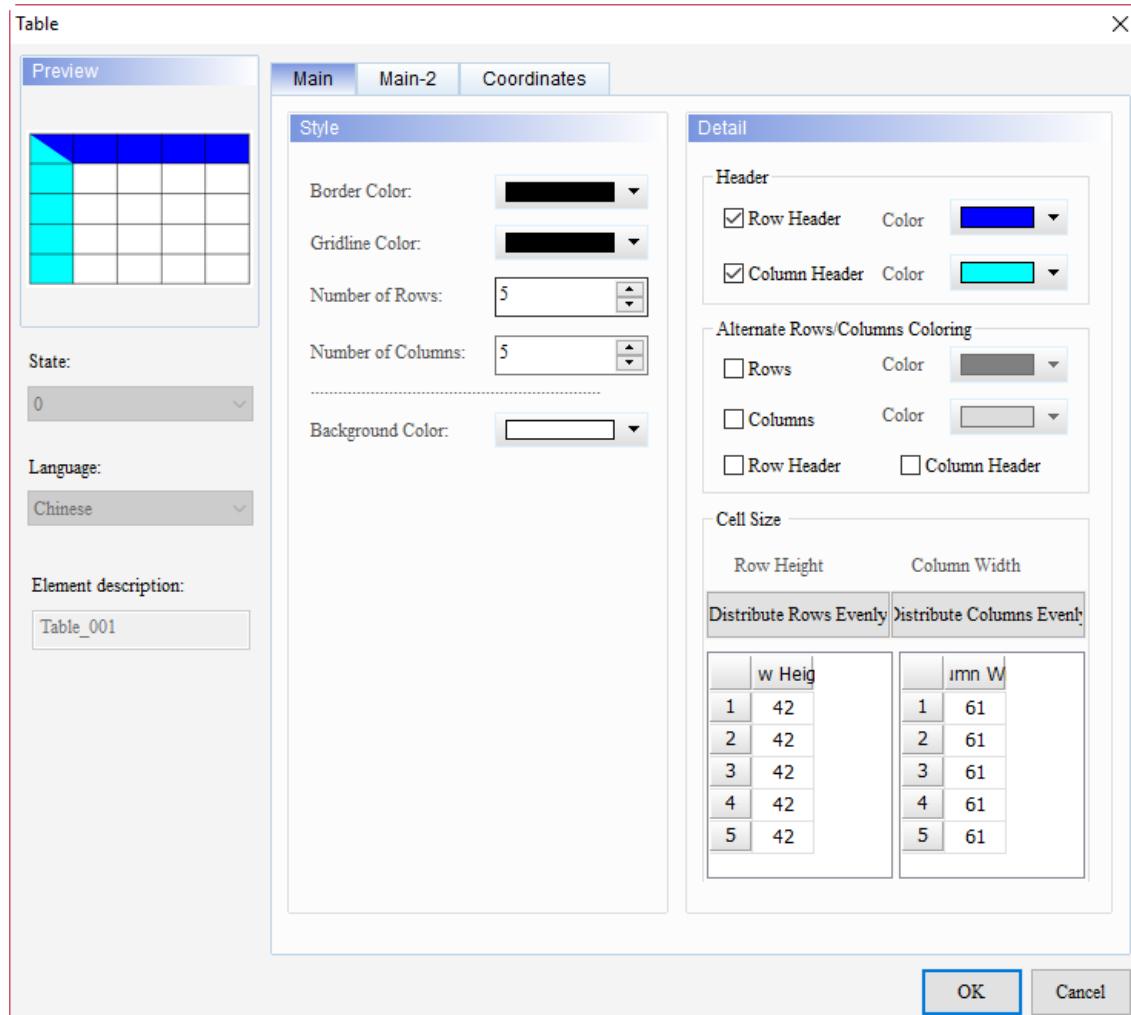


Figure 22.7.1 Properties of Table

Table 22.7.1 Function page of the Table element

Table	
Function page	Description
Preview	The Table element does not support multiple state values and multi-language display.
Main	Set the Border Color, Gridline Color, Number of Rows, Number of Columns, and Background Color. Set the Row Header, Column Header, (Alternate) Rows / Columns, and (Alternate) Row Header / Column Header. Set to Distribute Rows Evenly and Distribute Columns Evenly.
Main-2	Set the Transparent, Smooth animation, and Anti-aliasing functions.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

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## ■ Main

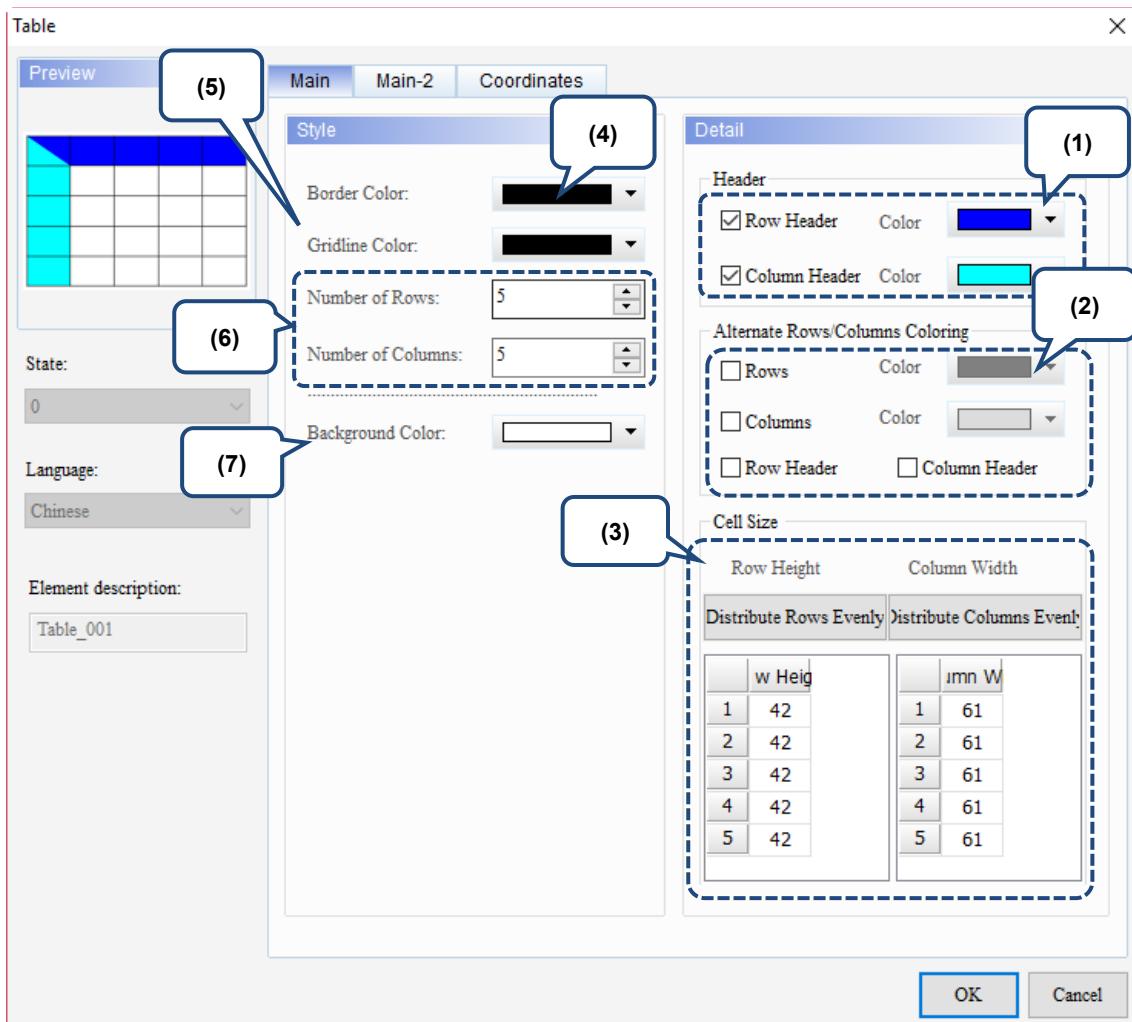
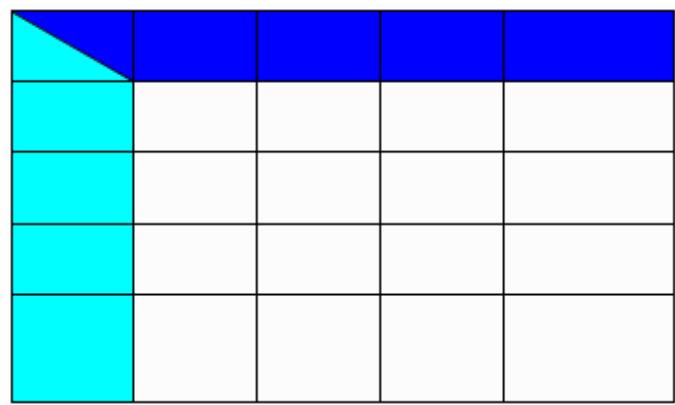
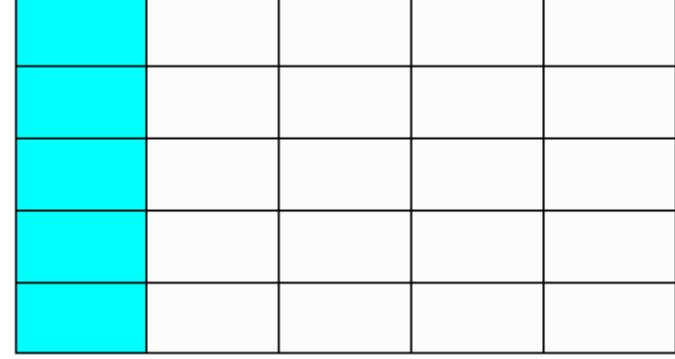
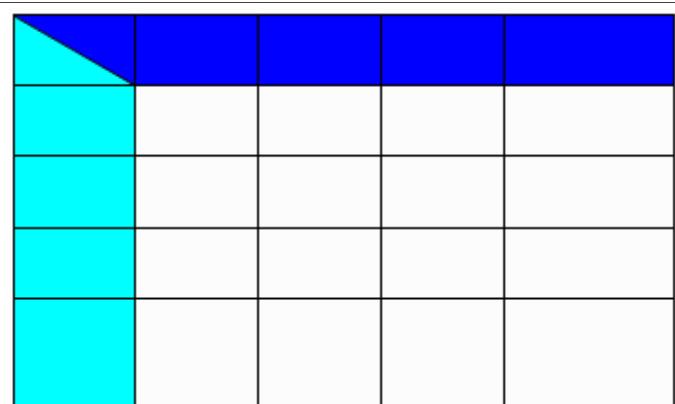
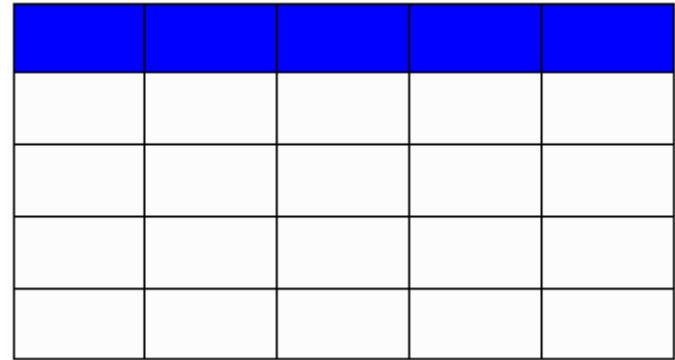
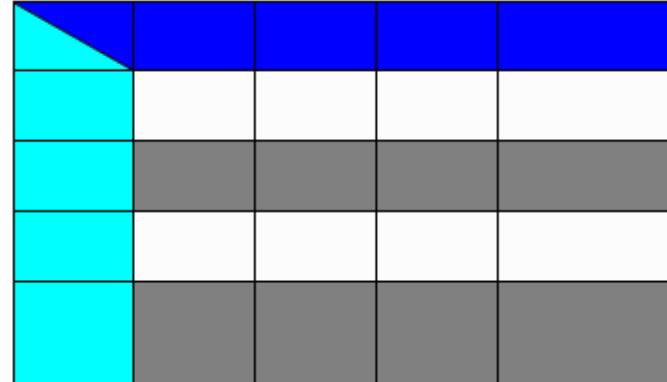
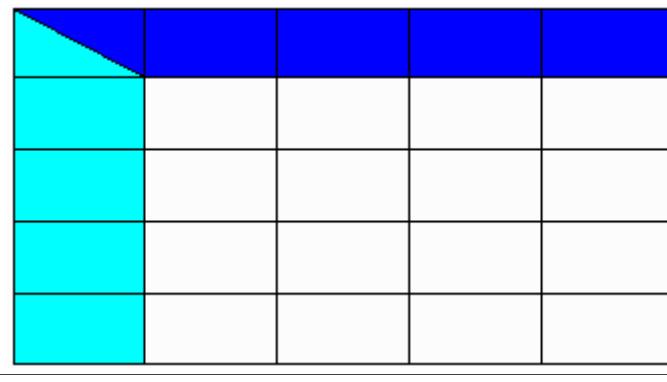
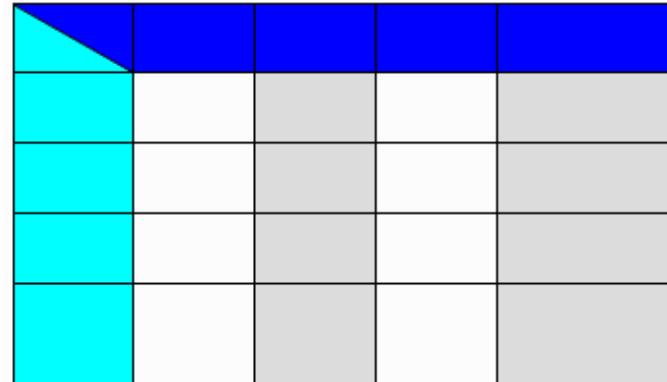
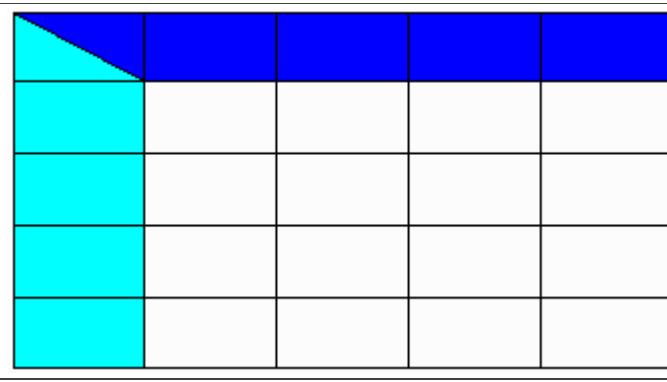


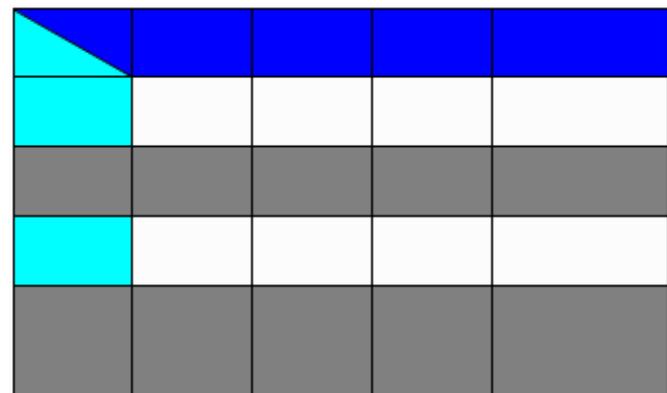
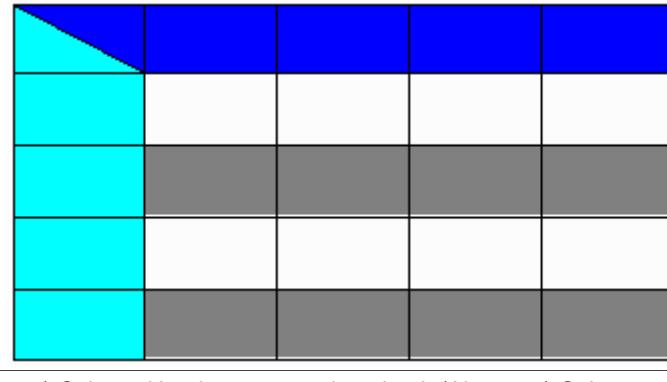
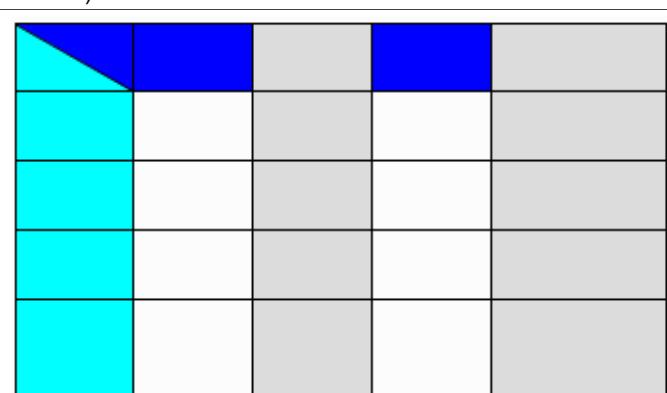
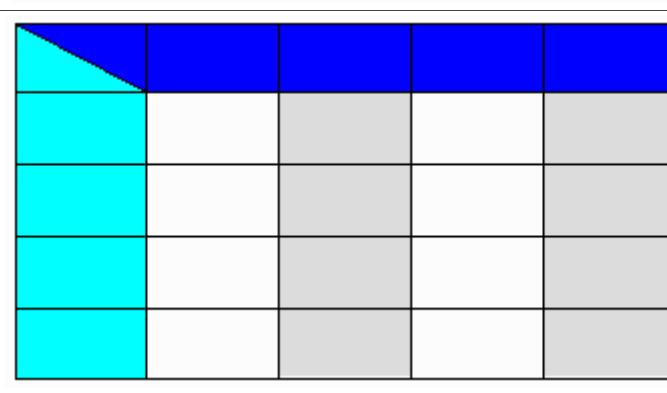
Figure 22.7.2 Main property page for the Table element

No.	Property	Function description				
	Row Header	You can set to display the Row Header for the first row of the Table and set the displaying color for the Row Header.				
	Check					
	Uncheck					
(1)	Column Header	You can set to display the Column Header for the first column of the Table and set the displaying color for the Column Header.				
	Check					
	Uncheck					

22

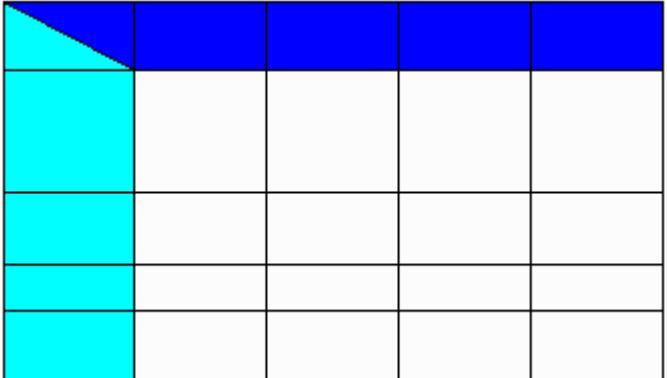
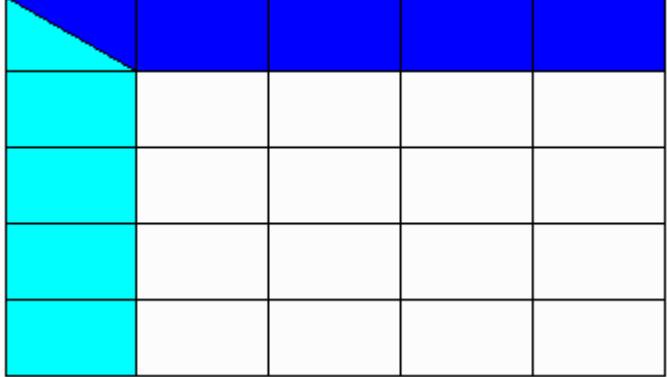
22

No.	Property	Function description					
(2)	(Alternate) Rows	Check	<p>You can set the displaying color for the (Alternate) Rows and set to use the (Alternate) Rows format.</p> 				
							
	(Alternate) Columns	Check					
							

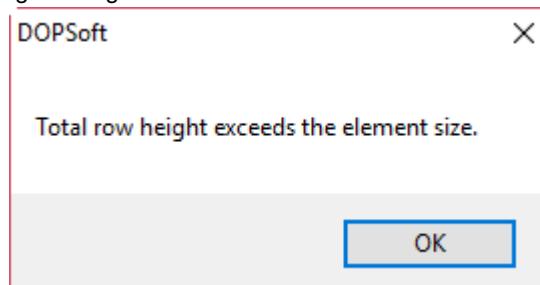
No.	Property	Function description					
	(Alternate) Row Header	To use (Alternate) Row Header, you need to check (Alternate) Rows to enable the (Alternate) Row Header function.					
							
							
(2)	(Alternate) Column Header	To use (Alternate) Column Header, you need to check (Alternate) Columns to enable the (Alternate) Column Header function.					
							
							

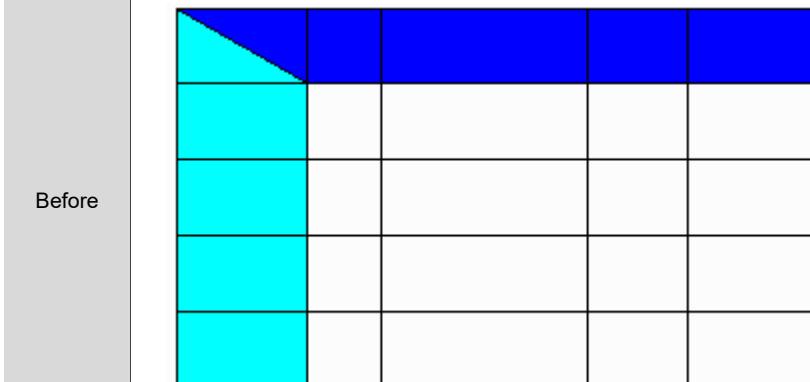
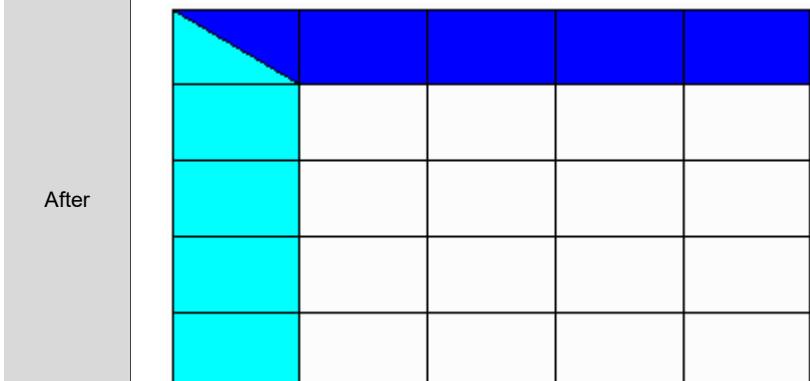
22

22

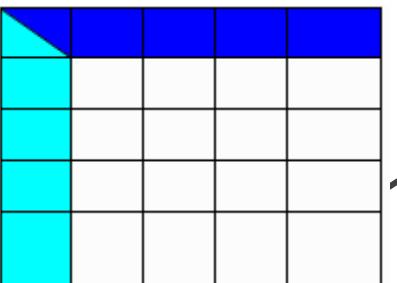
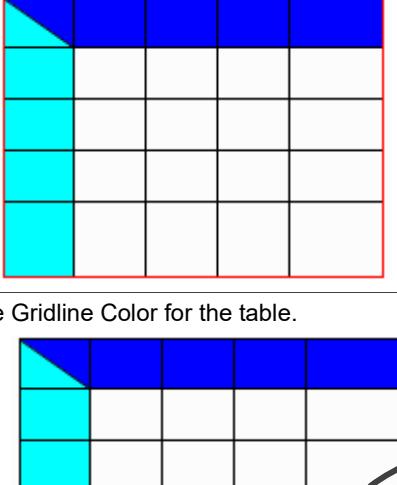
No.	Property	Function description					
(3)	Distribute Rows Evenly	Before	<ul style="list-style-type: none"> <li>The Distribute Rows Evenly option adjusts uneven height between the rows in a table.</li> </ul> 				
							

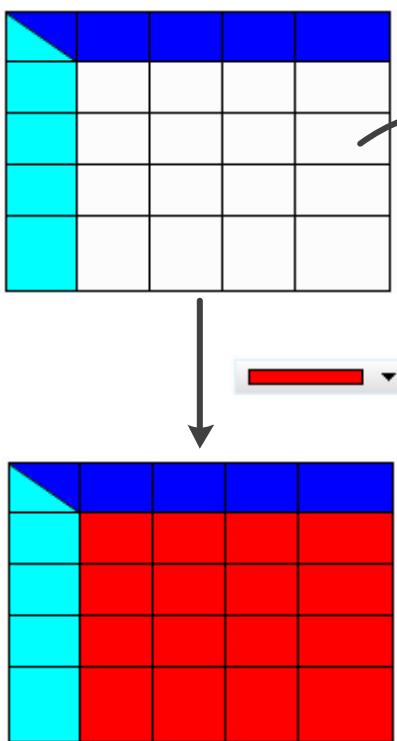
- You can set the height for the row with the sum of the height not exceeding the element height.
- If the set row height is greater than the element height, the software displays the following message.



No.	Property	Function description
	Distribute Columns Evenly	<p>■ The Distribute Columns Evenly option adjusts uneven width between the columns in a table.</p>  <p>Before</p>  <p>After</p> <ul style="list-style-type: none"> <li>■ You can set the width for the column with the sum of the width not exceeding the element width.</li> <li>■ If the set column width is greater than the element width, the software displays the following message.</li> </ul> <div style="border: 1px solid red; padding: 10px; text-align: center;"> <span style="font-weight: bold;">DOPSoft</span> <span style="float: right;">×</span>    <span style="color: #800000;">Total column width exceeds the element size.</span> <div style="text-align: right; margin-top: 10px;"> <span style="border: 1px solid blue; padding: 2px 10px; background-color: #e0e0e0;">OK</span> </div> </div>

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No.	Property	Function description
(4)	Border Color	<p>Set the Border Color for the table.</p>  <p>Border Color</p>
(5)	Gridline Color	<p>Set the Gridline Color for the table.</p>  <p>Gridline Color</p>
(6)	Number of Rows Number of Columns	<p>Up to 99 rows and columns can be added for the Number of Rows and Columns.</p>

No.	Property	Function description
(7)	Background Color	<p>You can customize the displaying color for the element background.</p>  <p>Background Color</p>

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## ■ Main-2

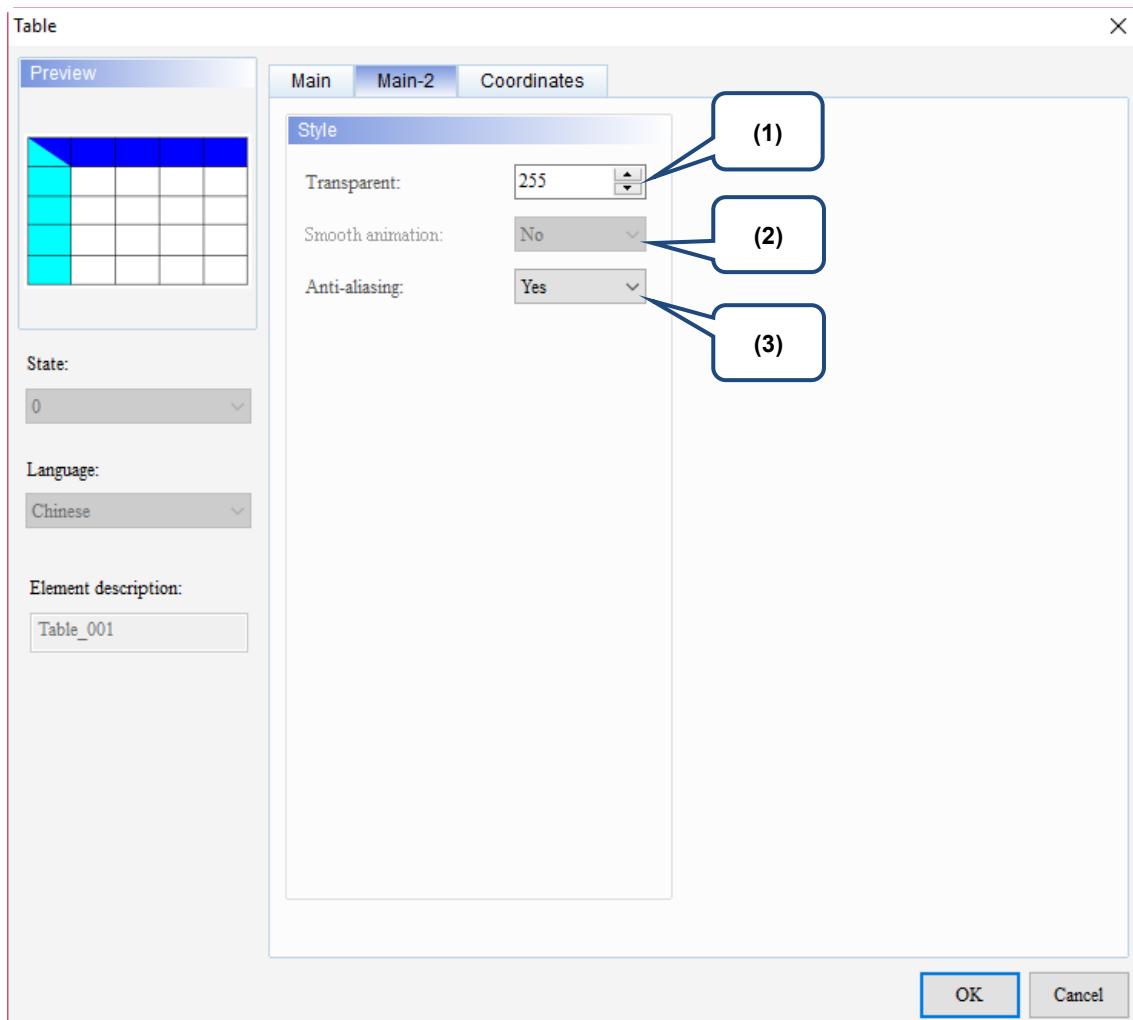


Figure 22.7.3 Main-2 property page for the Table element

No.	Property	Function description				
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.				
(2)	Smooth animation	The Smooth animation function is not available for this element.				
(3)	Anti-aliasing	<p>The Anti-aliasing function is available for this element and the default is Yes.</p> <table border="1"> <tr> <td style="text-align: center;">Yes</td> <td></td> </tr> <tr> <td style="text-align: center;">No</td> <td></td> </tr> </table>	Yes		No	
Yes						
No						

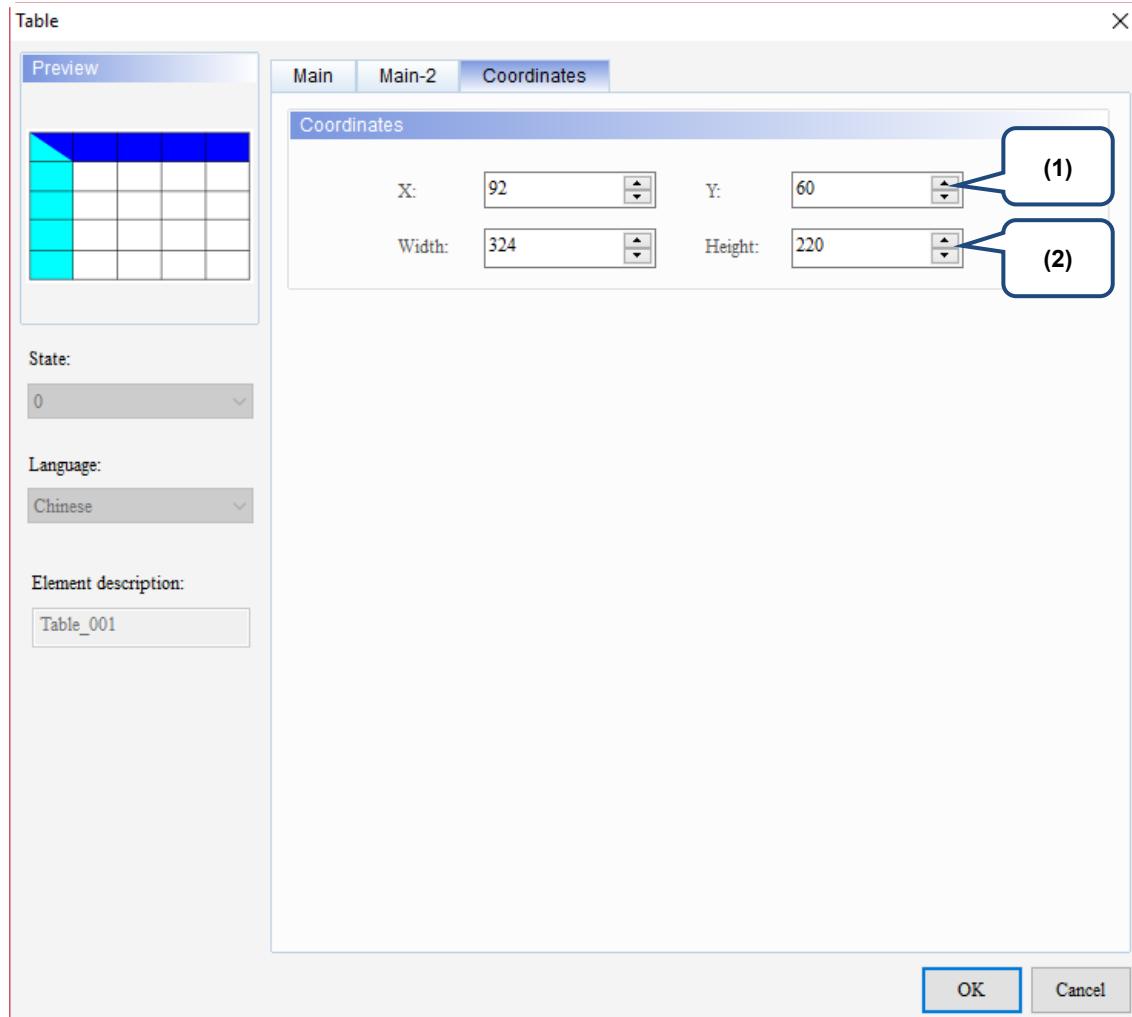
**■ Coordinates**

Figure 22.7.4 Coordinates property page for the Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

(This page is intentionally left blank.)

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# 23

## Recipe

---

This chapter explains the memory address occupied by recipes and the way to set up recipes in detail.

23.1	16-bit Recipe.....	23-3
23.2	32-bit Recipe.....	23-20
23.3	Indirect recipe index register (*RCP) .....	23-38
23.4	Enhanced recipe.....	23-41
23.5	Enhanced indirect recipe index register (*ENRCP) .....	23-61

# 23

A recipe is comprised of a number of parameters. When different products are used for different industrial applications, these products have their corresponding parameters. You can change the type of the products and use the corresponding recipe parameters. You can also set and save the recipe parameters. The created recipe tables can be uploaded from the HMI to the PLC or downloaded from the PLC to the HMI. The recipe function enables you to store a large number of numeric parameters in the HMI memory area. For example, the baking time varies from different types of bread, and these time variables can be controlled by the HMI recipe function. The purpose is to reduce the load of the controller, so that the register of the controller can be conserved for other operations.

Classification of recipe setup elements for the HMI:

Recipe setup	16-bit Recipe
	32-bit Recipe
	Enhanced Recipe

## 23.1 16-bit Recipe

Select the **Enable** check box and set the 16-bit Recipe Address, and then the dedicated register appears for you to create the 16-bit Recipe data.

The 16-bit Recipe has its own registers, which are RCP and RCPNO.

23

RCP	Recipe register
RCPNO	Recipe number register

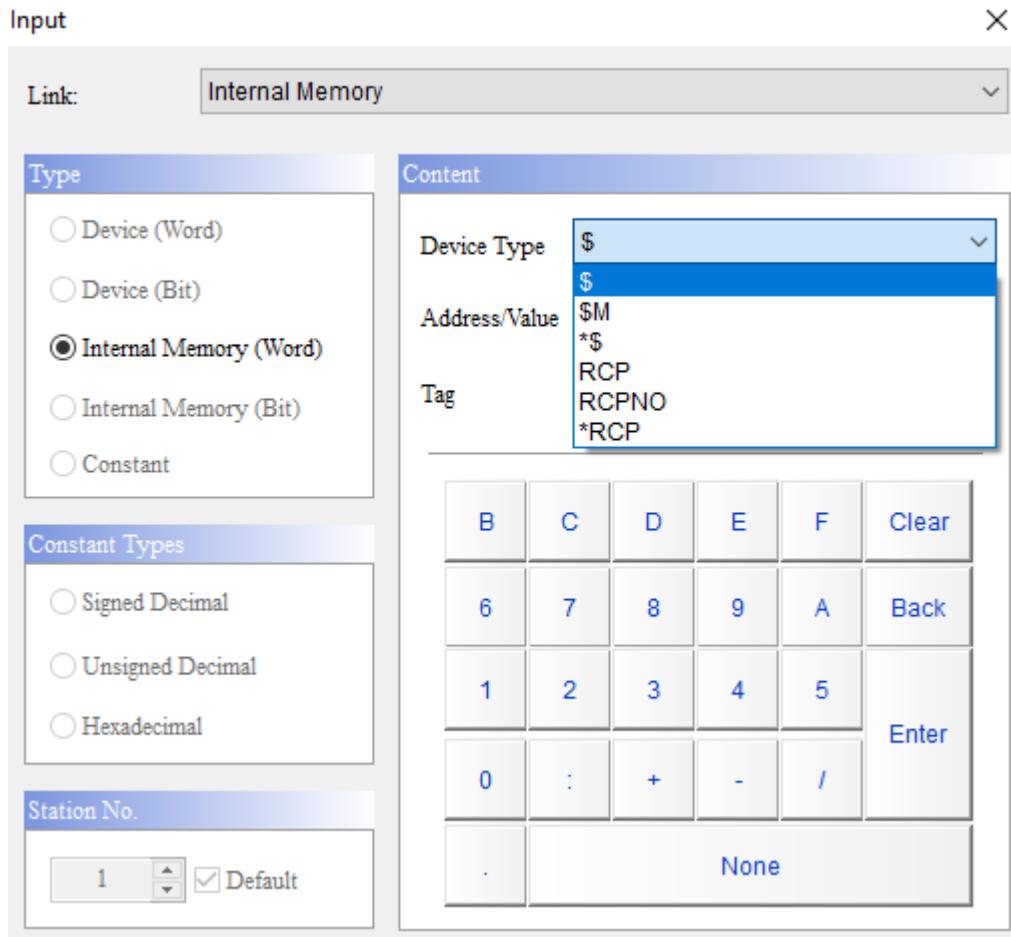
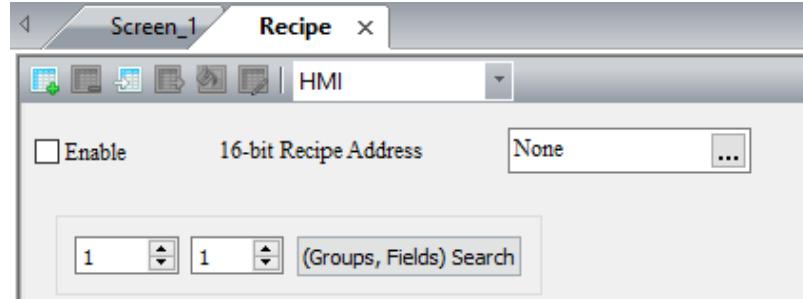


Figure 23.1.1 16-bit Recipe register

When the 16-bit Recipe is used, the size of each recipe register is 16 bits (16 bits = 1 word). Assuming that the length is L and the group is G, the actual recipe count is  $L \times G$  words.

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Actual recipe size: $L \times G$			Length (L)
Group (G)	1 Unsigned Decimal 1 Word	2 Unsigned Decimal 1 Word	3 Unsigned Decimal 1 Word
1	1	2	3
	2	5	6
	3	8	9

Figure 23.1.2 16-bit Recipe register size

#### ■ Recipe number register (RCPNO)

The recipe number register is used to specify the number for the 16-bit Recipe. Reading / writing of the recipe means to read / write a set of recipes according to the recipe number recorded in the recipe number register. When you select the first set of recipes, RCPNO = 1; when you select the fourth set of recipes, RCPNO = 4.

Note: the recipe number register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

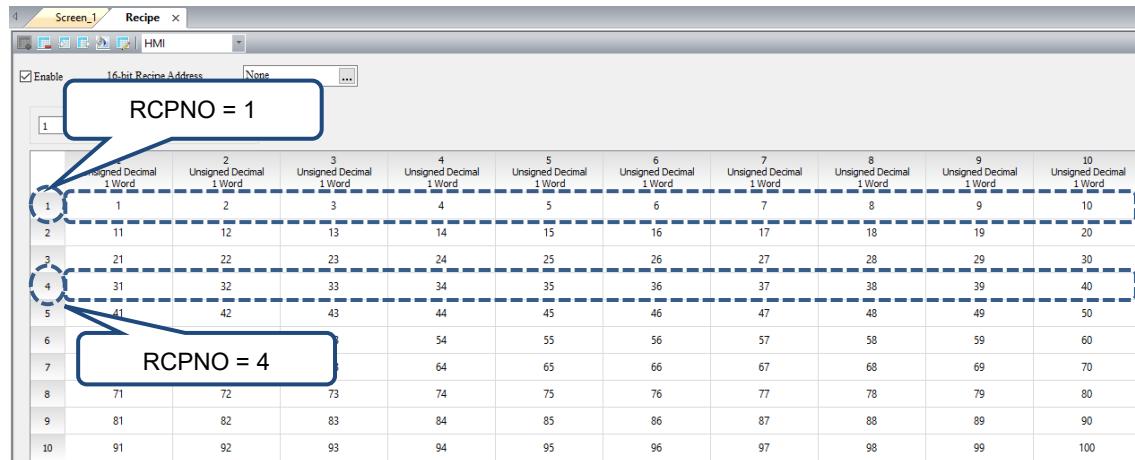


Figure 23.1.3 Recipe number editing screen

- Recipe register (RCP)

A recipe buffer is featured in the HMI and is configured at the front of the recipe register.

This buffer is used to store the selected set of recipes, and the length of the recipe buffer equals the length of the selected set of recipes, that is, the recipe buffer also occupies L recipe registers. Thus, the number of the recipe registers that a recipe table occupies is  $L * (G+1)$ , where  $G+1$  stands for the number of the registers with an additional buffer. With the recipe buffer, you only need to switch between the recipe numbers to check the currently specified recipe parameters. When the selected recipe number (RCPNO) is 1, the first set of recipes is displayed in the recipe buffer (i.e. RCPNO = 1 in the following figure).

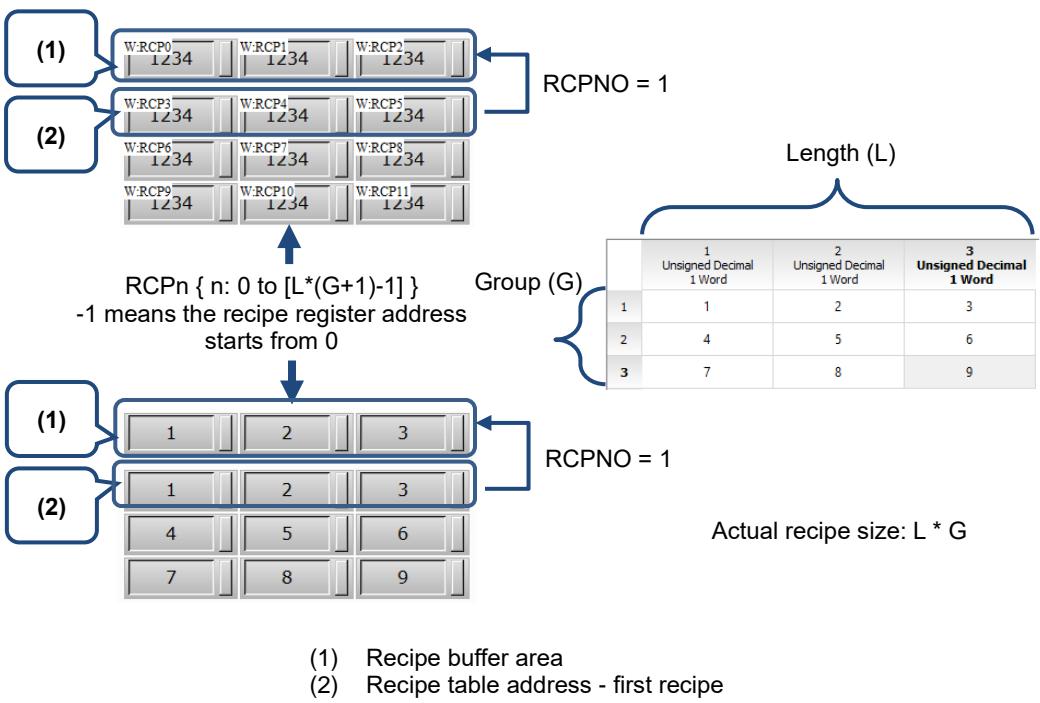


Figure 23.1.4 16-bit Recipe buffer configuration

Accessing range of the recipe register:

Table 23.1.1 Recipe register

Accessing type	Device type	Accessing range
Word	RCPn	RCP0 to RCP65535
Bit	RCPn	RCP0.0 to RCP65535.15

Note: n = Word (0 to 65535)

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The address accessing range provided by RCP is limited according to the recipe size that you created. Assuming that the recipe size is length 3\*group 3, then the RCP address ranges from RCP0 to RCP11. When the RCP12 address is created, the software displays the warning message shown as follows.

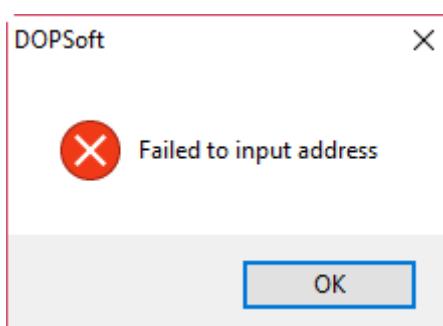


Figure 23.1.5 Recipe register configuration error

- 16-bit Recipe size limit
  1. If the non-volatile memory area is set in the USB Disk or SD Card, the editable size of a 16-bit Recipe is  $(L^*G) = 4194304$ . You can go to [View] > [Memory List] to check the size and capacity for the 16-bit Recipe.

HMI Memory	
Item	Cost-Bytes
History	0 (0K)
Alarm	0 (0K)
Total Used	0 (0K)
Available	437675622 (427417K)
Free	437675622 (427417K)
1 - Screen_1	0.00 % Used
Macro	0 (0K)
Curve	0 (0K)
Image	644 (0K)
Text	0 (0K)
Background Image	0 (0K)
Total Used	644 (0K)
Available	437675622 (427417K)
Free	437674978 (427416K)
Screen Saver	Pass
Sub Screen	Pass
External Storage	
Alarm	0 (0K)
History	0 (0K)
Recipe16	0 (0K)
Recipe 32	0 (0K)
Enhanced Recipe	0 (0K)
Total Used	0 (0K)

Figure 23.1.6 16-bit Recipe external storage

2. If the non-volatile memory area is set to the HMI, the editable size of a 16-bit Recipe is  $(L \times G) = 65536$  words or 64K. Hence, when the edited 16-bit Recipe exceeds 64K, a warning message appears on the Recipe Settings window to remind you that the current recipe size has exceeded the allowable limit.

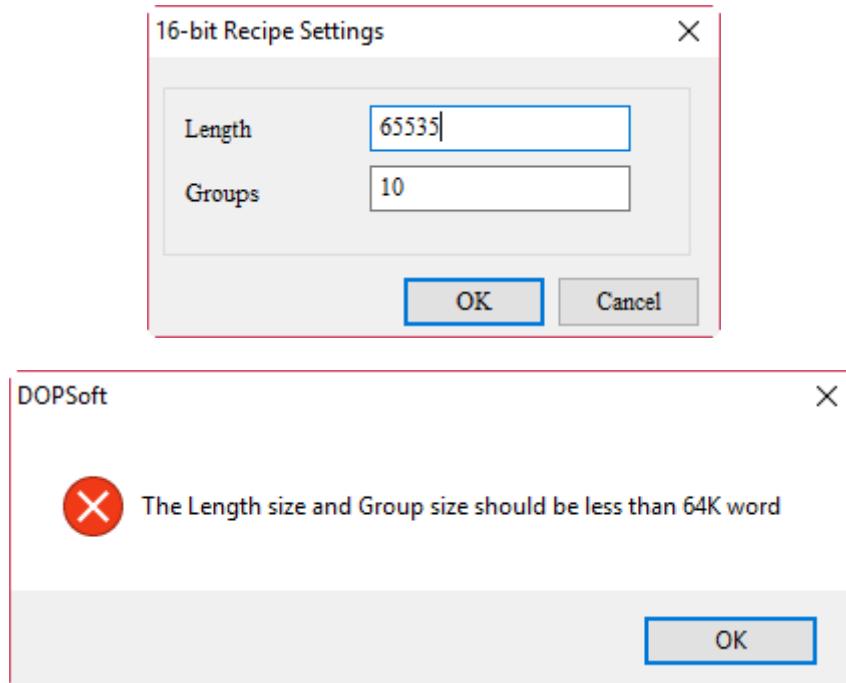


Figure 23.1.7 16-bit Recipe internal storage

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Go to [Options] > [Recipe] to create the 16-bit Recipe data. By setting the recipe, you can batch write a large amount of data to the PLC or batch read the data from the PLC to the HMI with the Recipe Control flag of the Control Block. The recipe can be used for controlling the industrial production process, enhancing convenience in processing a large amount of data.

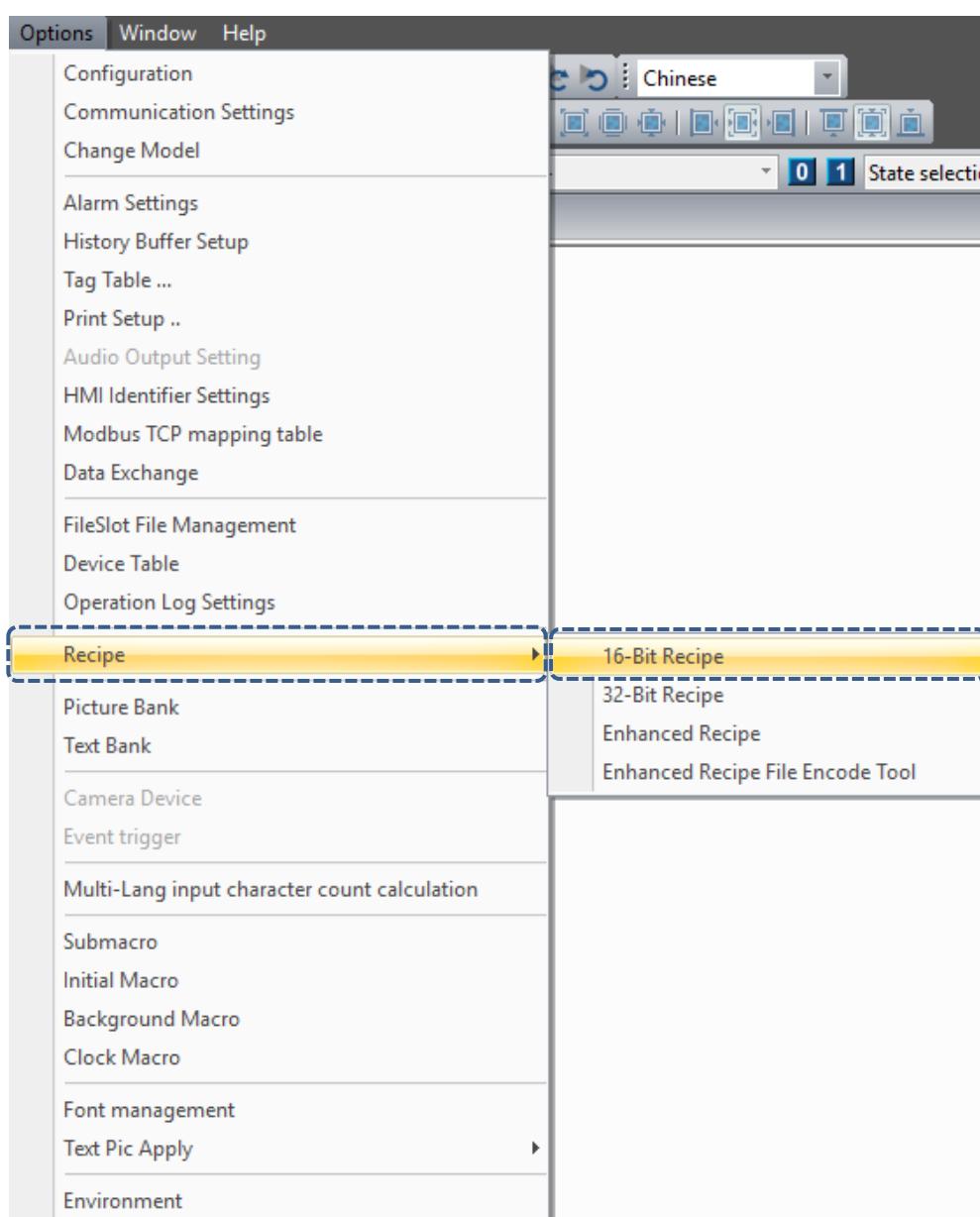
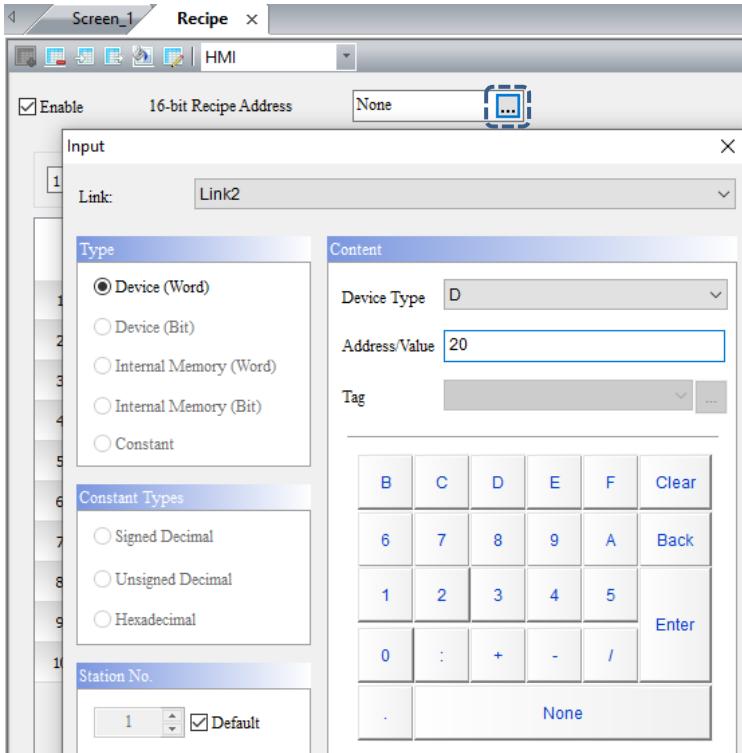
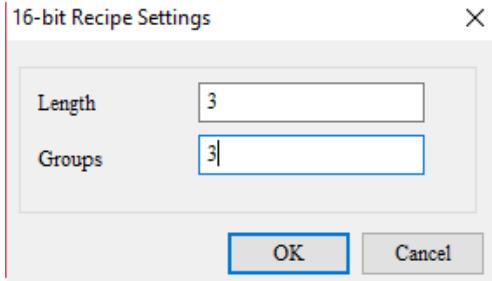
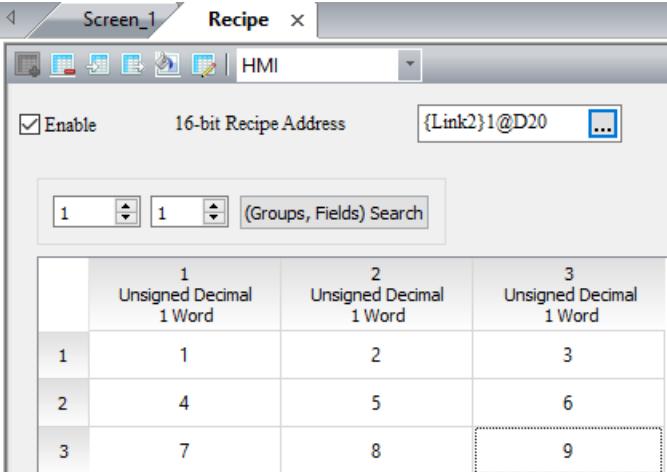


Figure 23.1.8 16-bit Recipe

Refer to the 16-bit Recipe example in Table 23.1.2 as follows.

Table 23.1.2 16-bit Recipe example

16-bit Recipe	
Set 16-bit Recipe	<p>Step 1: go to [Options] &gt; [Recipe] &gt; [16-Bit Recipe].</p> <ol style="list-style-type: none"> <li>1. Select the <b>Enable</b> check box.</li> <li>2. Set the external address to D20.</li> </ol> 
	<ol style="list-style-type: none"> <li>3. Click  to set the Length and Groups to 3.</li> </ol> 
	<ol style="list-style-type: none"> <li>4. Click <b>OK</b> and a table with the set Length and Groups appears. Fill in the values to be displayed.</li> </ol> 

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**16-bit Recipe**

■ Create a Numeric Entry element and set the Write Address to the Internal Memory. Select RCPNO for the Device Type. This element is used to select the recipe number.

Create RCPNO Numeric Entry element

The following is an example of the created element:

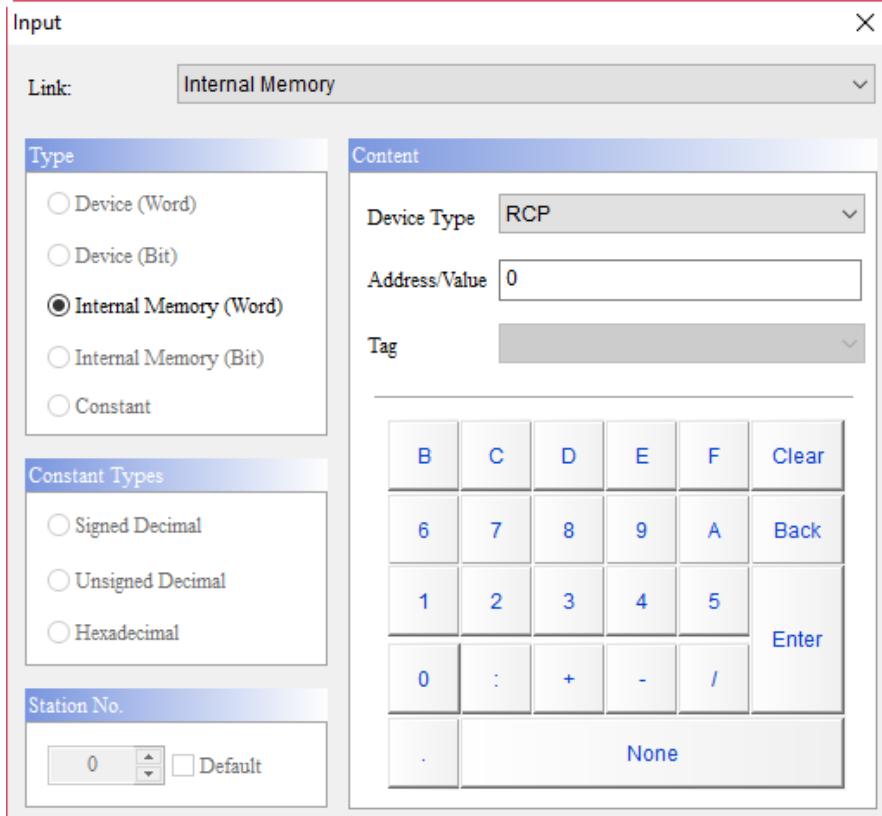
W:RCPNO  
RCPNO # ## #

**16-bit Recipe**

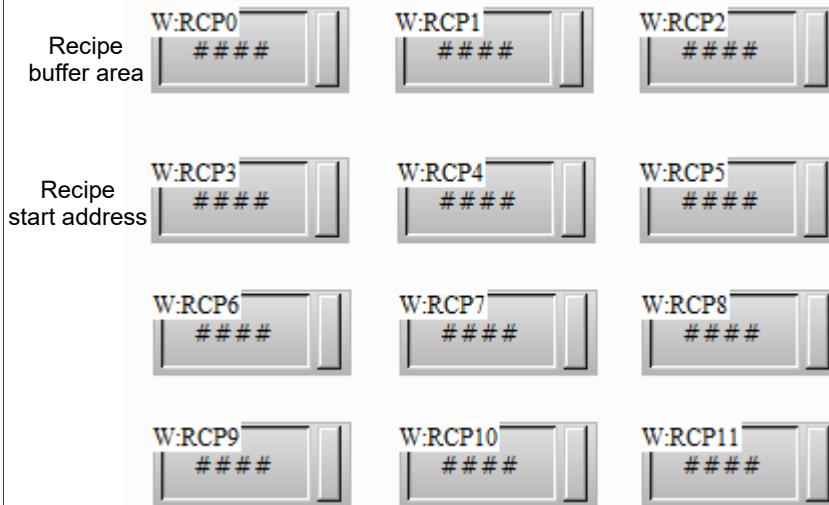
The steps are as follows:

1. Input the size of the recipe (Length (L) x Group (G) = 3 x 3) into the formula L \* (G+1) to get the actual configured RCP = RCP0 to RCP11.
2. Create 12 Numeric Entry elements and set their Read Addresses as RCP0 to RCP11 of the Internal Memory.

Create RCP  
Numeric  
Entry  
elements



3. The following is an example of the created elements:

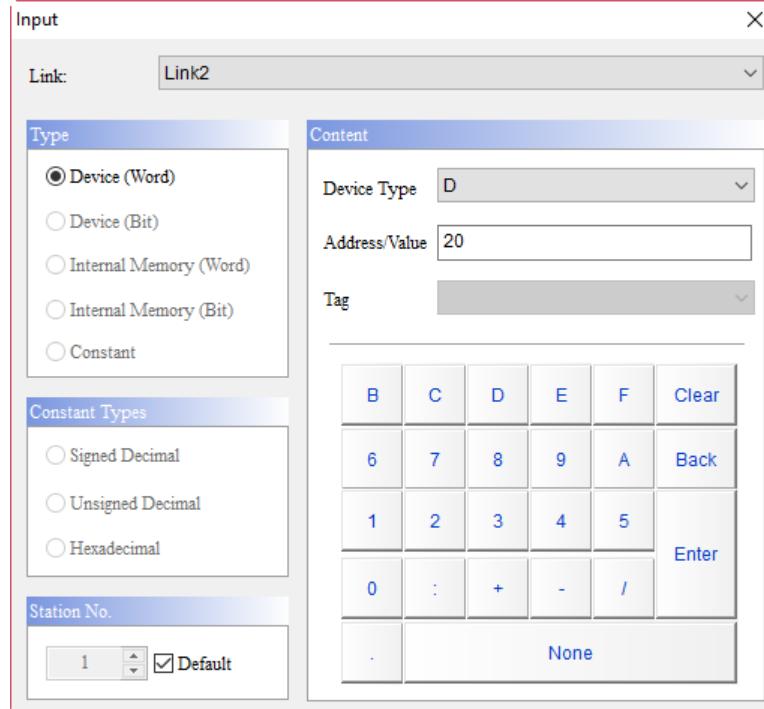


Note: RCP0 to RCP2 are the recipe buffers and the actual recipe data RCPs are RCP3 to RCP11.  
For more information, refer to Figure 23.1.4 16-bit Recipe buffer configuration.

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Create Numeric Entry elements for the Recipe Read Address

- Create three Numeric Entry elements, which are D20, D21, and D22, to display changes made to the data when the PLC recipes are read or written.
- Set the Read Address to D20 for the Numeric Entry element, which is shown as follows:



- The following is an example of the created elements:



Set Recipe Control flag in Control Block

Go to [Options] > [Configuration] > [Control Block], and select the **Recipe Control** flag check box. Then, set the Start Address for the Control Block to define the recipe control address.

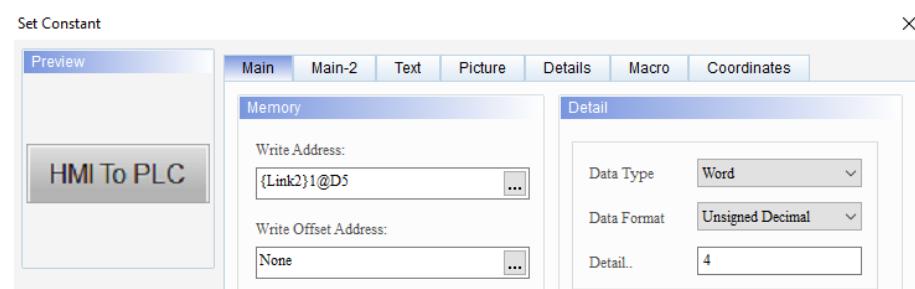
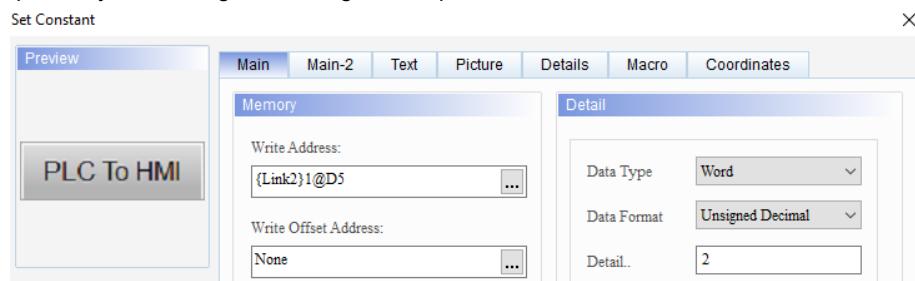
Once the setting is complete, click **OK** to exit the Configuration window.

#### Configuration

Bit	Description
0	Change recipe number
1	Read recipe
2	Write recipe
3	Change recipe group number
8-15	Specify Recipe group number

Create Set Constant elements

Create two Set Constant buttons. Set the Write Addresses to D5 and the setting values (Detail.) to 2 and 4 corresponding to Bit 1 and Bit 2 of the Recipe Control flag D5 respectively for reading and writing the recipe.



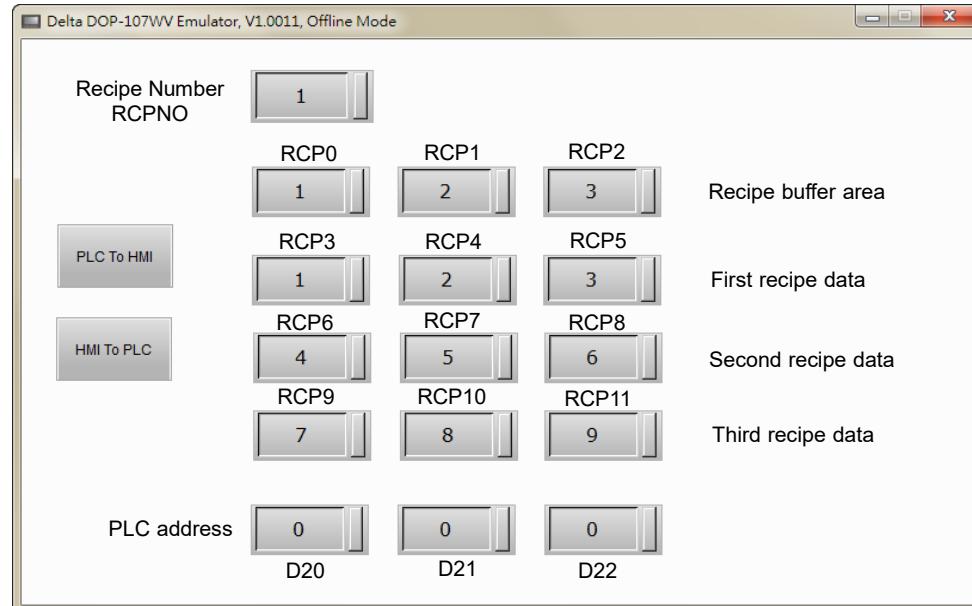
- After creating all the elements, execute the Compile and Download Screen and Recipe buttons to download data to the HMI.



- Select the recipe number. The recipe data is displayed in RCP0 to RCP11 according to the set recipe, with RCP0 to RCP2 as the recipe buffers.

The starting address for the first set of the actual recipe data is RCP3.

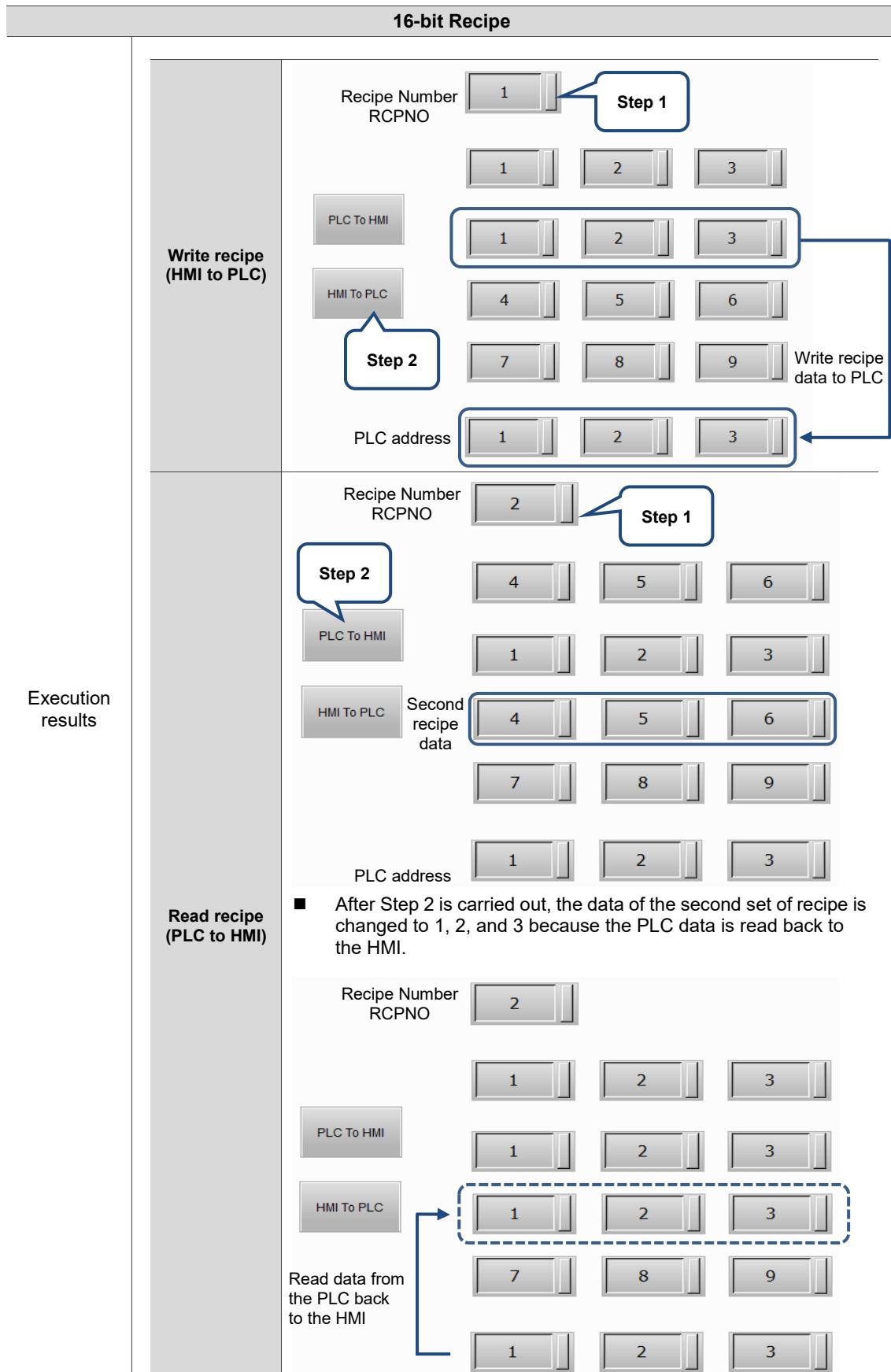
Execution results



- Trigger the Write Recipe (HMI To PLC) button, and the recipe data of the selected set of recipe (RCPNO = 1) is written to the PLC.

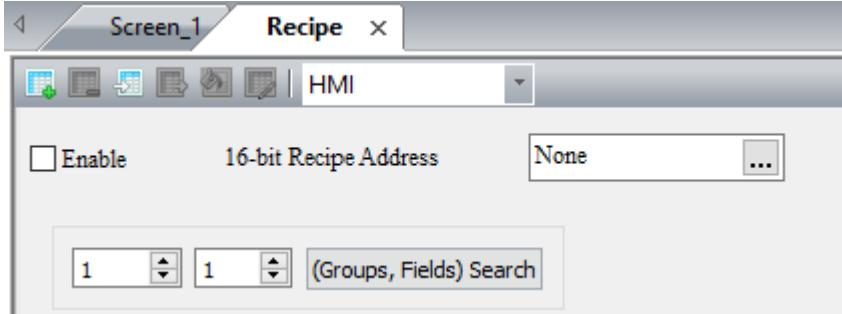
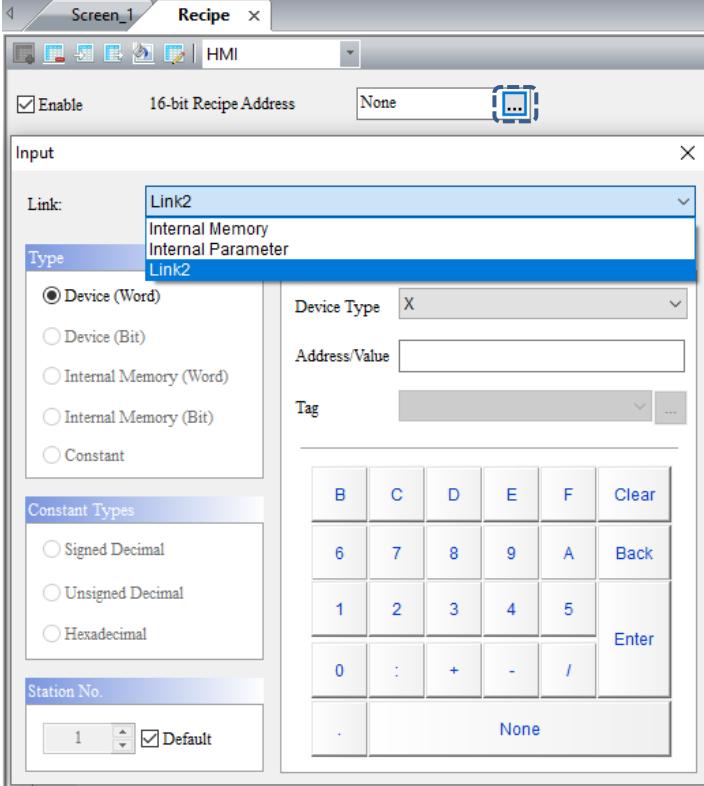
Trigger the Read Recipe (PLC To HMI) button, and the recipe data written to the PLC is read back to the HMI. And the recipe data read back is then written to the selected set of recipe (RCPNO =2).

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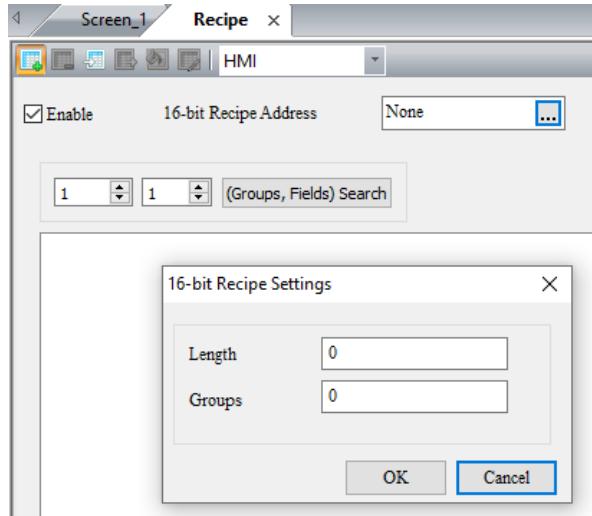
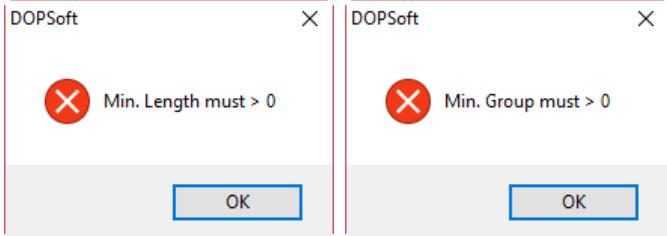
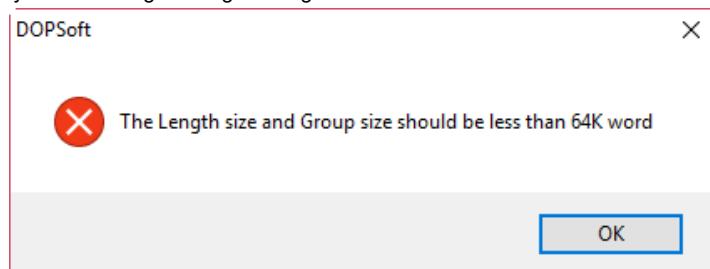
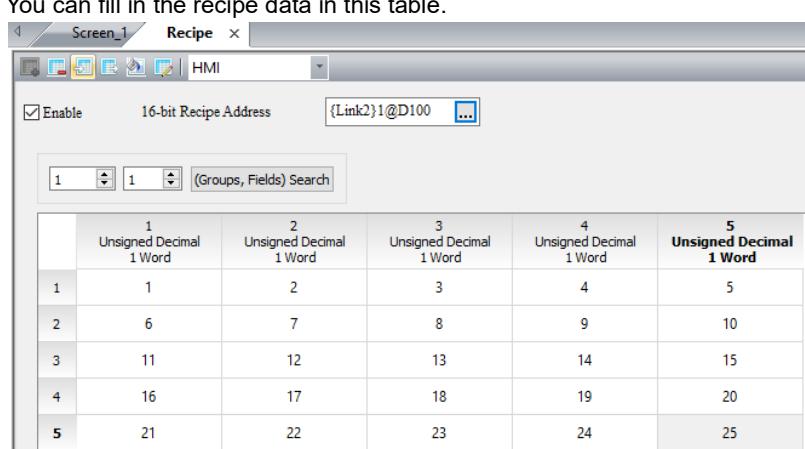


The following section introduces the property settings for the 16-bit Recipe.

Table 23.1.3 Properties of the 16-bit Recipe setting

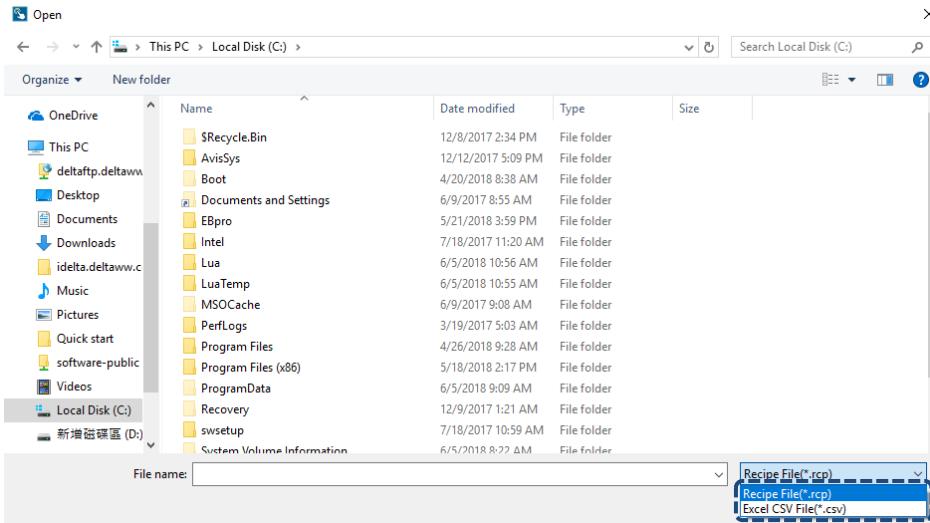
Properties of the 16-bit Recipe setting	
	
Enable	<ul style="list-style-type: none"> <li>Select the <b>Enable</b> check box to use the recipe register address.</li> <li>If <b>Enable</b> is not selected, setting the 16-bit Recipe does not take effect.</li> </ul>
Non-volatile	<ul style="list-style-type: none"> <li>The non-volatile memories include HMI, USB Disk, and SD Card.</li> </ul>  <ul style="list-style-type: none"> <li>If you set to save in the HMI, the data is saved in the HMI ROM when the power is off.</li> </ul>
Recipe read address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 for details.</li> </ul> 

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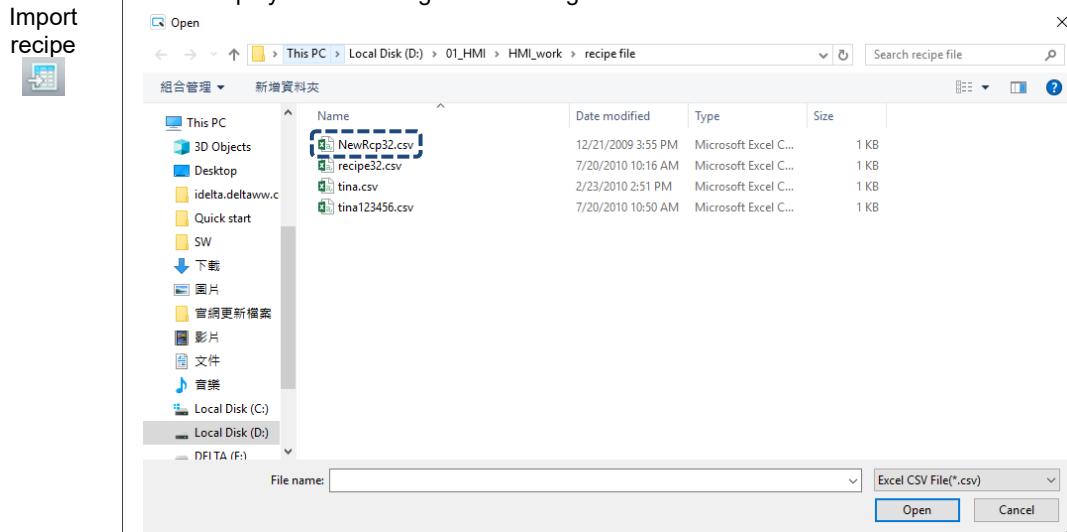
Properties of the 16-bit Recipe setting	
Add recipe 	<p>Click  and set the Length and Groups.</p> 
Length / Groups	<ul style="list-style-type: none"> <li>After entering the Length and Groups values for the recipe, press <b>OK</b> to create the recipe.</li> <li>The Length and Groups cannot be 0. If you input 0 in Length or Groups, the software displays an error message.</li> </ul> 
Recipe content	<ul style="list-style-type: none"> <li>Enter the Length and Groups to form a table of Length (L) x Groups (G) in the blank area. For example, with 4 for the Length and 3 for the Groups, the table is 4 x 3. Note: limited by the internal memory size of the HMI, the recipe size cannot exceed 64K (Length x Groups cannot be greater than 65536). If the recipe size exceeds 64K, the software displays the following warning message:</li> </ul>  <ul style="list-style-type: none"> <li>You can fill in the recipe data in this table.</li> </ul> 

### Properties of the 16-bit Recipe setting

- The import recipe function supports CSV and RCP file formats for you to select and import the recipe.



- The opened and imported recipe file provides the current recipe data content only, and the recipe address does not support loading the originally set address. If you use the 16-bit Recipe to open a RCP or CSV file of the 32-bit Recipe, the software displays the following error message once the file is loaded.

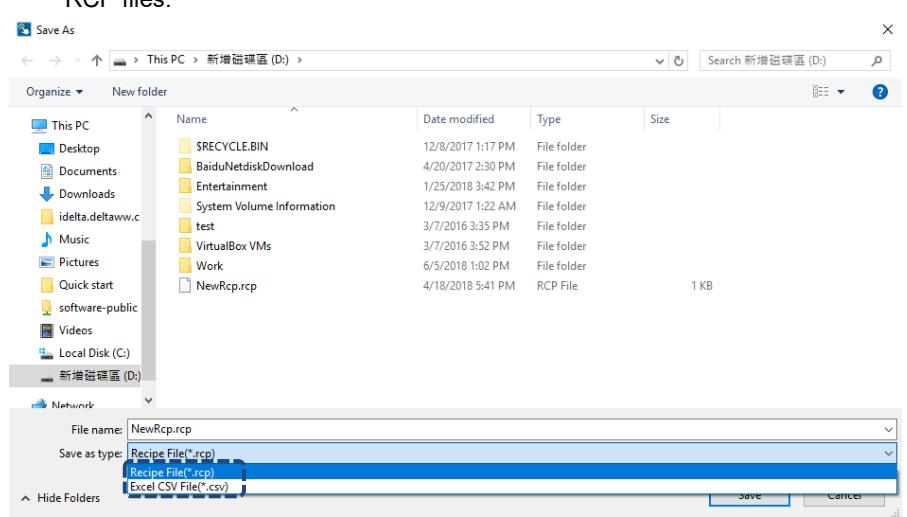


DOPSoft

RCP file format compiling error. Please verify if the RCP file is correct.

OK

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**Export recipe**

- The saved recipe data does not support saving the set recipe address.

Clear the recipe content that has the value entered.

**Clear configuration**

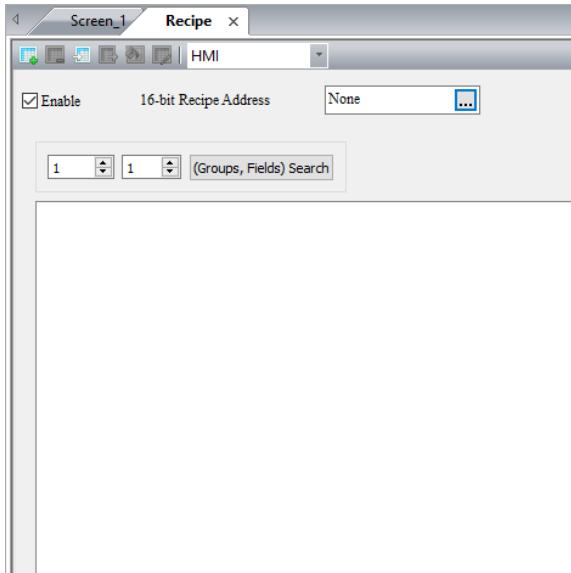
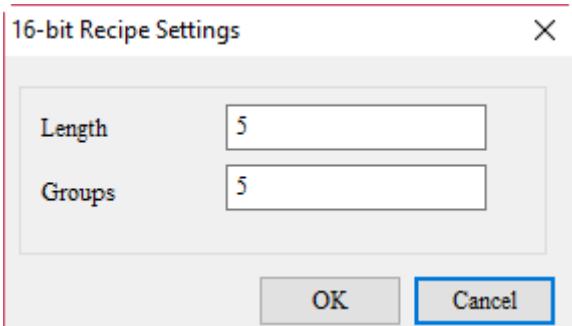
	Before				
	1 Unsigned Decimal 1 Word	2 Unsigned Decimal 1 Word	3 Unsigned Decimal 1 Word	4 Unsigned Decimal 1 Word	5 Unsigned Decimal 1 Word
1	1	2	3	4	5
2	6	7	8	9	10
3	11	12	13	14	15
4	16	17	18	19	20
5	21	22	23	24	25

	After				
	1 Unsigned Decimal 1 Word	2 Unsigned Decimal 1 Word	3 Unsigned Decimal 1 Word	4 Unsigned Decimal 1 Word	5 Unsigned Decimal 1 Word
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0

### Properties of the 16-bit Recipe setting

- Click  to delete the entire recipe. You will have to create a new recipe if necessary.
- The delete function also sets the 16-bit Recipe Address to None.

<p><b>Before</b></p>       <p><b>After</b></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th><th>1 Unsigned Decimal 1 Word</th><th>2 Unsigned Decimal 1 Word</th><th>3 Unsigned Decimal 1 Word</th><th>4 Unsigned Decimal 1 Word</th><th>5 Unsigned Decimal 1 Word</th></tr> </thead> <tbody> <tr><td>1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>2</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>3</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>4</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>5</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr> </tbody> </table> 		1 Unsigned Decimal 1 Word	2 Unsigned Decimal 1 Word	3 Unsigned Decimal 1 Word	4 Unsigned Decimal 1 Word	5 Unsigned Decimal 1 Word	1	1	2	3	4	5	2	6	7	8	9	10	3	11	12	13	14	15	4	16	17	18	19	20	5	21	22	23	24	25
	1 Unsigned Decimal 1 Word	2 Unsigned Decimal 1 Word	3 Unsigned Decimal 1 Word	4 Unsigned Decimal 1 Word	5 Unsigned Decimal 1 Word																																
1	1	2	3	4	5																																
2	6	7	8	9	10																																
3	11	12	13	14	15																																
4	16	17	18	19	20																																
5	21	22	23	24	25																																
<p><b>Recipe Settings</b></p> 	<p>Change the settings of the Length and Groups for the recipe.</p> 																																				

# 23

## 23.2 32-bit Recipe

The data type that the 32-bit Recipe supports is Double Word. The data formats include Signed Decimal, Unsigned Decimal, and Floating. The size of each recipe register is 32 bits (2 Words or 1 Double Word, DW). Different from the 16-bit Recipes, the 32-bit Recipe features an additional recipe grouping option. When reading or writing the recipe, you have to specify both the recipe number and recipe group before reading / writing one of the recipe sets.

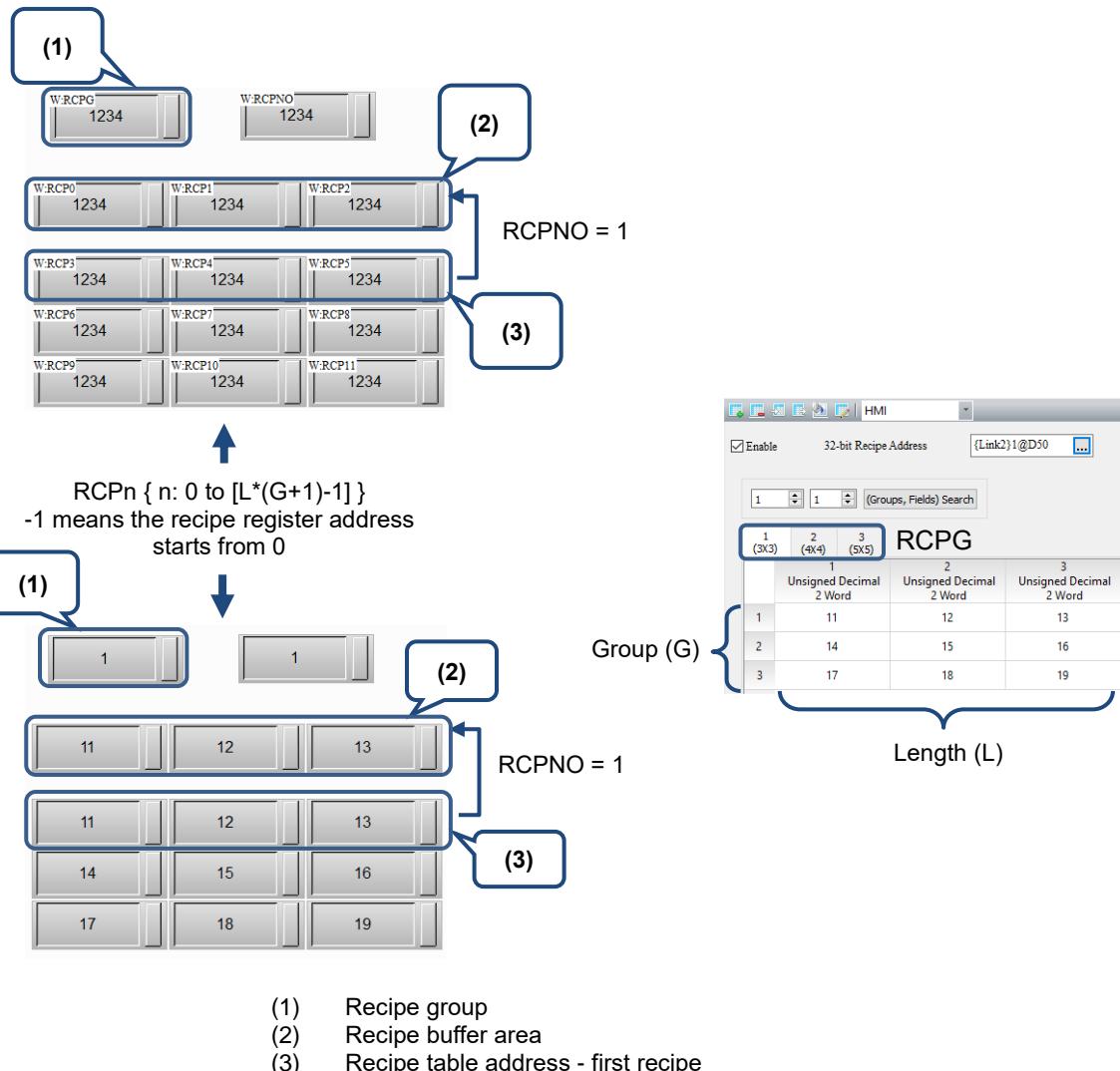


Figure 23.2.1 32-bit Recipe buffer configuration

The 32-bit Recipe has its own registers, which are RCP, RCPNO, and RCPG.

RCP	Recipe register
RCPNO	Recipe number register
RCPG	Recipe group register

RCP and RCPNO are registers that are jointly used with the 16-bit Recipe, as already introduced in the section on the 16-bit Recipe. The following section introduces the features of the RCPG and RCPNO registers for the 32-bit Recipe.

- Recipe group register (RCPG)

The recipe group register is used to specify the group for the 32-bit Recipe. You can create up to 255 groups of 32-bit Recipe data.

The Recipe Group 0 (RCPG 0) is assigned for use by the 16-bit Recipe. Calling the 32-bit Recipe data requires use of the Recipe Groups 1 to 255 (RCPG 1 to 255).

For a 32-bit Recipe, when you select the first set of recipe in the first recipe group, RCPG = 1 and RCPNO = 1; when you select the fourth set of recipe in the third recipe group, RCPG = 3 and RCPNO = 4.

Note: the recipe group register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

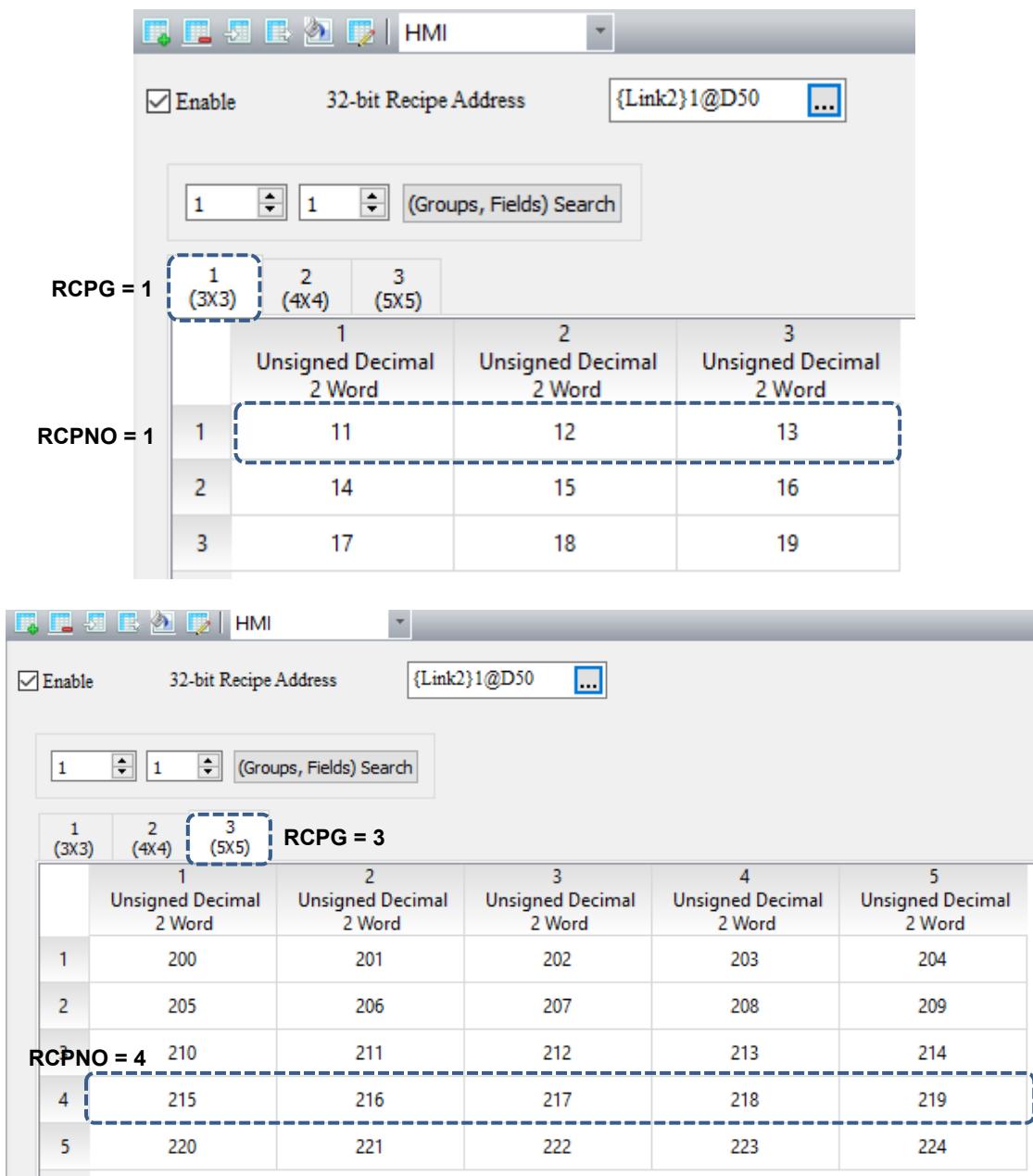


Figure 23.2.2 32-bit Recipe group editing screen

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## ■ Recipe number register (RCPNO)

RCPNO is used to specify the number for the 32-bit Recipe. Reading / writing of the recipe means to read / write a set of recipes according to the recipe number recorded in the recipe number register. When you select the first set of recipes, RCPNO = 1; when you select the fourth set of recipes, RCPNO = 4.

Note: the recipe number register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

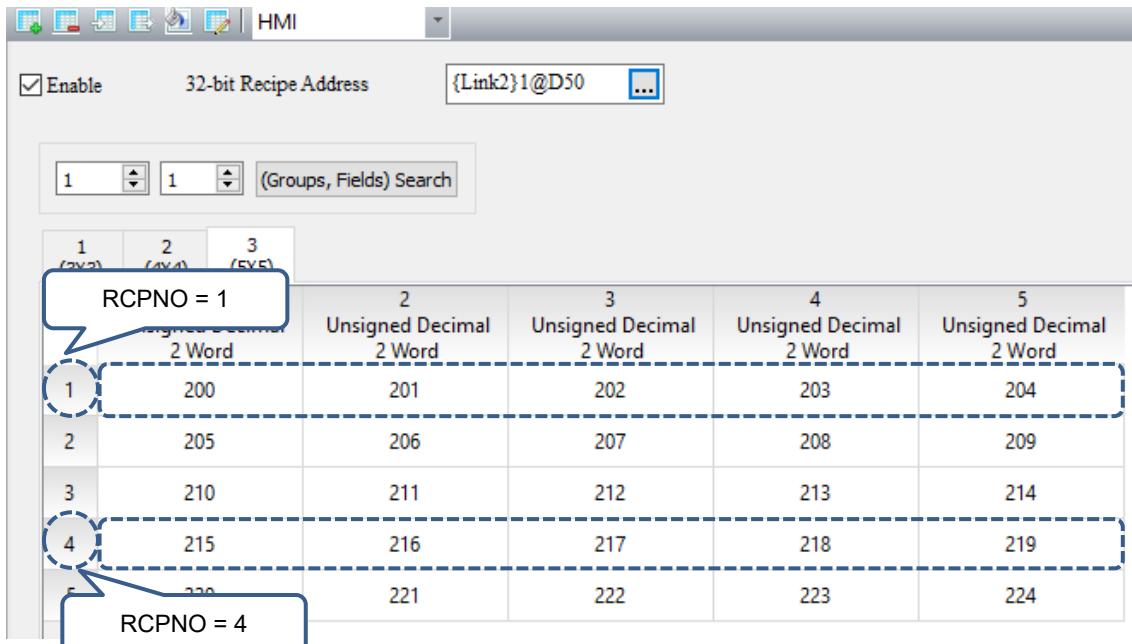


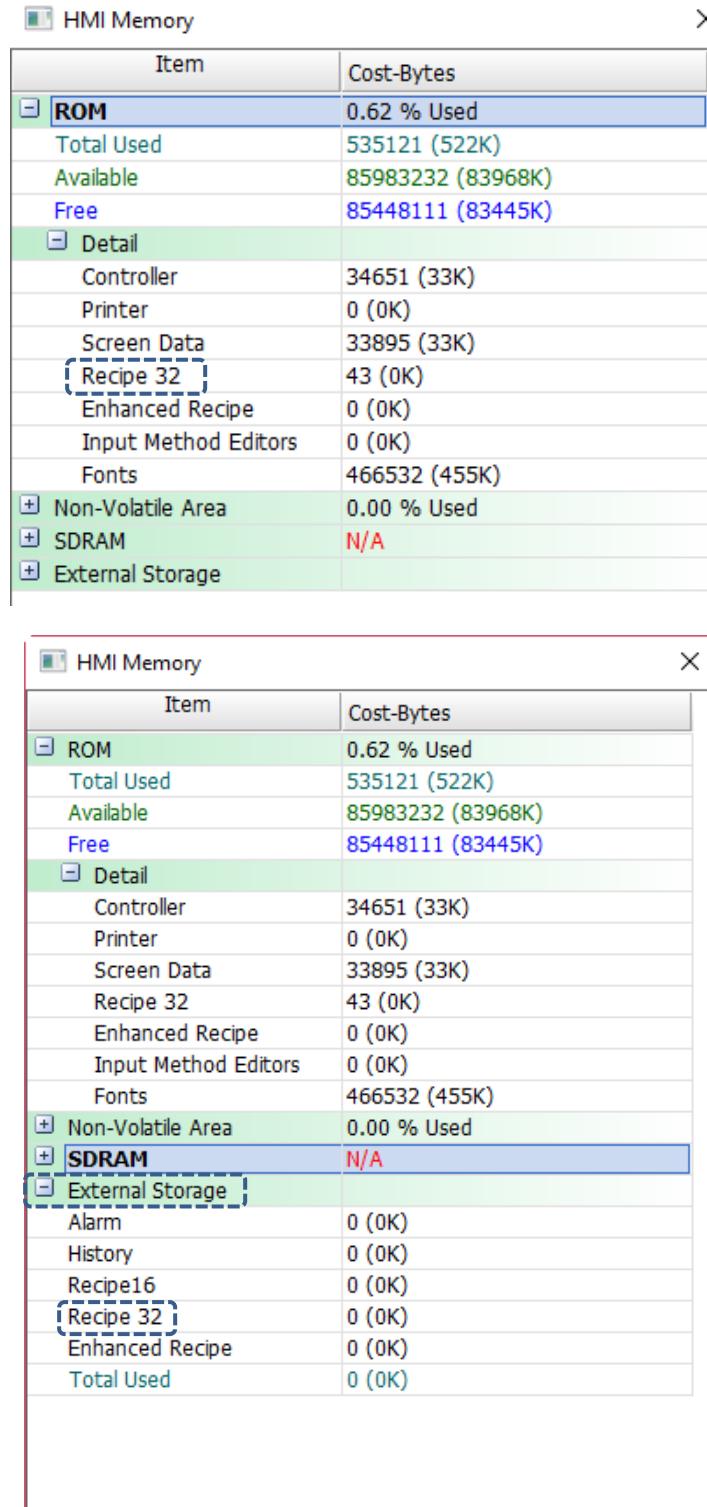
Figure 23.2.3 Recipe Number editing screen

## ■ 32-bit Recipe size limit

If the non-volatile memory area is set in the USB Disk or SD Card, the size of the 32-bit Recipe file cannot exceed 50 MB. Different from the 16-bit Recipe, the editable size of the 32-bit Recipe is dependent upon the specification of the flash memory of different HMI models when the non-volatile memory area is set in the HMI.

You can go to [View] > [Memory List] to check the editable recipe size, as shown in Figure 23.2.4.

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The figure consists of two screenshots of a software interface titled "HMI Memory".

**Top Window (ROM Usage):**

Item	Cost-Bytes
<b>ROM</b>	0.62 % Used
Total Used	535121 (522K)
Available	85983232 (83968K)
Free	85448111 (83445K)
<b>Detail</b>	
Controller	34651 (33K)
Printer	0 (0K)
Screen Data	33895 (33K)
Recipe 32	43 (0K)
Enhanced Recipe	0 (0K)
Input Method Editors	0 (0K)
Fonts	466532 (455K)
<b>+ Non-Volatile Area</b>	0.00 % Used
<b>+ SDRAM</b>	N/A
<b>+ External Storage</b>	

**Bottom Window (SDRAM Usage):**

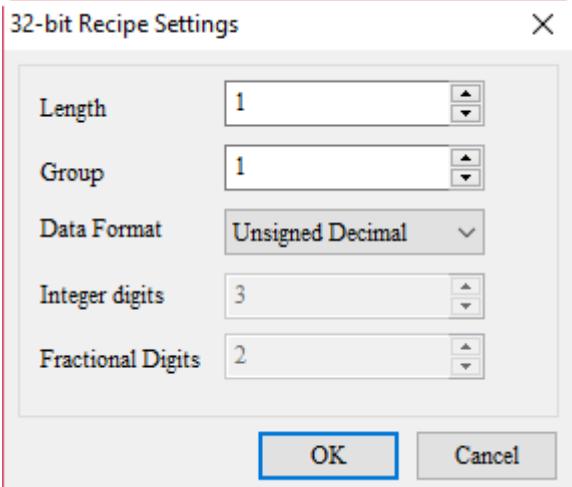
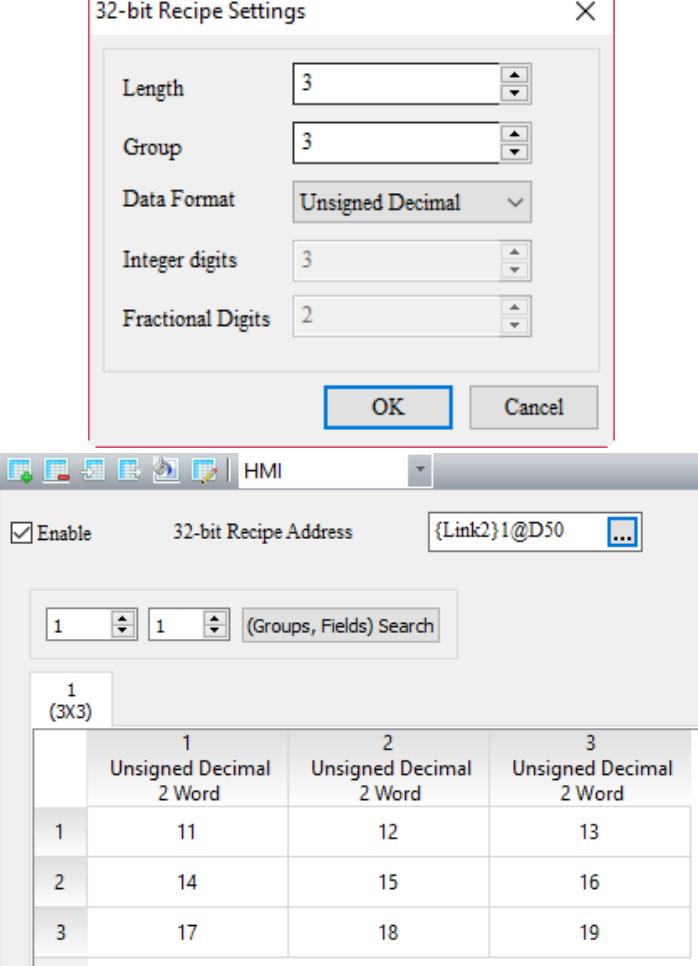
Item	Cost-Bytes
<b>ROM</b>	0.62 % Used
Total Used	535121 (522K)
Available	85983232 (83968K)
Free	85448111 (83445K)
<b>Detail</b>	
Controller	34651 (33K)
Printer	0 (0K)
Screen Data	33895 (33K)
Recipe 32	43 (0K)
Enhanced Recipe	0 (0K)
Input Method Editors	0 (0K)
Fonts	466532 (455K)
<b>+ Non-Volatile Area</b>	0.00 % Used
<b>SDRAM</b>	N/A
<b>External Storage</b>	
Alarm	0 (0K)
History	0 (0K)
Recipe16	0 (0K)
Recipe 32	0 (0K)
Enhanced Recipe	0 (0K)
<b>Total Used</b>	0 (0K)

Figure 23.2.4 32-bit Recipe memory list

Refer to the 32-bit Recipe example in Table 23.2.1 as follows.

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Table 23.2.1 32-bit Recipe example

32-bit Recipe																
Set 32-bit Recipe	Step 1: go to [Options] > [Recipe] > [32-Bit Recipe]. 1. Select the <b>Enable</b> check box. 2. Set the Recipe Address to D50.															
	Step 2: click  to enter the 32-bit Recipe Settings.  <p>Set both the Length and Group to 3 for the first set of Recipe. Set the Data Format to Unsigned Decimal.</p>  <table border="1"><thead><tr><th>1 (3X3)</th><th>1 Unsigned Decimal 2 Word</th><th>2 Unsigned Decimal 2 Word</th><th>3 Unsigned Decimal 2 Word</th></tr></thead><tbody><tr><td>1</td><td>11</td><td>12</td><td>13</td></tr><tr><td>2</td><td>14</td><td>15</td><td>16</td></tr><tr><td>3</td><td>17</td><td>18</td><td>19</td></tr></tbody></table>	1 (3X3)	1 Unsigned Decimal 2 Word	2 Unsigned Decimal 2 Word	3 Unsigned Decimal 2 Word	1	11	12	13	2	14	15	16	3	17	18
1 (3X3)	1 Unsigned Decimal 2 Word	2 Unsigned Decimal 2 Word	3 Unsigned Decimal 2 Word													
1	11	12	13													
2	14	15	16													
3	17	18	19													

23

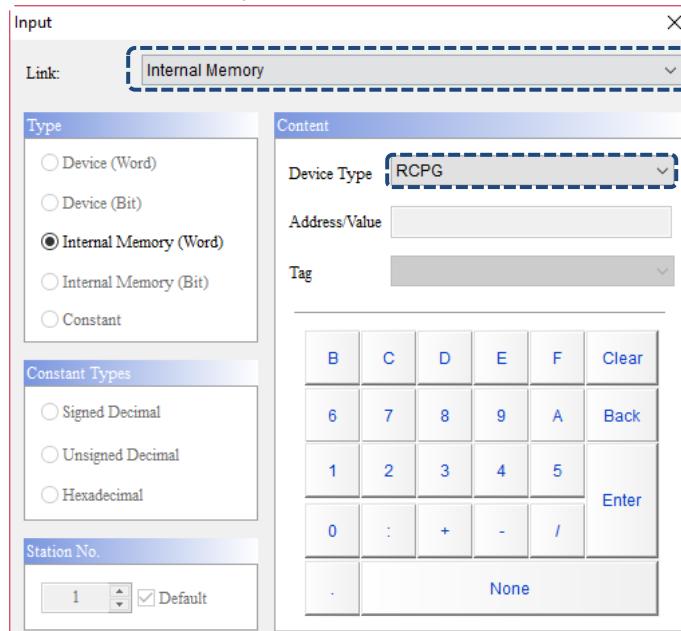
**32-bit Recipe**

Step 3: repeat Step 2. Set both the Length and Group to 3 to create the recipe data shown as follows:

Set 32-bit Recipe

Step 4: repeat Step 2. Set both the Length and Group to 3 to create the recipe data shown as follows:

- Create a Numeric Entry element and set the Write Address to Internal Memory. Select RCPG for the Device Type. This element is used to select the Recipe Group.



Create  
RCPG  
Numeric  
Entry  
element

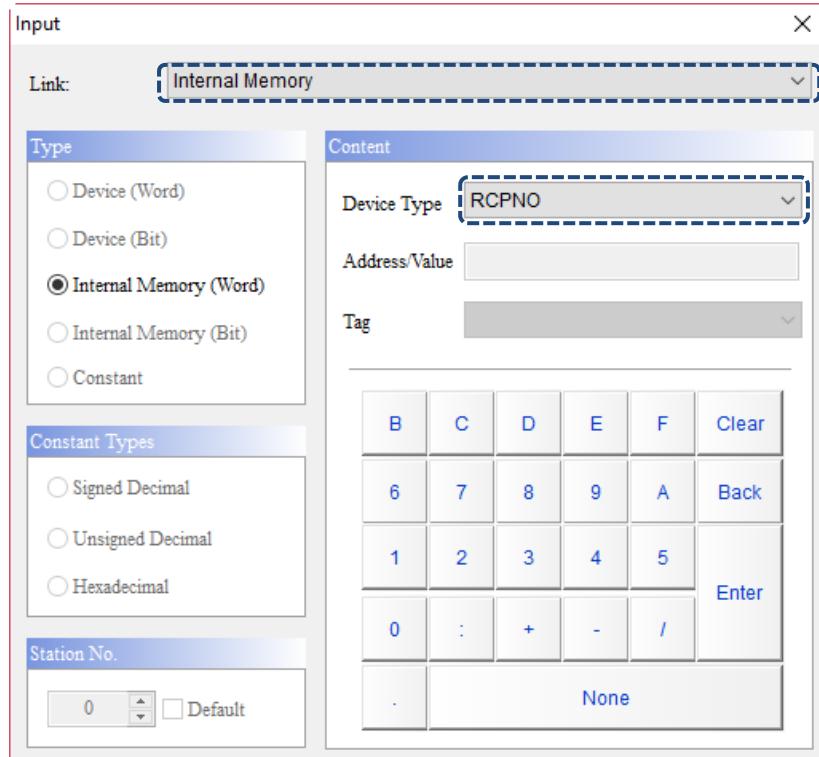
- The following is an example of the created element:



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### Create RCPNO Numeric Entry element

- Create a Numeric Entry element and set the Write Address to Internal Memory. Select RCPNO for the Device Type. This element is used to select the Recipe Number.



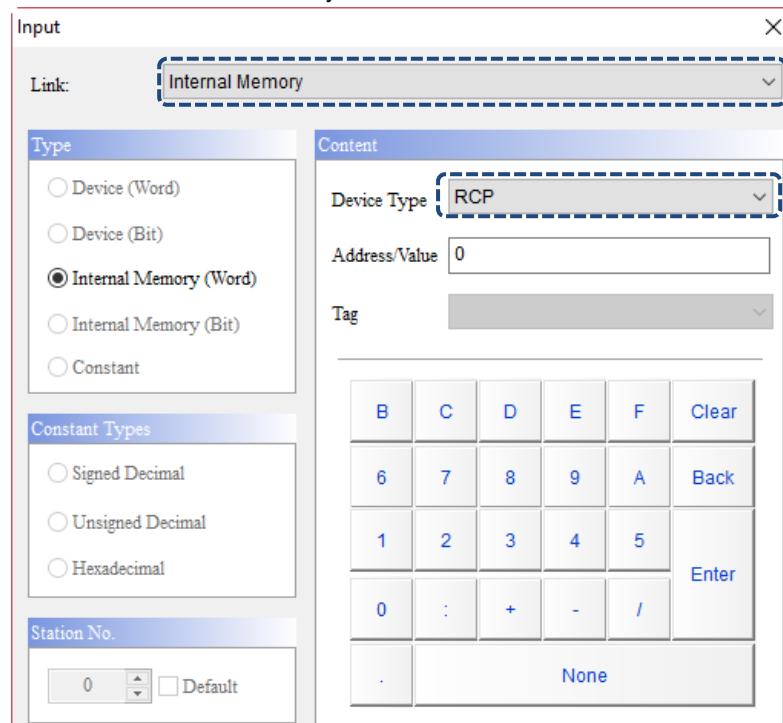
- The following is an example of the created element:



### Create RCP Numeric Entry elements

Step 1: before creating the Numeric Entry elements to display the 32-bit Recipe register, you can use the recipe register formula  $[L*(G+1)-1]$  to calculate the number that the n in RCPn represents. Substitute the set size of the recipe (Length (L) x Group (G) = 3 x 3) into the formula to find the RCPn = RCP0 to RCP11.

Step 2: create 12 Numeric Display elements and set their Write Addresses as RCP0 to RCP11 of the Internal Memory.



32-bit Recipe																	
Create RCP Numeric Entry elements	<p>The following is an example of the created elements:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Recipe buffer area</td><td style="text-align: center;">W:RCP0 #####</td><td style="text-align: center;">W:RCP1 #####</td><td style="text-align: center;">W:RCP2 #####</td></tr> <tr> <td>Recipe table address</td><td style="text-align: center;">W:RCP3 #####</td><td style="text-align: center;">W:RCP4 #####</td><td style="text-align: center;">W:RCP5 #####</td></tr> <tr> <td></td><td style="text-align: center;">W:RCP6 #####</td><td style="text-align: center;">W:RCP7 #####</td><td style="text-align: center;">W:RCP8 #####</td></tr> <tr> <td></td><td style="text-align: center;">W:RCP9 #####</td><td style="text-align: center;">W:RCP10 #####</td><td style="text-align: center;">W:RCP11 #####</td></tr> </table> <p>Note: RCP0 to RCP2 are the recipe buffers and the actual recipe data RCPs are RCP3 to RCP11. For more information, refer to Figure 23.2.1 32-bit Recipe buffer configuration.</p>	Recipe buffer area	W:RCP0 #####	W:RCP1 #####	W:RCP2 #####	Recipe table address	W:RCP3 #####	W:RCP4 #####	W:RCP5 #####		W:RCP6 #####	W:RCP7 #####	W:RCP8 #####		W:RCP9 #####	W:RCP10 #####	W:RCP11 #####
Recipe buffer area	W:RCP0 #####	W:RCP1 #####	W:RCP2 #####														
Recipe table address	W:RCP3 #####	W:RCP4 #####	W:RCP5 #####														
	W:RCP6 #####	W:RCP7 #####	W:RCP8 #####														
	W:RCP9 #####	W:RCP10 #####	W:RCP11 #####														
Create Numeric Entry elements for the Recipe Read Address	<ul style="list-style-type: none"> <li>■ Create three Numeric Entry elements by referring to the address set for the 32-bit Recipe to display changes to the data when the PLC recipe is read or written. The 32-bit Recipe uses the Double Word format, so the Recipe Address entered needs to start from D50 and increment by 2 addresses to D52 and D54.</li> <li>■ Set the Read Address to D50 for the Numeric Entry element, which is shown as follows:</li> </ul> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> </div> <ul style="list-style-type: none"> <li>■ The following is an example of the created elements:</li> </ul> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">PLC address</td><td style="text-align: center;">W:{Link2}1@D50 #####</td><td style="text-align: center;">W:{Link2}1@D52 #####</td><td style="text-align: center;">W:{Link2}1@D54 #####</td></tr> </table>	PLC address	W:{Link2}1@D50 #####	W:{Link2}1@D52 #####	W:{Link2}1@D54 #####												
PLC address	W:{Link2}1@D50 #####	W:{Link2}1@D52 #####	W:{Link2}1@D54 #####														

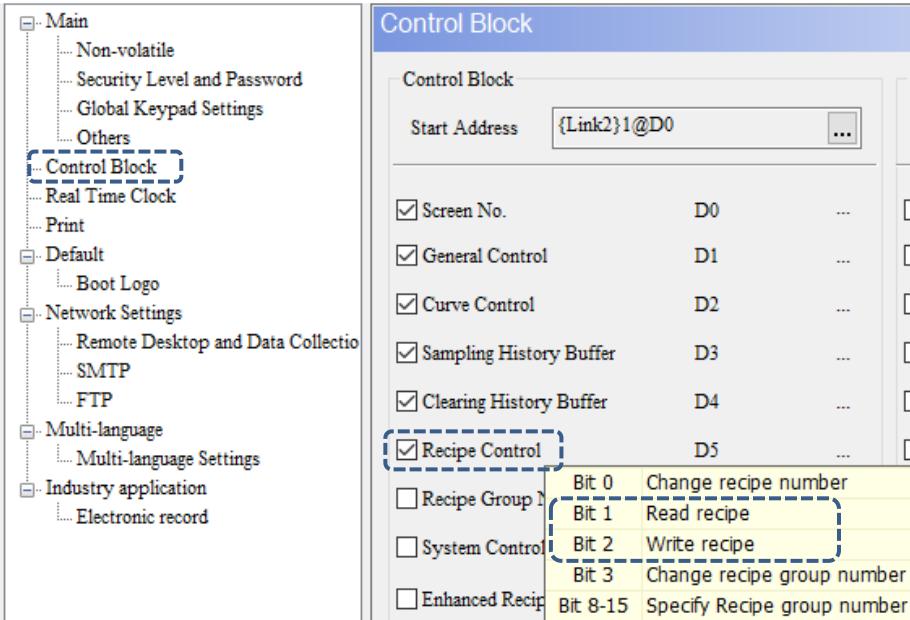
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Set Recipe Control flag in Control Block

Go to [Options] > [Configuration] > [Control Block], and select the **Recipe Control** flag check box. Then, set the Start Address for the Control Block to define the recipe control address.

Once the setting is complete, click **OK** to exit the Configuration window.

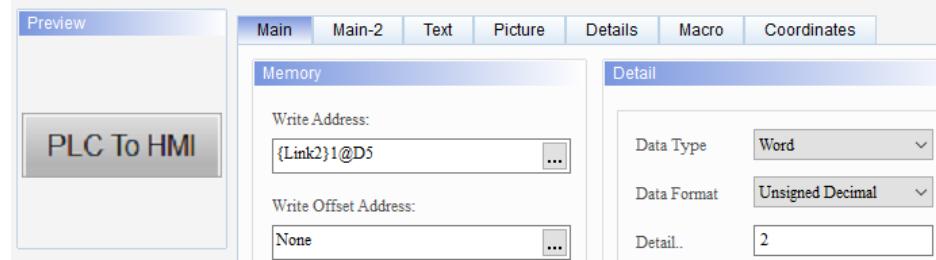
#### Configuration



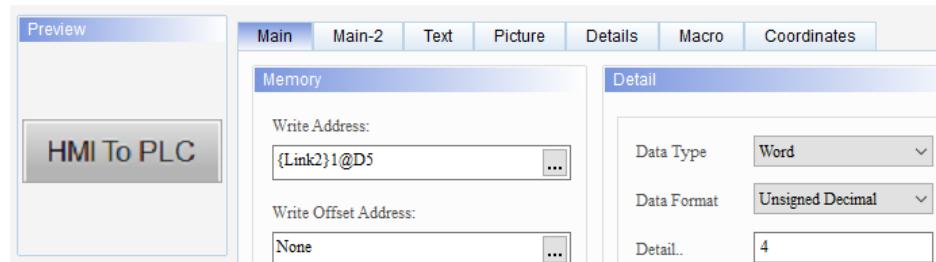
Create Set Constant button element

Create two Set Constant buttons. Set the Write Addresses to D5 and the setting values (Detail.) to 2 and 4 corresponding to Bit 1 and Bit 2 of the Recipe Control flag D5 respectively for reading and writing the recipe.

#### Set Constant



#### Set Constant



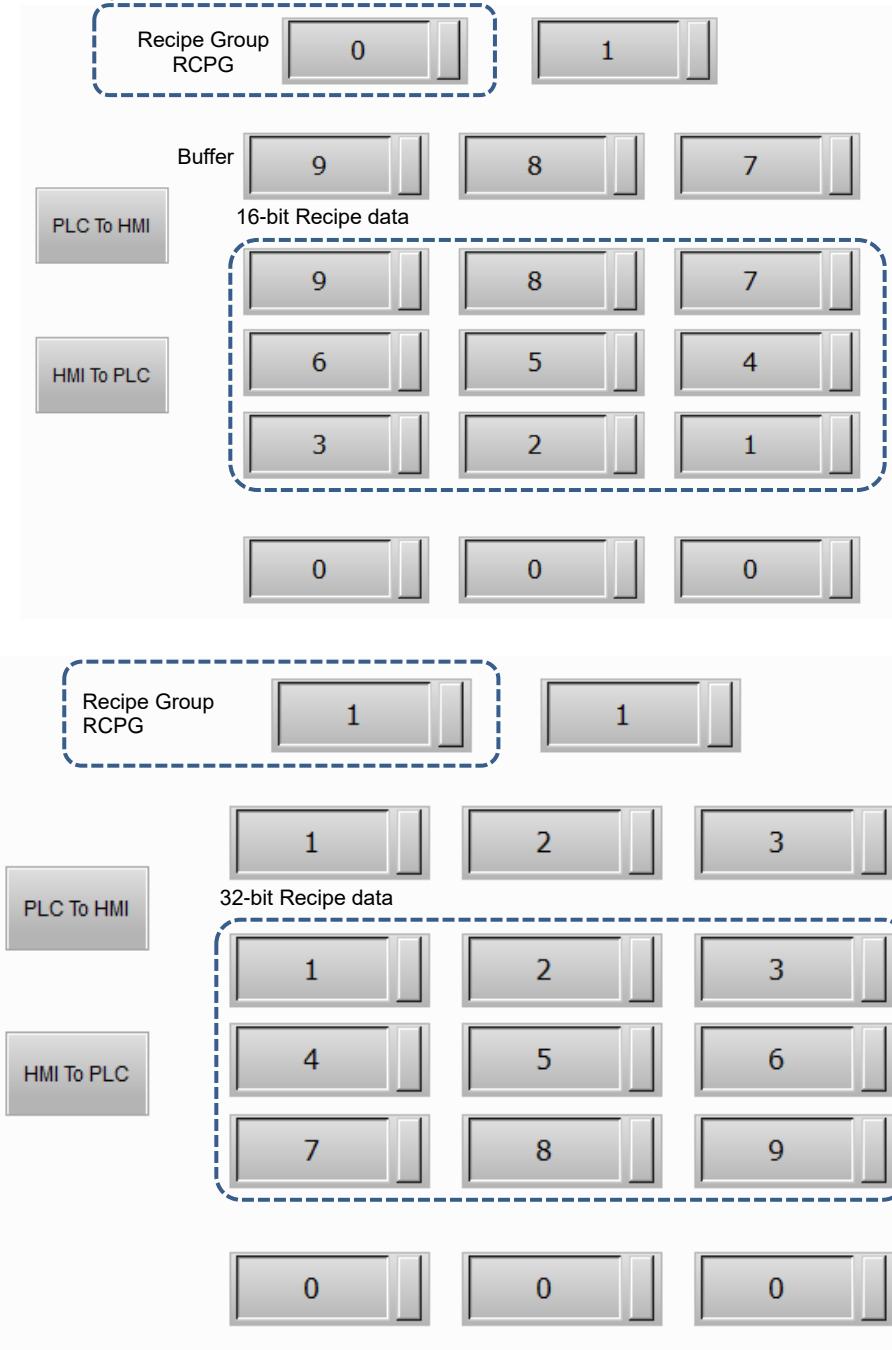
**32-bit Recipe**

- After creating all the elements, execute the Compile and Download Screen and Recipe buttons to download data to the HMI.

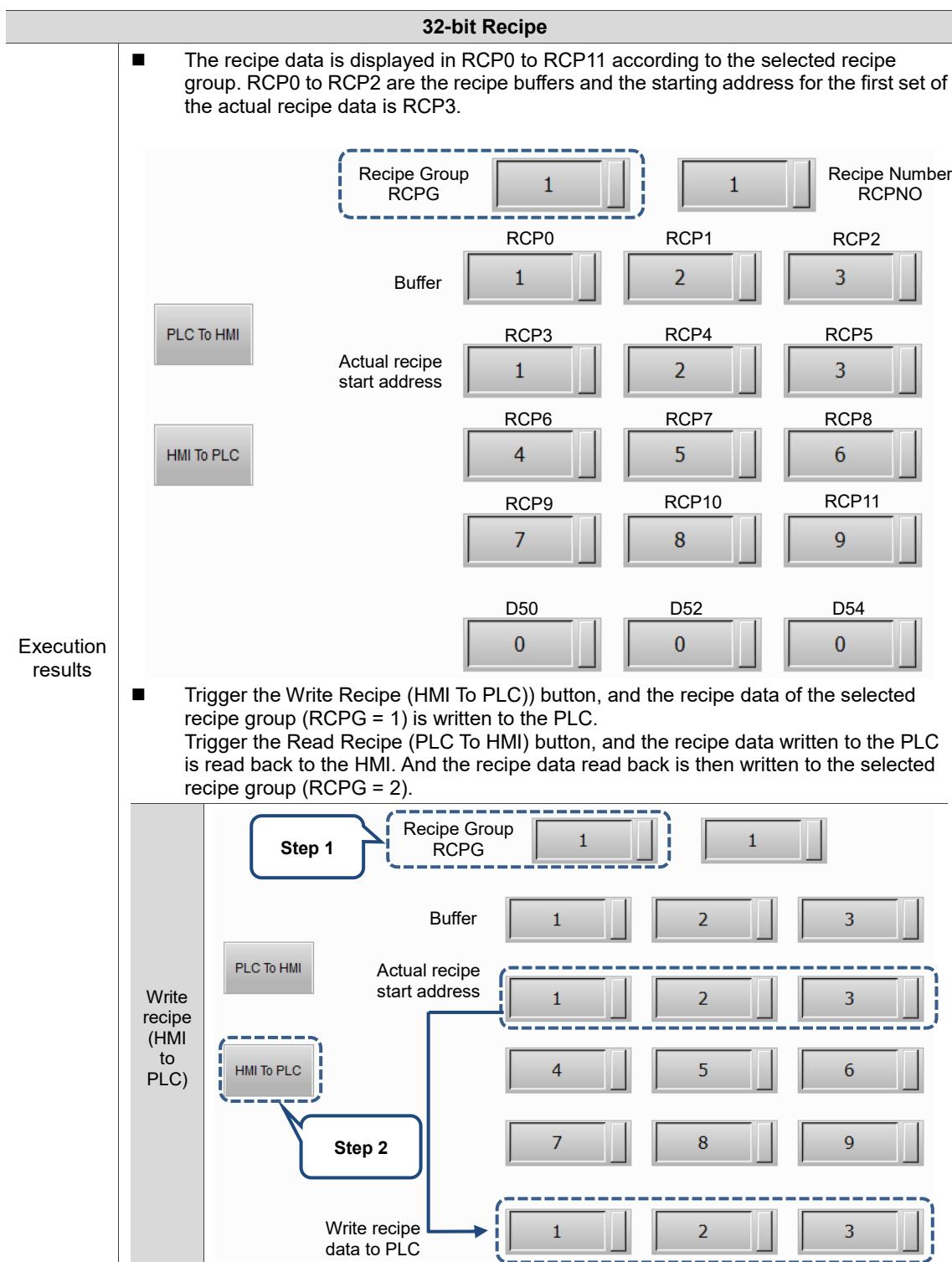


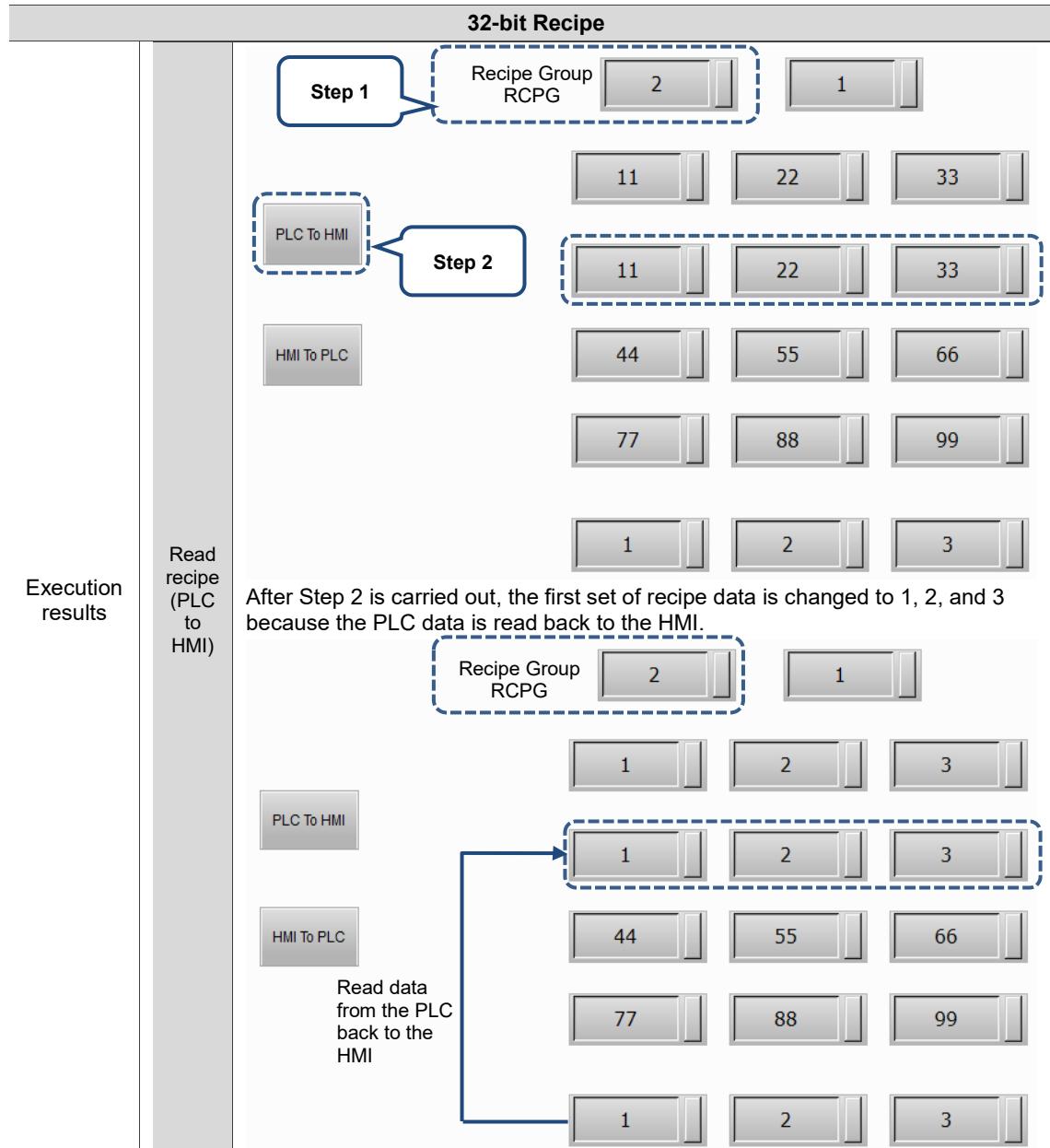
- The default for the Recipe Group (RCPG) is 0 after it is loaded to the HMI, meaning that the 16-bit Recipe data is displayed. You need to set the Recipe Group to 1 to display the 32-bit Recipe data.

Execution results



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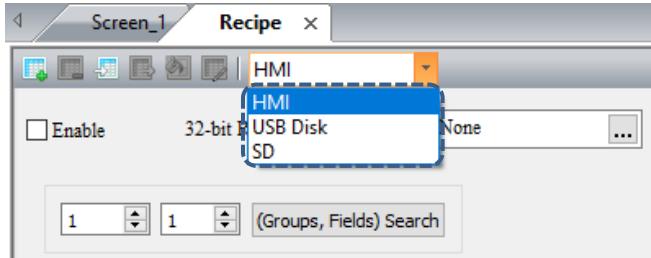
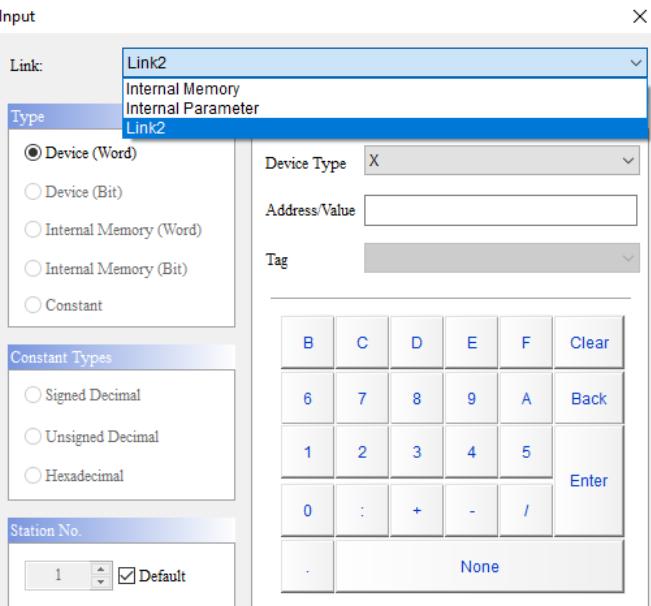




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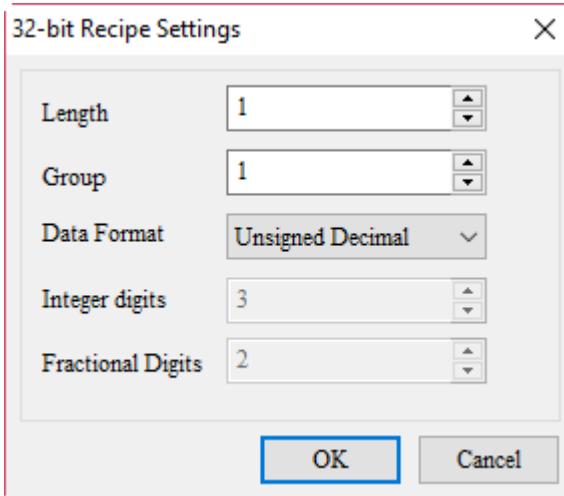
The following section introduces the property settings for the 32-bit Recipe.

Table 23.2.2 Properties of the 32-bit Recipe setting

Properties of the 32-bit Recipe setting	
Enable	<ul style="list-style-type: none"> <li>Select the <b>Enable</b> check box to use the 32-bit Recipe.</li> <li>If <b>Enable</b> is not selected, setting the 32-bit Recipe does not take effect.</li> </ul>
Non-volatile	<ul style="list-style-type: none"> <li>The non-volatile memories include HMI, USB Disk, and SD Card.</li> </ul>  <ul style="list-style-type: none"> <li>If you set to save in the HMI, the data is saved in the HMI ROM when the power is off.</li> </ul>
Address	<ul style="list-style-type: none"> <li>You can select the internal memory or the controller register address.</li> <li>Select Link Name or Device Type. Refer to Chapter 5 for details.</li> <li>Regardless of the number of recipe sets, the 32-bit Recipes share the same memory address.</li> </ul> 

**Properties of the 32-bit Recipe setting**

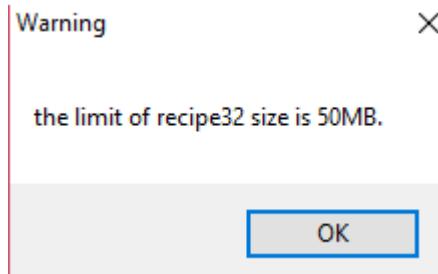
- In the 32-bit Recipe window, click  to add a 32-bit Recipe data.



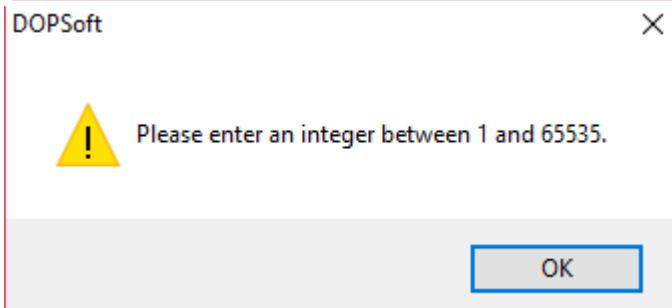
- You can add up to 255 groups of 32-bit Recipe data with the  button.

Add recipe 

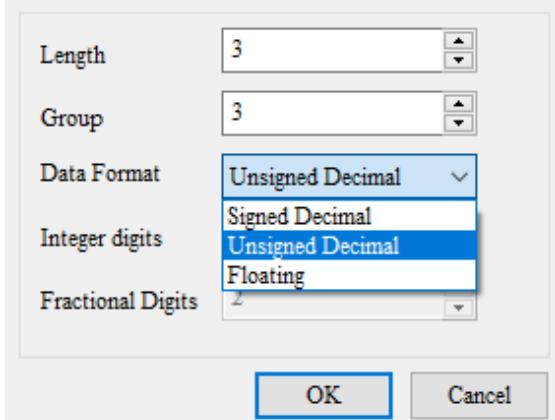
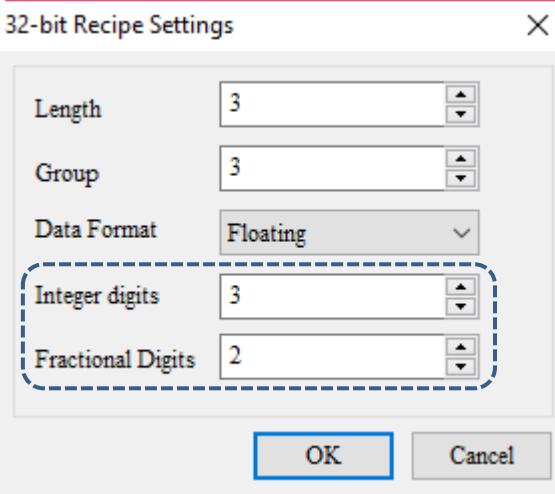
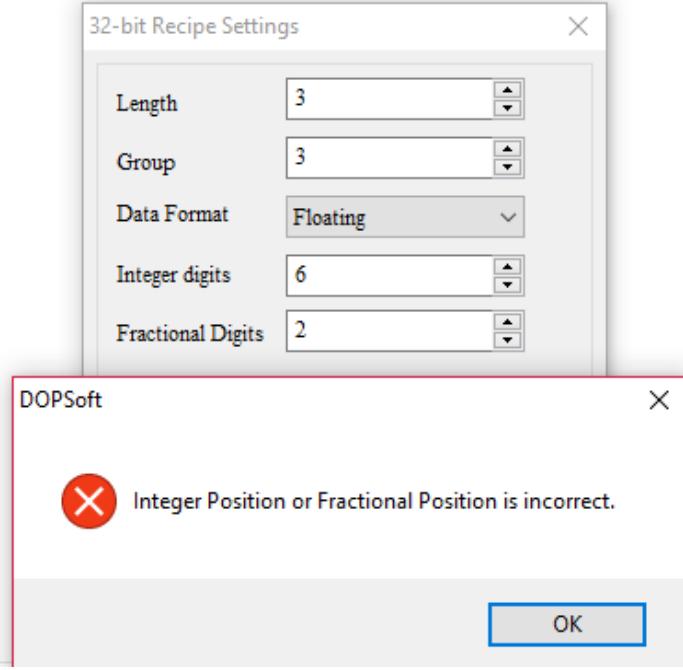
- |                |   |
|----------------|---|
| Length / Group | <ul style="list-style-type: none"><li>■ The Length and Group respectively represent the recipe length and group that you entered. The size of Length x Group cannot exceed 50 MB.</li></ul> |
|----------------|---|



- |                |  |
|----------------|--|
| Length / Group | <ul style="list-style-type: none"><li>■ The Length and Group cannot be 0. If you input 0 in Length or Group, the software displays an error message.</li></ul> |
|----------------|--|



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Properties of the 32-bit Recipe setting	
Data Format	<p>Data formats include Signed Decimal, Unsigned Decimal, and Floating.</p> 
Add recipe 	<ul style="list-style-type: none"> <li>You can only set the Integer and Fractional Digits when the Data Format is Floating.</li> </ul>  <ul style="list-style-type: none"> <li>When the Data Format is Floating, the Integer and Fractional Digits support only 7 digits in total. When this limit is exceeded, the software displays a warning message.</li> </ul> 
Fractional Digits	

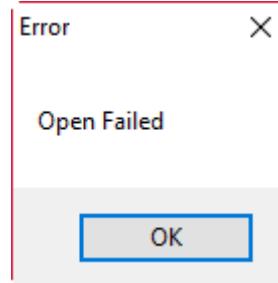
### Properties of the 32-bit Recipe setting

- The import recipe function supports CSV and RCP file formats for you to select and import the recipe.

Import  
recipe



- The opened and imported recipe file provides the current recipe data content only, and the recipe address does not support loading the originally set address. If you use the 32-bit Recipe to open a RCP or CSV file of the 16-bit Recipe, the loaded recipe data cannot be displayed normally and the software displays the following error message.



- The export recipe function saves the current 32-bit Recipe. The supported file format is CSV file.

Export  
recipe



- The saved recipe data does not support saving the set recipe address.

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**Properties of the 32-bit Recipe setting**

The delete recipe function deletes the 32-bit Recipe data. This function deletes the entire recipe, so you will have to create a new recipe if necessary.

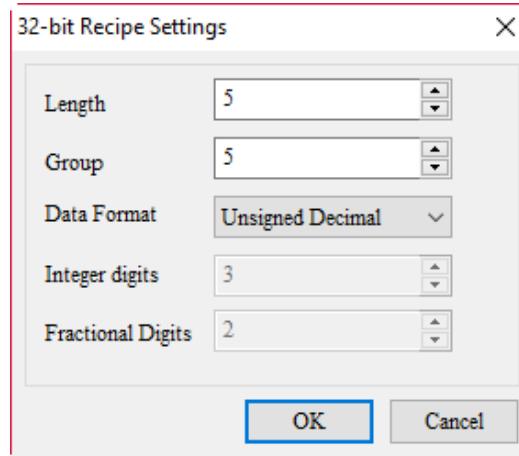
	<p>Before</p>
Delete recipe	<p>After</p>

### Properties of the 32-bit Recipe setting

Clear the recipe content that has the value entered.

<div style="text-align: center;"> <span style="font-size: 1.5em;">Clear configuration</span>   </div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">Before</th><th colspan="5" style="text-align: center; padding: 5px;">(5x5)</th></tr> <tr> <th style="text-align: center; padding: 2px;">1</th><th style="text-align: center; padding: 2px;">2</th><th style="text-align: center; padding: 2px;">3</th><th style="text-align: center; padding: 2px;">4</th><th style="text-align: center; padding: 2px;">5</th></tr> <tr> <th style="text-align: center; padding: 2px;">Unsigned Decimal 2 Word</th><th style="text-align: center; padding: 2px;">Unsigned Decimal 2 Word</th></tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px;">1</td><td style="text-align: center; padding: 2px;">1</td><td style="text-align: center; padding: 2px;">2</td><td style="text-align: center; padding: 2px;">3</td><td style="text-align: center; padding: 2px;">4</td></tr> <tr> <td style="text-align: center; padding: 2px;">2</td><td style="text-align: center; padding: 2px;">6</td><td style="text-align: center; padding: 2px;">7</td><td style="text-align: center; padding: 2px;">8</td><td style="text-align: center; padding: 2px;">9</td></tr> <tr> <td style="text-align: center; padding: 2px;">3</td><td style="text-align: center; padding: 2px;">11</td><td style="text-align: center; padding: 2px;">12</td><td style="text-align: center; padding: 2px;">13</td><td style="text-align: center; padding: 2px;">14</td></tr> <tr> <td style="text-align: center; padding: 2px;">4</td><td style="text-align: center; padding: 2px;">16</td><td style="text-align: center; padding: 2px;">17</td><td style="text-align: center; padding: 2px;">18</td><td style="text-align: center; padding: 2px;">19</td></tr> <tr> <td style="text-align: center; padding: 2px;">5</td><td style="text-align: center; padding: 2px;">21</td><td style="text-align: center; padding: 2px;">22</td><td style="text-align: center; padding: 2px;">23</td><td style="text-align: center; padding: 2px;">24</td></tr> <tr> <td style="text-align: center; padding: 2px;"> </td><td style="text-align: center; padding: 2px;"> </td></tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">After</th><th colspan="5" style="text-align: center; padding: 5px;">(5x5)</th></tr> <tr> <th style="text-align: center; padding: 2px;">1</th><th style="text-align: center; padding: 2px;">2</th><th style="text-align: center; padding: 2px;">3</th><th style="text-align: center; padding: 2px;">4</th><th style="text-align: center; padding: 2px;">5</th></tr> <tr> <th style="text-align: center; padding: 2px;">Unsigned Decimal 2 Word</th><th style="text-align: center; padding: 2px;">Unsigned Decimal 2 Word</th></tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px;">1</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td></tr> <tr> <td style="text-align: center; padding: 2px;">2</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td></tr> <tr> <td style="text-align: center; padding: 2px;">3</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td></tr> <tr> <td style="text-align: center; padding: 2px;">4</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td></tr> <tr> <td style="text-align: center; padding: 2px;">5</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td><td style="text-align: center; padding: 2px;">0</td></tr> <tr> <td style="text-align: center; padding: 2px;"> </td><td style="text-align: center; padding: 2px;"> </td></tr> </tbody> </table>	Before	(5x5)					1	2	3	4	5	Unsigned Decimal 2 Word	1	1	2	3	4	2	6	7	8	9	3	11	12	13	14	4	16	17	18	19	5	21	22	23	24						After	(5x5)					1	2	3	4	5	Unsigned Decimal 2 Word	1	0	0	0	0	2	0	0	0	0	3	0	0	0	0	4	0	0	0	0	5	0	0	0	0													
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To use the Recipe Settings function, you must first create recipe data in the 32-bit Recipe. You can use this function to change the Length, Group, and Data Format of the recipe.



### Recipe Settings



# 23

## 23.3 Indirect recipe index register (\*RCP)

Indirect recipe index register can be used by both 16-bit and 32-bit Recipes. Indirect recipe index register (\*RCPn) acquires the value from RCPn first. It takes this value as the new address and then accesses the value from this new address. For example, RCP1 = 3, RCP3 = 99, so \*RCP1 = 99 (see Figure 23.3.1).

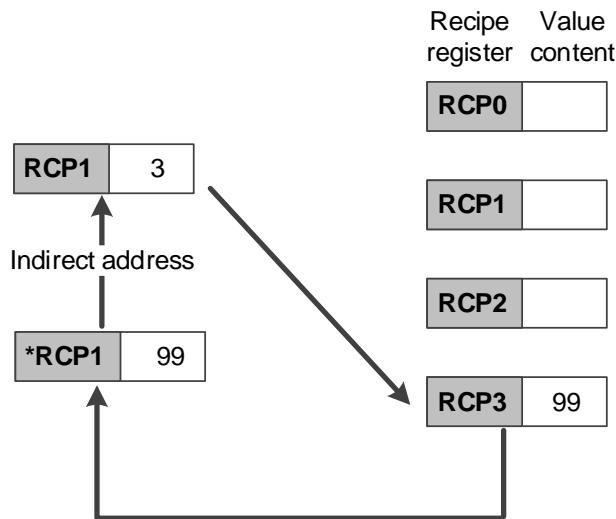


Figure 23.3.1 Indirect recipe index

The accessing range of the indirect recipe index register is as follows:

Accessing type	Device type	Accessing range
Word	*RCPn	RCP0 to RCP65535

Note: n = Word (0 to 65535)

The address accessing range provided by \*RCP is limited according to the recipe size you created. Assuming that the recipe size is Length 3 \* Group 3, then the RCP address ranges from \*RCP0 to \*RCP11. When \*RCP12 is created, the software displays the following warning message.

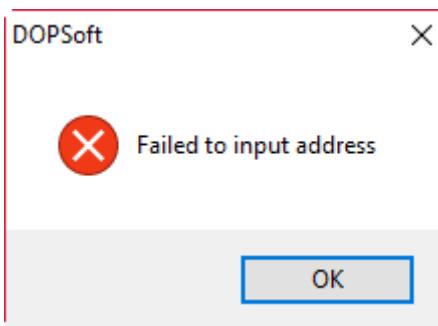
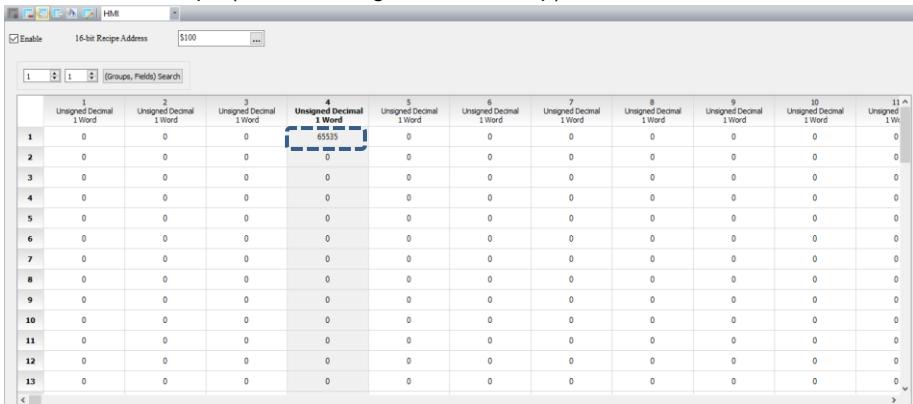


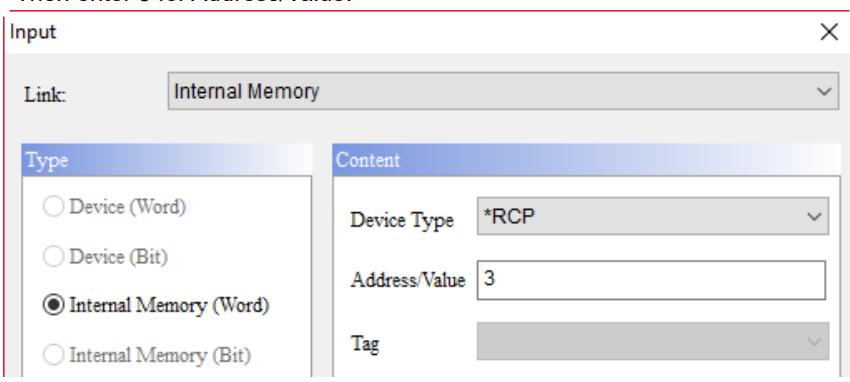
Figure 23.3.2 Indirect recipe index register configuration error

The following section introduces the example for the indirect recipe index.

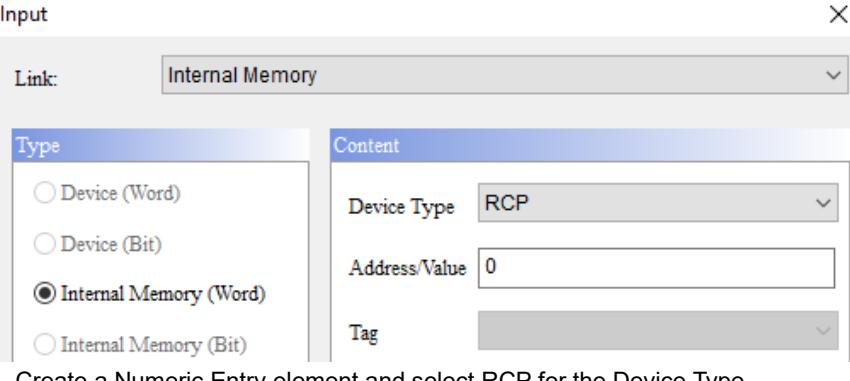
Table 23.3.1 Example of indirect recipe index register

Indirect recipe index register												
<b>Set 16-bit Recipe</b>	Create a 16-bit Recipe (1024 for Length, 64 for Group) and set RCP3 to 65535.											
												

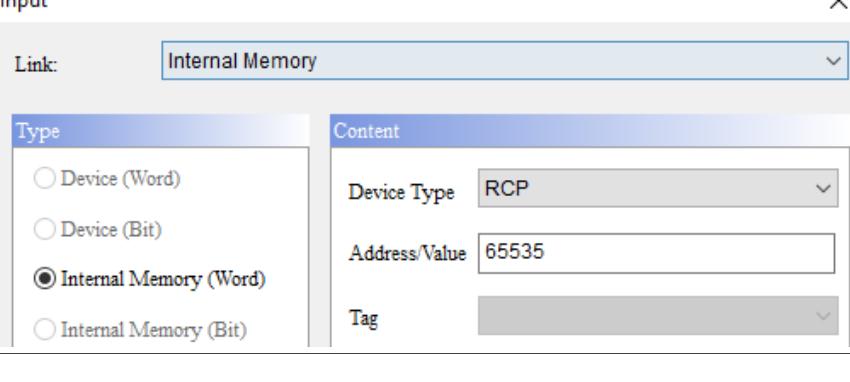
  

<b>Create Numeric Entry elements</b>	■ Create a Numeric Entry element and select *RCP for the Device Type. Then enter 3 for Address/Value.											
												

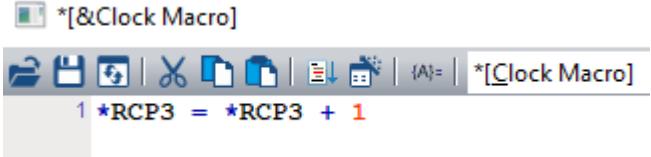
  

<b>Create Numeric Entry elements</b>	■ Create four Numeric Entry elements and select RCP for the Device Type. Then enter 0 to 3 for Address/Value respectively.											
												

<b>Create Numeric Entry elements</b>	■ Create a Numeric Entry element and select RCP for the Device Type. Then enter 65535 for Address/Value.											
												

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Indirect recipe index register	
Create Clock macro command	<p>Create the Clock macro command <math>*RCP3 = *RCP3 + 1</math>.</p> <p> 1 *RCP3 = *RCP3 + 1</p>
Execution results	<p>After compiling the screen, download it to the HMI. Then you can see the values of <math>*RCP3</math> and <math>RCP65535</math> increase simultaneously.</p> <p><math>*RCP3</math></p> <p></p> <p><math>RCP0</math>   <math>RCP1</math>   <math>RCP2</math>   <math>RCP3</math>   <math>RCP65535</math></p> <p></p>

## 23.4 Enhanced recipe

During the production process, recording information with character format is sometimes needed for ease of identification. Thus, DOPSoft provides the enhanced recipe which is able to record contents with combinations of characters (string) and numbers. Its supporting data type is Word or Double Word and its data format options include BCD, Signed Decimal, Unsigned Decimal, Hexadecimal, Floating, and Char. Among these data formats, the Char format supports Unicode input and the read length of up to 32 Words (= 64 bits).

The use of its Control Block setting is the same as that of the 16-bit / 32-bit Recipe with the exception of using a different Control Block address. When reading or writing the recipe, you have to specify both the recipe number and recipe group before reading / writing one of the recipe sets.

DOPSoft provides an enhanced recipe that incorporated the Multi-language Input element to name the recipe group, which does not require you to memorize the content and other information for the first recipe group as the previous ENRCPG register address does. With the added ENRCPGNAME register address, you can enter the recipe name to call the recipe, which is more user-friendly. Also, ENRCPGNAME names the group in Unicode, so you can enter different languages. Therefore, you need to use the Multi-language Input element with the ENRCPGNAME register.

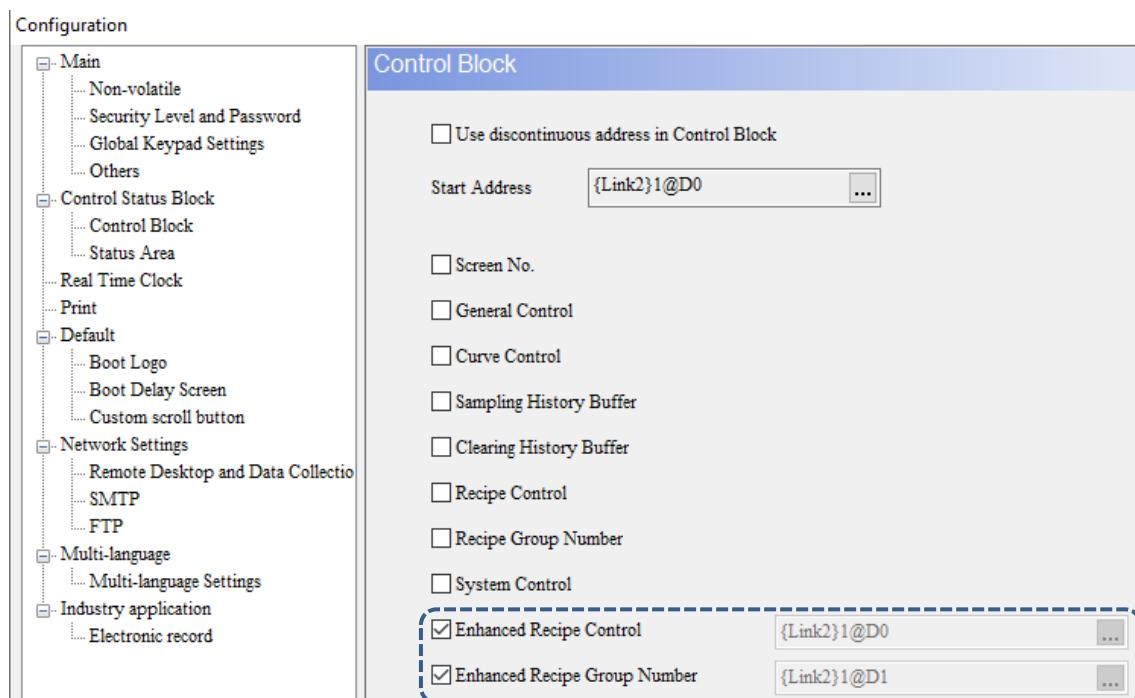


Figure 23.4.1 Using enhanced recipe address in the Control Block

The enhanced recipe has its own registers, which are ENRCP, ENRCPNO, ENRCGP, ENRCPGNAME, and \*ENRCP.

ENRCP	Enhanced recipe register
ENRCPNO	Enhanced recipe number register
ENRCGP	Enhanced recipe group register
ENRCPGNAME	Enhanced recipe group register
*ENRCP	Enhanced indirect recipe index register

The following section introduces the features of each register mentioned previously.

#### ■ Enhanced recipe number register (ENRCPNO)

ENRCPNO is used to specify the number for the enhanced recipe. Reading / writing of the recipe means to read / write a set of recipes according to the recipe number recorded in the recipe number register. When you select the first set of recipes, ENRCPNO = 1; when you select the fourth set of recipes, ENRCPNO = 4.

Note: the recipe number register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

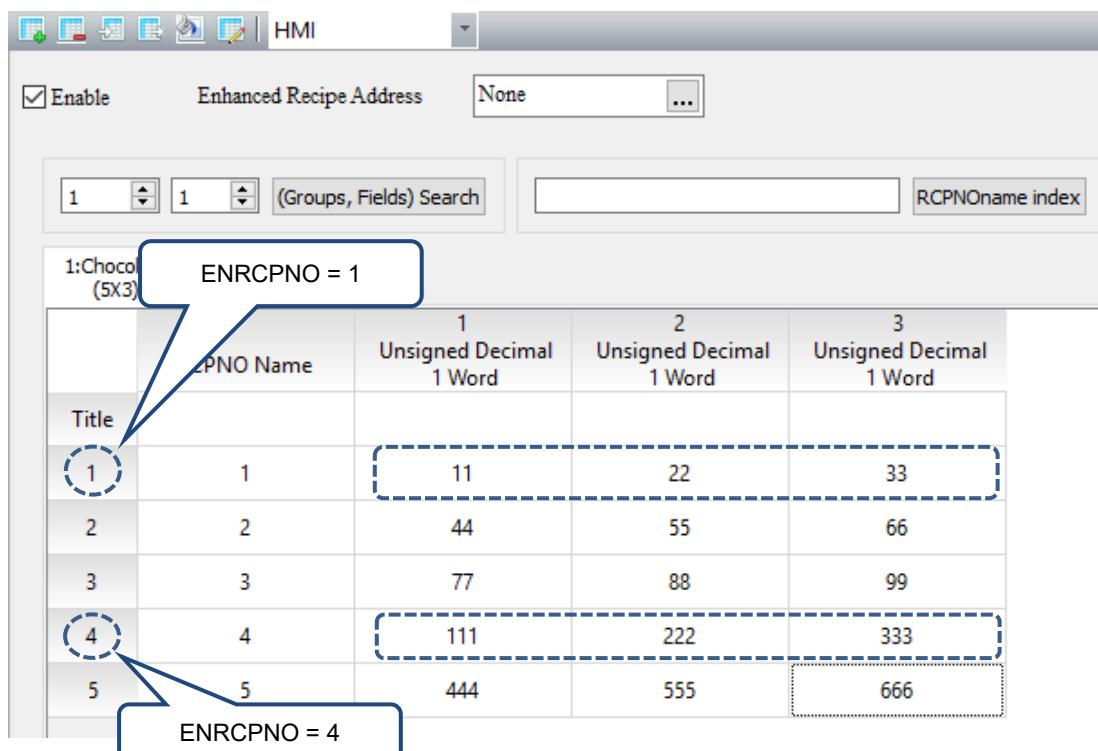
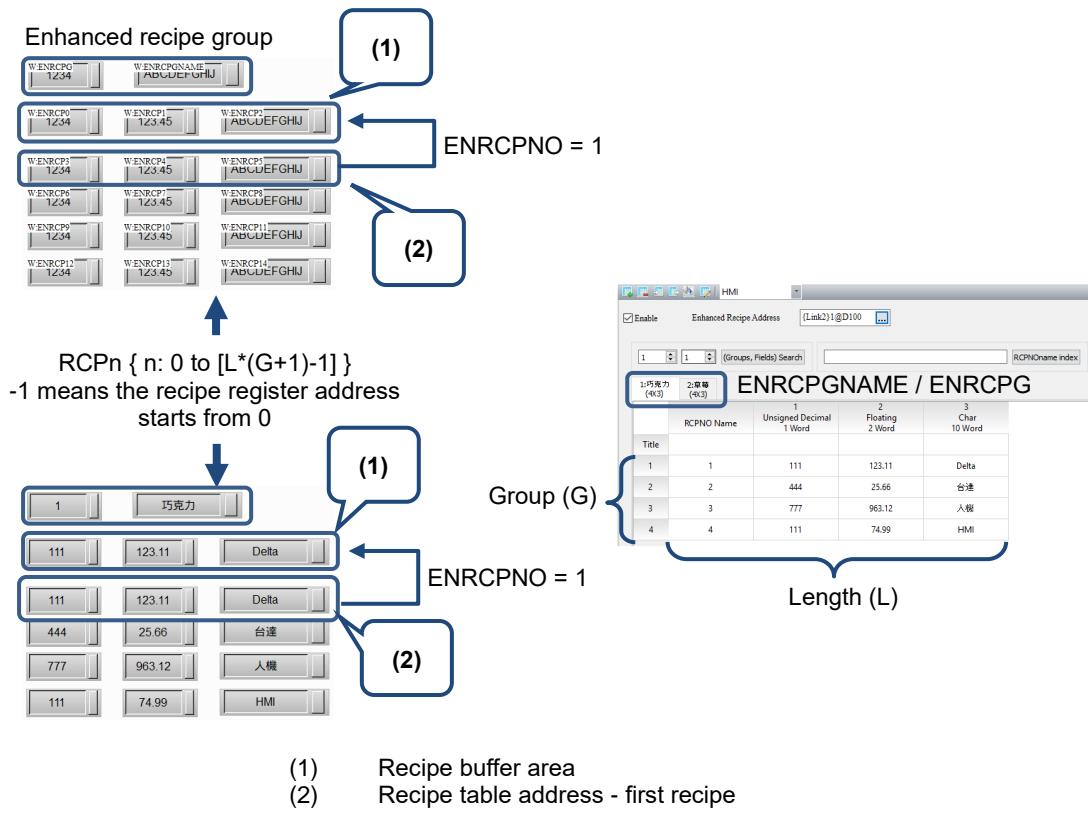


Figure 23.4.2 Enhanced recipe number editing screen

- Enhanced recipe register (ENRCP)

A recipe buffer is featured in the HMI and is configured at the front of the recipe register.

This buffer is used to store the selected set of recipes, and the number of fields for the recipe buffer equals the number of fields for the selected set of recipes, that is, the recipe buffer also occupies L recipe registers. Thus, the number of the recipe registers that a recipe table occupies is  $L * (G+1)$ , where G+1 stands for the number of the registers with an additional buffer. With the recipe buffer, you only need to switch between the recipe numbers to check the currently specified recipe parameters. When the selected enhanced recipe number (ENRCPO) is 1, the first set of enhanced recipe is displayed in the enhanced recipe buffer (i.e. ENRCPO = 1 in the following figure).



# 23

- Enhanced recipe group register (ENRCPG / ENRCPGNAME)

Enhanced recipe group register is used to specify the group for the enhanced recipe. You can create up to 255 groups of enhanced recipe data. Calling the enhanced recipe data requires the use of the Recipe Groups 1 to 255 (RCPG 1 to 255). If the enhanced recipe is activated, the default value of the recipe group is 1.

For an enhanced recipe, if you select the first set of recipe in the first group, ENRCPG = 1 (ENRCPGNAME = Chocolate) and ENRCPNO = 1; if you select the third set of recipe in the second group, ENRCPG = 2 (ENRCPGNAME = Strawberry) and ENRCPNO = 3.

The function of the ENRCPGNAME register is identical to that of the ENRCPG register. The main difference is that with ENRCPGNAME, the recipe content is acquired by entering the recipe name; with ENRCPG, the content is acquired by entering a value between 1 and 255.

Note: the recipe group register does not feature the non-volatile function, so the data in the register cannot be maintained when the HMI is powered off.

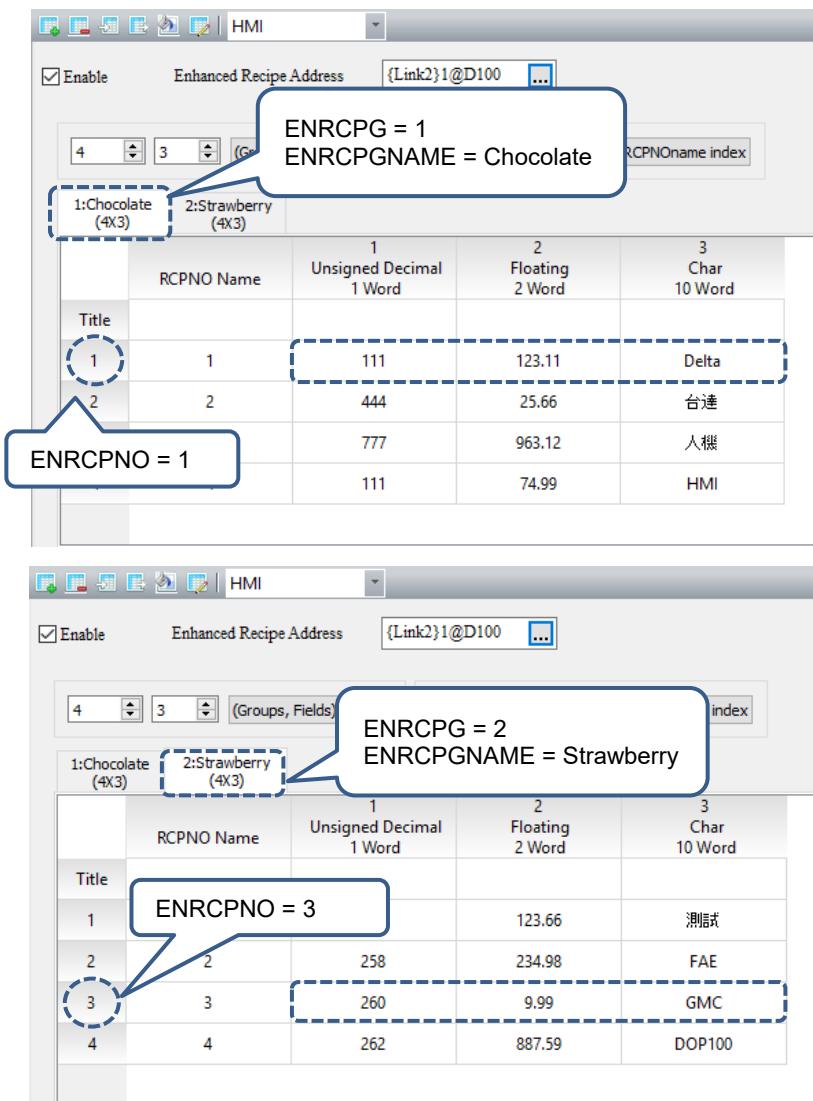


Figure 23.4.4 Recipe Group editing screen

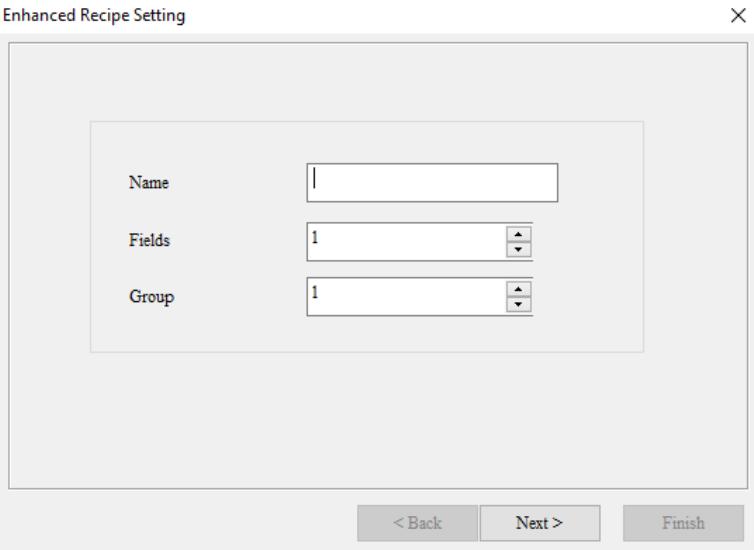
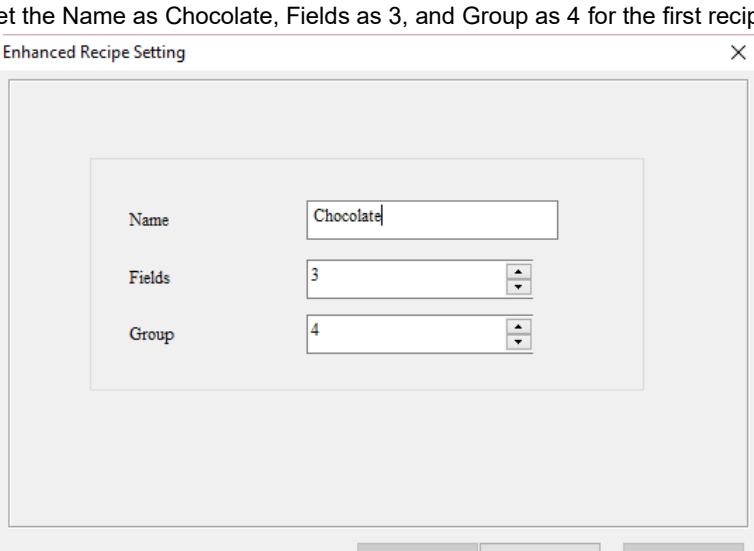
■ Enhanced recipe size limit

If the non-volatile memory area is set in the USB Disk or SD Card, the size of the enhanced recipe file cannot exceed Fields 256 x Groups 10000.

If the non-volatile area is set in the HMI, the editable size of the enhanced recipe is dependent upon the specification of the flash memory of different HMI models.

Refer to Table 23.4.1 shown as follows for the example of the enhanced recipe.

Table 23.4.1 Enhanced recipe example

Enhanced recipe							
	Step 1: go to [Options] > [Recipe] > [Enhanced Recipe].						
	1. Select the <b>Enable</b> check box. 2. Set the Recipe Address to D100.						
	Step 2: click  to enter the Enhanced Recipe Settings.						
Set enhanced recipes	 <p>Enhanced Recipe Setting</p> <table> <tr> <td>Name</td> <td><input type="text"/></td> </tr> <tr> <td>Fields</td> <td><input type="text" value="1"/></td> </tr> <tr> <td>Group</td> <td><input type="text" value="1"/></td> </tr> </table> <p>&lt; Back    Next &gt;    Finish</p>	Name	<input type="text"/>	Fields	<input type="text" value="1"/>	Group	<input type="text" value="1"/>
Name	<input type="text"/>						
Fields	<input type="text" value="1"/>						
Group	<input type="text" value="1"/>						
	1. Set the Name as Chocolate, Fields as 3, and Group as 4 for the first recipe.						
	 <p>Enhanced Recipe Setting</p> <table> <tr> <td>Name</td> <td><input type="text" value="Chocolate"/></td> </tr> <tr> <td>Fields</td> <td><input type="text" value="3"/></td> </tr> <tr> <td>Group</td> <td><input type="text" value="4"/></td> </tr> </table> <p>&lt; Back    Next &gt;    Finish</p>	Name	<input type="text" value="Chocolate"/>	Fields	<input type="text" value="3"/>	Group	<input type="text" value="4"/>
Name	<input type="text" value="Chocolate"/>						
Fields	<input type="text" value="3"/>						
Group	<input type="text" value="4"/>						

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Set enhanced recipes

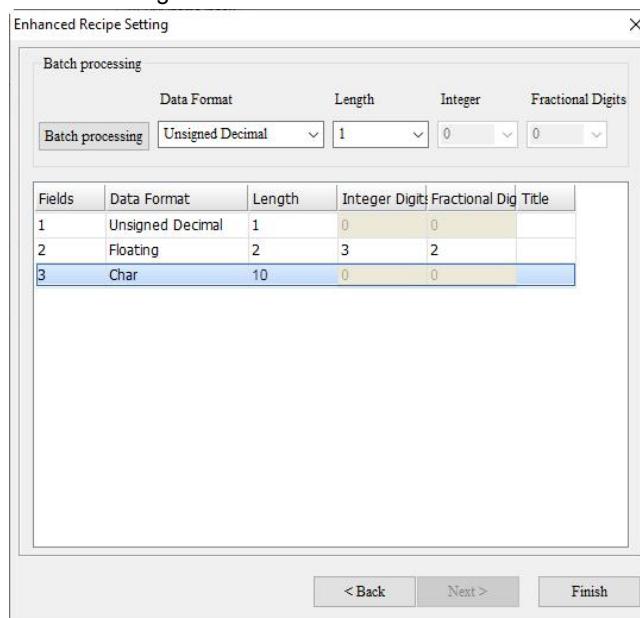
**Enhanced recipe**

2. Set the Data Format as follows.

Field 1: Unsigned Decimal. Set the Length as 1.

Field 2: Floating. Set the Length as 2, Integer Digits as 3, and Fractional Digits as 2.

Field 3: Char. Set the Length as 10.

Step 3: click **Finish** and enter the recipe data as follows:

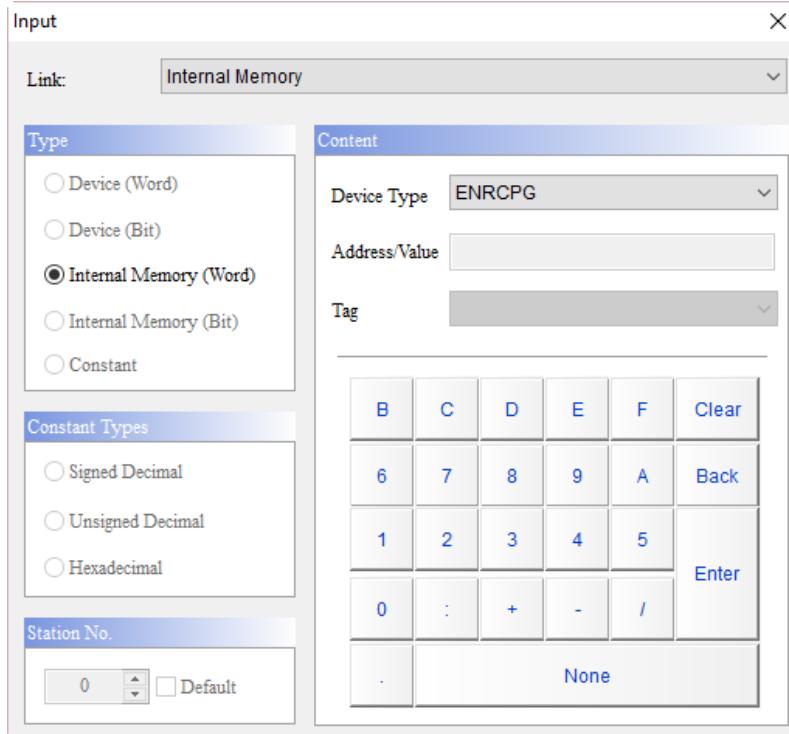
HMI				
<input checked="" type="checkbox"/> Enable      Enhanced Recipe Address      {Link2}1@D100      ...		4      3      (Groups, Fields) Search      RCPNOname index		
1:Chocolate (4X3)		2:Strawberry (4X3)		
	RCPNO Name	1 Unsigned Decimal 1 Word	2 Floating 2 Word	3 Char 10 Word
Title				
1	1	111	123.11	Delta
2	2	444	25.66	台達
3	3	777	963.12	人機
4	4	111	74.99	HMI

Step 4: repeat Steps 1 and 2 with the Fields set to 3 and Group set to 4. The recipe data is shown as follows:

HMI				
<input checked="" type="checkbox"/> Enable      Enhanced Recipe Address      {Link2}1@D100      ...		4      3      (Groups, Fields) Search      RCPNOname index		
1:Chocolate (4X3)		2:Strawberry (4X3)		
	RCPNO Name	1 Unsigned Decimal 1 Word	2 Floating 2 Word	3 Char 10 Word
Title				
1	1	256	123.66	測試
2	2	258	234.98	FAE
3	3	260	9.99	GMC
4	4	262	887.59	DOP100

### Enhanced recipe

Step 1: create a Numeric Entry element and set the Write Address to Internal Memory. Select ENRCPG for the Device Type. This element is used to select the enhanced recipe group.

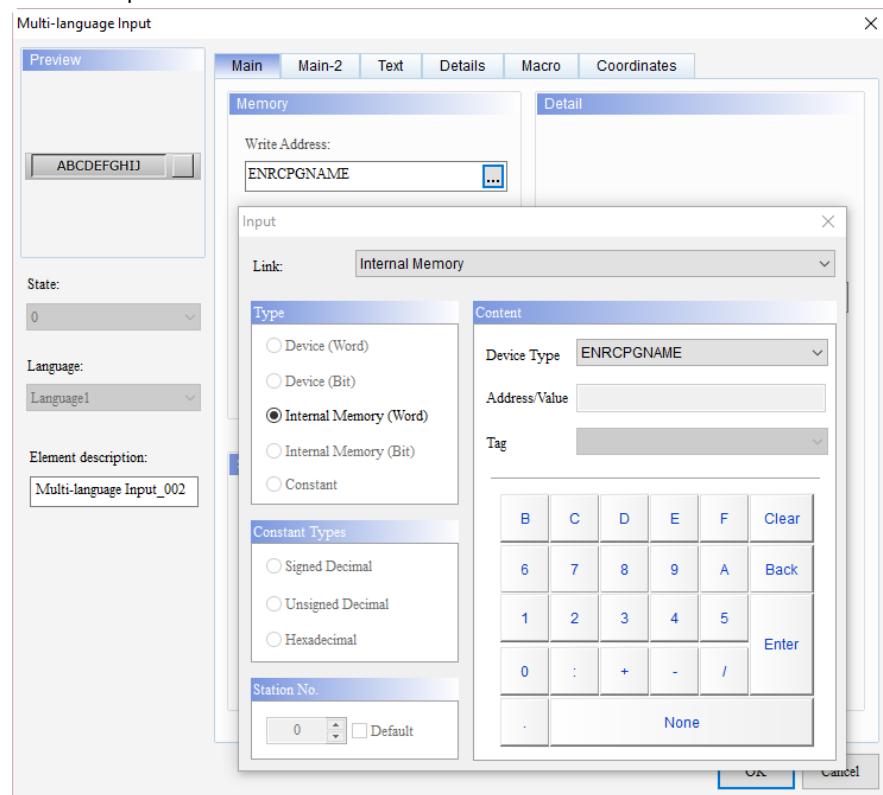


Create Numeric  
Entry elements  
for ENRCPG  
and ENRCPNO  
and  
Multi-language  
Input element  
for  
ENRCPGNAME

The following is an example of the created element:



Step 2: create a Multi-language Input element. Set the String Length to 10 and Write Address to Internal Memory, and select ENRCPGNAME for the Device Type. This element is used to select the enhanced recipe group by entering the recipe name.

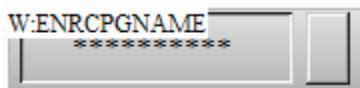


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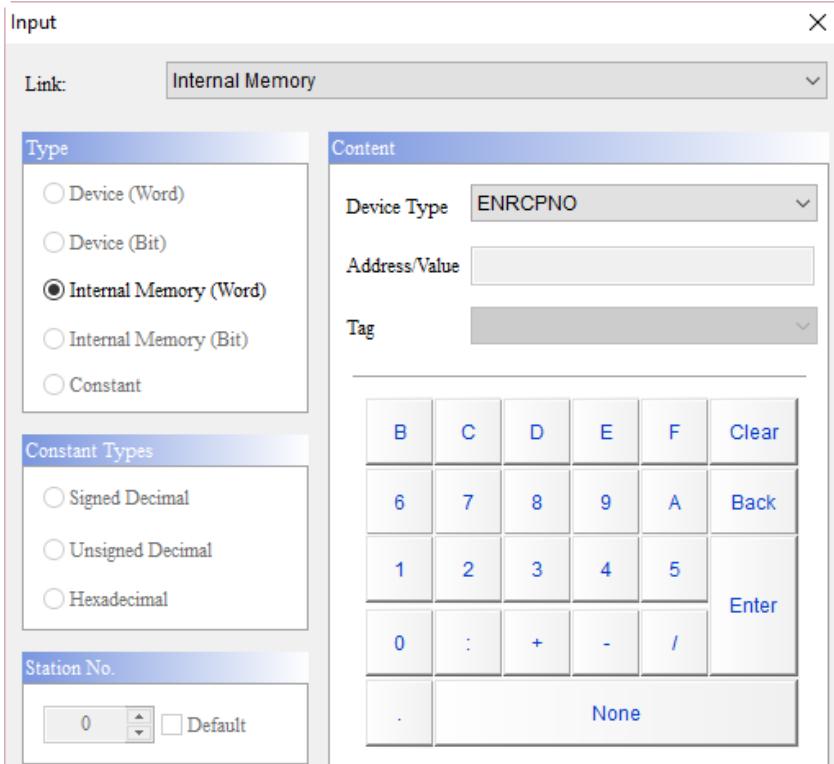
Create Numeric Entry elements for ENRCPG and ENRCPNO and Multi-language Input element for ENRCPGNAME

**Enhanced recipe**

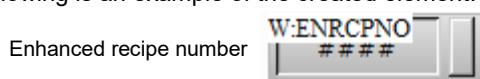
The following is an example of the created element:

Enhanced recipe group 

Step 3: create a Numeric Entry element and set the Write Address to Internal Memory. Select ENRCPNO for the Device Type. This element is used to select the enhanced recipe number.



The following is an example of the created element:

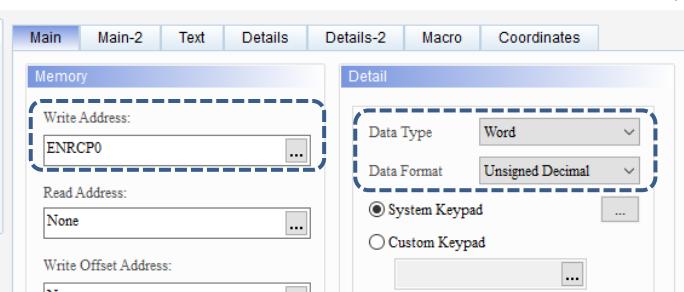


Create Numeric Entry elements for ENRCP

Before the Numeric Entry Element is created to display the enhanced recipe register, you can use the recipe register formula  $[L*(G+1)-1]$  to calculate the number n in ENRCPn represents. Substitute the size of the recipe (Length (L) x Group (G) = 3 x 3) into the formula to find the ENRCPn = ENRCP0 to ENRCP11.

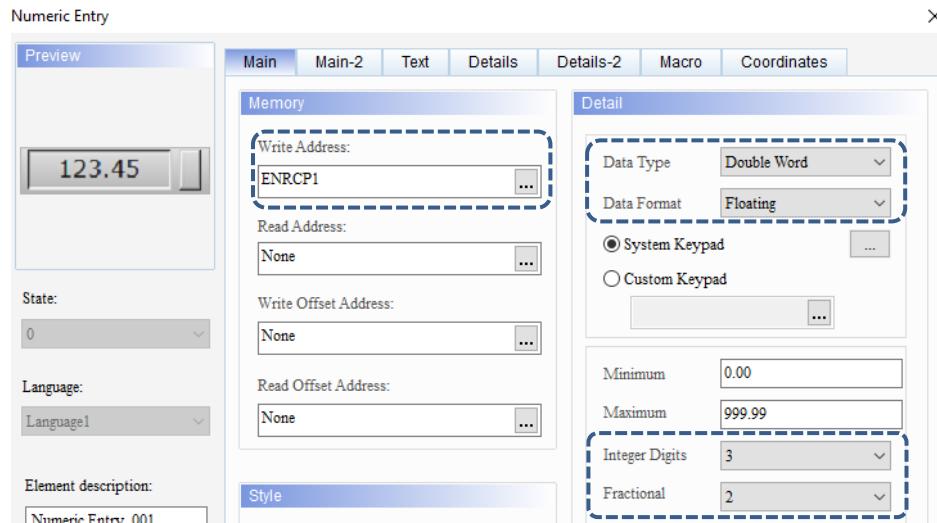
Step 1: create a Numeric Entry element and set the Write Address to ENRCP0 of the Internal Memory. Set the way of expression according to Field 1 of the recipe table with the Data Type as Word and Data Format as Unsigned Decimal.

Numeric Entry

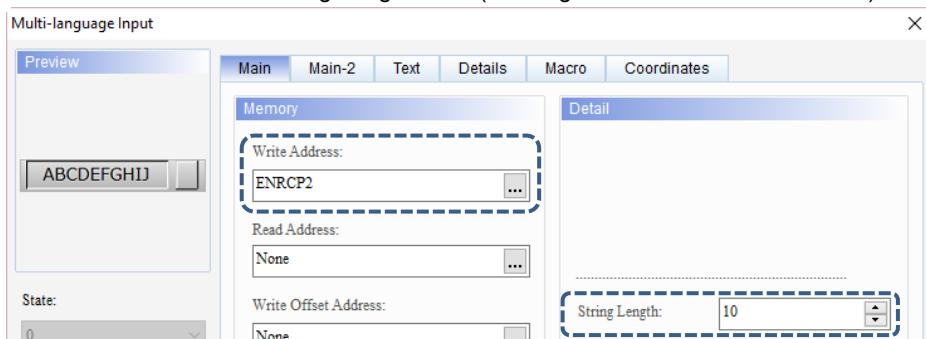


### Enhanced recipe

Step 2: create a Numeric Entry element and set the Write Address to ENRCP1 of the Internal Memory. Set the way of expression according to Field 2 of the recipe table with the Data Type as Double Word and Data Format as Floating. Then, set the Integer Digits to 3 and Fractional (Digits) to 2.



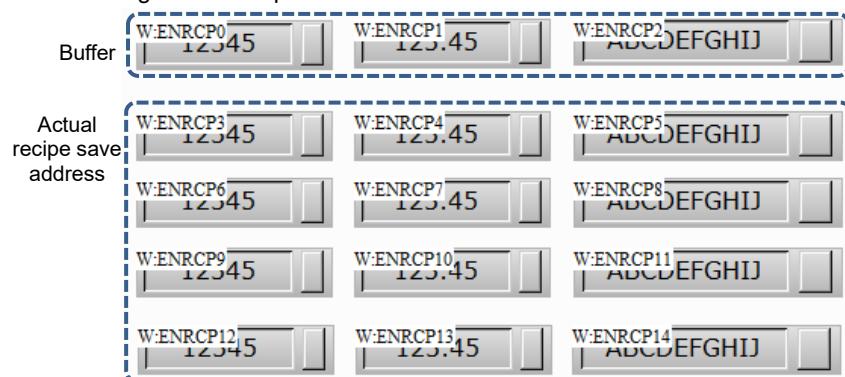
Step 3: create a Multi-language Input element and set the Write Address to ENRCP2 of the Internal Memory. Set the way of expression according to Field 3 of the recipe table and set the String Length to 10 (the length of 1 word can store 2 bits).



Create  
Numeric  
Entry  
elements  
for ENRCP

Repeat Steps 1 to 3 to create the Display elements for ENRCP3 to ENRCP11 and set the Data Format.

The following is an example of the created elements:

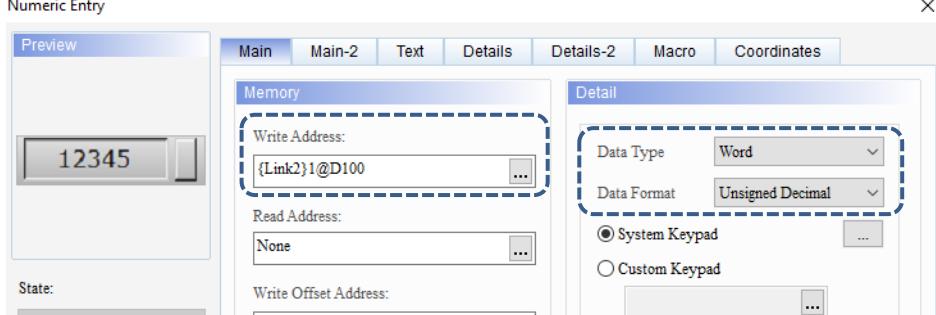


Note: ENRCP0 to ENRCP2 are the recipe buffers and the actual recipe data ENRCPs are ENRCP3 to ENRCP11. For more information, refer to Figure 23.4.3 Enhanced recipe buffer configuration.

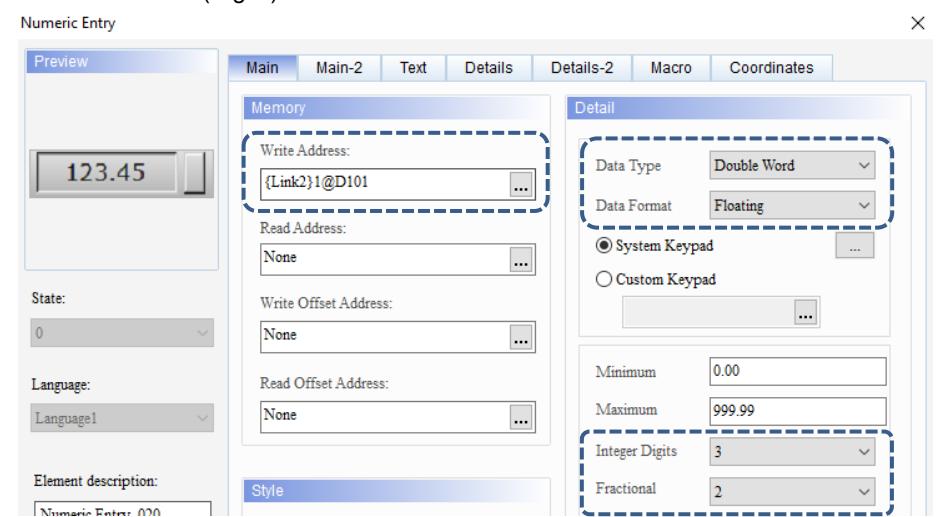
23

**Enhanced recipe**

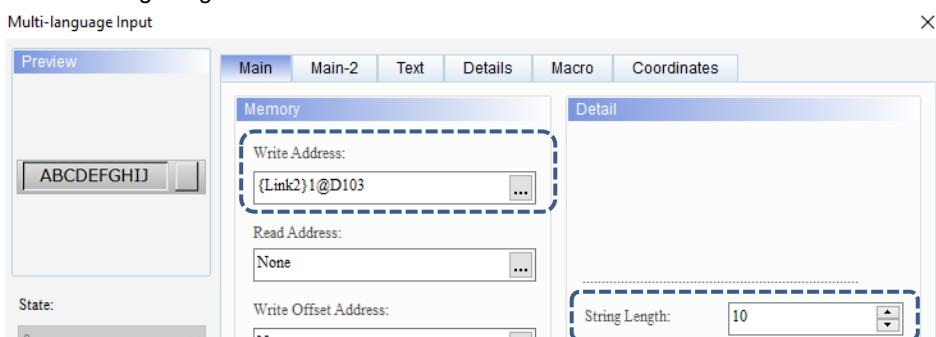
Step 1: create a Numeric Entry element by referring to the address set for the enhanced recipe to display the data change when the PLC recipe is read or written. Each field length of the enhanced recipe is not fixed, so you need to set the PLC address to be entered based on the recipe table. For example, the first field of this recipe table is in Unsigned Decimal format and its read length is 1. Thus, the Read Address is set to D100, Data Type is Word, and Data Format is Unsigned Decimal.



Step 2: create a Numeric Entry element and set the Write Address to D101, Data Type as Double Word, and Data Format as Floating. Then, set the Integer Digits to 3 and Fractional (Digits) to 2.



Step 3: create a Multi-language Input element and set the Write Address to D103 and String Length to 10.



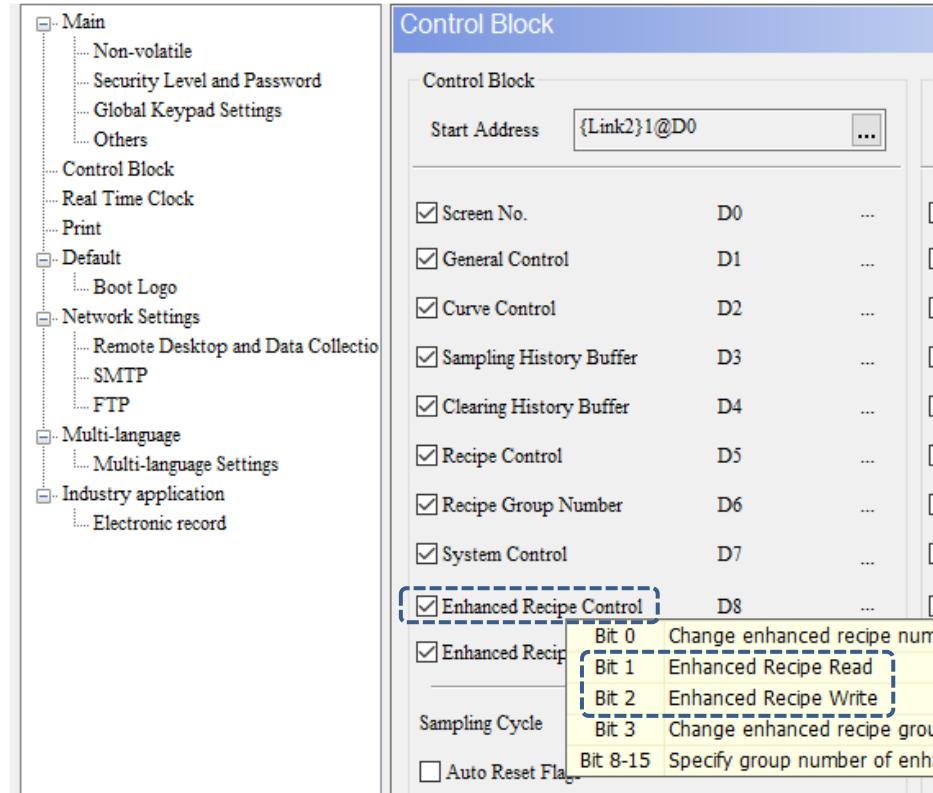
The following is an example of the created elements.

PLC address    W:{Link2}1@D100    W:{Link2}1@D101    W:{Link2}1@D103

### Enhanced recipe

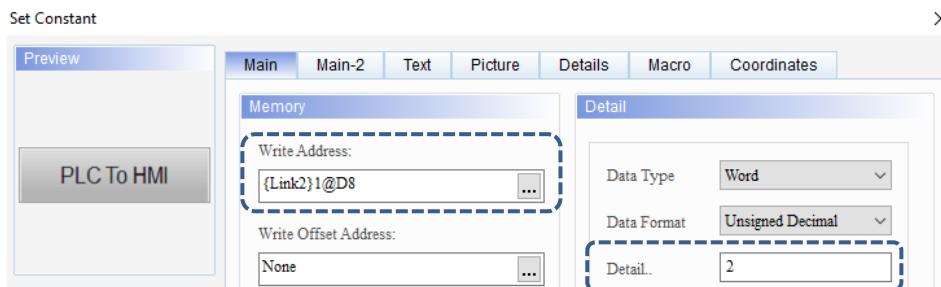
Go to [Options] > [Configuration] > [Control Block], and select the **Enhanced Recipe Control** flag check box. Then, set the Start Address for the Control Block to define the recipe control address. Once the setting is complete, click **OK** to exit the Configuration window.

#### Configuration

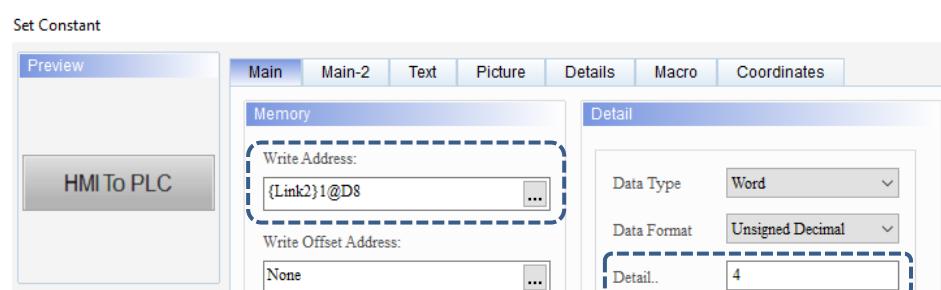


Set Recipe Control flag in Control Block

Create 2 Set Constant buttons with the Write Addresses as D8 and the setting values (Detail.) as 2 and 4 respectively, which correspond to Bit 1 and Bit 2 of the Enhanced Recipe Control flag D8 for reading and writing the recipe.



Create Set Constant button elements



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**Enhanced recipe**

- After creating all the elements, execute the Compile and Download Screen and Recipe buttons to download data to the HMI.

ENRCPNO      1      ENRCPG  
1      Chocolate      ENRCPGNAME

Buffer      111      123.11      Delta      PLC To HMI

Actual recipe address

111	123.11	Delta
444	25.66	台達
777	963.12	人機
111	74.99	HMI

HMI To PLC

0      0.00      PLC Address

- When the enhanced recipe group is loaded into the HMI, the default value is 1. To display different groups, you can select a different enhanced recipe group according to the requirement.
- The recipe data is displayed in ENRCP0 to ENRCP11 according to the selected recipe group. ENRCP0 to ENRCP2 are the recipe buffer data and the starting address for the first set of recipe data is ENRCP3.

**Execution results**

**Write recipe (HMI to PLC)**

Enhanced recipe number	1	Enhanced recipe group	
	1	Chocolate	
Recipe address	111	123.11	Delta
	444	25.66	台達
	777	963.12	人機
PLC address	1111	74.99	HMI
	111	123.11	Delta

PLC To HMI

Write recipe data to PLC

HMI To PLC

Step 1

**Enhanced recipe**

- Press the ENRCPGNAME element.

Step 1

- Enter "Strawberry", and then press .

Step 1

Execution results

Read recipe (PLC to HMI)

PLC To HMI

HMI To PLC

Read data from the PLC back to the HMI

- After Step 2 is executed, the result is shown as follows.

Step 2

256	123.66	測試
258	234.98	FAE
260	9.99	GMC
262	887.59	DOP100
111	123.11	Delta

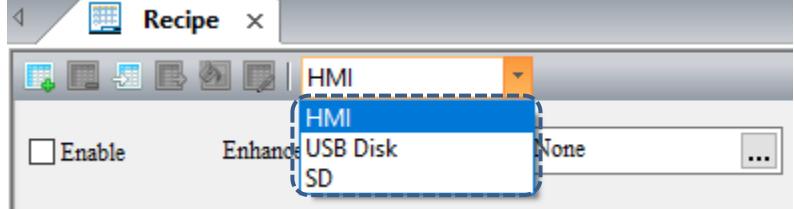
PLC To HMI

HMI To PLC

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The following section introduces the property settings for the enhanced recipe.

Table 23.4.2 Properties of the Enhanced Recipe setting

Properties of the Enhanced Recipe setting	
Enable	<ul style="list-style-type: none"><li>■ Select the <b>Enable</b> check box to use the enhanced recipe.</li><li>■ If <b>Enable</b> is not selected, setting the enhanced recipe does not take effect.</li></ul>
Non-volatile	<ul style="list-style-type: none"><li>■ The non-volatile memories include HMI, USB Disk, and SD Card. <ul style="list-style-type: none"><li>■ If you set to save in the HMI, the data is saved in the HMI ROM when the power is off.</li></ul></li></ul>

### Properties of the Enhanced Recipe setting

- You can select the internal memory and the controller register address.
- Select Link Name or Device Type. Refer to Chapter 5 for details.
- Regardless of the number of recipe sets, the enhanced recipes share the same memory address.

Address	<p><b>Input</b></p> <p>Link: <b>Link2</b></p> <p>Type Internal Memory Internal Parameter <b>Link2</b></p> <p><input checked="" type="radio"/> Device (Word)  <input type="radio"/> Device (Bit)  <input type="radio"/> Internal Memory (Word)  <input type="radio"/> Internal Memory (Bit)  <input type="radio"/> Constant</p> <p>Constant Types  <input type="radio"/> Signed Decimal  <input type="radio"/> Unsigned Decimal  <input type="radio"/> Hexadecimal</p> <p>Station No.  <input type="button" value="1"/> <input checked="" type="checkbox" value="Default"/> Default</p> <p style="text-align: right;"><b>X</b></p>
---------	---

- Go to the Enhanced Recipe window. Click  to add the enhanced recipe data.

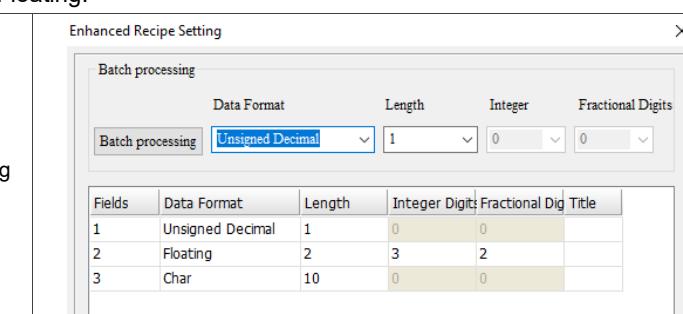
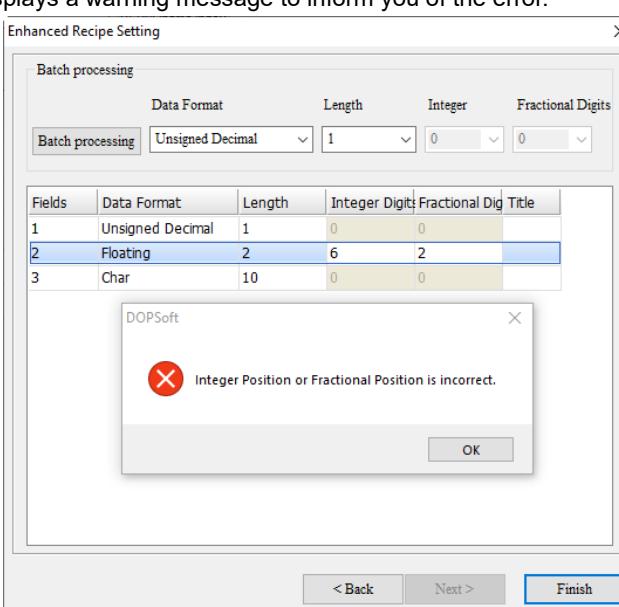
Add recipe  


Add recipe	<p><b>Enhanced Recipe Setting</b></p> <p>Name <input type="text" value=""/></p> <p>Fields <input type="text" value="1"/></p> <p>Group <input type="text" value="1"/></p> <p style="text-align: center;"><b>&lt; Back</b> <b>Next &gt;</b> <b>Finish</b></p>
------------	---

- You can add up to 255 groups of enhanced recipe data with the  button.

23

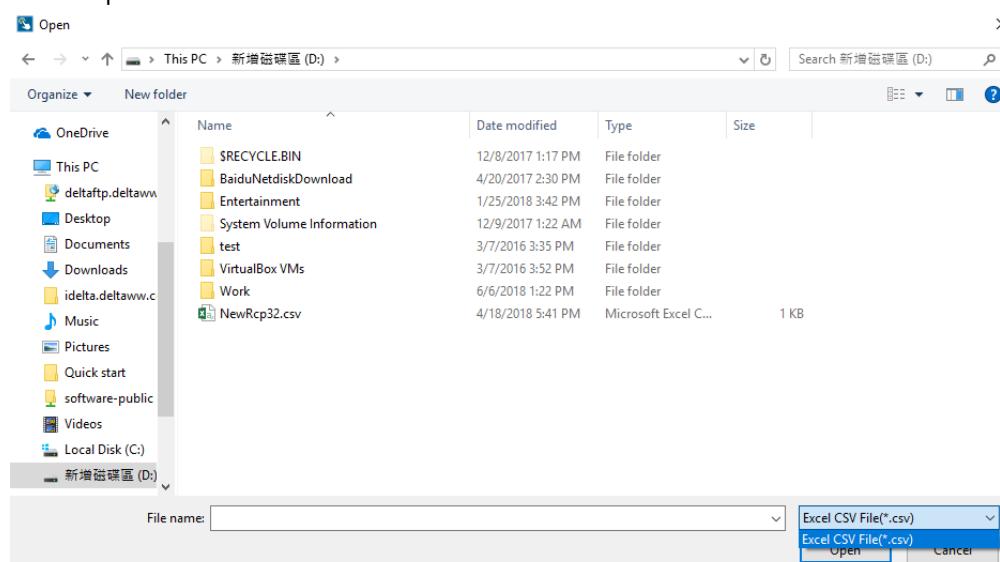
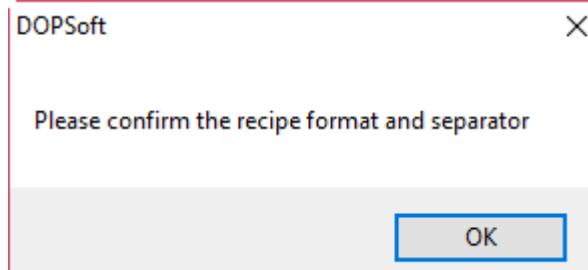
Properties of the Enhanced Recipe setting	
Name	<ul style="list-style-type: none"> <li>You can name the enhanced recipe group and the use of Unicode characters is supported.</li> <li>With the Multi-language Input element, you can enter the name of the enhanced recipe to call the recipe.</li> <li>The following example shows the first recipe group name in <b>Japanese</b>, the second recipe group name in <b>Chinese</b>, and the third recipe group name in <b>English</b>.</li> </ul>
Add recipe	<ul style="list-style-type: none"> <li>The Fields and Group represent the recipe length and group that you entered respectively. It is suggested the numbers in Fields x Group should not exceed 350 x 65535.</li> </ul> <div style="border: 1px solid red; padding: 10px; width: fit-content; margin: auto;"> <p><b>Warning</b></p> <p>Not enough physical memory!</p> <p><b>OK</b></p> </div> <ul style="list-style-type: none"> <li>The numbers in Fields and Group cannot be 0. If any of the value is 0, the system automatically sets the value to the minimum which is 1.</li> </ul>
Data Format	<p>Data formats include BCD, Signed Decimal, Unsigned Decimal, Hexadecimal, Floating, and Char.</p> <p>Note: if you select Char as the data format, do not use the same character for the input value and delimiter. Otherwise, it may cause data error and failure to import the data.</p>

Properties of the Enhanced Recipe setting					
		<ul style="list-style-type: none"> <li>Limit of the read length varies according to different data formats.</li> </ul>			
Length		Data Format	Length	Note	
		BCD	1 or 2	1: Word 2: Double Word	
		Signed Decimal	1 or 2		
		Unsigned Decimal	1 or 2		
		Hexadecimal	1 or 2		
		Floating	2	2: Double Word	
Add recipe		Char	1 to 32	Supports up to 32 Words (64 bits)	
		<ul style="list-style-type: none"> <li>If you select Char as the data format, the system automatically fills in the blank string if there is any remaining space after you entered the characters.</li> </ul>			
		<ul style="list-style-type: none"> <li>You can only set the integer and fractional digits when the data format is Floating.</li> </ul>			
					
		<ul style="list-style-type: none"> <li>When the data format is Floating, the integer and fractional digits support only 7 digits in total. When this limit is exceeded, the software displays a warning message to inform you of the error.</li> </ul>			
					

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### Import recipe

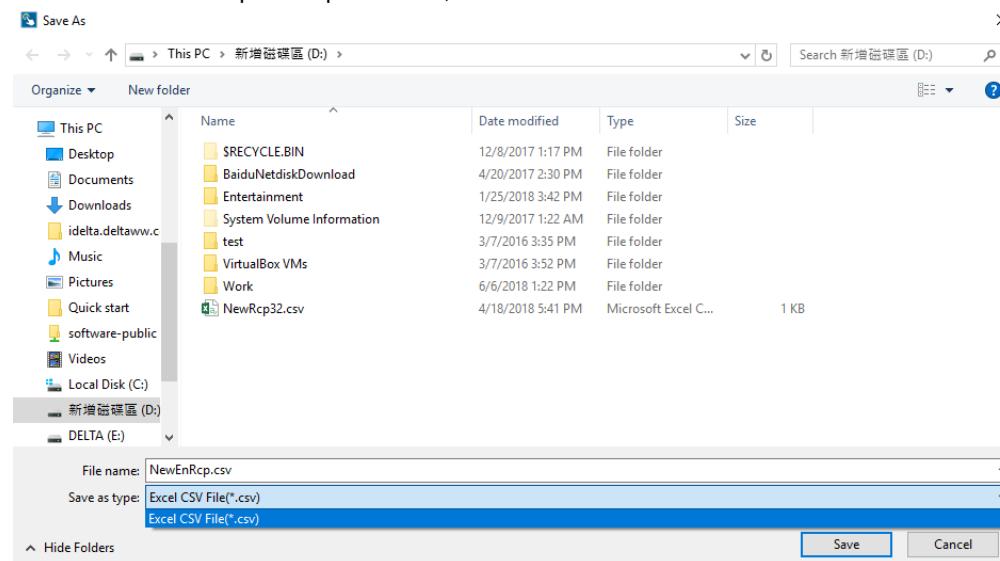


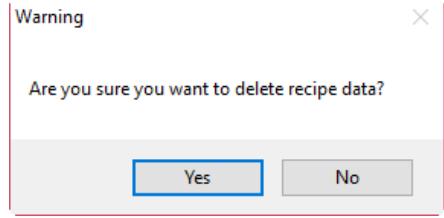
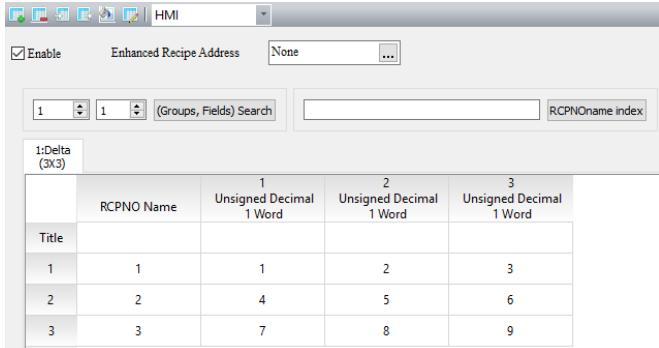
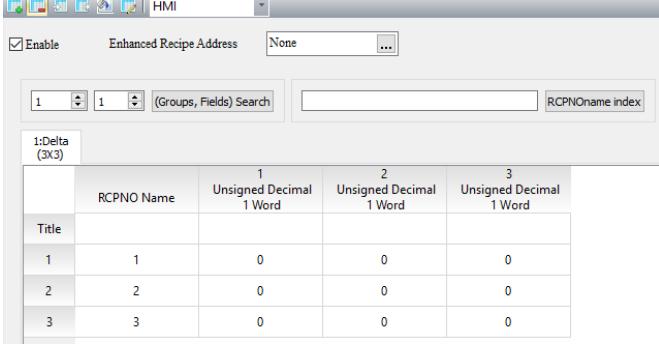
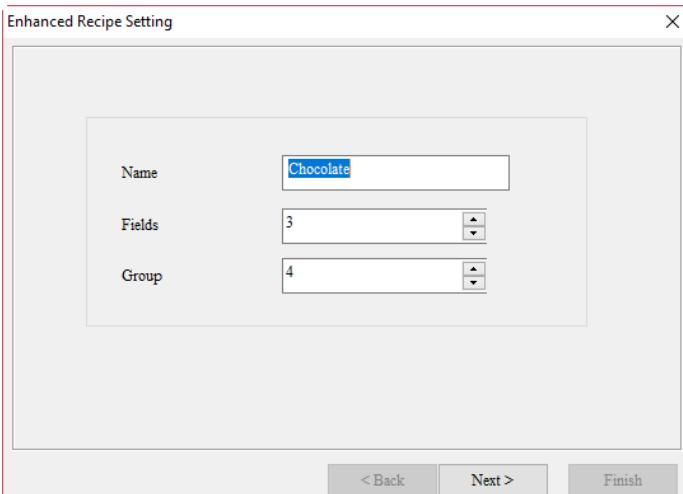
- Properties of the Enhanced Recipe setting**
- The import recipe function only supports CSV file format for you to select and import the recipe.
- 
- The opened and imported recipe file provides the current recipe data content only, and the recipe address does not support loading the originally set address. If you use the enhanced recipe to open a CSV file of the 16- or 32-bit Recipe, the loaded recipe data cannot be displayed normally and the software displays the following error message.
- 

### Export recipe



The export recipe function saves the current enhanced recipes. The supported file format is the same as that of the import recipe function, which is CSV file.



Properties of the Enhanced Recipe setting	
Delete recipe 	The delete recipe function deletes the enhanced recipe data. When this function is executed, the software displays the following warning message for confirming if you want to delete the data. 
Clear configuration 	Clear the recipe content that has the value entered. Before:  After: 
Enhanced Recipe Setting 	To use the Enhanced Recipe Setting function, there must be recipe data in the enhanced recipe. You can use this function to change the Name, Fields, Group, and data format of the recipe. 

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### Groups / Fields Search

- You can enter the group and field to be searched then click the **(Groups, Fields) Search** button, and the searching result is selected.

The screenshot shows a search interface with two input fields containing '1' and '1'. To the right is a button labeled '(Groups, Fields) Search'.

- For example, when you enter 3 and 3 for the group and field respectively and click the **(Groups, Fields) Search** button, the specified position is selected.

The screenshot shows a table titled '1:Delta (7X4)' with columns for RCPNO Name, 1 Unsigned Decimal 1 Word, 2 Unsigned Decimal 1 Word, 3 Unsigned Decimal 1 Word, and 4 Unsigned Decimal 1 Word. Row 3 is highlighted, indicating it is the selected result.

	RCPNO Name	1 Unsigned Decimal 1 Word	2 Unsigned Decimal 1 Word	3 Unsigned Decimal 1 Word	4 Unsigned Decimal 1 Word
Title					
1	1	0	0	0	0
2	2	0	0	0	0
3	3	0	0	1	0
4	4	0	0	0	0
5	5	0	0	0	0
6	6	0	0	0	0
7	7	0	0	0	0

- You can enter the RCPNO name to be searched then click the **RCPNOname index** button, and the searching result is selected.

The screenshot shows a search interface with an input field containing '10' and a button labeled 'RCPNOname index'.

- For example, if you enter 10 and click the **RCPNOname index** button, the specified position is selected.

The screenshot shows a table titled '1:Delta (11X4)' with columns for RCPNO Name, 1 Unsigned Decimal 1 Word, 2 Unsigned Decimal 1 Word, 3 Unsigned Decimal 1 Word, and 4 Unsigned Decimal 1 Word. Row 10 is highlighted, indicating it is the selected result.

	RCPNO Name	1 Unsigned Decimal 1 Word	2 Unsigned Decimal 1 Word	3 Unsigned Decimal 1 Word	4 Unsigned Decimal 1 Word
Title					
1	1	0	0	0	0
2	2	0	0	0	0
3	3	0	0	0	0
4	4	0	0	0	0
5	5	0	0	0	0
6	6	0	0	0	0
7	7	0	0	0	0
8	8	0	0	0	0
9	9	0	0	0	0
10	10	0	0	0	0
11	11	0	0	0	0

## 23.5 Enhanced indirect recipe index register (\*ENRCP)

The enhanced indirect recipe index register is used specifically for the enhanced recipe.

Enhanced indirect recipe index register (\*ENRCPn) acquires the value from ENRCPn first, and then it takes this value as the new address and accesses the value from this new address. For example, if ENRCP1 = 3 and ENRCP3 = 99, then \*ENRCP1 = 99 (see Figure 23.5.1).

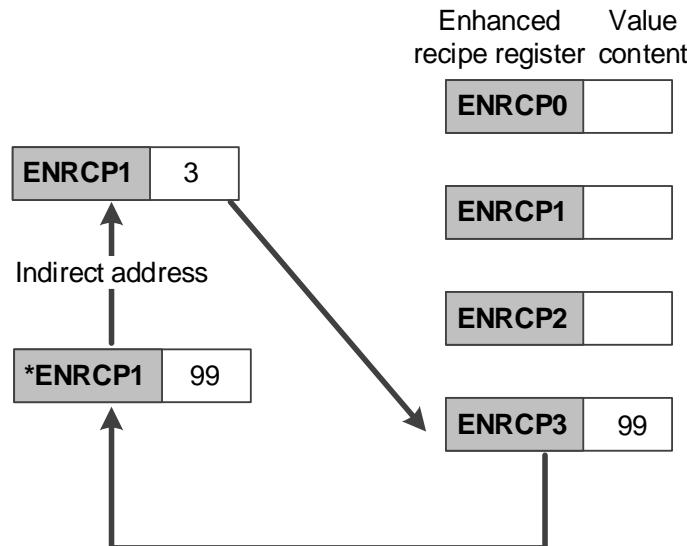


Figure 23.5.1 Enhanced indirect recipe index

The accessing range of the enhanced indirect recipe index register is as follows:

Accessing type	Device type	Accessing range
Word	*ENRCPn	ENRCP0 to ENRCP65535

Note: n = Word (0 to 65535)

The address accessing range provided by \*ENRCP is limited according to the recipe size you created. Assuming that the recipe size is Length 3 \* Group 3, then the ENRCP address ranges from \*ENRCP0 to \*ENRCP11. When \*ENRCP12 is created, the software displays the warning message shown as follows.

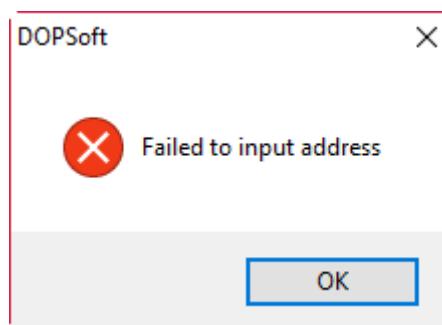
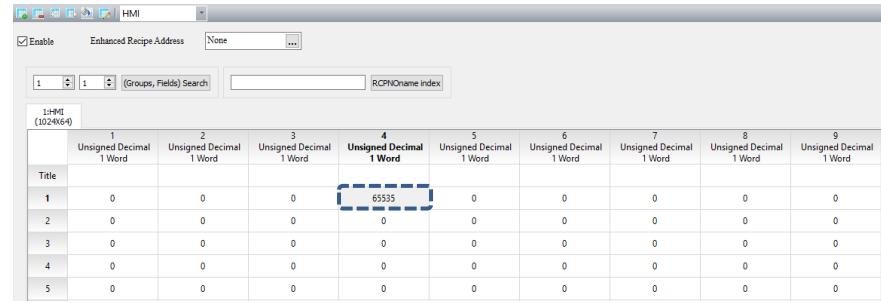
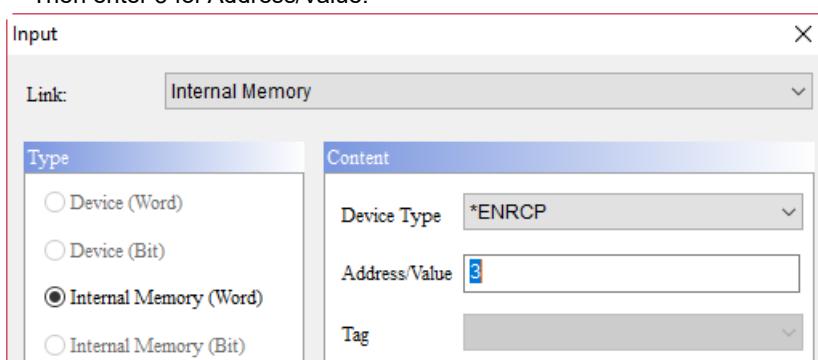
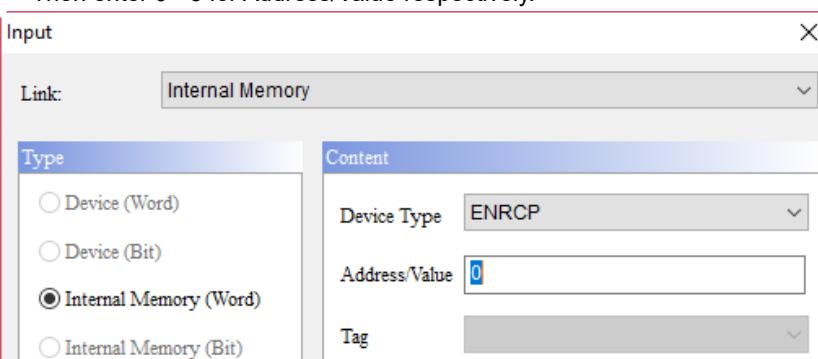
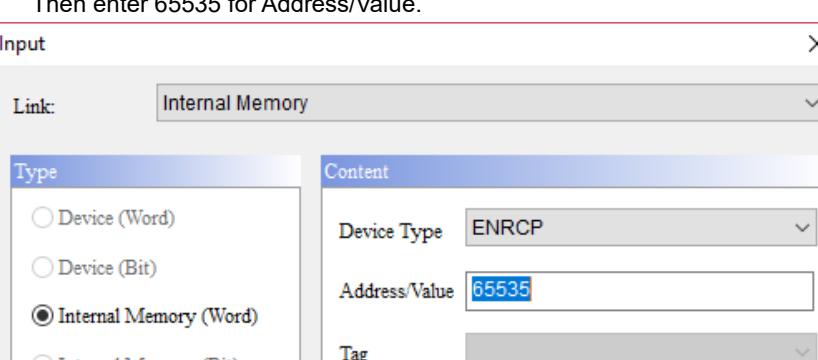


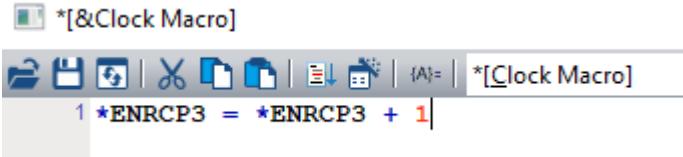
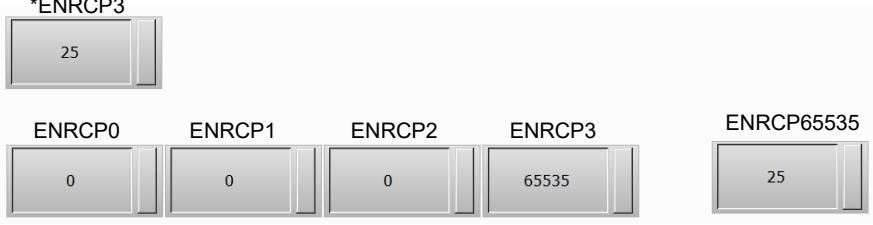
Figure 23.5.2 Enhanced indirect recipe index register configuration error

# 23

The following section introduces the example for the enhanced indirect recipe index register.

Table 23.5.1 Example of enhanced indirect recipe index register

Enhanced indirect recipe index register	
Set enhanced recipe	<p>Create an enhanced recipe (64 for Fields, 1024 for Group) and set ENRCP3 to 65535.</p> 
Create Numeric Entry elements	<ul style="list-style-type: none"> <li>■ Create a Numeric Entry element and select *ENRCP for the Device Type. Then enter 3 for Address/Value.</li>  </ul> <ul style="list-style-type: none"> <li>■ Create four Numeric Entry elements and select ENRCP for the Device Type. Then enter 0 - 3 for Address/Value respectively.</li>  </ul> <ul style="list-style-type: none"> <li>■ Create a Numeric Entry element and select ENRCP for the Device Type. Then enter 65535 for Address/Value.</li>  </ul>

Enhanced indirect recipe index register	
Create Clock macro command	<p>Create the Clock macro command <math>*\text{ENRCP3} = *\text{ENRCP3} + 1</math>.</p> <p></p>
Execution results	<p>After compiling the screen, download it to the HMI. Then you can see the values of <math>*\text{ENRCP3}</math> and <math>\text{ENRCP65535}</math> increase simultaneously.</p> <p></p>

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# Macro

# 24

This chapter mainly describes the types and commands of macro provided by the HMI and the setting details of the macro commands.

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DOPSoft provides a variety of macro commands for you to perform various operations, such as Arithmetic, Logical Operation, Data transfer, Data Conversion, Comparison, FlowControl, Bit Setting, Communication, Drawing.

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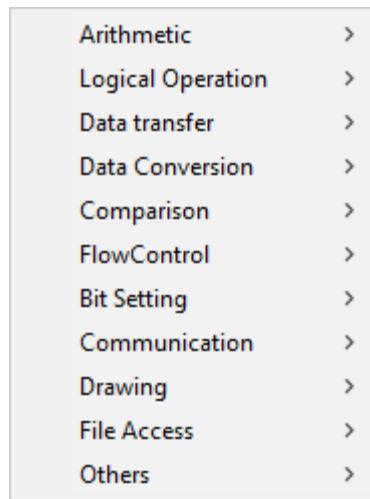


Figure 24.1.1 Types of Macro

## 24.1 Types of macro

Macros consist of independent commands processing programs written by the user. 512 lines of commands can be edited in each type of macro. The main features of each type of macros are shown in the following table.

Table 24.1.2 Features of macro

Type of macro	Features of macro
On Macro	<ul style="list-style-type: none"> <li>■ When the On Macro is triggered, it is executed only once.</li> <li>■ It is available only for Set to On, Set to Off, Maintained, and Momentary buttons.</li> </ul>
Off Macro	<ul style="list-style-type: none"> <li>■ When the Off Macro is triggered, it is executed only once.</li> <li>■ It is available only for Set to On, Set to Off, Maintained, and Momentary buttons.</li> </ul>
Before Execute Macro	<ul style="list-style-type: none"> <li>■ When you press the button element, the HMI first executes the macro commands and then executes the button actions. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.</li> <li>■ It is available in all button and input elements.</li> </ul>
After Execute Macro	<ul style="list-style-type: none"> <li>■ When you press the button element, the HMI first executes the button actions and then executes the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.</li> <li>■ It is available in all button and input elements.</li> </ul>
Screen Open Macro	Execute the macro when the screen is opened.
Screen Close Macro	Execute the macro one time when the screen is closed.
Screen Cycle Macro	Execute the macro continuously on the screen. If you have set the Screen Open Macro, the system first executes the Screen Open Macro and then executes Screen Cycle Macro.
Submacro	<ul style="list-style-type: none"> <li>■ There are 512 submacros and 512 lines of commands can be written in each submacro.</li> <li>■ Submacros are similar to subroutines in programming languages where you can write highly repetitive actions or functions. In addition, you can call the submacros when needed.</li> </ul>
Initial Macro	Initial macro is the first one to be executed after the start of the HMI and it is executed only once.
Background Macro	The Background Macro is a program that is executed repeatedly during the HMI operation. The Background Macro is executed in the manner of one line or several lines at a time (instead of finishing with one execution). When the last line is executed, this macro starts all over again.
Clock Macro	The Clock Macro is executed repeatedly during the HMI operation. It batch runs programs all at once rather than running one line or several lines at a time.

### 24.1.1 On Macro / Off Macro

On Macro / Off Macro are functions available only when Set to On, Set to Off, Maintained, and Momentary buttons are created.

When you switch the state to On by pressing the button, the HMI executes the On Macro commands. When you switch the state to Off by pressing the button, the HMI executes the Off Macro commands. However, the On Macro / Off Macro commands will not be executed if the button states are not changed with the button touch (using external controller commands or other macros instead).

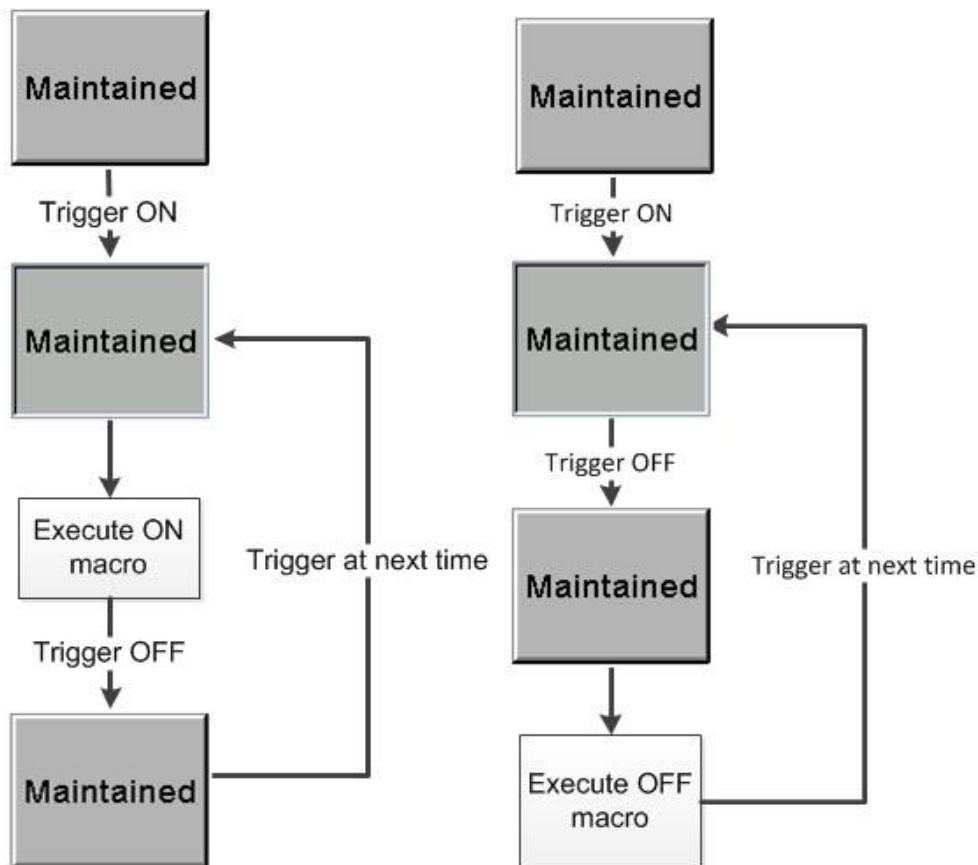


Figure 24.1.1.1 Flowchart of On / Off Macros

### 24.1.2 Before Execute Macro

The Before Execute Macro can only be used when the created elements are button and entry elements.

When you press the button element, the HMI first executes the macro commands and then executes the button actions. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.

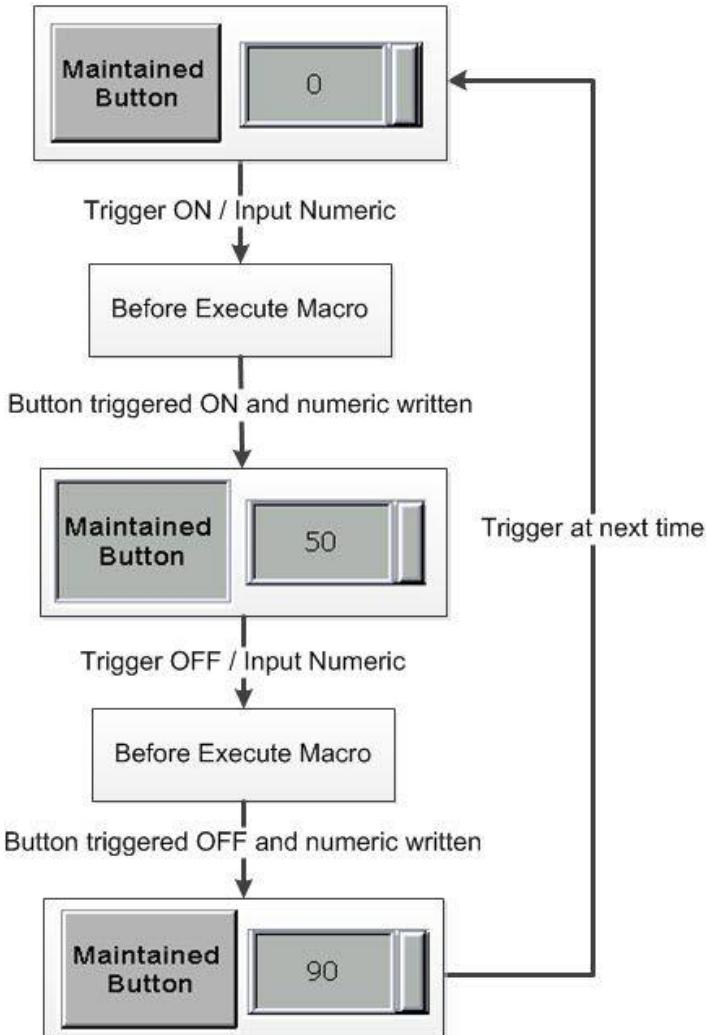


Figure 24.1.2.1 Flowchart of Before Execute Macro

### 24.1.3 After Execute Macro

The After Execute Macro can only be used when the created elements are button and entry elements.

When you press the button element, the HMI first executes the button actions and then executes the macro commands. If the button states are not changed with the button touch (using external controller commands or other macros instead), the HMI does not execute the macro commands.

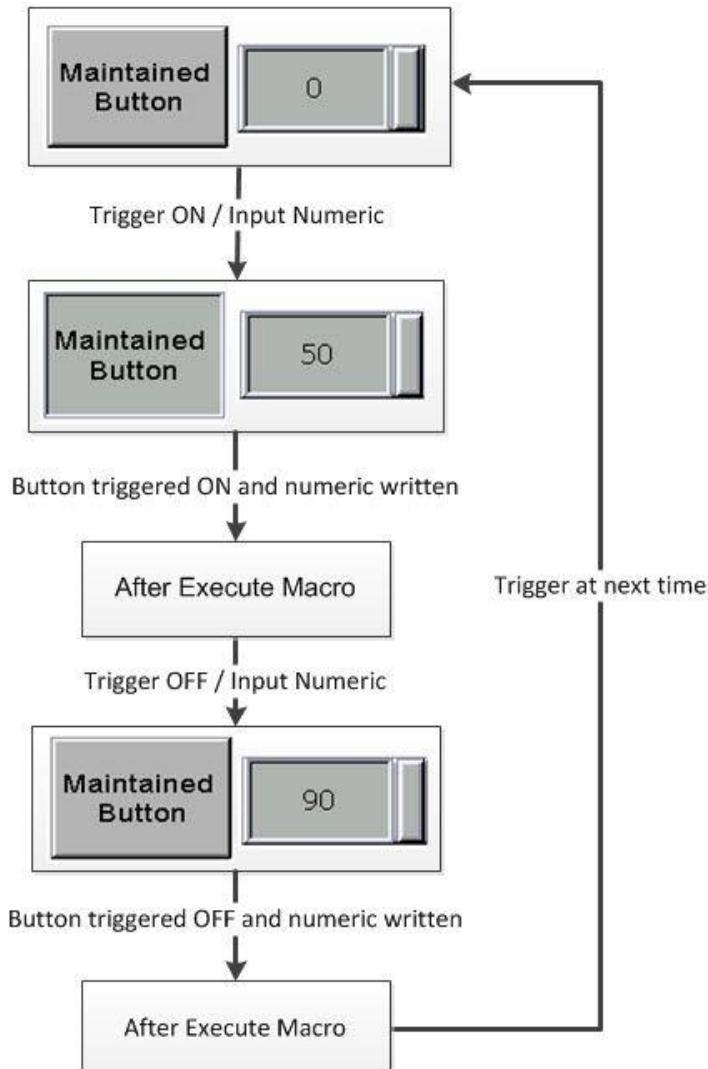
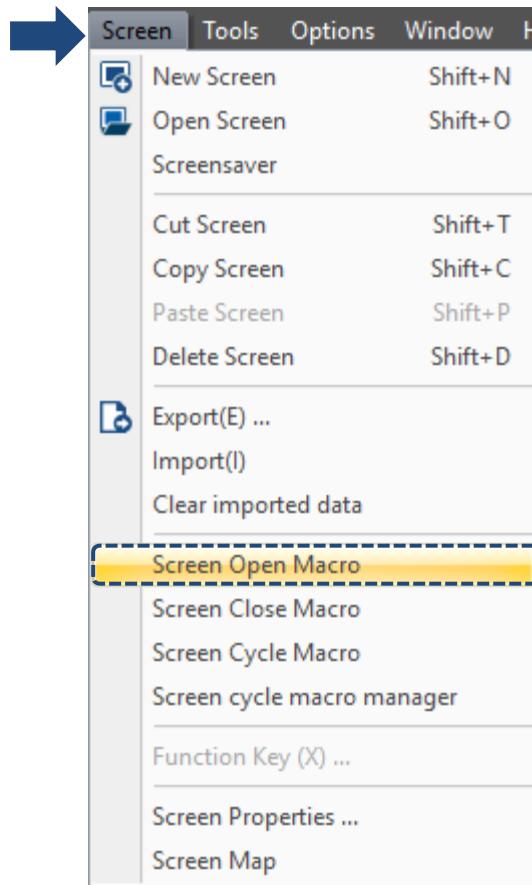


Figure 24.1.3.1 Flowchart of After Execute Macro

#### 24.1.4 Screen Open Macro

Go to [Screen] > [Screen Open Macro] to edit the Screen Open Macro.



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Figure 24.1.4.1 Screen Open Macro

Every screen created by DOPSoft contains a Screen Open Macro, which will be executed when you open the current screen or switch to another screen. Other actions of the screen will not be executed until the execution of the Screen Open Macro is finished.

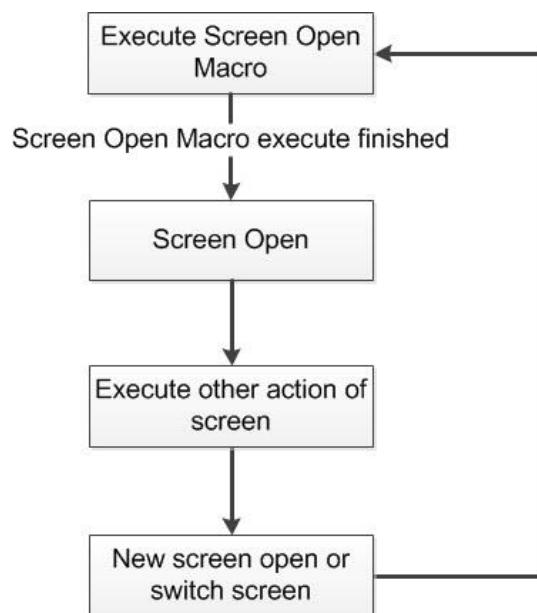


Figure 24.1.4.2 Flowchart of Screen Open Macro

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### 24.1.5 Screen Close Macro

Go to [Screen] > [Screen Close Macro] to edit the Screen Close Macro.

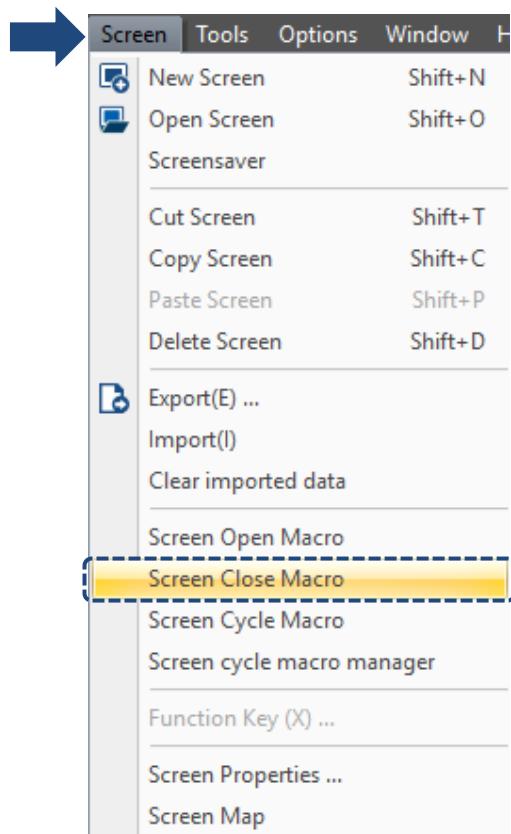


Figure 24.1.5.1 Screen Close Macro

Every screen created by DOPSoft contains a Screen Close Macro, which will be executed when you close the current screen or switch to another screen. Actions of the new screen will not be executed until the execution of the Screen Close Macro is finished.

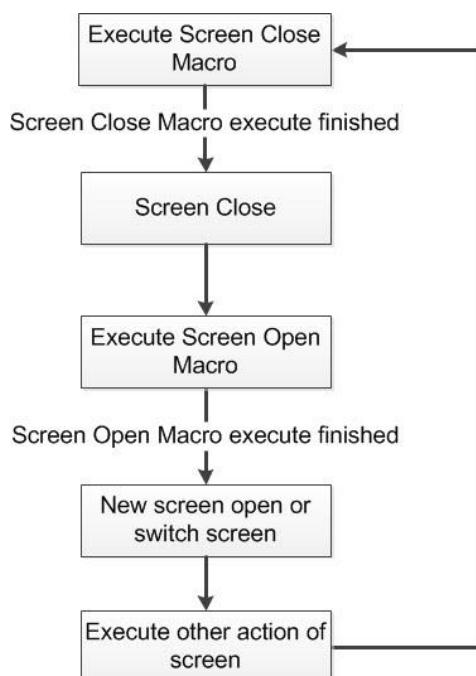


Figure 24.1.5.2 Flowchart of Screen Close Macro

### 24.1.6 Screen Cycle Macro

Go to [Screen] > [Screen Cycle Macro] to edit the Screen Cycle Macro.

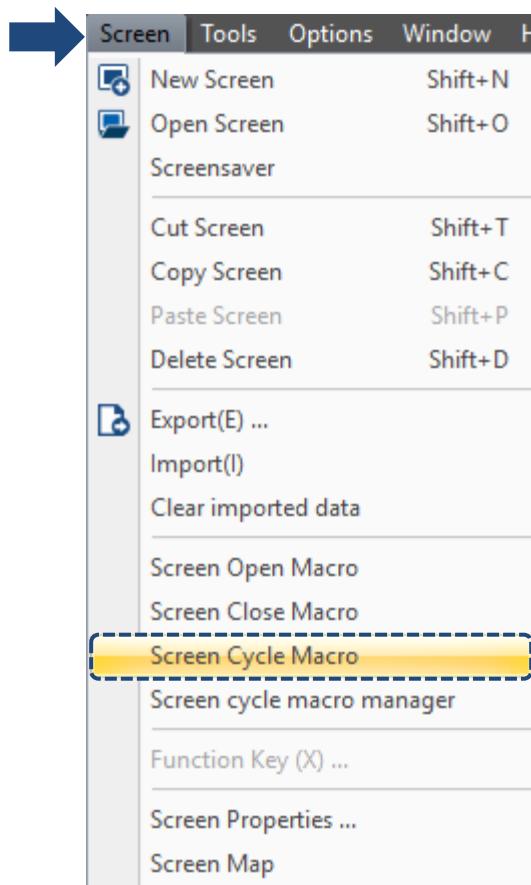


Figure 24.1.6.1 Screen Cycle Macro

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Every screen created by DOPSoft contains a Screen Cycle Macro, which will be executed according to the set Cycle Macro delay time after the execution of Screen Open Macro is finished. You can double-click on the screen to go to the Screen Property page for setting the Macro Cycle Delay. It represents the delay time before the re-execution of each Screen Cycle Macro. The default is 100 ms.

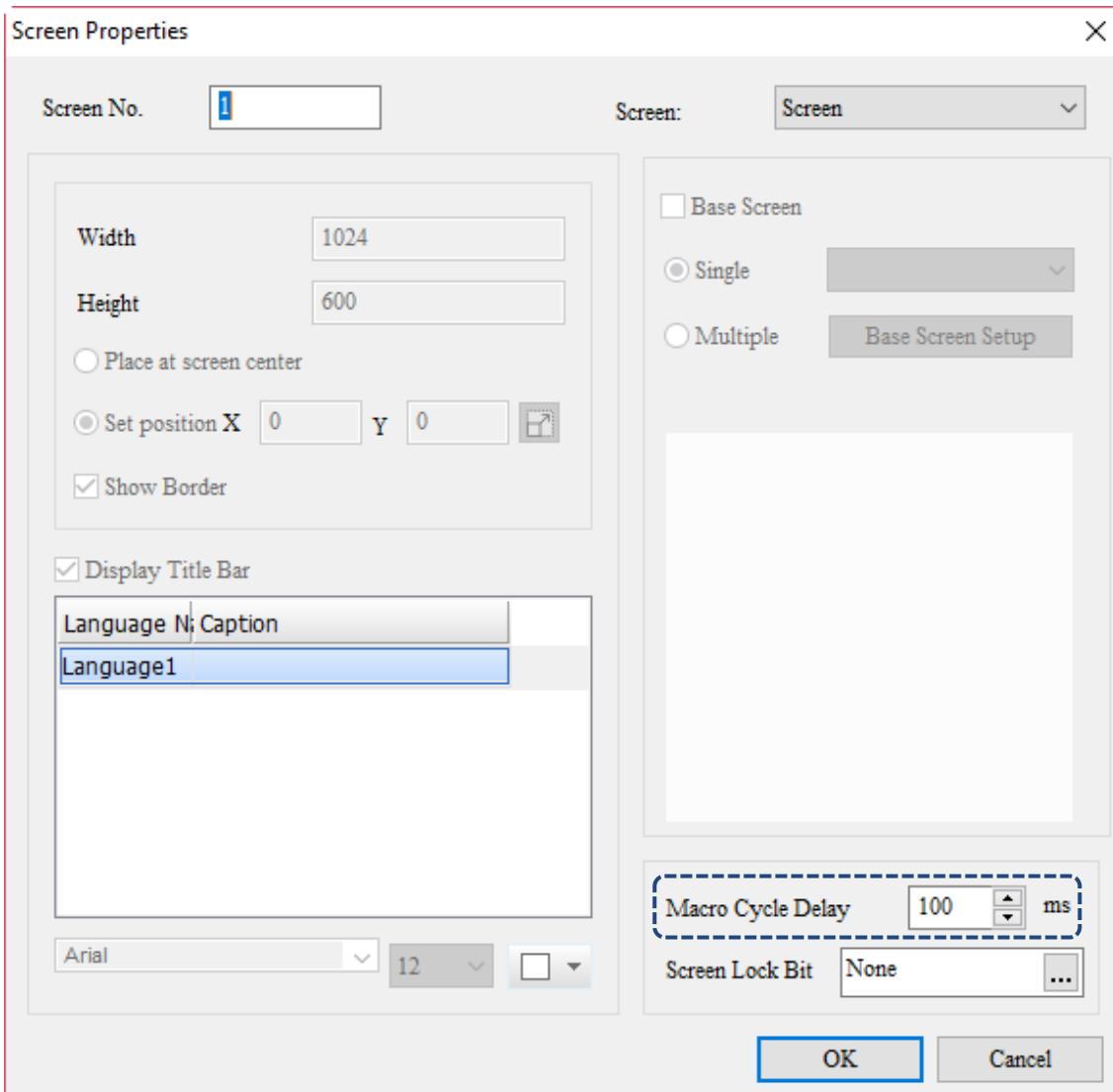


Figure 24.1.6.2 Setting of Macro Cycle Delay

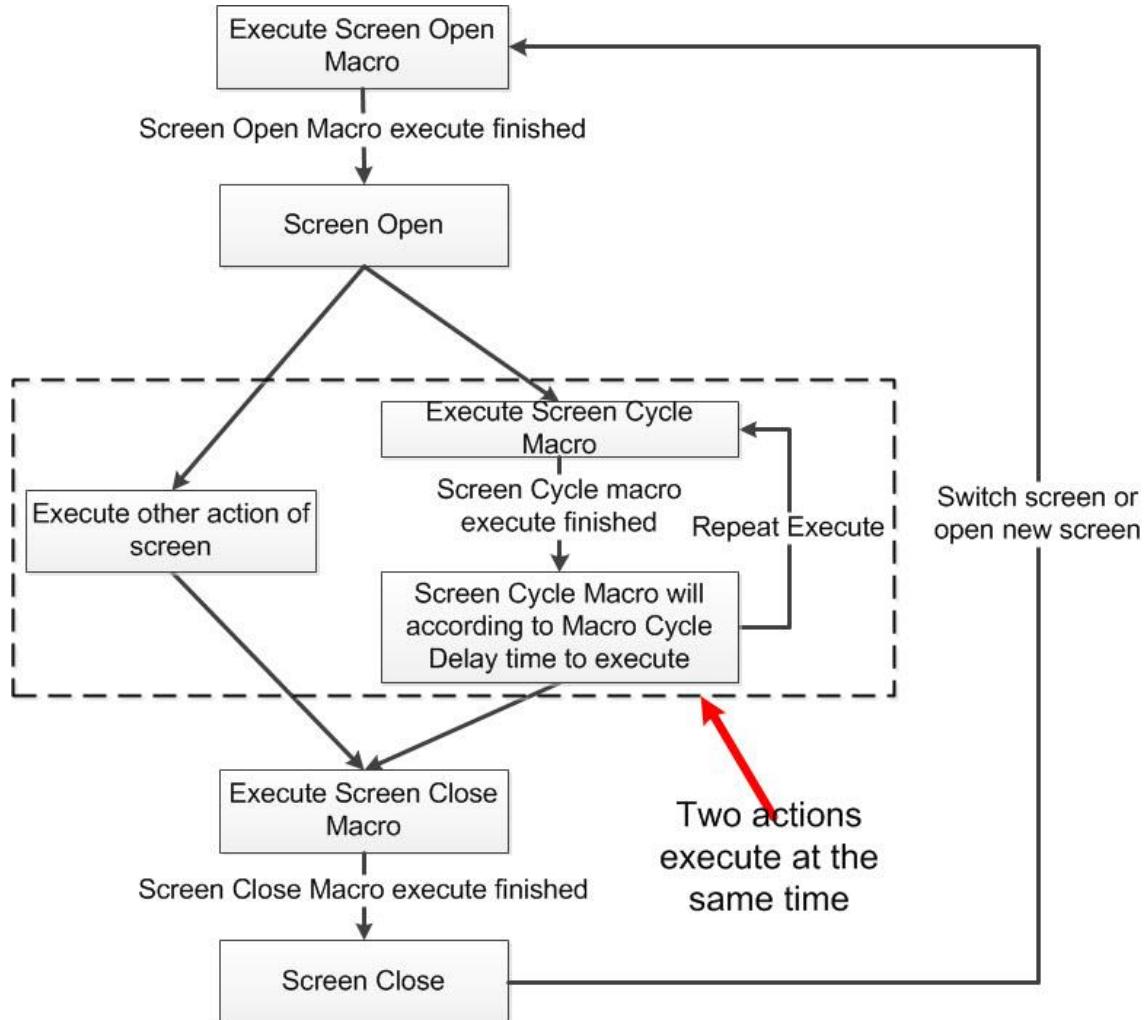


Figure 24.1.6.3 Flowchart of Screen Cycle Macro

### 24.1.7 Screen cycle macro manager

The Screen cycle macro manager helps you quickly open the cycle macro of each screen when you edit the screen cycle macro. When you are programming for the HMI and it is not yet connected to the PLC, you can disable the execution of screen cycle macro.

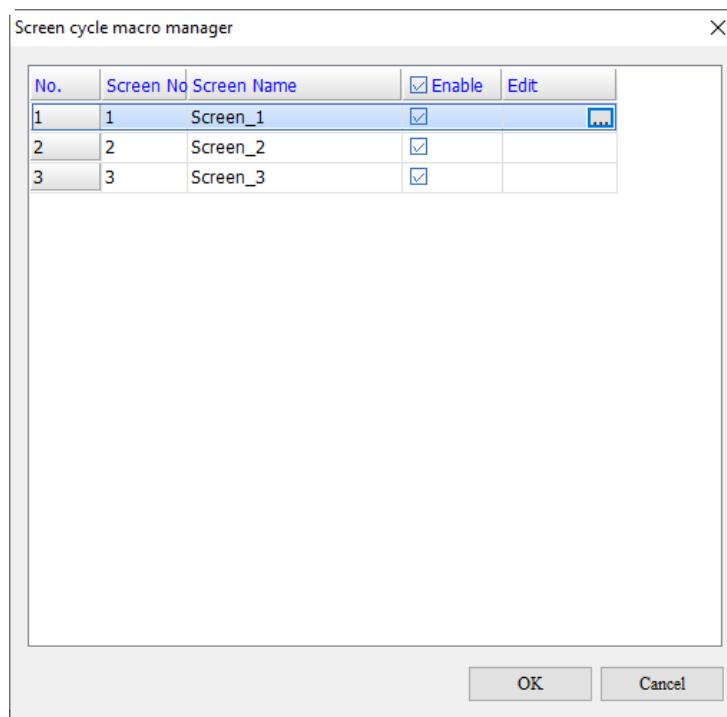


Figure 24.1.7.1 Screen Cycle macro manager

### 24.1.8 Submacro

Go to [Options] > [Submacro] to set the Submacro.

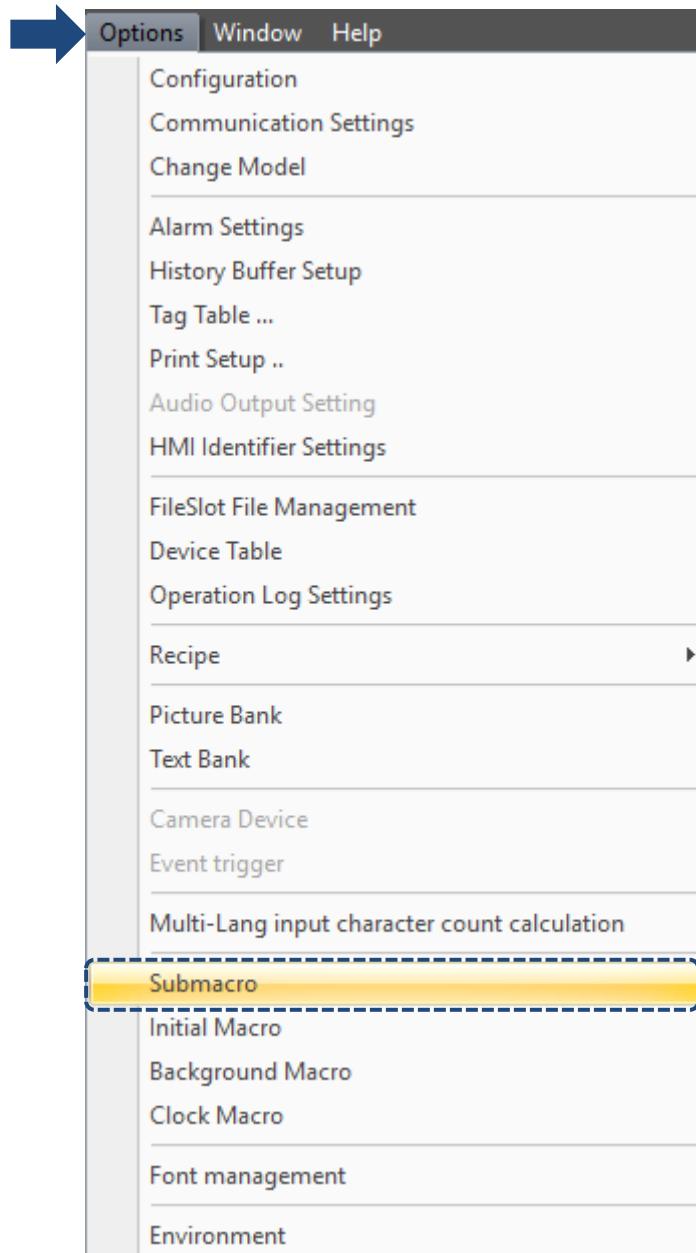


Figure 24.1.8.1 Submacro

24

24

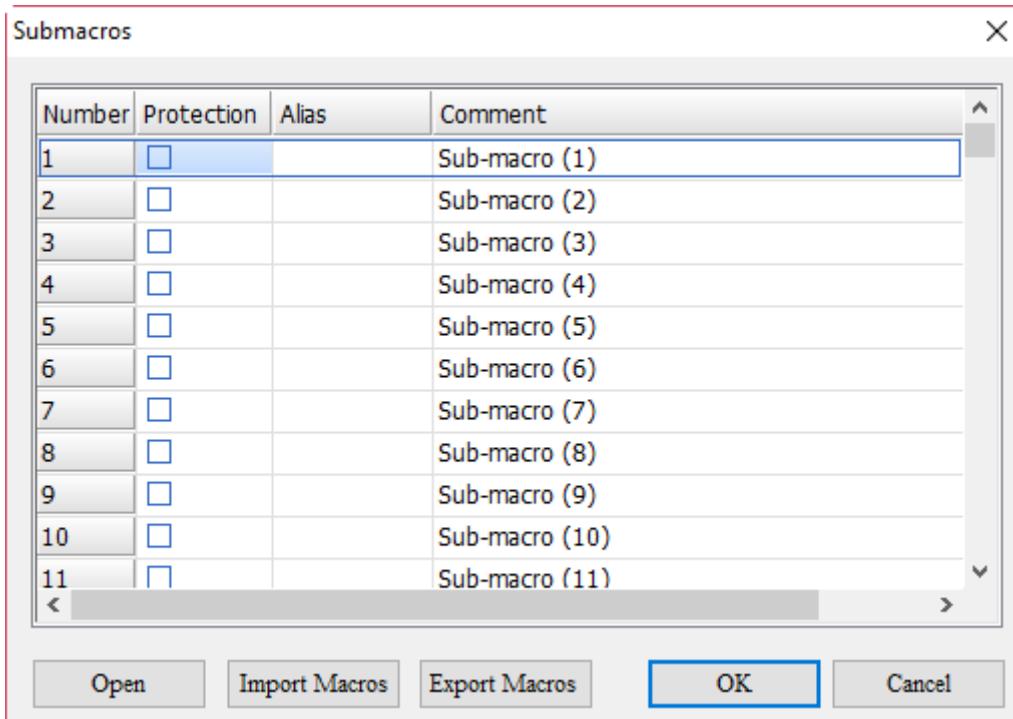


Figure 24.1.8.2 Submacro setting window

The Submacro provides 512 submacro programs with the numbers of 1 - 512 respectively. Submacros are similar to subroutines in programming languages where you can write highly repetitive actions or functions. In addition, you can call the submacros when needed, which saves the time for writing the macros and makes it easier for maintenance.

Note: the actions of calling submacros in the Submacro should not exceed six layers.

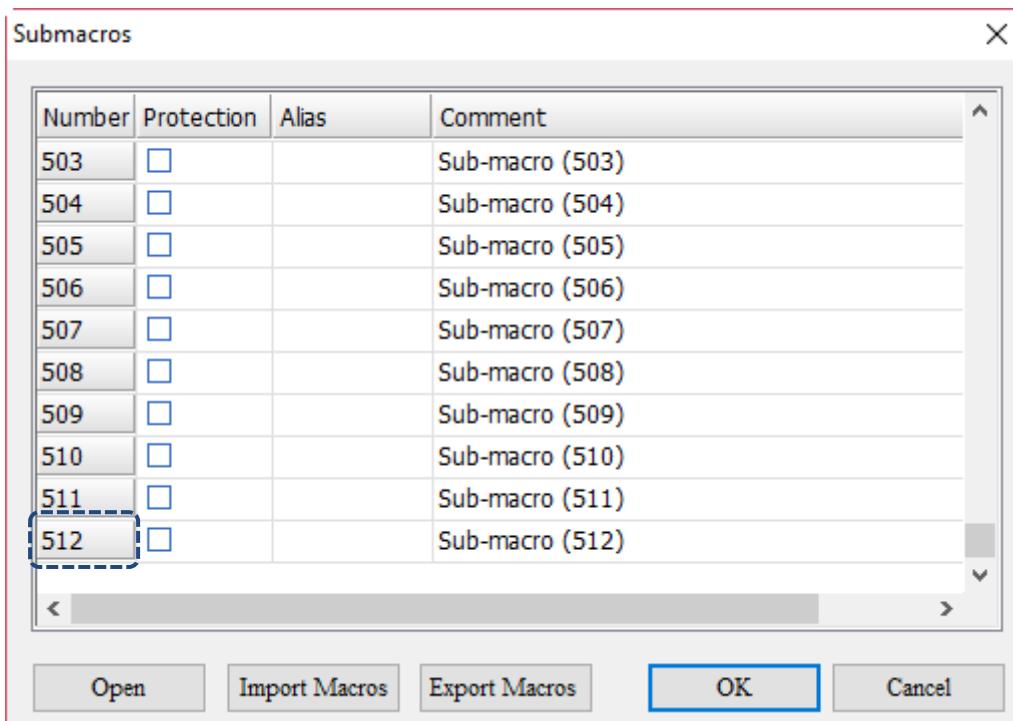


Figure 24.1.8.3 Submacro Screen I

To call a submacro, you can call its number directly or name it in the Alias column and call its alias. Submacro names support character and Chinese input for up to 64 characters.

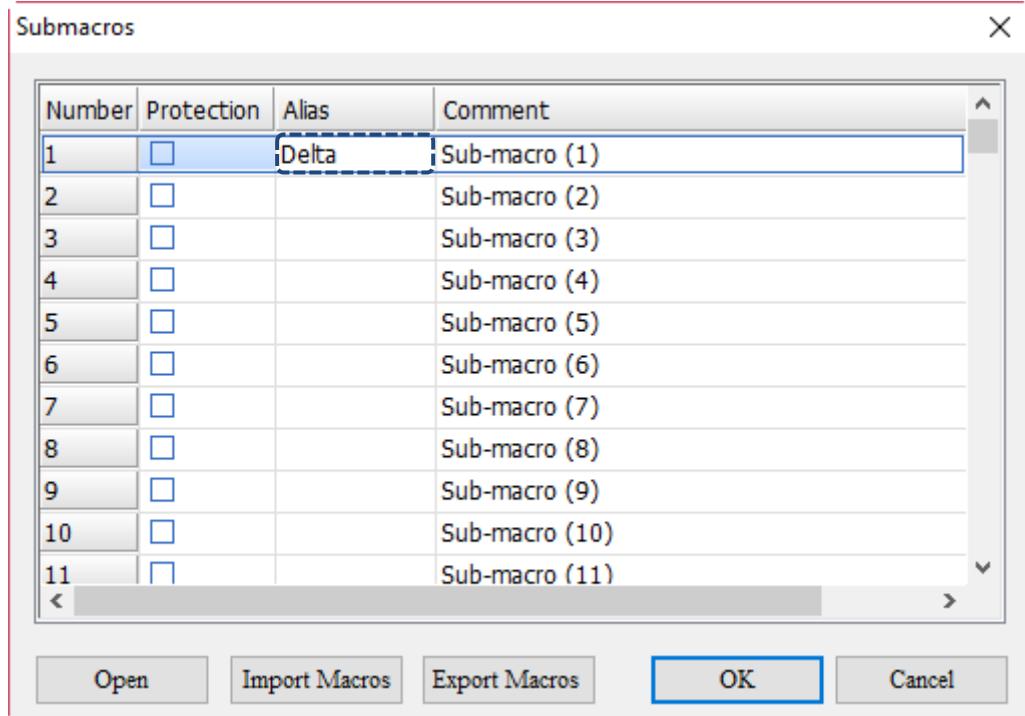


Figure 24.1.8.4 Submacro Screen II

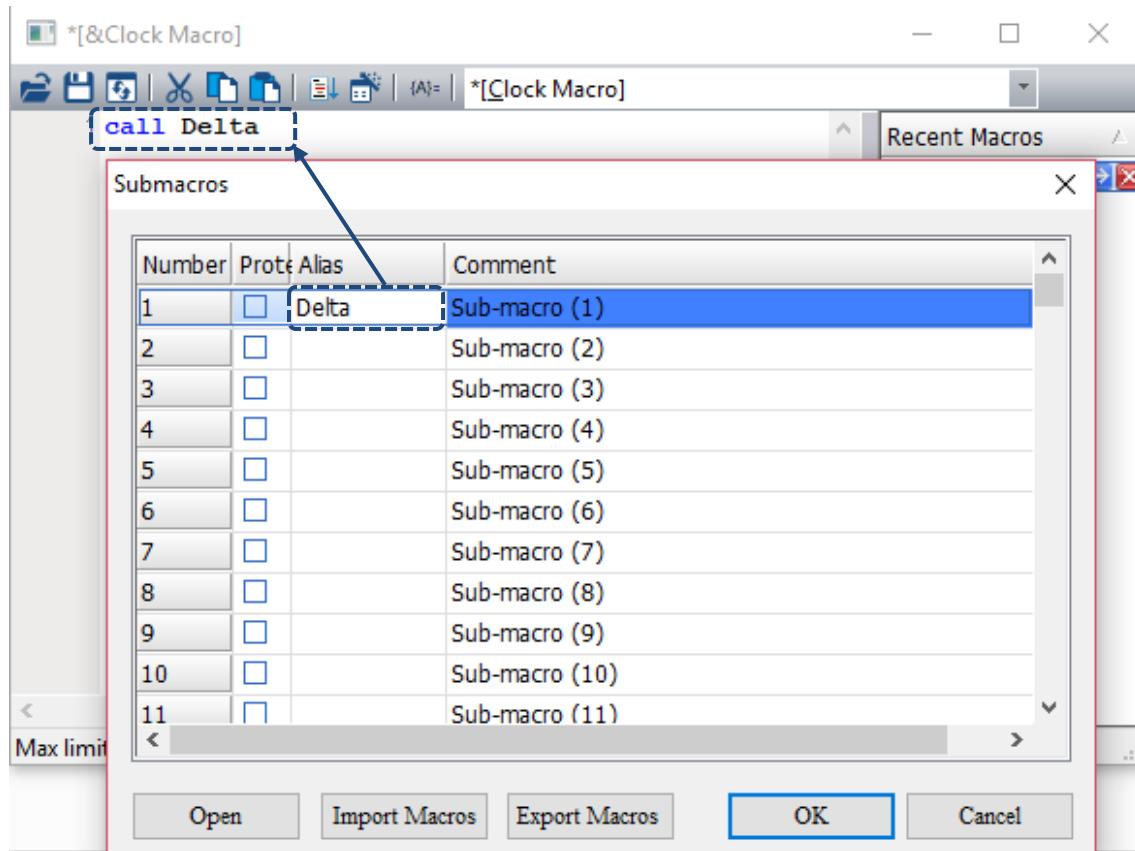


Figure 24.1.8.5 Submacro Screen III

24

24

Macro contents written in the Screen Cycle Macro.

```
* Screen_1 [Screen Cycle Macro]
1 $5555 = 10
2 call Delta
```

Macro contents written in the Submacro.

User	Protected	Alias	Comment
		Delta	Sub-macro (1)

```
* Delta [Submacro 1]
1 $5555 = $5555 + 1
```

Recent Macros

- \*[&Clock Macro]
- \* Delta [Submacro]

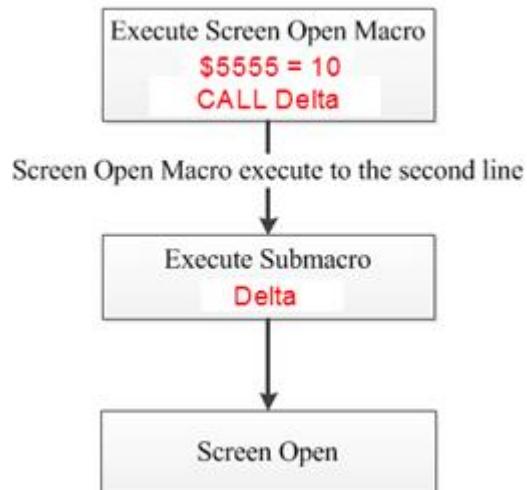


Figure 24.1.8.6 Flowchart of Submacro

Submacro also provides the function of password protection, which can encrypt each submacro.

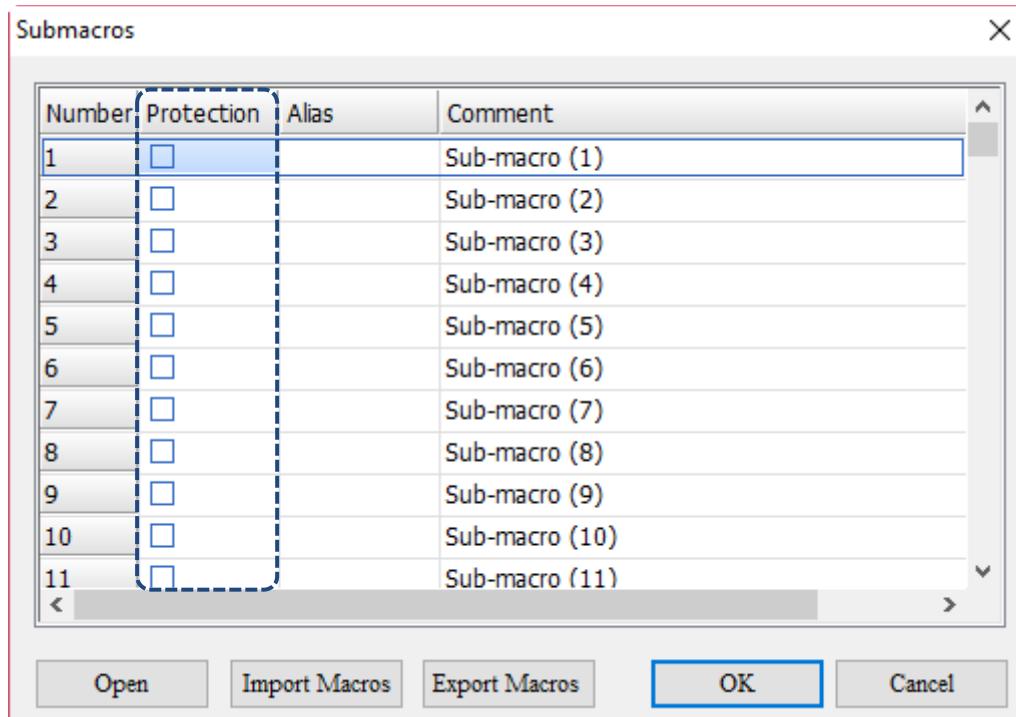


Figure 24.1.8.7 Protection function of Submacro

When the check box of **Protection** is selected, you are immediately asked to input a set of password.

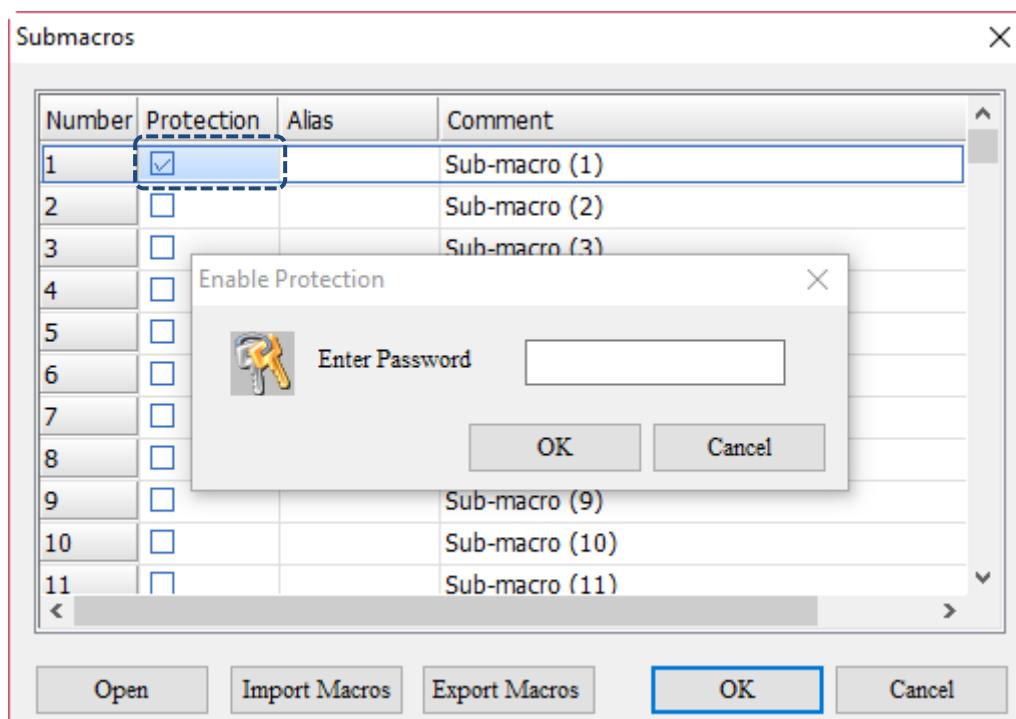
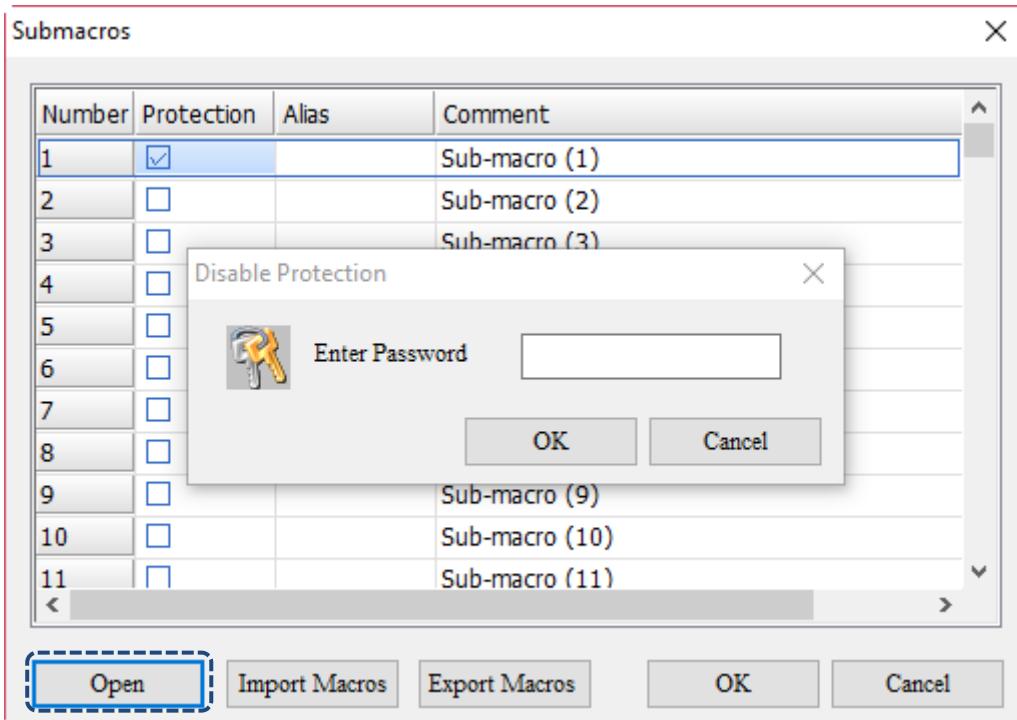


Figure 24.1.8.8 Submacro encryption

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After Submacro Number 1 is encrypted, you must enter the password to enter Submacro Number 1 and edit the macro commands.



When the check box of Protection is cleared, you are also required to enter the password set for Submacro Number 1 to disable the protection function.

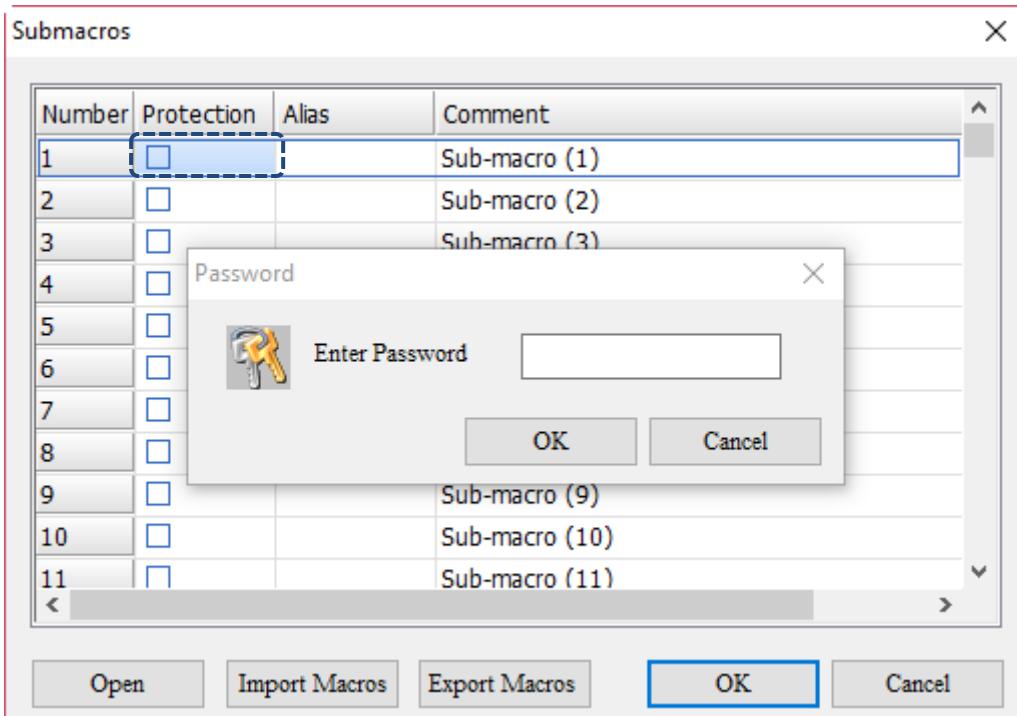


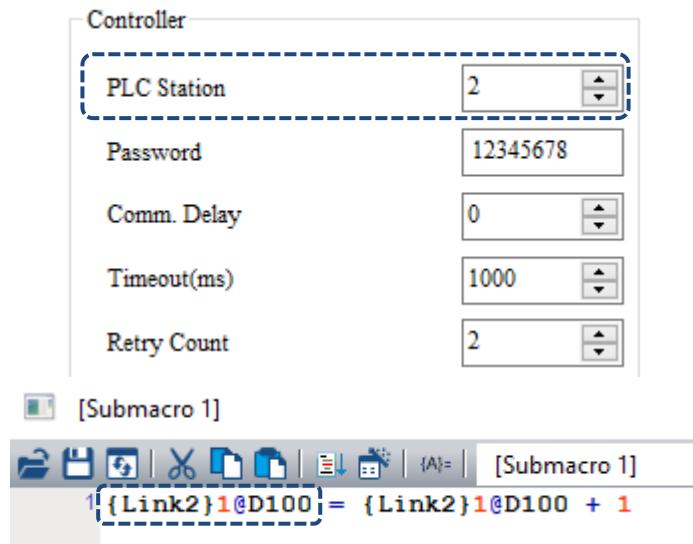
Figure 24.1.8.9 Disable Submacro encryption

When submacros are password-protected, the functions affected are as follows:

- If there is a communication station number in a protected submacro, the function of changing station number will be invalid.
- If the station number in the protected submacro is 1, change the PLC Station to 2 and then enter the protected submacro. You will find that the station number must be 1 and will not be changed.

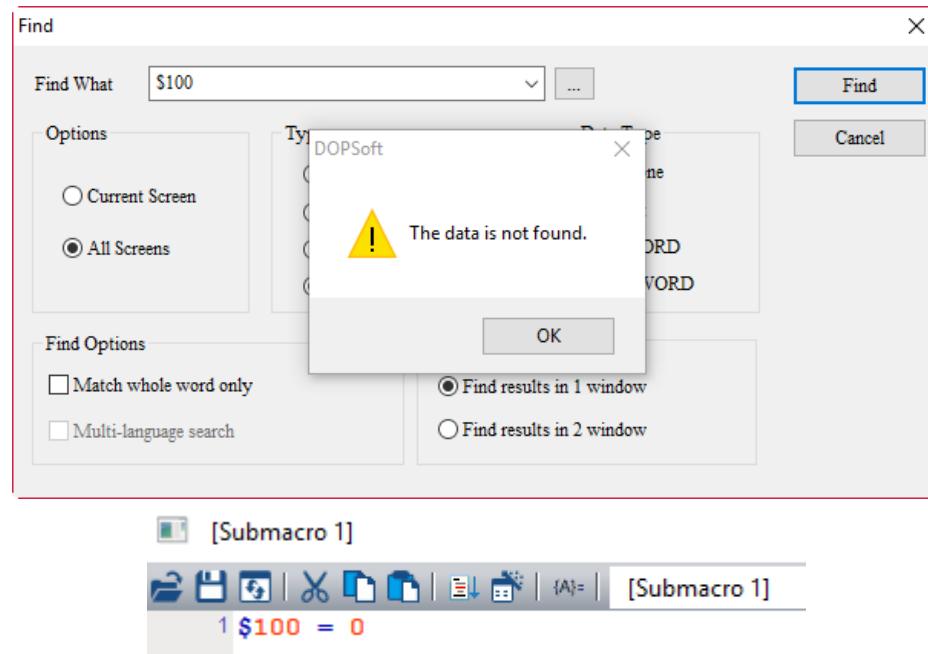
24

(1)

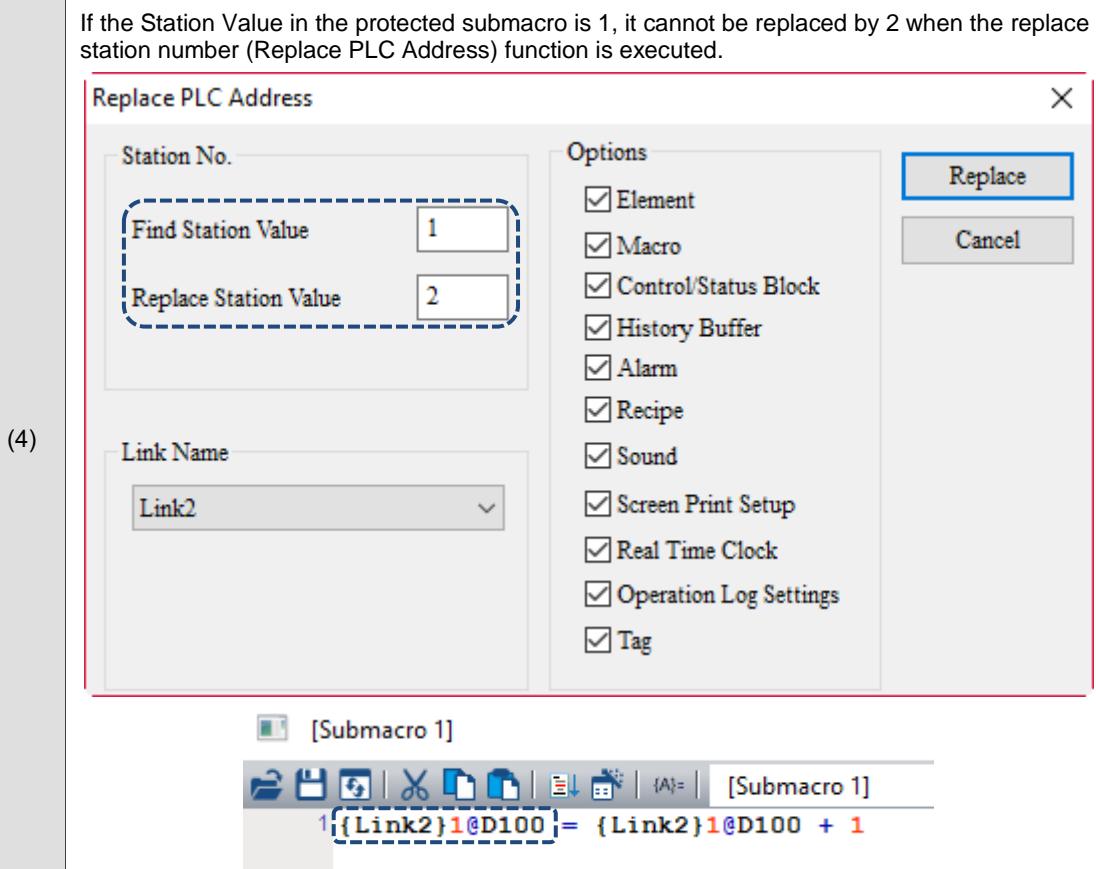
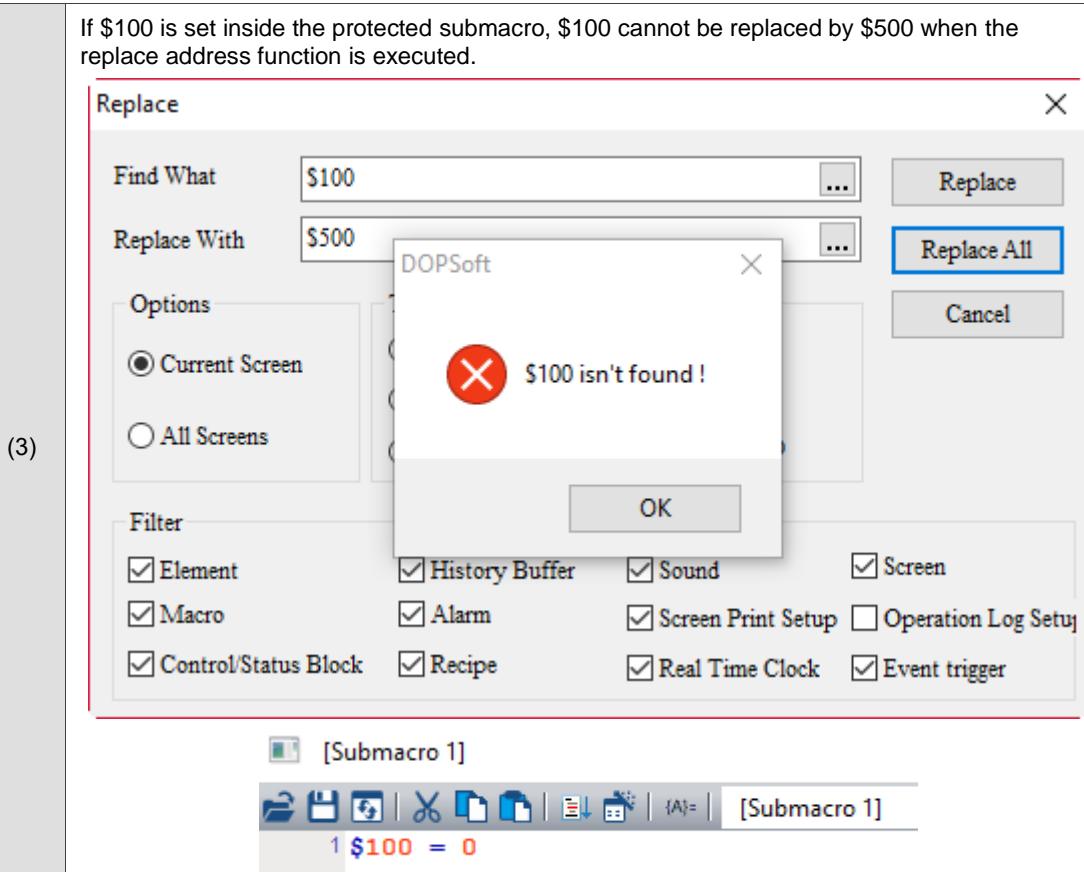


(2)

If \$100 is set inside the protected submacro, \$100 is not found when the find address function is executed.

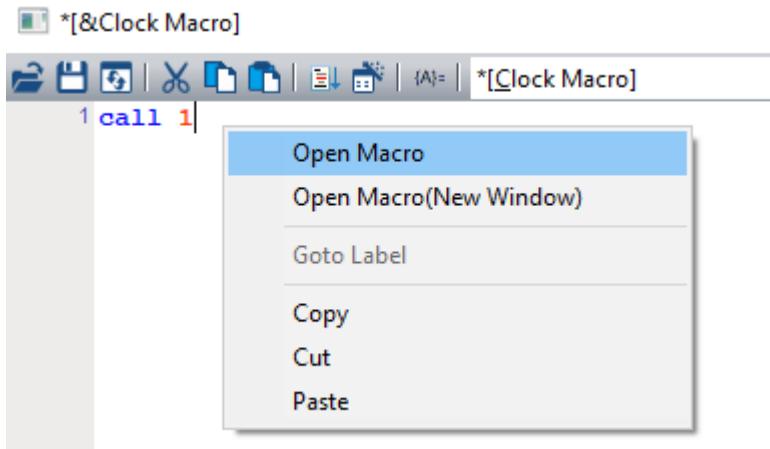
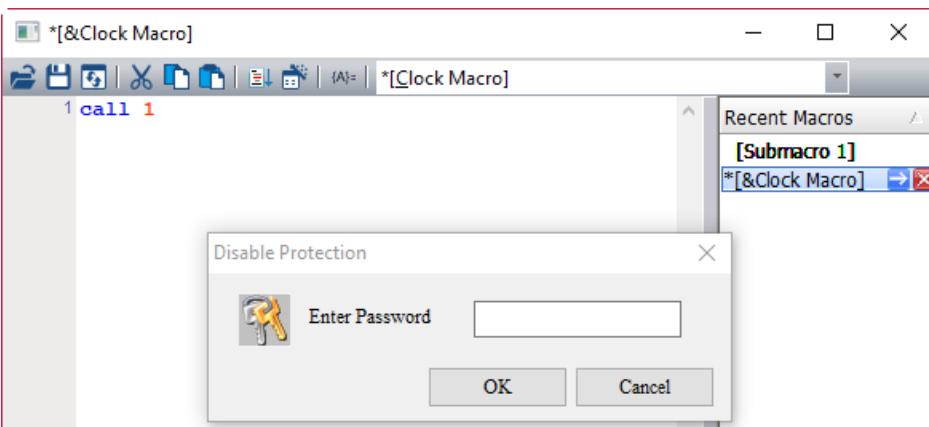


24



When there is a call command in the macro, right-click and select the Open Macro option. You will be asked to enter the password if the submacro is password-protected.

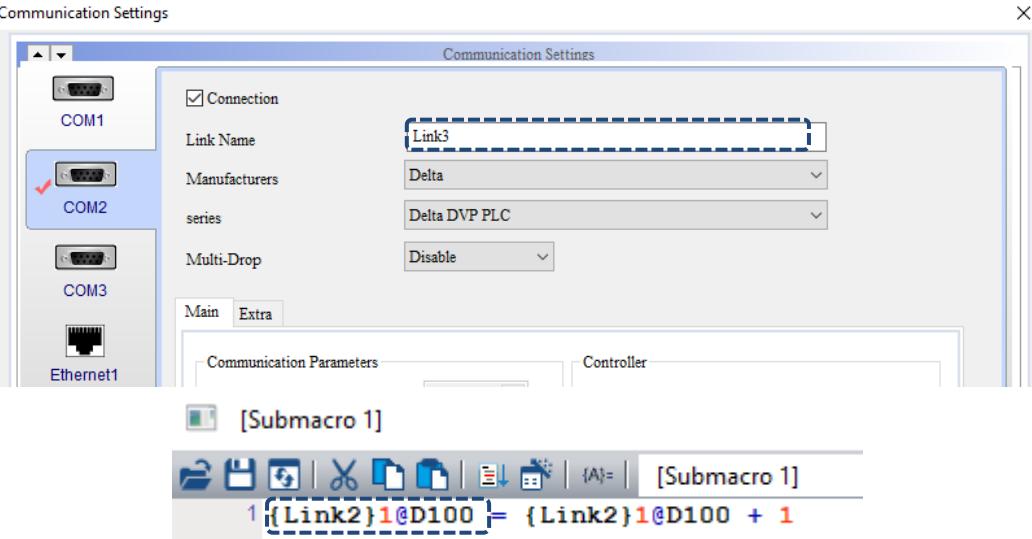
(5)

Change the Link Name to Link3, and Link2 cannot be changed to Link3 in the protected submacro.

Communication Settings

(6)



### 24.1.9 Initial Macro

Go to [Options] > [Initial Macro] to set the Initial Macro.

24

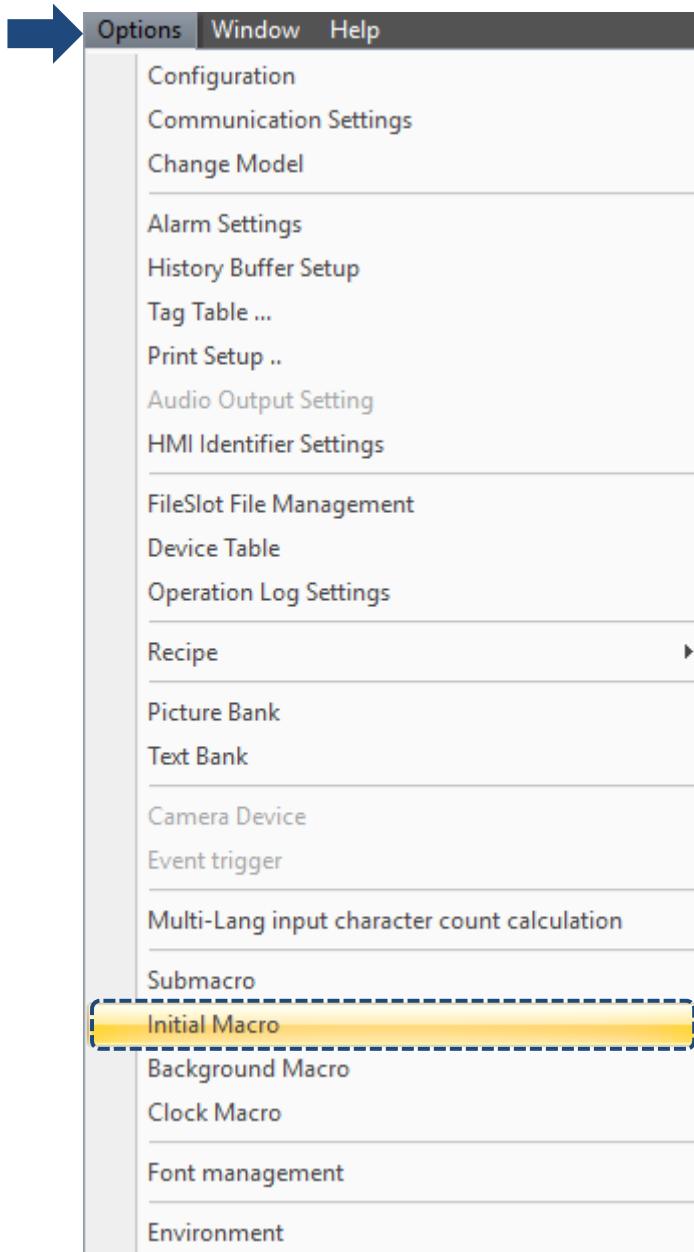


Figure 24.1.9.1 Initial Macro

Initial Macro is the first macro to be executed when the HMI starts up, so you can write the initial settings required for the whole HMI program in the Initial Macro.

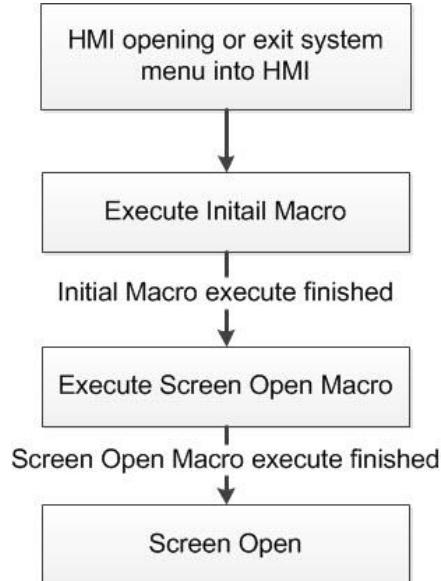


Figure 24.1.9.2 Flowchart of Initial Macro

### 24.1.10 Background Macro

Go to [Options] > [Background Macro] to set the Background Macro.

24

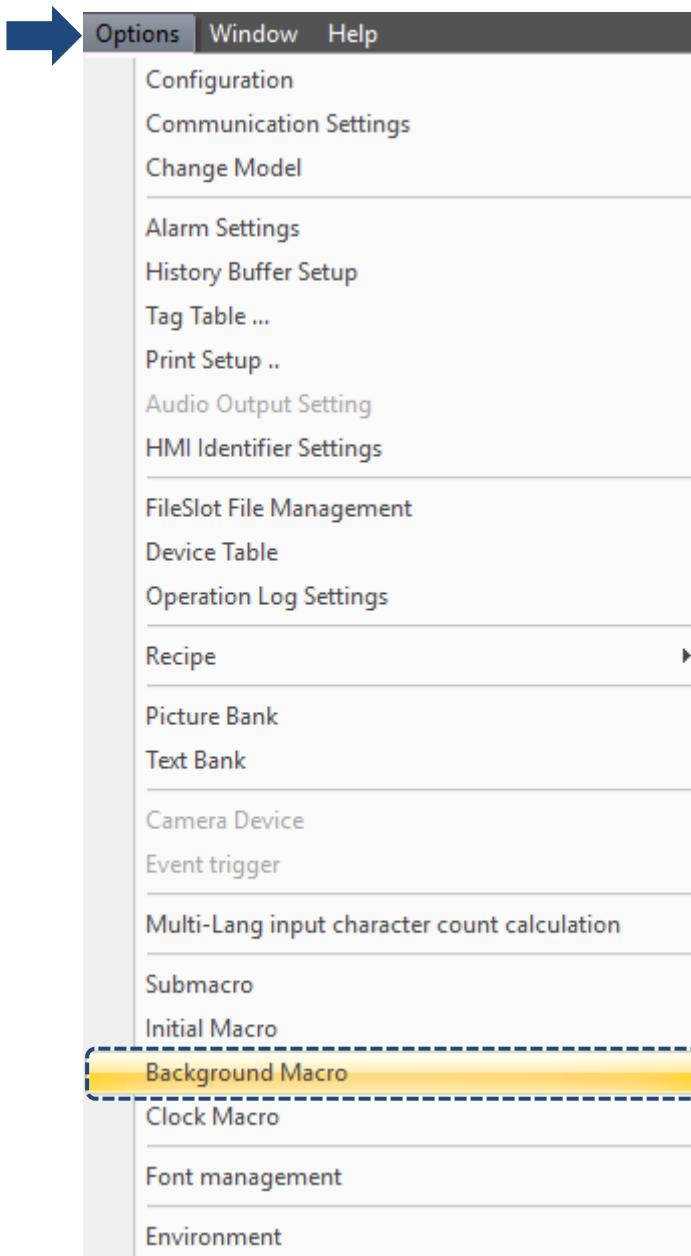


Figure 24.1.10.1 Background Macro

The Background Macro is a program that is executed repeatedly during the HMI operation.

The Background Macro is executed in the manner of one line or several lines at a time (instead of finishing with one execution). When the last line is executed, this macro starts all over again.

To define the number of lines for each Background Macro execution, go to [Options] > [Configuration] to set the Background macro update cycle with a maximum of 512 lines.

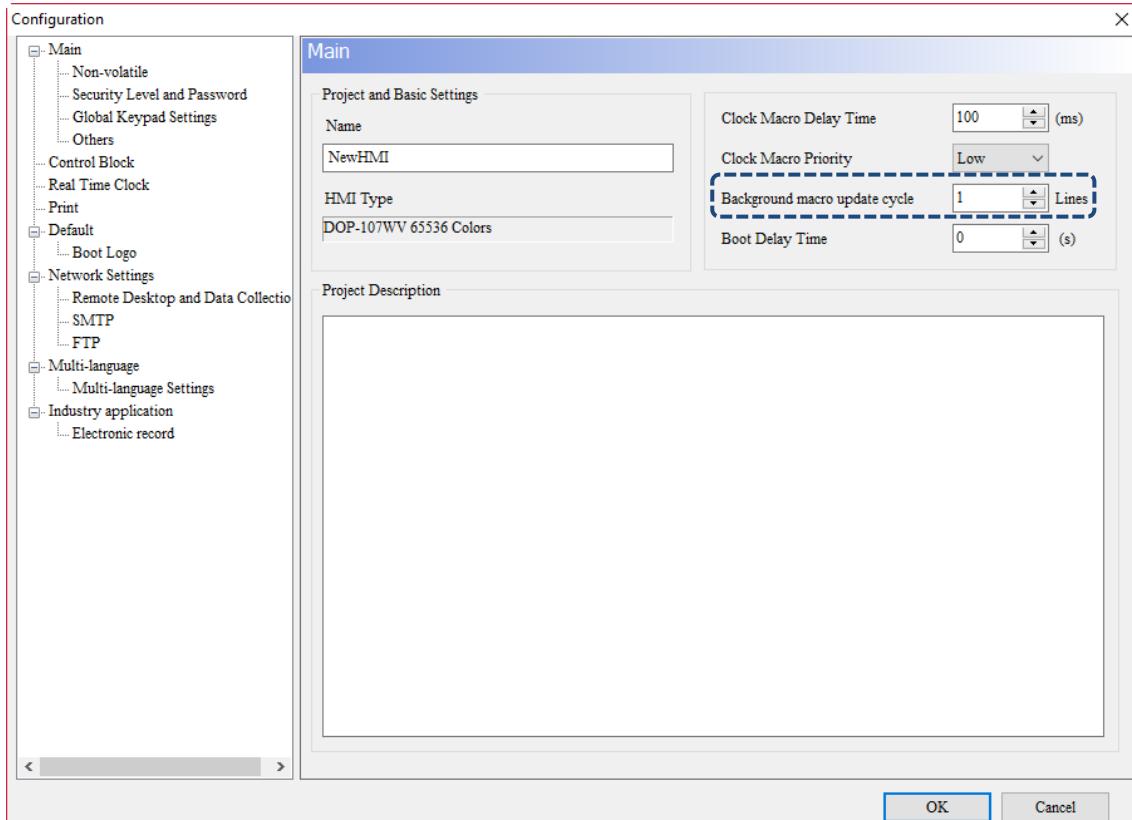


Figure 24.1.10.2 Background macro update cycle

Suppose that 10 elements are created on the HMI screen, input 6 lines of macro commands into the Background Macro and set the Background macro update cycle to 3 lines, then the execution process of Background Macro is shown as follows:

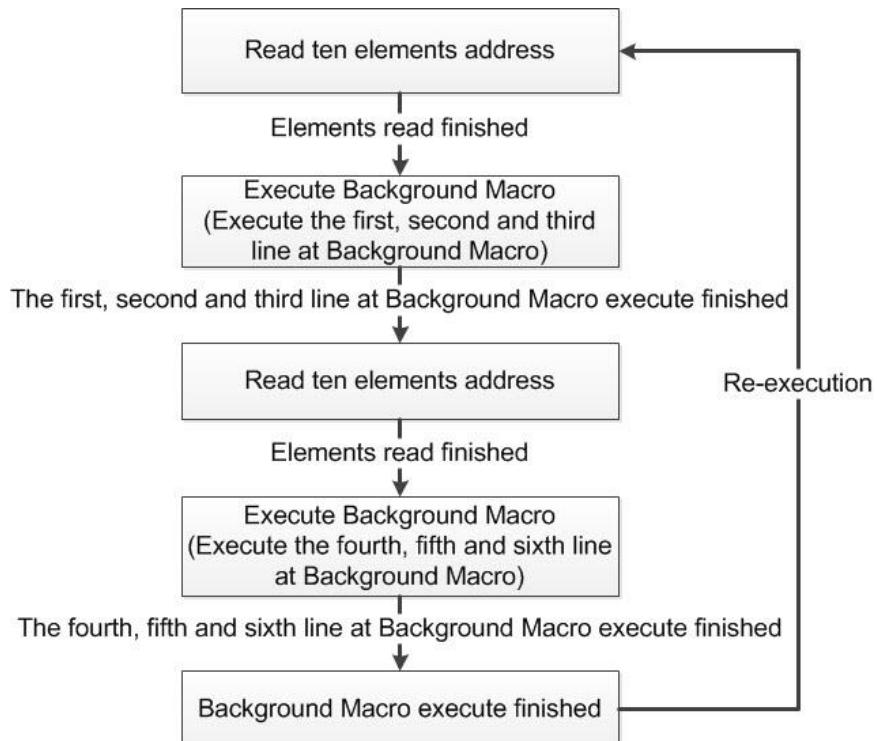


Figure 24.1.10.3 Flowchart of Background Macro

### 24.1.11 Clock Macro

Go to [Options] > [Clock Macro] to set the Clock Macro.

24

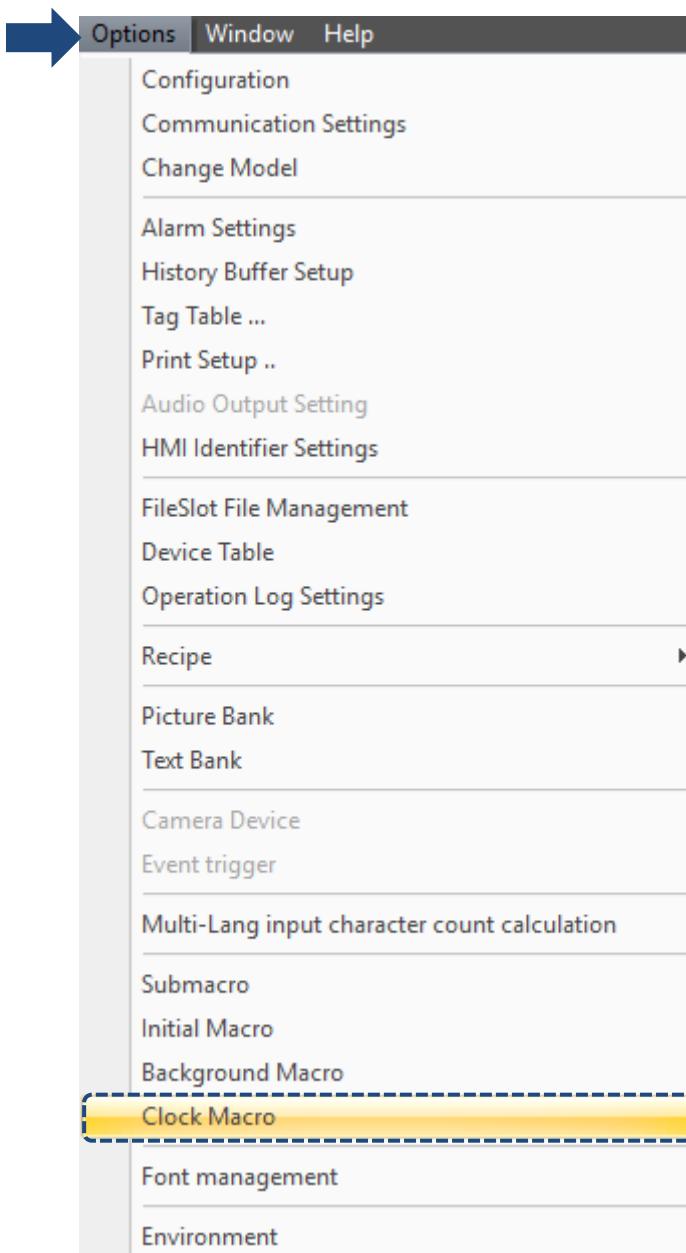


Figure 24.1.11.1 Clock Macro

Clock Macro will be executed repeatedly in the process of the HMI operation. Unlike Background Macro, Clock Macro executes its commands all at once rather than one line or several lines at a time. Similar to Screen Cycle macro, the Clock Macro is executed repeatedly according to the set macro delay time. You can go to [Options] > [Configuration] to set the Clock Macro Delay Time. At the end of each Clock Macro execution, it will resume its execution according to the set delay time. The default is 100 ms and the maximum is 65535 ms.

24

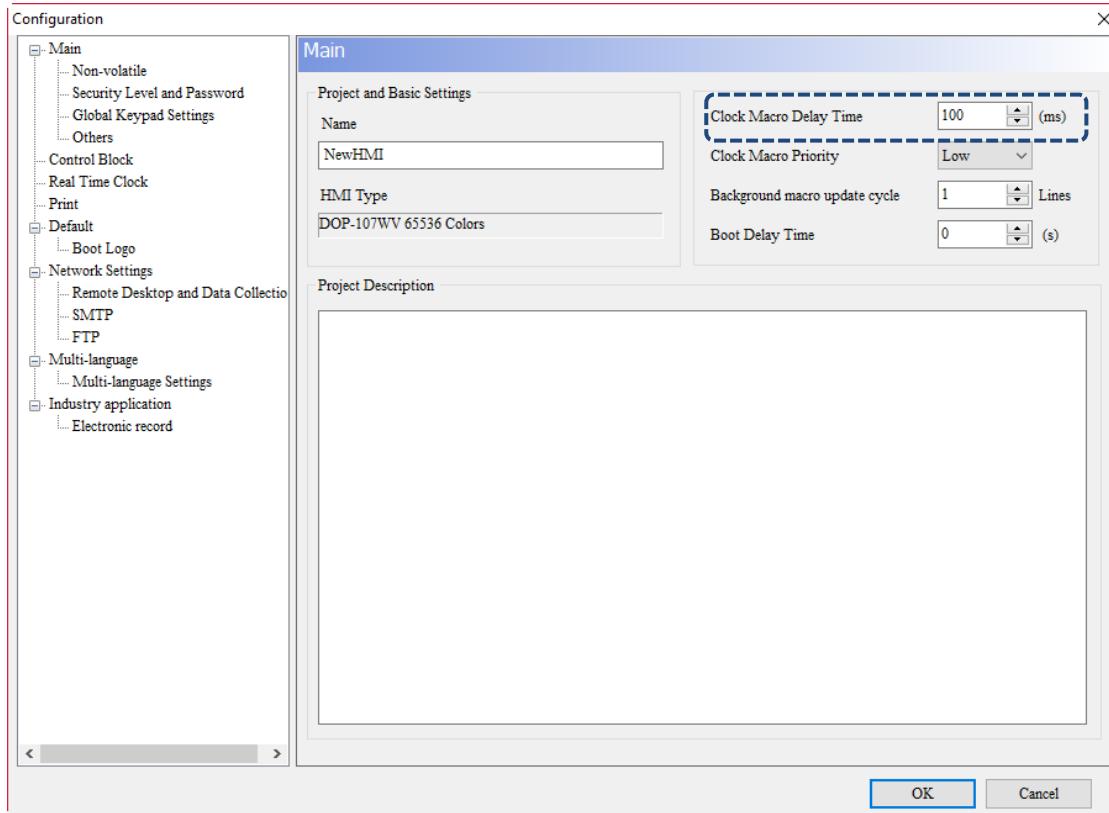


Figure 24.1.11.2 Clock Macro Delay Time

Clock Macro also provides you with the function to prioritize the execution of the Clock Macro, which provides the selections of Low, Medium, and High. Set the Clock Macro Priority, and when the priority is higher, it ensures the Clock Macro Delay Time is more accurate.

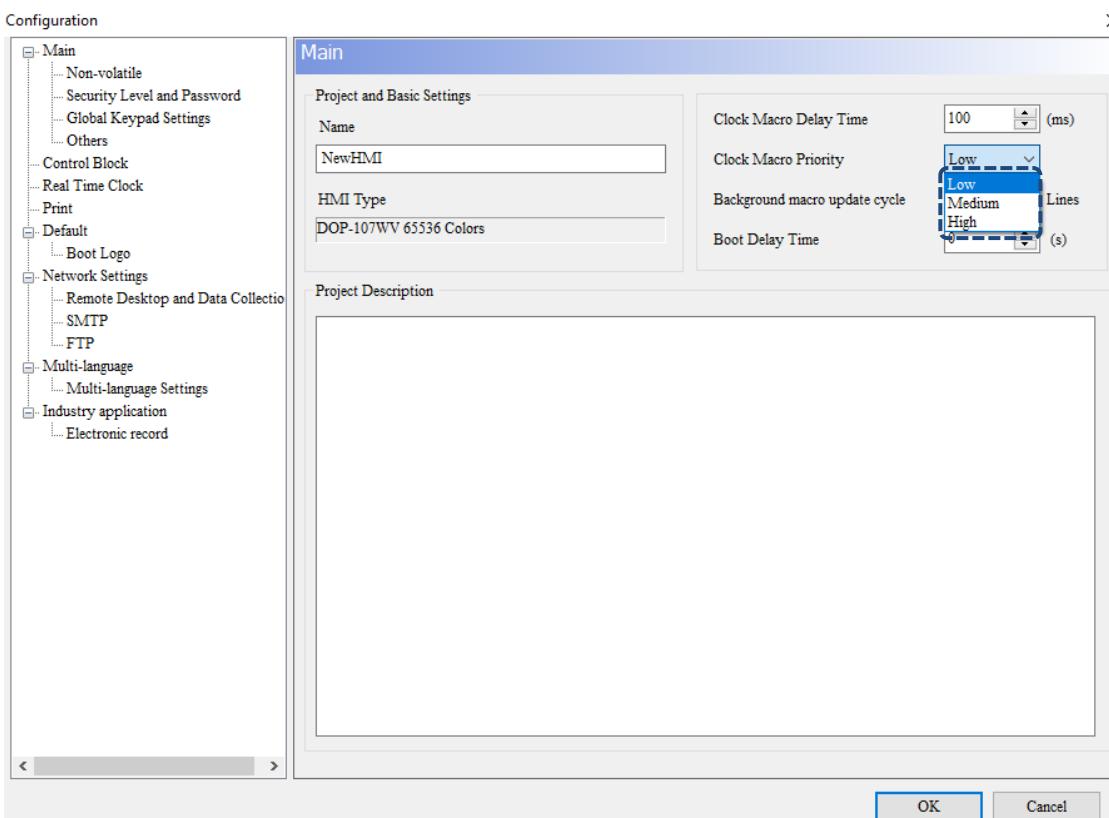


Figure 24.1.11.3 Clock Macro Priority

24

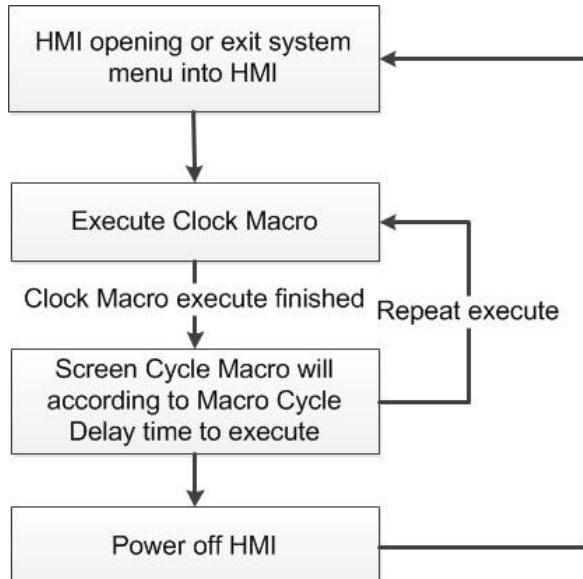


Figure 24.1.11.4 Flowchart of Clock Macro

## 24.2 Macro edit window

Go to the macro screen to be edited to start editing the macros. The maximum lines for each type of macros is 512 lines and the maximum words is 640 bytes or 640 words. The right side of the macro edit window can only record a maximum of 10 recently-opened macros. If there are more than 10 records, the first macro will be closed and a new macro will be added. If the first macro record is updated before being closed, the system will prompt you to save the first macro before adding the new macro.

24

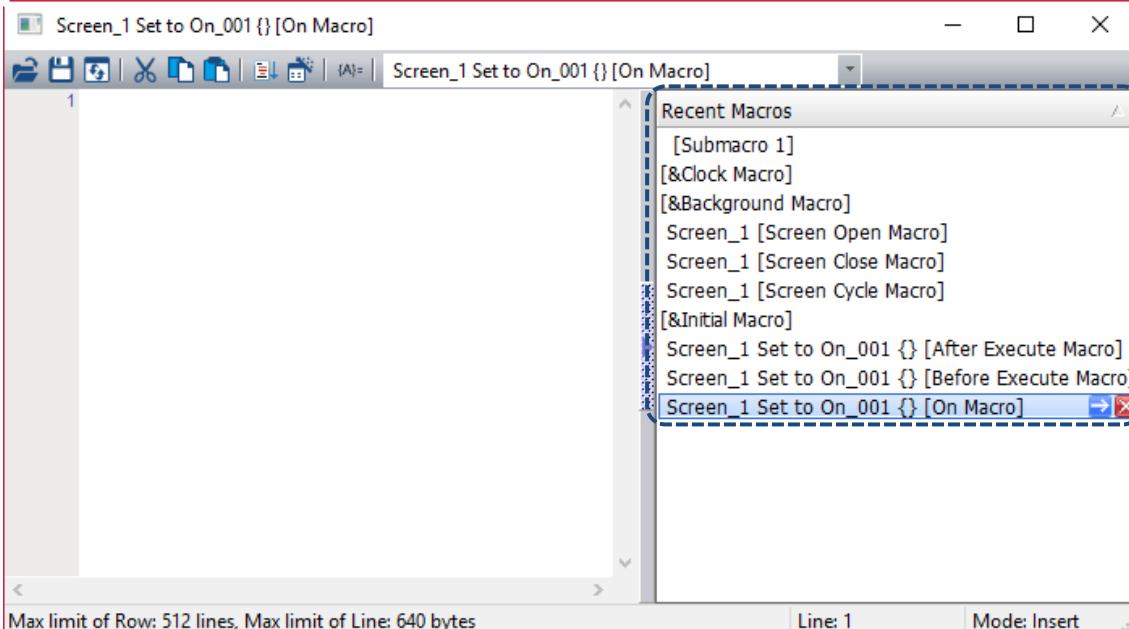


Figure 24.2.1 Macro edit window

Each macro has a toolbar to assist you in planning and editing macro commands.

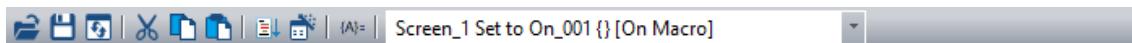
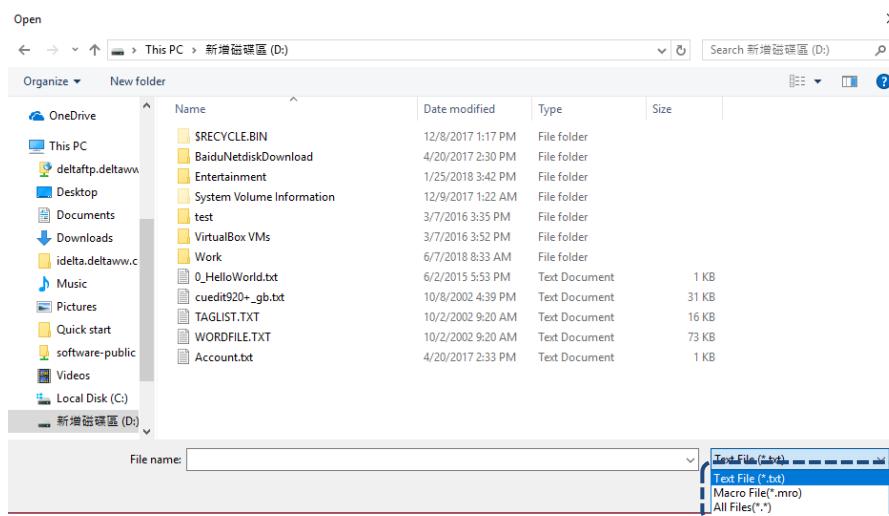
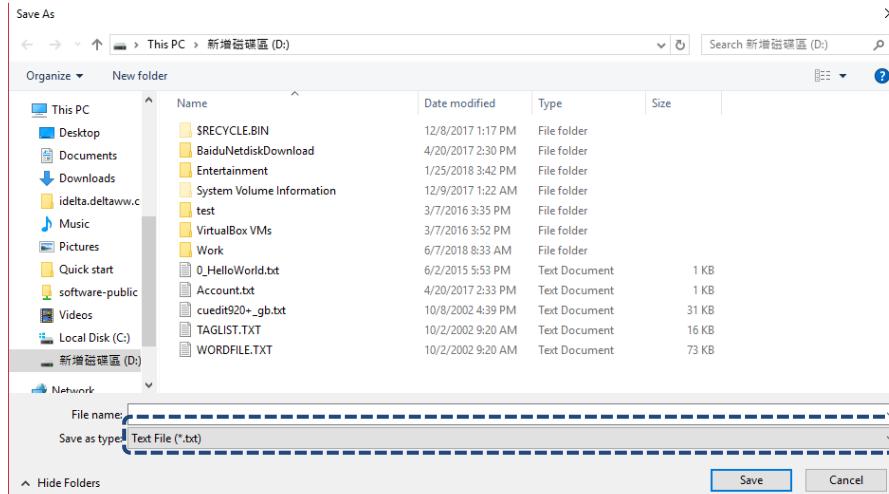


Figure 24.2.2 Macro toolbar

The functions in the macro toolbar are shown in the following table.

Figure 24.2.1 Description of macro toolbar functions

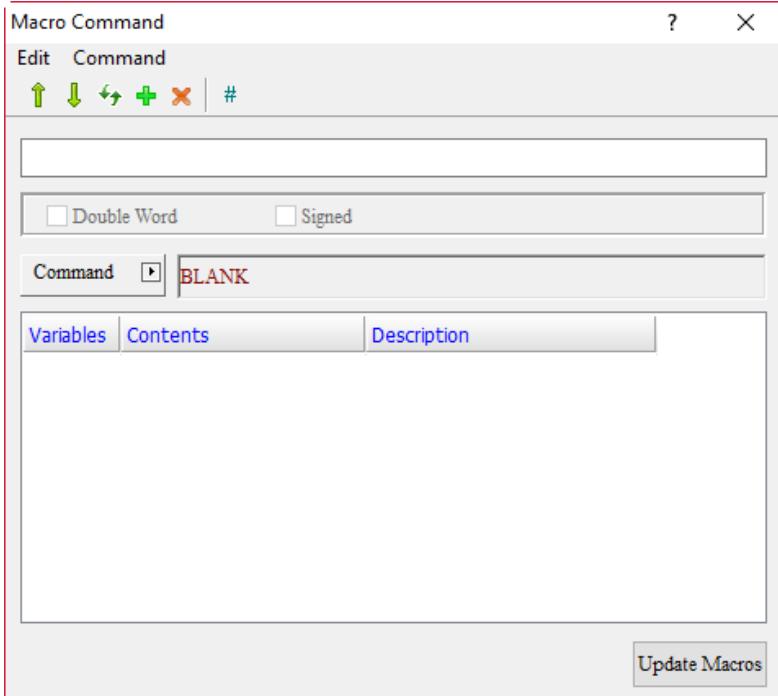
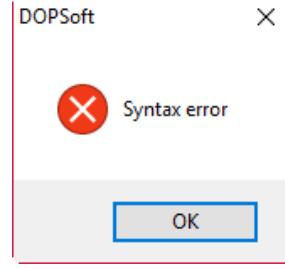
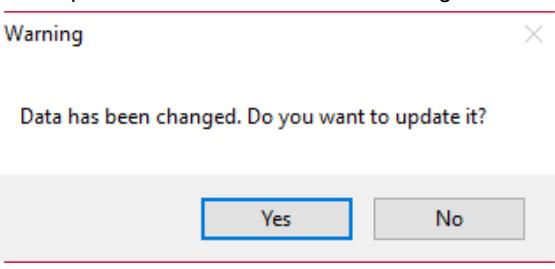
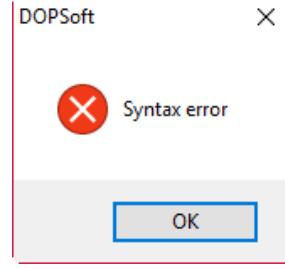
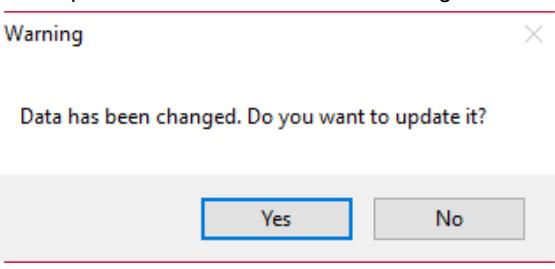
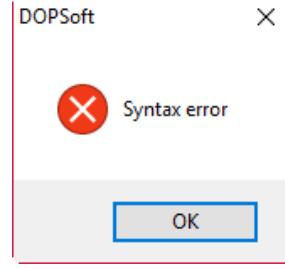
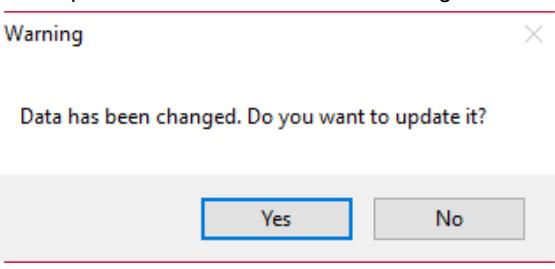
24

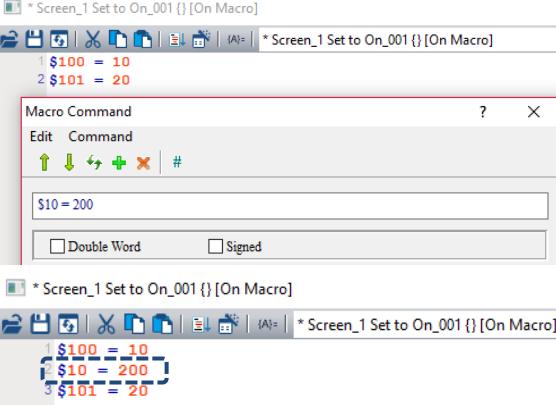
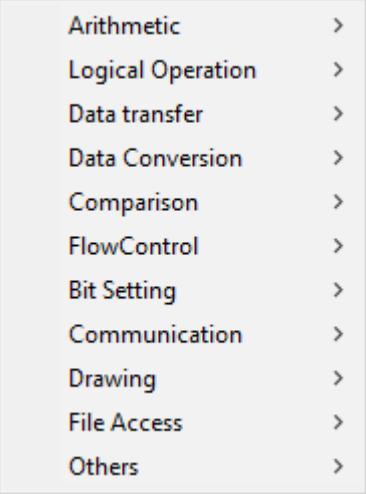
Macro toolbar functions		
Icon	Function	Content
	Open	<p>The Open function is equivalent to the action of import. The software provides two formats: txt and mro. You can import edited macros to reduce the time for repeated editing.</p> 
	Save	<p>The Save function is equivalent to the action of export. The software only provides the txt format for saving. You can save the edited macros for backup or for use of other screens.</p> 

Macro toolbar functions		
Icon	Function	Content
	Update	<ul style="list-style-type: none"> <li>The Update function is to update the modified macro contents and check the macro syntax as well. If you close the macro edit window without executing , the software will inform you that the macro has been changed.</li> </ul> <div style="border: 1px solid red; padding: 10px;"> <p>The macro has been changed. <span style="float: right;">X</span></p> <p>Update the edited macro contents.</p> <p style="text-align: center;"><input type="button" value="Yes"/> <input type="button" value="No"/> <input type="button" value="Cancel"/></p> </div> <ul style="list-style-type: none"> <li>If  is executed, the current syntax will be checked. If there are syntax errors, the software will show the following message.</li> </ul> <div style="border: 1px solid red; padding: 10px;"> <p>DOPSoft <span style="float: right;">X</span></p> <p>Failed to check macro syntax. : Line 1</p> <p style="text-align: center;"><input type="button" value="OK"/></p> </div>
	Cut	Operations of Cut, Copy, and Paste are the same as those of Office. You can also execute Cut, Copy, and Paste with the keyboard shortcuts (cut: Ctrl + X; copy: Ctrl + C; paste: Ctrl + V).
	Copy	
	Paste	
	Syntax check	<p>The function of Syntax check is used to make sure that macro commands are correct. An error message will pop up if there is any syntax error.</p> <div style="border: 1px solid red; padding: 10px;"> <p>DOPSoft <span style="float: right;">X</span></p> <p>Failed to check macro syntax. : Line 1</p> <p style="text-align: center;"><input type="button" value="OK"/></p> </div> <p>Note: the Syntax check function is not equivalent to macro compilation. You need to execute the compile function to compile macros.</p>

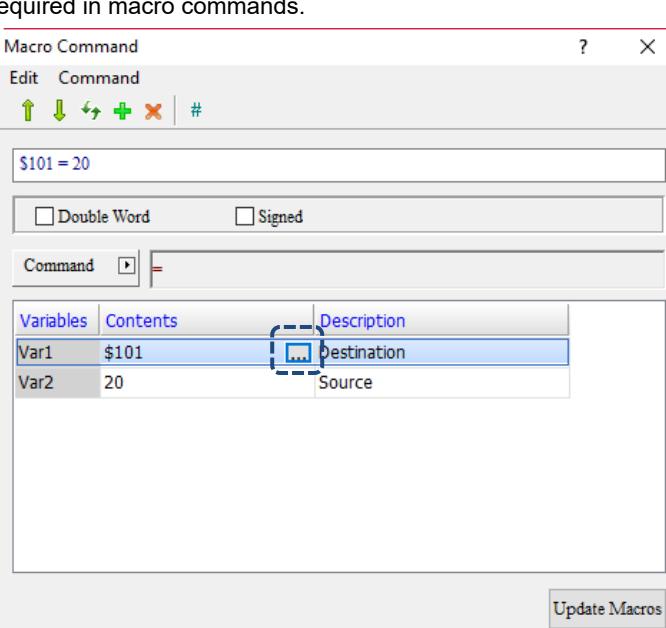
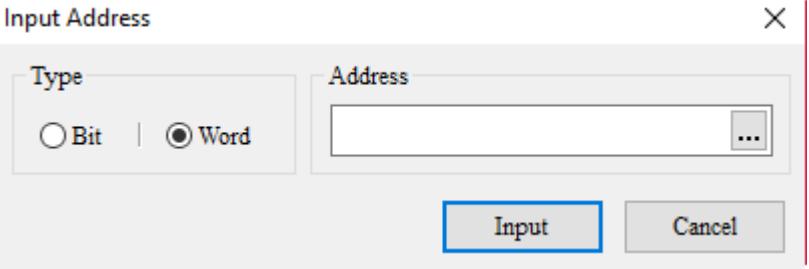
24

24

Macro toolbar functions				
Icon	Function	Content		
		<p>The Macro Wizard function provides convenient and easy input of macro commands, which are less error-prone than manually entering macro commands.</p> 		
	Macro Wizard	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px; vertical-align: top;"> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Up</span>   </div> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Down</span>   </div> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Edit</span>   </div> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Update</span>   </div> </td><td style="padding: 5px; vertical-align: top;"> <ul style="list-style-type: none"> <li>■ You can move the cursor up or down.</li> <li>■ You can select to move to which line by using the Up and Down functions.</li> </ul>   <ul style="list-style-type: none"> <li>■ Execute the Update button and check whether the syntax of macro command is correct. If there are syntax errors, an error message will pop up.</li> </ul>    <ul style="list-style-type: none"> <li>■ If you change data and close the Macro Wizard window without updating it, the software will also display a message asking if you want to update the data as it has been changed.</li> </ul>  </td></tr> </table>	<div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Up</span>   </div> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Down</span>   </div> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Edit</span>   </div> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Update</span>   </div>	<ul style="list-style-type: none"> <li>■ You can move the cursor up or down.</li> <li>■ You can select to move to which line by using the Up and Down functions.</li> </ul> <ul style="list-style-type: none"> <li>■ Execute the Update button and check whether the syntax of macro command is correct. If there are syntax errors, an error message will pop up.</li> </ul>  <ul style="list-style-type: none"> <li>■ If you change data and close the Macro Wizard window without updating it, the software will also display a message asking if you want to update the data as it has been changed.</li> </ul> 
<div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Up</span>   </div> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Down</span>   </div> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Edit</span>   </div> <div style="background-color: #cccccc; padding: 5px; margin-bottom: 5px;"> <span style="font-size: 1.5em;">Update</span>   </div>	<ul style="list-style-type: none"> <li>■ You can move the cursor up or down.</li> <li>■ You can select to move to which line by using the Up and Down functions.</li> </ul> <ul style="list-style-type: none"> <li>■ Execute the Update button and check whether the syntax of macro command is correct. If there are syntax errors, an error message will pop up.</li> </ul>  <ul style="list-style-type: none"> <li>■ If you change data and close the Macro Wizard window without updating it, the software will also display a message asking if you want to update the data as it has been changed.</li> </ul> 			

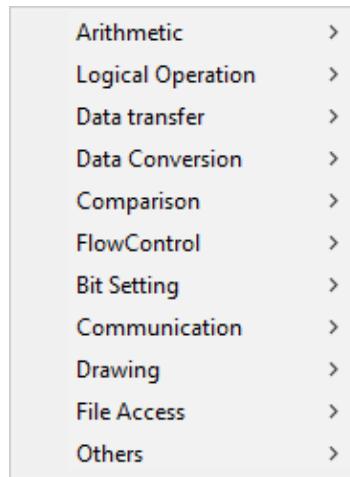
Macro toolbar functions		
Icon	Function	Content
	Edit	<p><b>Insert</b> </p> <p>■ Insert (add) a line of macro command. The new macro command will be inserted above the macro command of which the cursor has selected and the original one will be moved down.</p> 
		<p><b>Delete</b> </p> <p>Delete the macro command of which the cursor has selected. If there are other macro commands following the deleted one, they will be moved up automatically. If the cursor has selected a line without a macro command, the delete action is invalid.</p>
		<p><b>Comment</b> </p> <p>The function of Comment is to help you manage macros, improve readability, and simply maintenance. You can simply type the symbol "#" in the macro edit screen, or use the [Edit] &gt; [Comment] on the Macro Wizard or click  , and then write comments or macro programs. The comments written will not be executed in macros.</p>
	Command	<p>■ Command includes all functions of macro commands which are shown as follows:</p>  <p>■ For a detailed description of macro command functions, refer to Section 24.3 Macro commands.</p>

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Macro toolbar functions										
Icon	Function	Content								
	Double Word	<p>Macro commands provide 32 bits and signed number operations. If you select the check box of <b>Signed</b>, the command is operated with signed number; if you do not select this check box, the command is operated with unsigned number.</p> <p>If you select the <b>Double Word</b>, the command is operated with 32 bits; if you do not select this check box, the command is operated with 16 bits.</p> <table border="1"> <tr> <td>Unsigned</td> <td>Unsigned number</td> </tr> <tr> <td>Signed</td> <td>Signed number</td> </tr> <tr> <td>Word</td> <td>16-bit data</td> </tr> <tr> <td>DW (Double Word)</td> <td>32-bit data</td> </tr> </table> <p>Note: if the macro command is set to Double Word, two registers are occupied for each memory address in the command.</p>	Unsigned	Unsigned number	Signed	Signed number	Word	16-bit data	DW (Double Word)	32-bit data
Unsigned	Unsigned number									
Signed	Signed number									
Word	16-bit data									
DW (Double Word)	32-bit data									
	Signed	<p>The Command function is the same as the Command function in the Macro Wizard window, which is used to select macro commands. Refer to Section 24.3 Macro commands for more details.</p>								
	Macro Wizard	<p>You can directly click  to set parameters if the variables are required in macro commands.</p> 								
	Input Address	<p>You can input the PLC memory address to be used in the macro through the Input Address function to prevent inputting the wrong address.</p> 								

## 24.3 Macro commands

Macro commands include Arithmetic, Logical Operation, Data transfer, Data Conversion, Comparison, FlowControl, Bit Setting, Communication, Drawing, File Access, and Others.



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Figure 24.3.1 Types of macro commands

A list of macro commands are shown in the following table.

Macro type	Command	Expression	Description
Arithmetic	+	Var1 = Var2 + Var3	Addition
	-	Var1 = Var2 - Var3	Subtraction
	*	Var1 = Var2 * Var3	Multiplication
	/	Var1 = Var2 / Var3	Division
	%	Var1 = Var2 % Var3	Remainder
	+*/	Var1 = Var2	Arithmetic
	MUL64	Var1 = MUL64(Var2, Var3) (Signed DW)	64-bit multiplication
	ADDSUMW	Var1 = ADDSUMW(Var2, Var3)	Accumulative
	FADD	Var1 = FADD(Var2, Var3) (Signed DW)	Floating-point number addition
	FSUB	Var1 = FSUB(Var2, Var3) (Signed DW)	Floating-point number subtraction
	FMUL	Var1 = FMUL(Var2, Var3) (Signed DW)	Floating-point number multiplication
	FDIV	Var1 = FDIV(Var2, Var3) (Signed DW)	Floating-point number division
	FMOD	Var1 = FMOD(Var2, Var3) (Signed DW)	Floating-point number remainder
	SIN	Var1 = SIN(Var2) (Signed DW)	Sine function
	COS	Var1 = COS(Var2) (Signed DW)	Cosine function
	TAN	Var1 = TAN(Var2) (Signed DW)	Tangent function
	COT	Var1 = COT(Var2) (Signed DW)	Cotangent function
	SEC	Var1 = SEC(Var2) (Signed DW)	Secant function
	CSC	Var1 = CSC(Var2) (Signed DW)	Cosecant function

Macro type	Command	Expression	Description
Logical Operation		Var1 = Var2   Var3	OR logical operation
	&&	Var1 = Var2 && Var3	AND logical operation
	^	Var1 = Var2 ^ Var3	XOR logical operation
	NOT	Var1 = NOT Var2	NOT logical operation
	<<	Var1 = Var2 << Var3	SHL (left shift) logical operation
	>>	Var1 = Var2 >> Var3	SHL (right shift) logical operation
Data transfer	MOV	Var1 = Var2	Data specified operand
	BMOV	BMOV(Var1, Var2, Var3)	Copy block
	ArrayCopy	Var1 = ArrayCopy(Var2, Var3, Var4, Var5, Var6)	Copy array
	FILL	FILL(Var1, Var2, Var3)	Fill block
	FILLASC	FILLASC(Var1, " ")	Convert text to ASCII values
	STRCAT	Var1 = STRCAT(Var2, Var3, Var4)	Connection string
	FMOV	Var1 = FMOV(Var2) (Signed DW)	Specify floating-point number data
Data Conversion	BCD	Var1 = BCD(Var2)	Convert decimal values to BCD values
	BIN	Var1 = BIN(Var2)	Convert BCD values to decimal values
	TODWORD	Var1 = TODWORD(Var2)	Convert values from Word to Double Word
	TOWORD	Var1 = TOWORD(Var2, Var3)	Convert values from Byte to Word
	TOBYTE	Var1 = TOBYTE(Var2, Var3)	Convert values from Word to Byte
	SWAP	SWAP(Var1, Var2, Var3)	Swap high and low bytes of Word
	XCHG	XCHG(Var1, Var2, Var3)	Exchange value data
	MAX	Var1 = MAX(Var2, Var3)	Get maximum
	MIN	Var1 = MIN(Var2, Var3)	Get minimum
	TOHEX	Var1 = TOHEX(Var2)	Convert 4 ASCII characters to Word hexadecimal integers
	TOASC	Var1 = TOASC(Var2)	Convert a hexadecimal integer of Word to 4 Word ASCII characters
	FCNV	Var1 = FCNV(Var2) (Signed DW)	Convert an integer to a floating-point number
	ICNV	Var1 = ICNV(Var2) (Signed DW)	Convert a floating-point number to an integer
	SPRINTF	Var1 = SPRINTF(Var2, "%u", Var4)	Format string

Macro type	Command	Expression		Description
Comparison	IF ... THEN GOTO	IF ==	IF Var1 == Var2 THEN GOTO LABEL Var3	If... ,then execute according to the specified label name
		IF !=	IF Var1 != Var2 THEN GOTO LABEL Var3	
		IF >	IF Var1 > Var2 THEN GOTO LABEL Var3	
		IF >=	IF Var1 >= Var2 THEN GOTO LABEL Var3	
		IF <	IF Var1 < Var2 THEN GOTO LABEL Var3	
		IF <=	IF Var1 <= Var2 THEN GOTO LABEL Var3	
		IF AND == 0	IF (Var1 && Var2) == 0 THEN GOTO LABEL Var3	
		IF AND != 0	IF (Var1 && Var2) != 0 THEN GOTO LABEL Var3	
		IF == ON	IF Var1 == ON THEN GOTO LABEL Var2	
		IF == OFF	IF Var1 == OFF THEN GOTO LABEL Var2	
Comparison	IF ... THEN CALL	IFB == ON	IFB Var1 == ON THEN GOTO LABEL Var2	If...call submacro
		IFB == OFF	IFB Var1 == OFF THEN GOTO LABEL Var2	
		IF == CALL	IF Var1 == Var2 THEN CALL Var3	
		IF != CALL	IF Var1 != Var2 THEN CALL Var3	
		IF > CALL	IF Var1 > Var2 THEN CALL Var3	
		IF >= CALL	IF Var1 >= Var2 THEN CALL Var3	
		IF < CALL	IF Var1 < Var2 THEN CALL Var3	
		IF <= CALL	IF Var1 <= Var2 THEN CALL Var3	
		IF AND == 0 CALL	IF (Var1 && Var2) == 0 THEN CALL Var3	
		IF AND != 0 CALL	IF (Var1 && Var2) != 0 THEN CALL Var3	

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Macro type	Command	Expression	Description
Comparison	IF...	IF ==	IF Var1 == Var2
		IF !=	IF Var1 != Var2
		IF >	IF Var1 > Var2
		IF >=	IF Var1 >= Var2
		IF <	IF Var1 < Var2
		IF <=	IF Var1 <= Var2
		IF AND == 0	IF (Var1 && Var2) == 0
		IF AND != 0	IF (Var1 && Var2) != 0
		IF == ON	IF Var1 == ON
		IF == OFF	IF Var1 == OFF
FlowControl	ELSEIF...	ELSEIF ==	ELSEIF Var1 == Var2
		ELSEIF !=	ELSEIF Var1 != Var2
		ELSEIF >	ELSEIF Var1 > Var2
		ELSEIF >=	ELSEIF Var1 >= Var2
		ELSEIF <	ELSEIF Var1 < Var2
		ELSEIF <=	ELSEIF Var1 <= Var2
		ELSEIF AND == 0	ELSEIF (Var1 && Var2) == 0
		ELSEIF AND != 0	ELSEIF (Var1 && Var2) != 0
		ELSEIF == ON	ELSEIF Var1 == ON
		ELSEIF == OFF	ELSEIF Var1 == OFF
Bit Setting	ELSE	ELSE	Logical comparison
	ENDIF	ENDIF	Logical comparison
	FCMP	Var1 = FCMP(Var2, Var3) (Signed DW)	Comparison of floating-point value
	GOTO	GOTO LABEL Var1	Go to a label unconditionally (LABEL)
Bit Setting	LABEL	LABEL Var1	Label
	CALL	CALL Var1	Call submacro
	RET	RET	Exit submacro
	FOR	FOR Var1	Program loop
	NEXT	NEXT	
	END	END	End macro program
	BITON	BITON Var1	Set the bit to On
Bit Setting	BITOFF	BITOFF Var1	Set the bit to Off
	BITNOT	BITOFF Var1	Inverse bit (ON→OFF, OFF→ON)
	GETB	Var1 = GETB Var2	Get bit value

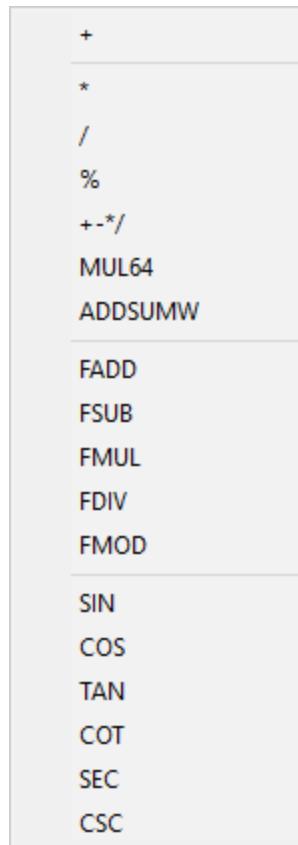
Macro type	Command	Expression	Description
Communication	INITCOM	Var1 = INITCOM(Var2, Var3, Var4, Var5, Var6, Var7, Var8)	COM PORT initialization
	ADD_SUM	Var1 = ADDSUM(Var2, Var3)	Calculate CHECKSUM by addition
	XOR_SUM	Var1 = XORSUM(Var2, Var3)	Calculate CHECKSUM by XOR
	PUTCHARS	Var1 = PUTCHARS(Var2, Var3, Var4)	Export characters via the communication port
	GETCHARS	Var1 = GETCHARS(Var2, Var3, Var4)	Get characters via the communication port
	SELECTCOM	SELECTCOM(Var1)	Select COM Port
	CLEARCOMBUFFER	CLEARCOMBUFFER(Var1, Var2)	Clear buffer of Com Port
	CHRCHKSUM	Var1 = CHRCHKSUM("Var2", Var3, Var4)	Calculate the length and checksum of string
	LOCKCOM	Var1 = LOCKCOM(Var2, Var3)	Lock COM Port
	UNLOCKCOM	UNLOCKCOM(Var1)	Unlock COM Port
	STATION_CHK	Var1 = STATIONCHK(Var2, Var3)	Check COM Port communication state
	STATIONON	STATIONON(Var1, Var2)	Station On
	STATIONOFF	STATIONOFF(Var1, Var2)	Station Off
	IPON	Var1 = IPON(Var2, Var3, Var4, Var5, Var6)	Enable IP address
Drawing	IPOFF	Var1 = IPOFF(Var2, Var3, Var4, Var5, Var6)	Disable IP address
	IPCHANGE	Var1 = IPCHANGE(Var2, Var3, Var4, Var5, Var6, Var7)	Change the IP address of the connecting controller and the communication port
	RECTANGLE	RECTANGLE(Var1)	Rectangle
	LINE	LINE(Var1)	Line
File Access	POINT	POINT(Var1)	Point
	CIRCLE	CIRCLE(Var1)	Circle
	FileSlotRead	Var1 = FileSlotRead(Var2, Var3, Var4, Var5)	Read file
	FileSlotWrite	Var1 = FileSlotWrite(Var2, Var3, Var4, Var5)	Write file
	FileSlotRemove	Var1 = FileSlotRemove(Var2)	Remove file
	FileSlotGetLength	Var1 = FileSlotGetLength(Var2, Var3)	Read length of file
File Access	FileSlotExport	Var1 = FileSlotEXPORT(Var2, Var3, Var4, Var5)	Export file
	FileSlotImport	Var1 = FileSlotIMPORT(Var2, Var3, Var4, Var5)	Import file

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Macro type	Command	Expression	Description
Others	Time Tick	Var1 = TIMETICK	Get the time from the start of the system up to now
	GETLASTERROR	Var1 = GETLASTERROR	Get the error value of the previous command
	Comment	#	Comment
	Delay	Delay(Var1)	Delay
	GETSYSTEMTIME	Var1 = GETSYSTEMTIME	Get system time
	SETSYSTEMTIME	SETSYSTEMTIME(Var1)	Set system time
	GETHISTORY	Var1 = GETHISTORY(Var2, Var3, Var4, Var5, Var6)	Get history data
	EXPORT	EXPORT(Var1)	Export list
	EXRCP16	Var1 = EXRCP16(Var2, Var3)	Export 16-bit Recipe
	IMRCP16	Var1 = IMRCP16(Var2, Var3)	Import 16-bit Recipe
	EXRCP32	Var1 = EXRCP32(Var2, Var3)	Export 32-bit Recipe
	IMRCP32	Var1 = IMRCP32(Var2, Var3)	Import 32-bit Recipe
	EXENRCP	Var1 = EXENRCP(Var2, Var3)	Export enhanced recipe
	IMENRCP	Var1 = IMENRCP(Var2, Var3)	Import enhanced recipe
	EXHISTORY	Var1 = EXHISTORY(Var2, Var3, Var4)	Export history data
	EXALARM	Var1 = EXALARM(Var2, Var3)	Export alarm data
	DISKFORMAT	Var1 = DISKFORMAT(Var2)	Format disk
	BMP_CAPTURE	Var1 = BMP_CAPTURE(Var2)	Screen capture
	PLC_DOWNLOAD	Var1 = PLC_DOWNLOAD(Var2, Var3, Var4, Var5, Var6)	Download DVP or ISP file to PLC via the HMI
	OPENSCREEN	OPENSCREEN(Var1)	Open screen
	CLOSESUBSCREEN	CLOSESUBSCREEN(Var1)	Close subscreen
	GetCircleCenter	Var1 = GetCircleCenter(Var2, Var3)	Calculate the coordinates of the center of a circle
	VAR	VAR Var1	Variable

### 24.3.1 Arithmetic

Arithmetic includes integer and floating-point operations. The macro commands are detailed as follows.



+
*
/
%
+-*
MUL64
ADDSUMW
FADD
FSUB
FMUL
FDIV
FMOD
SIN
COS
TAN
COT
SEC
CSC

Figure 24.3.1.1 Arithmetic

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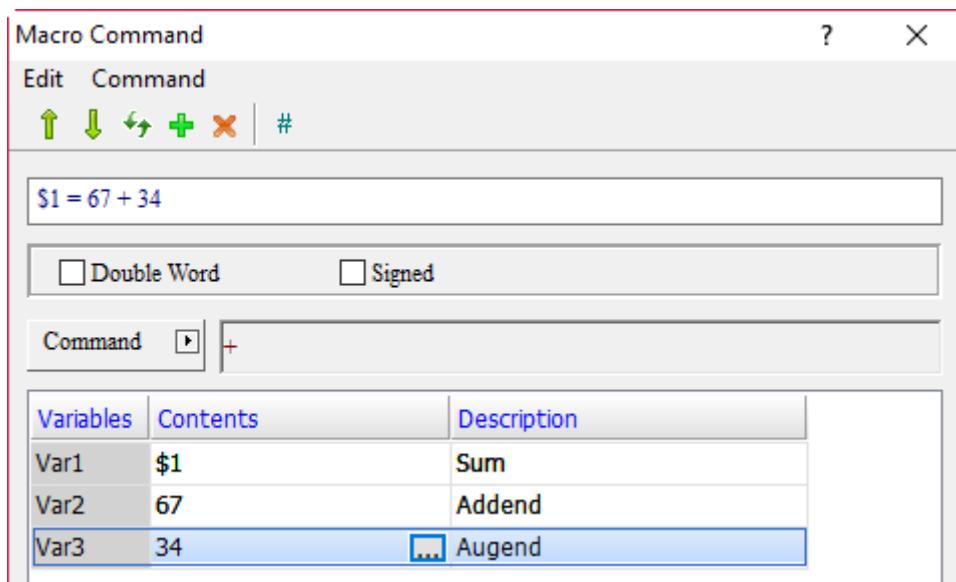
- + (addition)

Expression	Meaning of variable		Note	
Var1 = Var2 + Var3 (W) Var1 = Var2 + Var3 (DW) Var1 = Var2 + Var3 (Signed W) Var1 = Var2 + Var3 (Signed DW)	Var1	Sum	W: Word DW: Double Word Signed: signed number	
	Var2	Addend		
	Var3	Augend		
	<b>Description of action</b>			
	Add Var2 and Var3, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is  $\$1 = 67 + 34$ , the addition operation is executed and the result of  $67 + 34$  is put in \$1, so  $\$1 = 101$ .

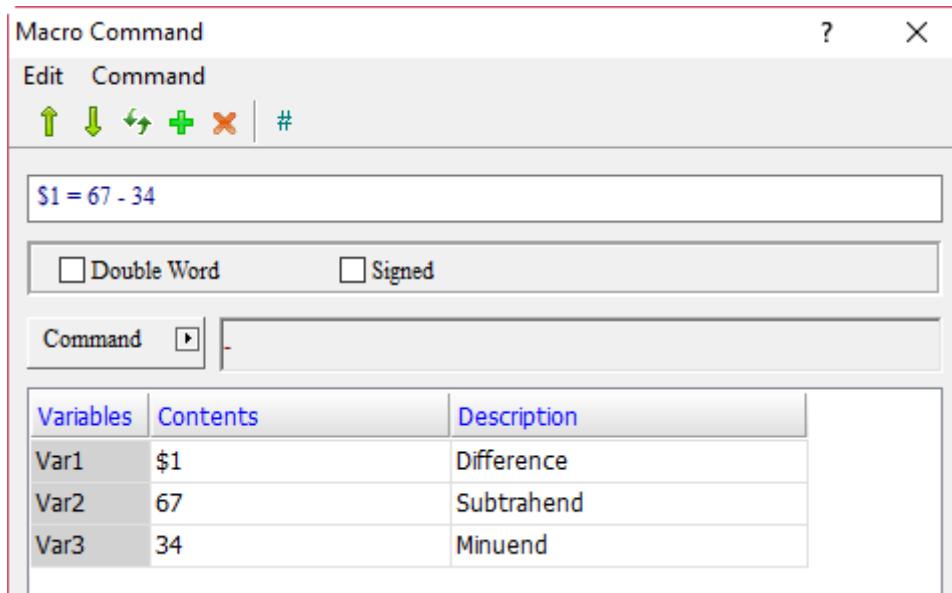
- (subtraction)

Expression	Meaning of variable		Note	
Var1 = Var2 - Var3 (W) Var1 = Var2 - Var3 (DW) Var1 = Var2 - Var3 (Signed W) Var1 = Var2 - Var3 (Signed DW)	Var1	Difference	W: Word DW: Double Word Signed: signed number	
	Var2	Subtrahend		
	Var3	Minuend		
	<b>Description of action</b>			
	Subtract Var2 from Var3, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is  $\$1 = 67 - 34$ , the subtraction operation is executed and the result of  $67 - 34$  is put in \$1, so  $\$1 = 33$ .

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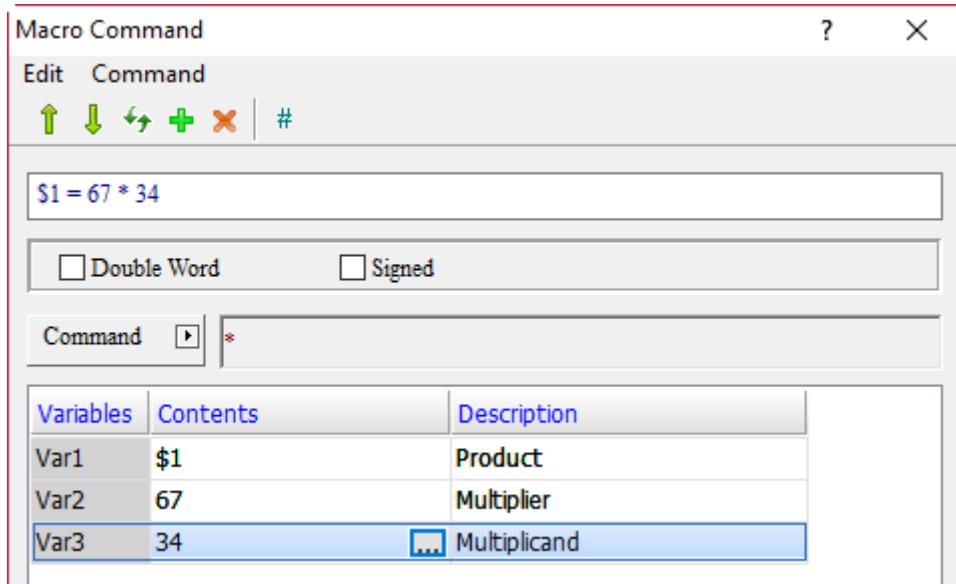
- \* (multiplication)

Expression	Meaning of variable		Note
Var1 = Var2 * Var3 (W) Var1 = Var2 * Var3 (DW) Var1 = Var2 * Var3 (Signed W) Var1 = Var2 * Var3 (Signed DW)	Var1	Product	W: Word DW: Double Word Signed: signed number
	Var2	Multiplier	
	Var3	Multiplicand	
	<b>Description of action</b>		
Multiply Var2 by Var3, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = 67 \* 34, the multiplication operation is executed and the result of 67 \* 34 is put in \$1, so \$1 = 2278.

- / (division)

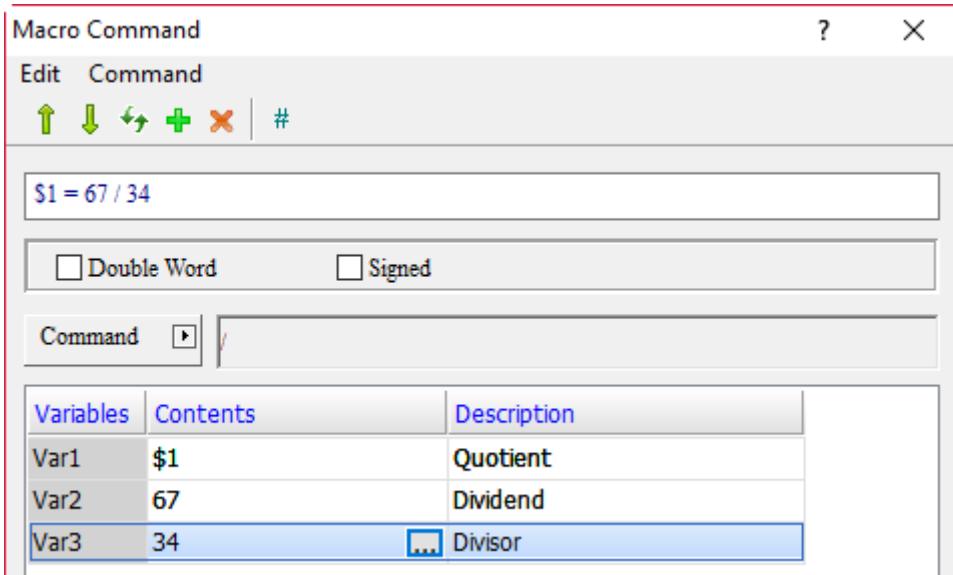
Expression	Meaning of variable		Note
Var1 = Var2 / Var3 (W) Var1 = Var2 / Var3 (DW) Var1 = Var2 / Var3 (Signed W) Var1 = Var2 / Var3 (Signed DW)	Var1	Quotient	W: Word DW: Double Word Signed: signed number
	Var2	Dividend	
	Var3	Divisor	
	<b>Description of action</b>		
Divide Var2 by Var3 and put the result in Var1.			

Note: Var3 cannot be 0

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is  $\$1 = 67 / 34$ , the division operation is executed and the result of  $67 / 34$  is put in \$1, so  $\$1 = 1$ .

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- % (remainder)

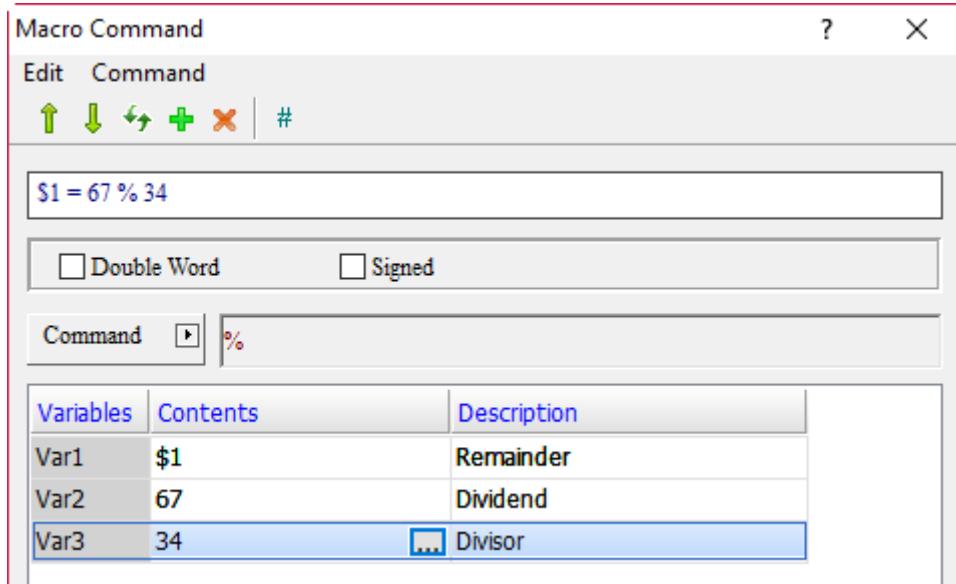
Expression	Meaning of variable		Note
Var1 = Var2 % Var3 (W) Var1 = Var2 % Var3 (DW) Var1 = Var2 % Var3 (Signed W) Var1 = Var2 % Var3 (Signed DW)	Var1	Remainder	W: Word DW: Double Word Signed: signed number
	Var2	Dividend	
	Var3	Divisor	
	<b>Description of action</b>		
Divide Var2 by Var3 and put the remainder in Var1.			

Note: Var3 cannot be 0

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = 67 % 34, the remainder operation is executed and the result of 67 % 34 is put in \$1, so \$1 = 33.

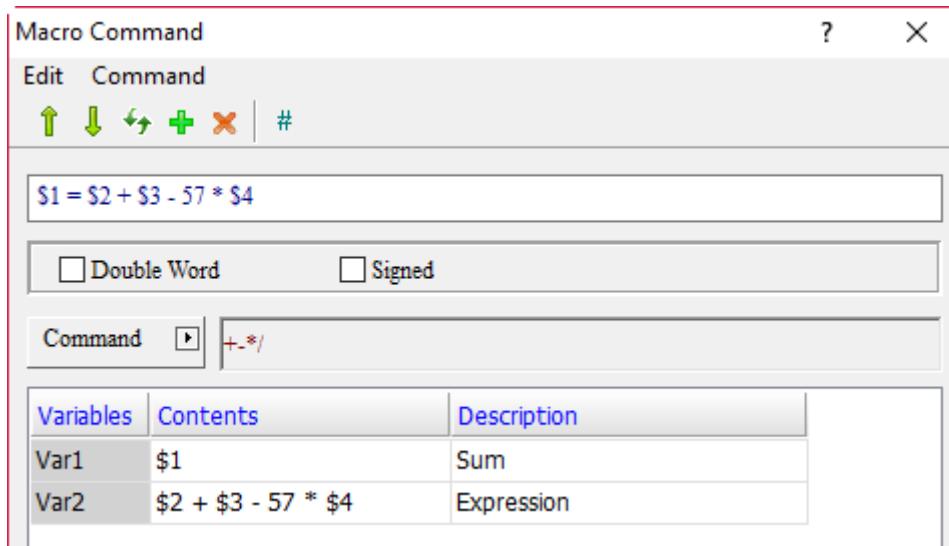
- $+-*/$  (arithmetic)

Expression	Meaning of variable		Note	
Var1 = Var2 (W) Var1 = Var2 (DW) Var1 = Var2 (Signed W) Var1 = Var2 (Signed DW)	Var1	Sum	W: Word DW: Double Word Signed: signed number	
	Var2	Expression		
	<b>Description of action</b>			
	Put the result of Var2 expression in Var1.			

Variable	Type			
	Internal memory	PLC register	Constant	String
Var1	v	v		
Var2				v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is  $\$1 = \$2 + \$3 - 57 * \$4$ , the arithmetic operations will be executed, and the result of  $\$2 + \$3$  subtracting  $57 * \$4$  will be put in  $\$1$ . Take the following figure as an example. Input 66, 55, and 2 into  $\$2$ ,  $\$3$ , and  $\$4$  respectively, and the result in  $\$1$  will be 7.



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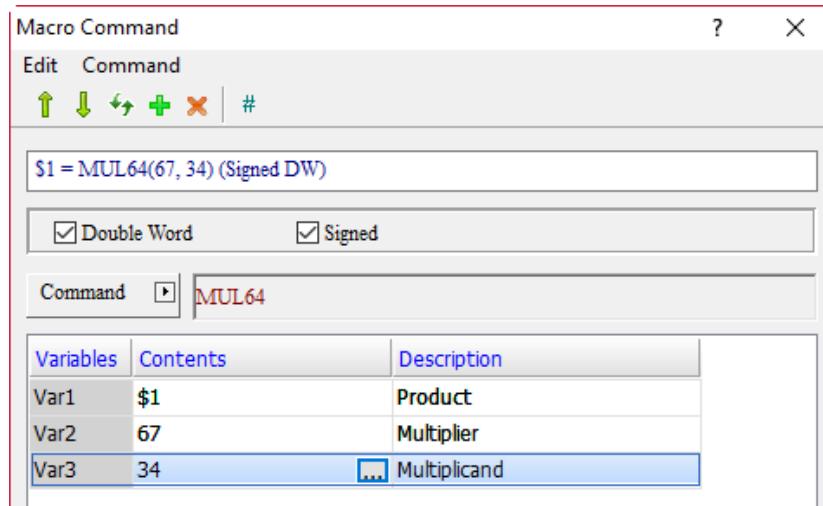
■ MUL64 (64-bit multiplication)

Expression	Meaning of variable		Note	
Var1 = MUL64(Var2, Var3) (W) Var1 = MUL64(Var2, Var3) (DW) Var1 = MUL64(Var2, Var3) (Signed W) Var1 = MUL64(Var2, Var3) (Signed DW)	Var1	Product	W: Word DW: Double Word Signed: signed number	
	Var2	Multiplier		
	Var3	Multiplicand		
	<b>Description of action</b>			
	Multiple Var3 by Var2, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

**Example**

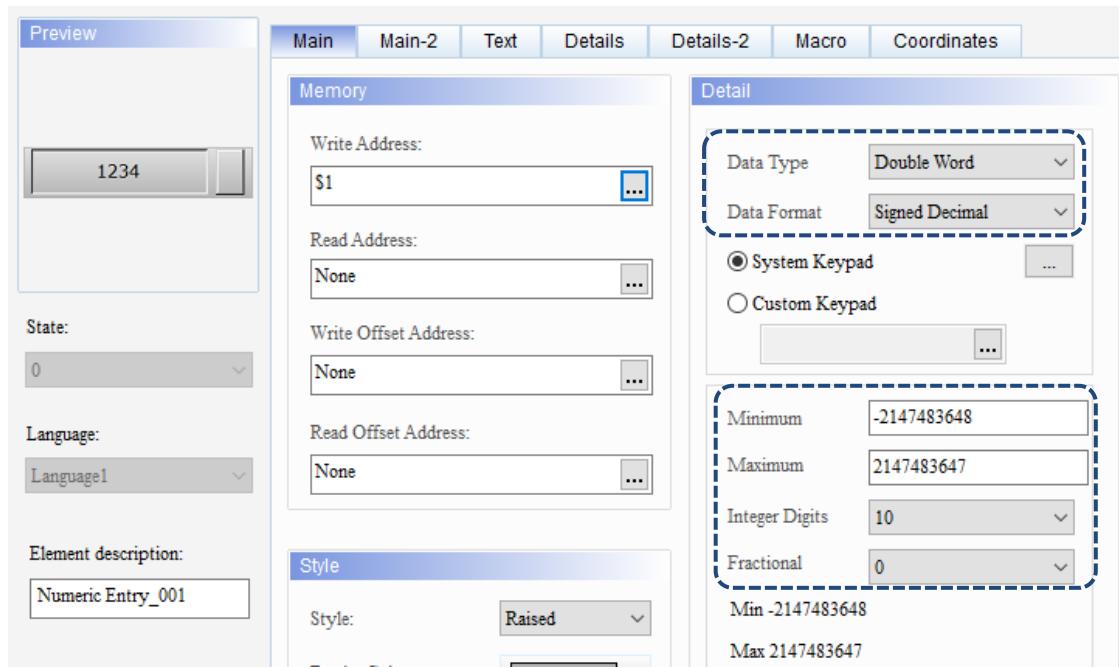
- Var1 is the internal memory address, and Var2 and Var3 are constants.



**Example**

- If the check box of **Double Word** is selected, set the Data Type of the elements to Double Word so as to save the correct value.

Numeric Entry



- When the command is  $\$1 = \text{MUL64}(67, 34)$ , the MUL64 bit multiplication is executed and the result of 67 multiplied by 34 is put in \$1, so  $\$1 = 2278$ .

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■ ADDSUMW (accumulation)

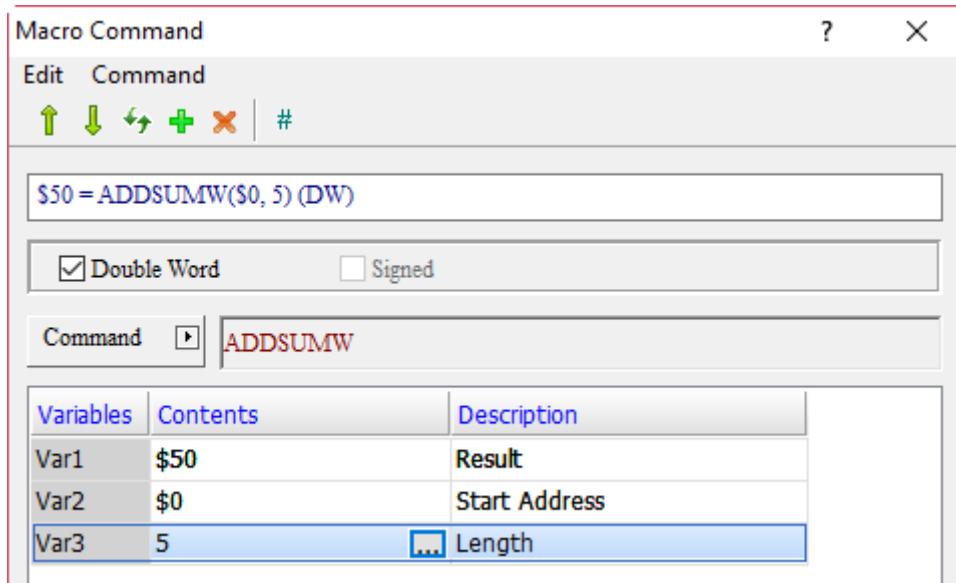
Expression	Meaning of variable		Note
Var1 = ADDSUMW(Var2, Var3) (W) Var1 = ADDSUMW(Var2, Var3) (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Start address	
	Var3	Length	
	<b>Description of action</b>		
	Add up Var3 length addresses continuously from Var2 start address, and put the result in Var1.		

Note: if Double Word is selected, the Start Address increments by 2 to Length; if Word is selected, it increments by 1.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

**Example**

- Var1 and Var2 are the internal memory addresses, Var3 is a constant, and the check box of **Double Word** is selected.
- Memory address increments by 2 addresses from \$0 to 5 lengths: \$0, \$2, \$4, \$6, \$8.



- Enter \$0 = 1, \$2 = 2, \$4 = 3, \$6 = 4, and \$8 = 5, and put the accumulated value in \$50, so \$50 = 15.

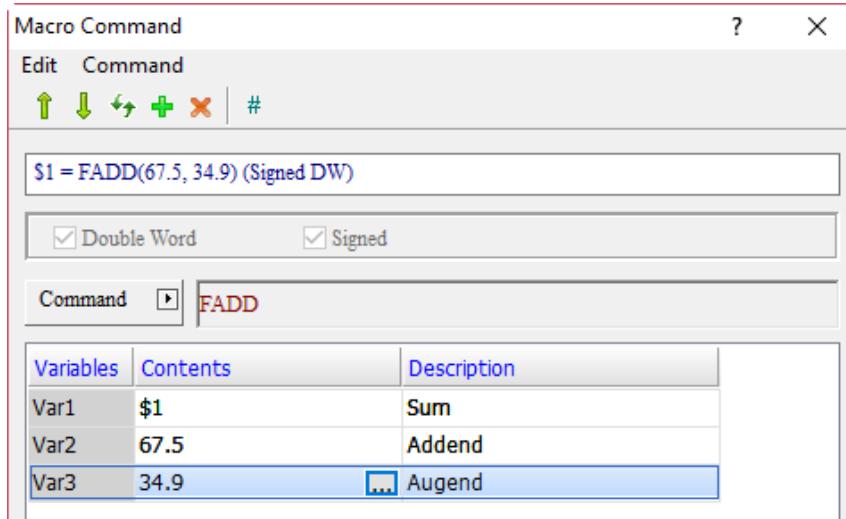
- FADD (floating-point number addition)

Expression	Meaning of variable		Note
Var1 = FADD(Var2, Var3) (Signed DW)	Var1	Sum	DW: Double Word Signed: signed number
	Var2	Addend	
	Var3	Augend	
	<b>Description of action</b>		
Add Var2 and Var3, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = FADD(67.5, 34.9), the floating-point number addition operation is executed and the result of 67.5 plus 34.9 is put in \$1, so \$1 = 102.4.

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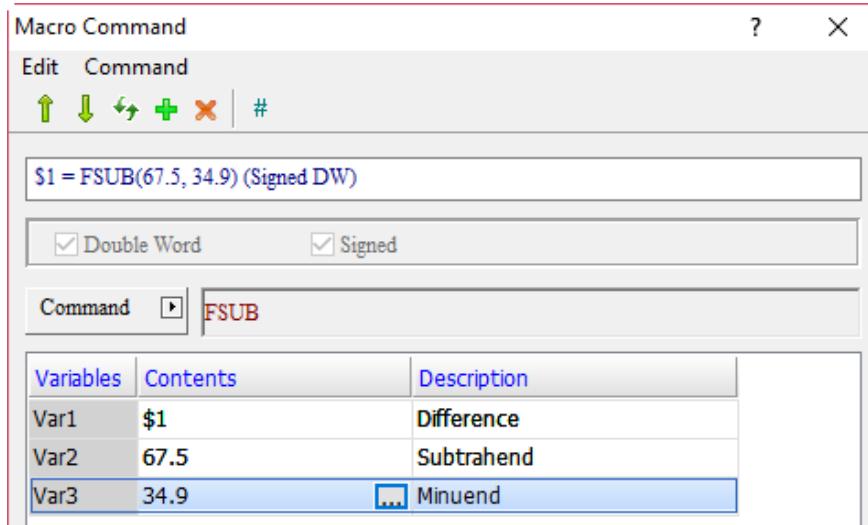
- FSUB (floating-point number subtraction)

Expression	Meaning of variable		Note	
Var1 = FSUB(Var2, Var3) (Signed DW)	Var1	Difference	DW: Double Word Signed: signed number	
	Var2	Subtrahend		
	Var3	Minuend		
	<b>Description of action</b>			
	Subtract Var2 from Var3, and put the result in Var 1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = FSUB(67.5, 34.9), the floating-point number subtraction operation is executed and the result of 67.5 minus 34.9 is put in \$1, so \$1 = 32.6.

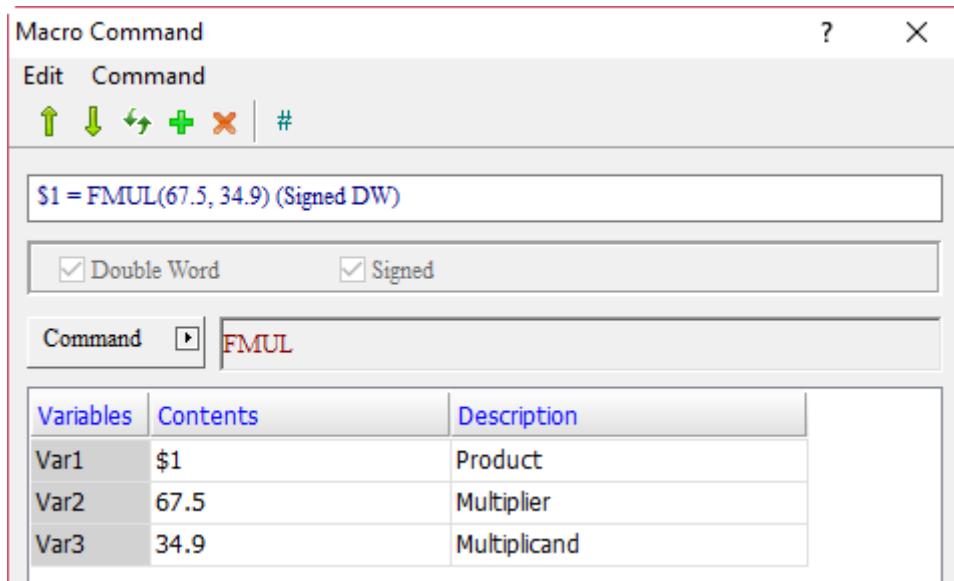
- FMUL (floating-point number multiplication)

Expression	Meaning of variable		Note	
Var1 = FMUL(Var2, Var3) (Signed DW)	Var1	Product	DW: Double Word Signed: signed number	
	Var2	Multiplier		
	Var3	Multiplicand		
	<b>Description of action</b>			
	Multiply Var 3 by Var 2, and put the result in Var 1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = FMUL(67.5, 34.9), the floating-point number multiplication is executed and the result of 67.5 multiplied by 34.9 is put in \$1, so \$1 = 2355.75.

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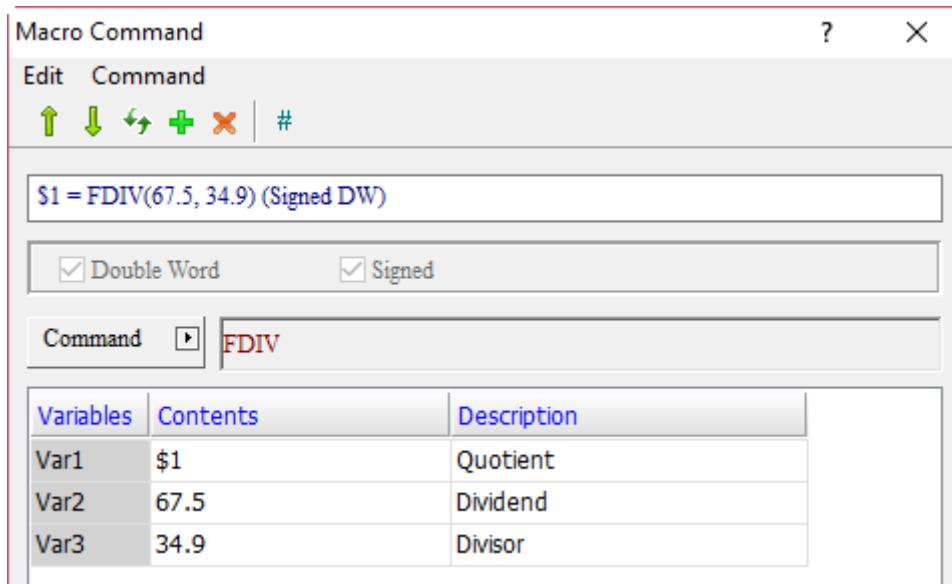
- FDIV (floating-point number division)

Expression	Meaning of variable		Note
Var1 = FDIV(Var2, Var3) (Signed DW)	Var1	Quotient	DW: Double Word Signed: signed number
	Var2	Dividend	
	Var3	Divisor	
	<b>Description of action</b>		
Divide Var 2 by Var 3, and put the result in Var 1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = FDIV(67.5, 34.9), the floating-point number division operation is executed and the result of 67.5 divided by 34.9 is put in \$1, so \$1 = 1.934.

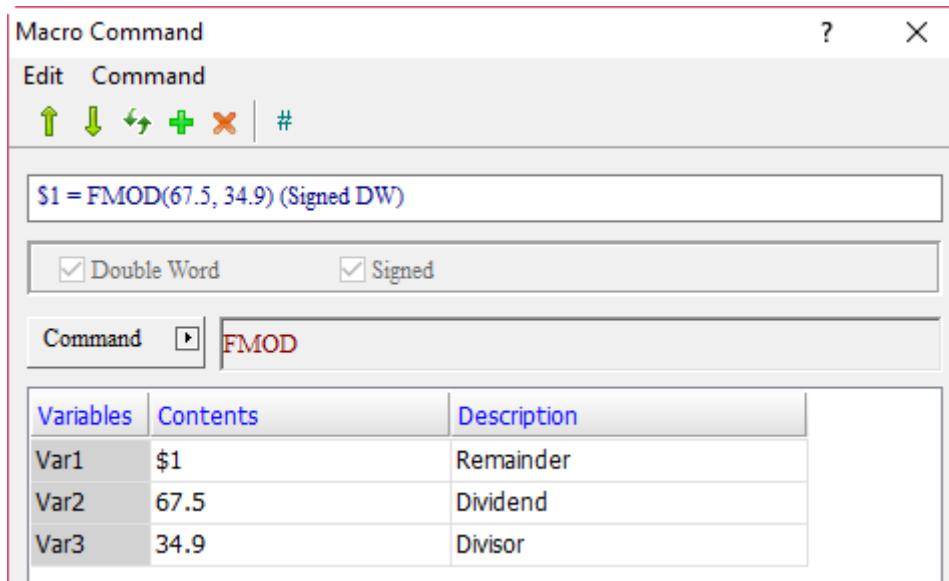
- FMOD (floating-point number remainder)

Expression	Meaning of variable		Note
Var1 = FMOD(Var2, Var3) (Signed DW)	Var1	Remainder	DW: Double Word Signed: signed number
	Var2	Dividend	
	Var3	Divisor	
	<b>Description of action</b>		
Divide Var2 by Var3 and put the remainder in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

#### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- When the command is \$1 = FMOD(67.5, 34.9), the floating-point number remainder operation is executed and the remainder of 67.5 divided by 34.9 is put in \$1, so \$1 = 32.6.

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- SIN (sine function)

Expression	Meaning of variable		Note
Var1 = SIN(Var2) (Signed DW)	Var1	Sine	DW: Double Word Signed: signed number
	Var2	Angle	
	<b>Description of action</b>		
Sine operation is executed for the value input in Var2, and the result is put in Var1.			

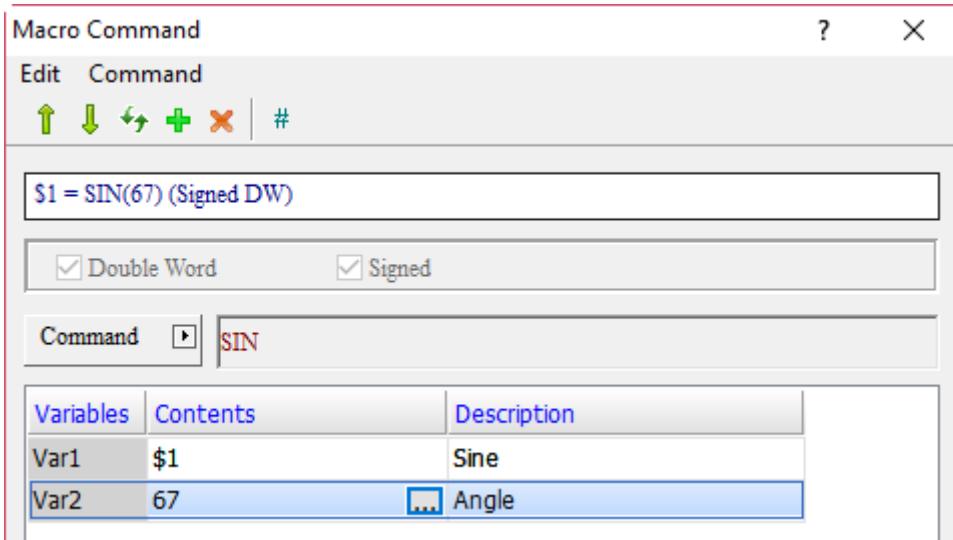
Note:

- The Data Format for Var1 must be Floating.
- The Data Format for Var2 must be Signed Decimal and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

### Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = SIN(67), the input angle of 67 is used for sine operation and the result is put in \$1, so \$1 = 0.921.

- COS (cosine function)

Expression	Meaning of variable		Comment
Var1 = COS(Var2) (Signed DW)	Var1	Cosine	DW: Double Word Signed: signed number
	Var2	Angle	
	<b>Description of action</b>		
Cosine operation is executed for the value input in Var2, and the result is put in Var1.			

Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

### Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = COS(67), the input angle of 67 is used for cosine operation and the result is put in \$1, so \$1 = 0.391.

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- TAN (tangent function)

Expression	Meaning of variable		Note	
Var1 = TAN(Var2) (Signed DW)	Var1	Tangent	DW: Double Word Signed: signed number	
	Var2	Angle		
	Description of action			
	Tangent operation is executed for the value input in Var2, and the result is put in Var1.			

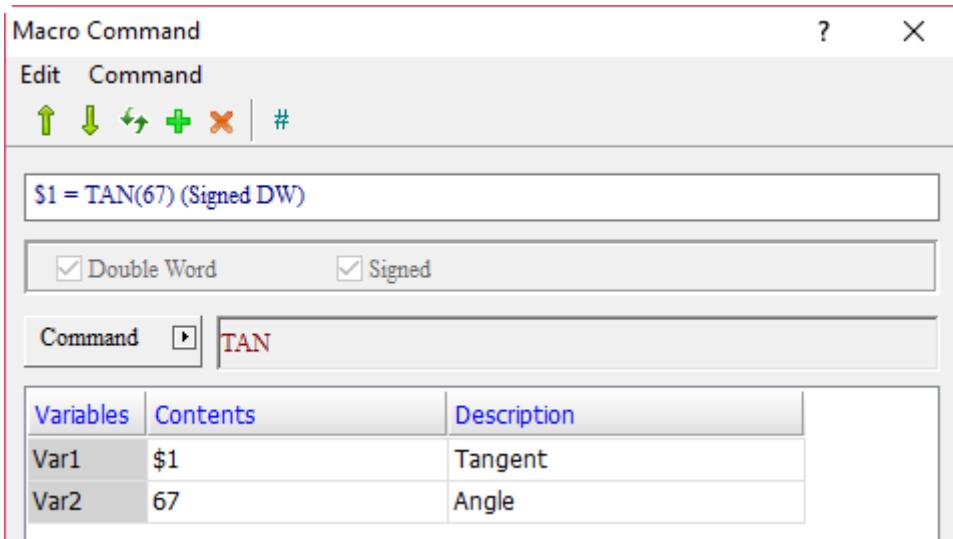
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

### Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = TAN(67), the input angle of 67 is used for tangent operation and the result is put in \$1, so \$1 = 2.356.

- COT (cotangent function)

Expression	Meaning of variable		Note
Var1 = COT(Var2) (Signed DW)	Var1	Cotangent	DW: Double Word Signed: signed number
	Var2	Angle	
	<b>Description of action</b>		
Cotangent operation is executed for the value input in Var2. and the result is put in Var1.			

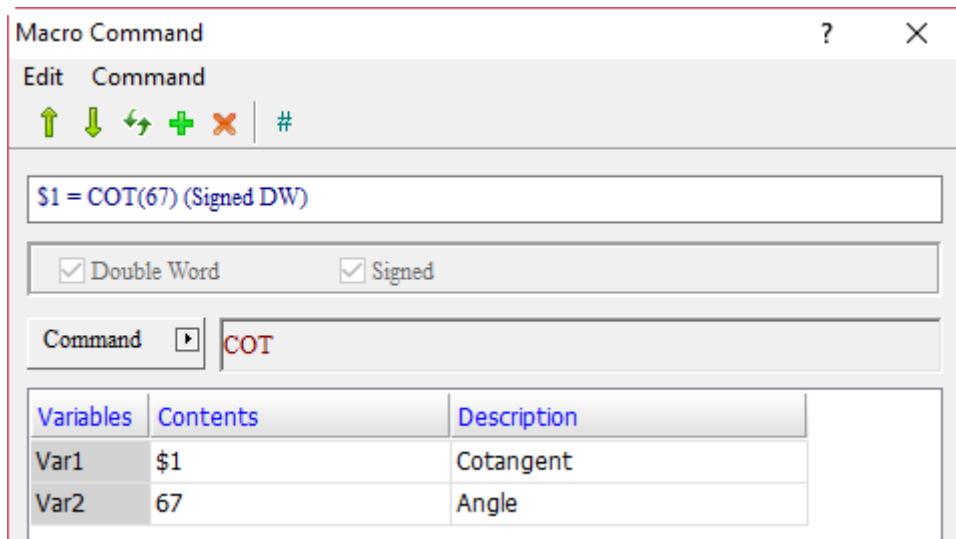
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

### Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = COT(67), the input angle of 67 is used for cotangent operation and the result is put in \$1, so \$1 = 0.424.

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- SEC (secant function)

Expression	Meaning of variable		Note	
Var1 = SEC(Var2) (Signed DW)	Var1	Secant	DW: Double Word Signed: signed number	
	Var2	Angle		
	Description of action			
	Secant operation is executed for the value input in Var2, and the result is put in Var1.			

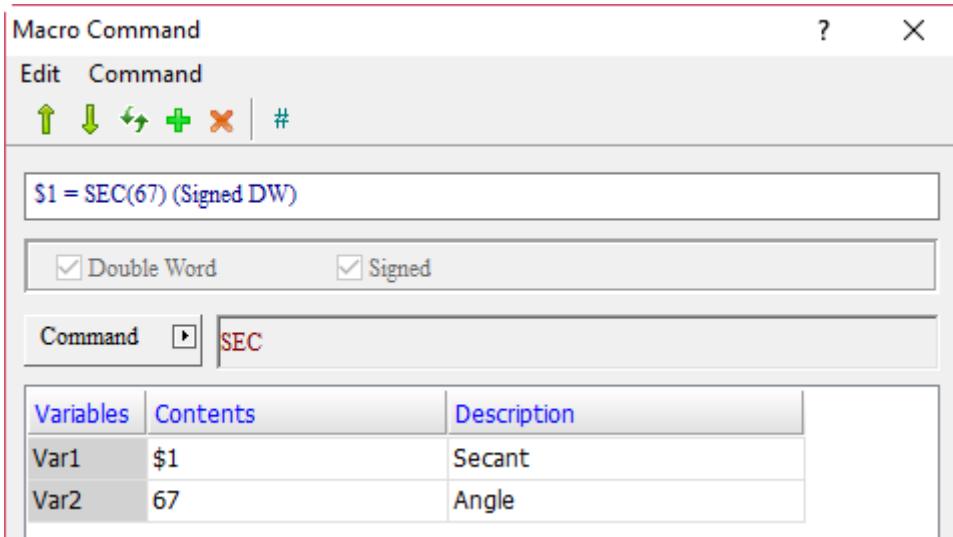
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

### Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = SEC(67), the input angle of 67 is used for secant operation and the result is put in \$1, so \$1 = 2.559.

- CSC (cosecant function)

Expression	Meaning of variable		Note
Var1 = CSC(Var2) (Signed DW)	Var1	Cosecant	DW: Double Word Signed: signed number
	Var2	Angle	
	Description of action		
Cosecant operation is executed for the value input in Var2, and the result is put in Var1.			

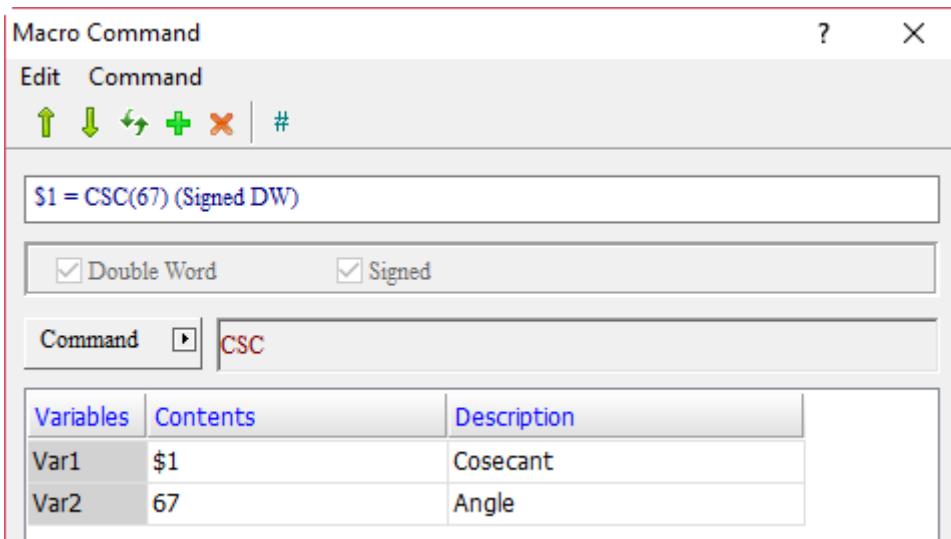
Note:

1. The Data Format for Var1 must be Floating.
2. The Data Format for Var2 must be Signed Decimal, and no decimal digits can be set.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

### Example

- Var1 is the internal memory address and Var2 is a constant.



- When the command is \$1 = CSC(67), the input angle of 67 is used for cosecant operation and the result is put in \$1, so \$1 = 1.086.

# 24

## 24.3.2 Logical Operation

Logic Operation contains six operators which convert numerical values to binary 0 and 1 representations, and then conduct |, &&, ^, NOT, < <, and > > operations. The macro commands are detailed as follows.

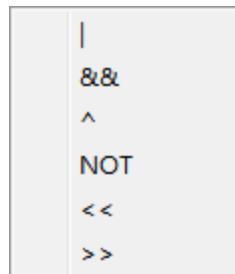


Figure 24.3.2.1 Logical Operation

- | (OR logical operation)

OR logical operation feature	
Expression	Result
0   0	0
0   1	1
1   0	1
1   1	1

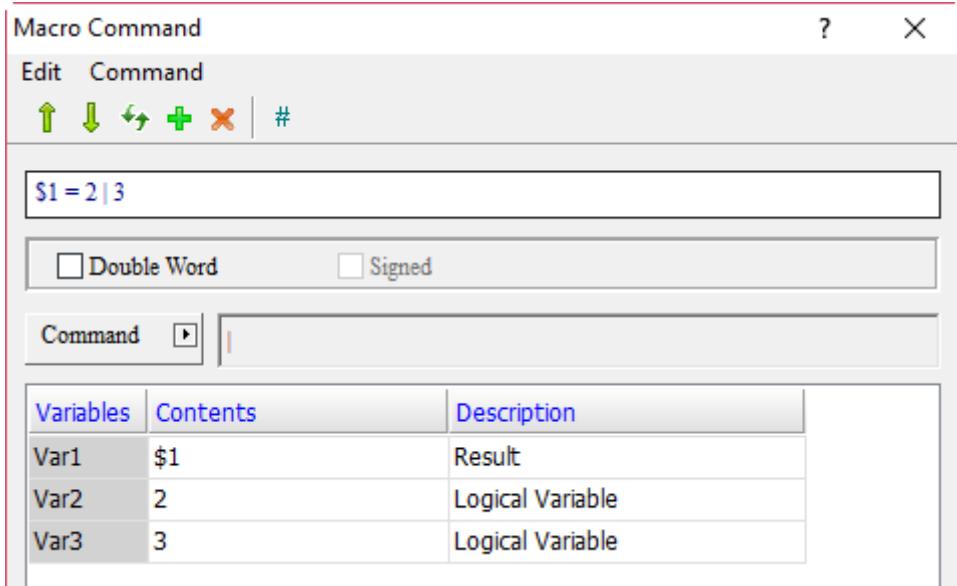
Expression	Meaning of variable		Note	
Var1 = Var2   Var3 (W) Var1 = Var2   Var3 (DW)	Var1	Result	W: Word DW: Double Word	
	Var2	Logical Variable		
	Var3	Logical Variable		
	Description of action			
	Execute OR operation on Var2 and Var3, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

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### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- After converting the values of Var2 and Var3 into binary representations (2 = 0010 and 3 = 0011), execute OR logical operation on 0010 and 0011, and the result is 0011 which is also 3.

Binary representation	Value content
0010	2
(OR operation)	0011
	3
<hr/>	
0011	3

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- && (AND logical operation)

AND logical operation feature	
Expression	Result
0 && 0	0
0 && 1	0
1 && 0	0
1 && 1	1

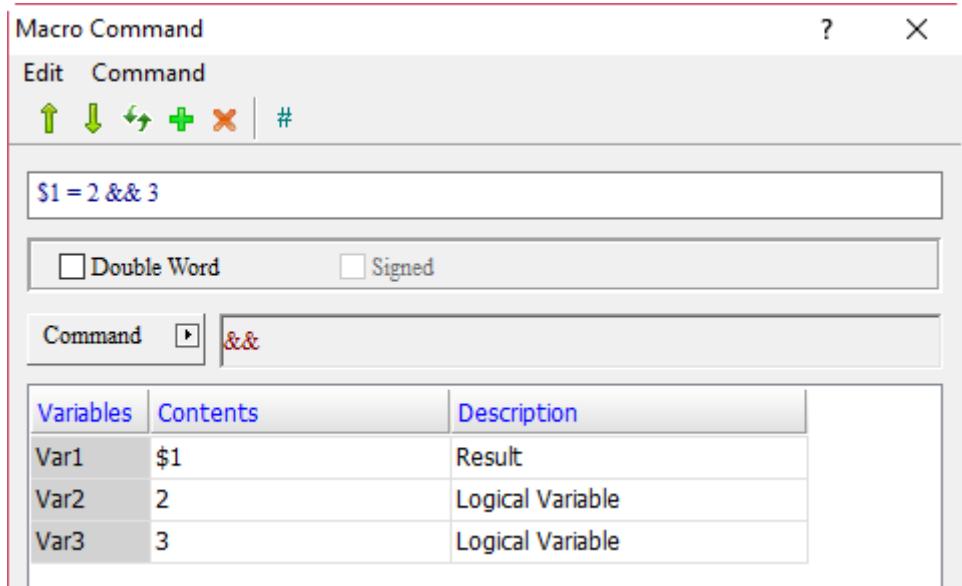
Expression	Meaning of variable		Note
Var1 = Var2 && Var3 (W) Var1 = Var2 && Var3 (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Logical Variable	
	Var3	Logical Variable	
	<b>Description of action</b>		
Execute AND operation on Var2 and Var3, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

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**Example**

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- After converting the values of Var2 and Var3 into binary representations (2 = 0010 and 3 = 0011), execute AND logical operation on 0010 and 0010, and the result is 0010 which is also 2.

Binary representation	Value content
0010	2
&& (AND operation)	0011
<hr/>	
0010	2

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- ^ (XOR logical operation)

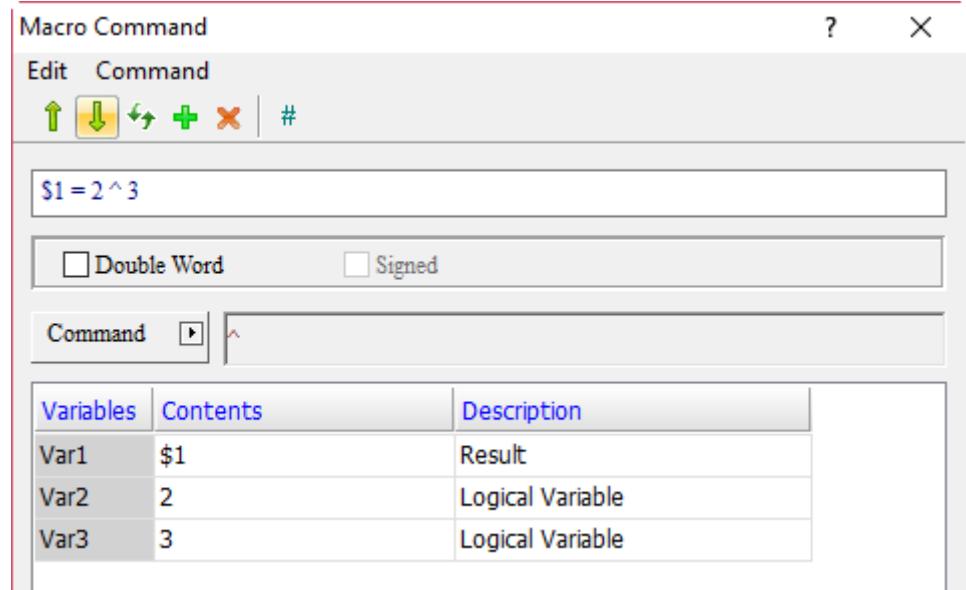
XOR logical operation feature	
Expression	Result
0 ^ 0	0
0 ^ 1	1
1 ^ 0	1
1 ^ 1	0

Expression	Meaning of variable		Note
Var1 = Var2 ^ Var3 (W) Var1 = Var2 ^ Var3 (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Logical Variable	
	Var3	Logical Variable	
	<b>Description of action</b>		
Execute XOR operation on Var2 and Var3, and put the result in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- After converting the values of Var2 and Var3 into binary representations (2 = 0010 and 3 = 0011), execute XOR logical operation on 0010 and 0011, and the result is 0001 which is also 1.

Binary representation	Value content
<b>0010</b>	2
^ (XOR operation)	<b>0011</b>
<hr/>	
<b>0001</b>	1

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- NOT (NOT logical operation)

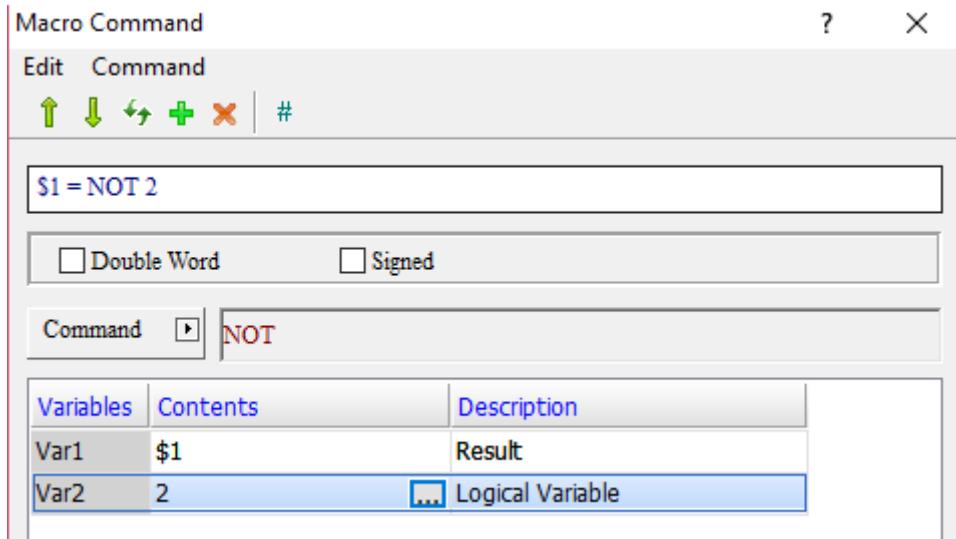
NOT logical operation feature	
Expression	Result
NOT 0	1
NOT 1	0

Expression	Meaning of variable	Note
Var1 = NOT Var2 (W) Var1 = NOT Var2 (DW) Var1 = NOT Var2 (Signed W) Var1 = NOT Var2 (Signed DW)	Var1	Result
	Var2	Logical Variable
	<b>Description of action</b>	
	Execute NOT operation on Var2, and put the result in Var1.	

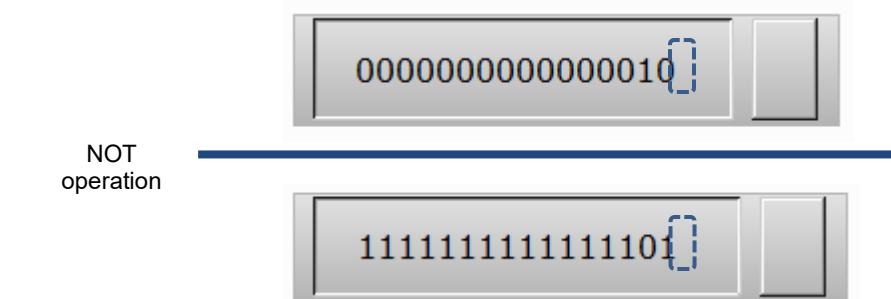
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

### Example

- Var1 is the internal memory address and Var2 is a constant.



- After converting the value of Var2 into binary representation (2 = 0000000000000010), execute NOT 2 logical operation on 0000000000000010, and the result is 111111111111101.



- << (SHL left shift logical operation)

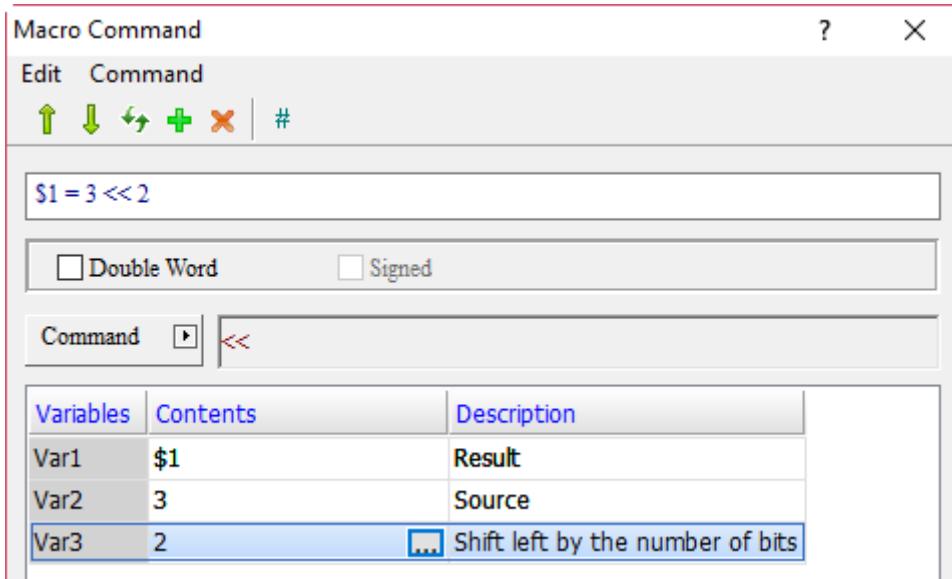
Expression	Meaning of variable		Note
Var1 = Var2 << Var3 (W) Var1 = Var2 << Var3 (DW)	Var1	Result	W: Word DW: Double Word
	Var2	Source	
	Var3	Shift left by the number of bits	
	<b>Description of action</b>		
Move the number of bits of Source Var2 to the left by Var3, and put the result in Var1.			

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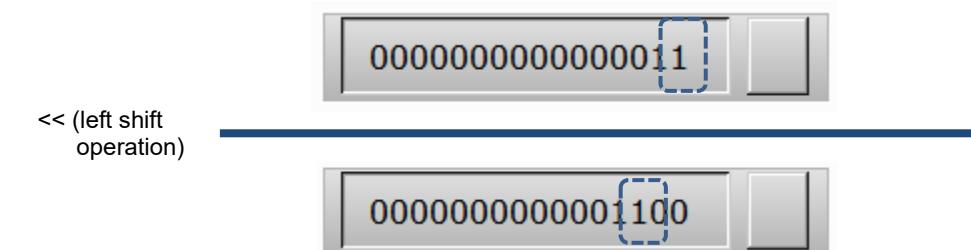
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- After converting the value of Var2 into binary representation (3 = 0000000000000011), execute the logical operation of << left shift by 2 bits on 0000000000000011, and the result is 0000000000001100.



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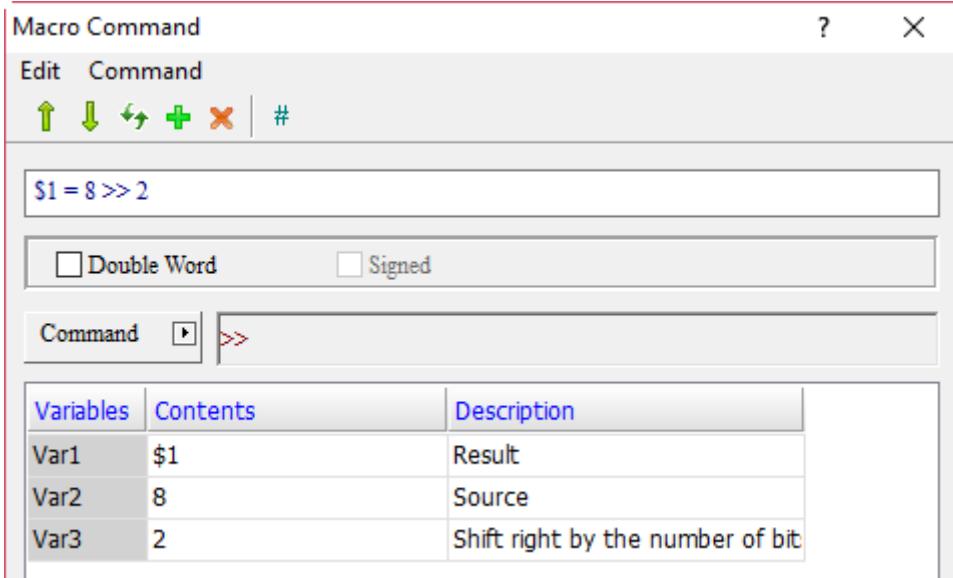
- >> (SHR right shift logical operation)

Expression	Meaning of variable		Note	
Var1 = Var2 >> Var3 (W) Var1 = Var2 >> Var3 (DW)	Var1	Result	W: Word DW: Double Word	
	Var2	Source		
	Var3	Shift right by the number of bits		
	Description of action			
	Move the number of bits of Source Var2 to the right by Var3, and put the result in Var1.			

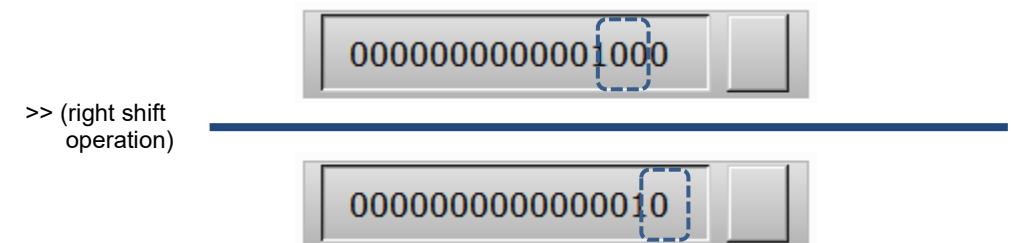
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- After converting the value of Var2 into binary representation (8 = 0000000000001000), execute the logical operation of >> right shift by 2 bits on 0000000000001000, and the result is 0000000000000010.



### 24.3.3 Data transfer

Data transfer includes the following transfer commands, which are detailed as follows.

MOV
BMOV
ArrayCopy
FILL
FILLASC
STRCAT
FMOV

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Figure 24.3.3.1 Data transfer

#### ■ MOV (data specified operand)

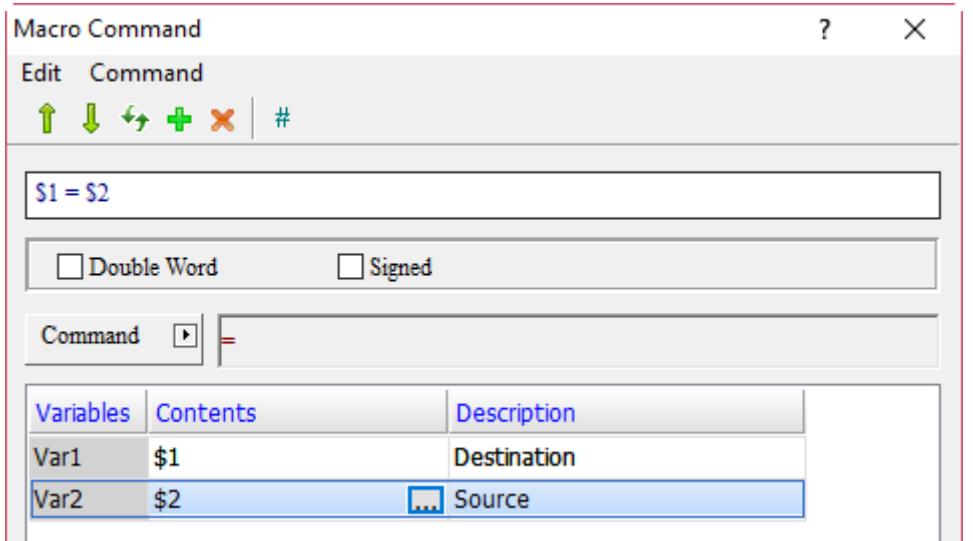
Expression	Content		Note	
Var1 = Var2 (W) Var1 = Var2 (DW) Var1 = Var2 (Signed W) Var1 = Var2 (Signed DW)	Var1	Destination	W: Word DW: Double Word Signed: signed number	
	Var2	Source		
	<b>Description of action</b>			
	Copy the source of Var2 to the Var1 destination, and Var2's source will not be changed due to the data specify command.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

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**Example**

- Var1 and Var2 are internal memory addresses.



- When the command  $\$1 = \$2$  is executed, the input value of  $\$2$  will be moved to  $\$1$ . If the input value of  $\$2$  is 34,  $\$1$  is 34.



- BMOV (copy block)

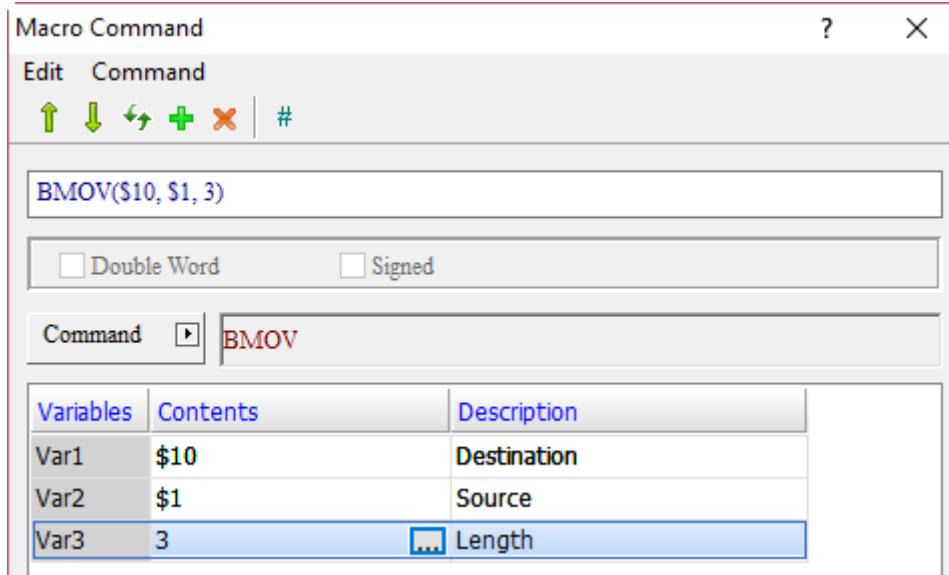
Expression	Meaning of variable		Note
BMOV(Var1, Var2, Var3) (W)	Var1	Destination	W: Word
	Var2	Source	
	Var3	Length (Word)	
	<b>Description of action</b>		
Copy Var3 data lengths from Var2 source to Var1 destination.			

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Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v		v

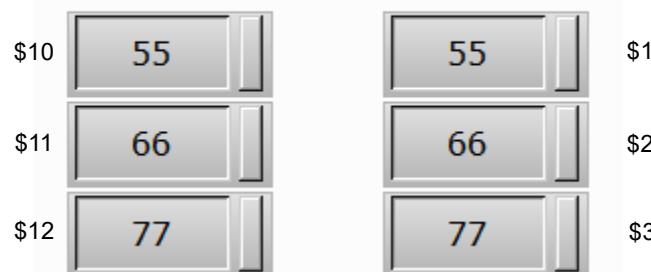
### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Get the data of the three addresses starting from \$1 and move the data to \$10, so the values input in \$1, \$2, and \$3 are transferred to \$10, \$11, and \$12 respectively.

**BMOV(\$10, \$1, 3)**



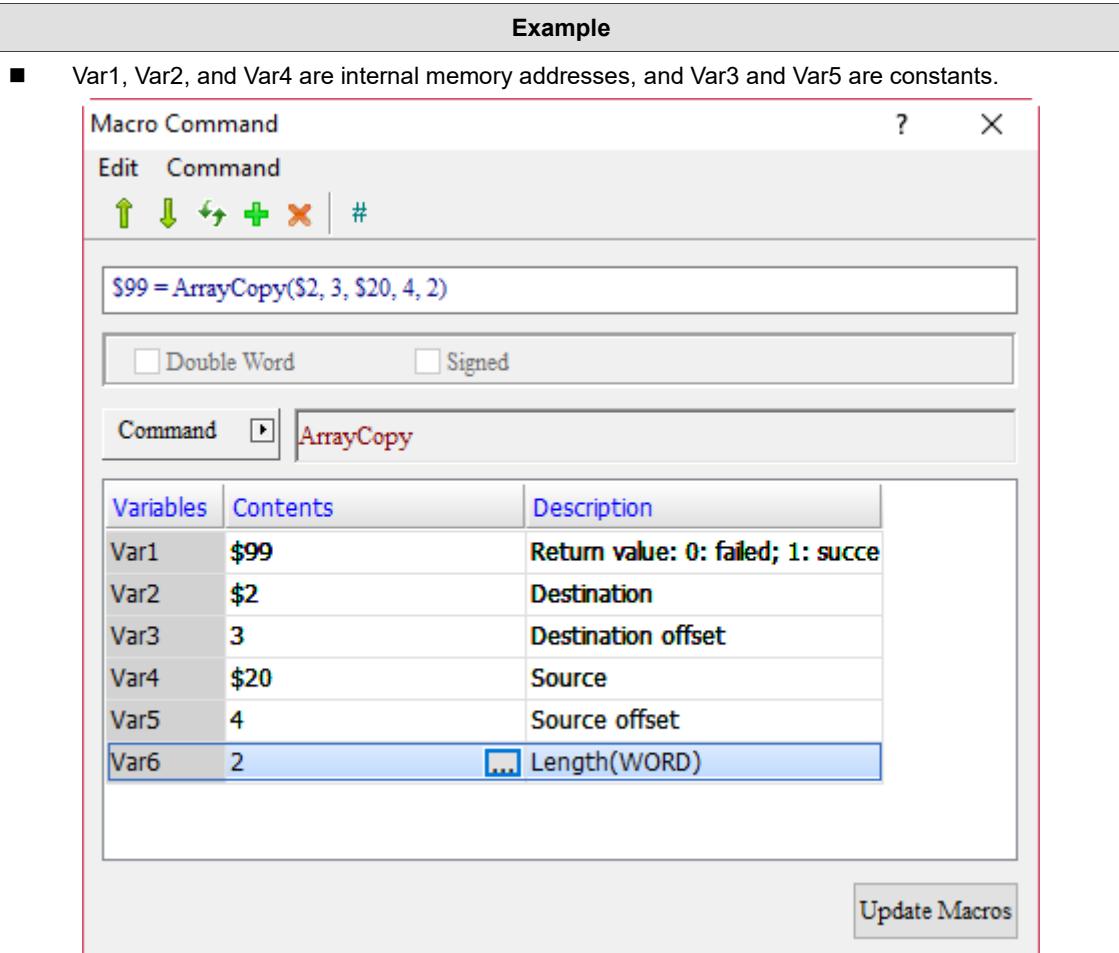
24

■ ArrayCopy (copy array)

Expression	Meaning of variable			Note			
Var1 = ArrayCopy(Var2, Var3, Var4, Var5, Var6)	Var1	Return value		The function returns 1 if successful, 0 if failed.			
		Failed	0				
		Succeeded	1				
	Var2	Destination					
	Var3	Destination offset					
	Var4	Source					
	Var5	Source offset					
	Var6	Length (Word)					
	<b>Description of action</b>						
Copy a continuous address data to another address.							

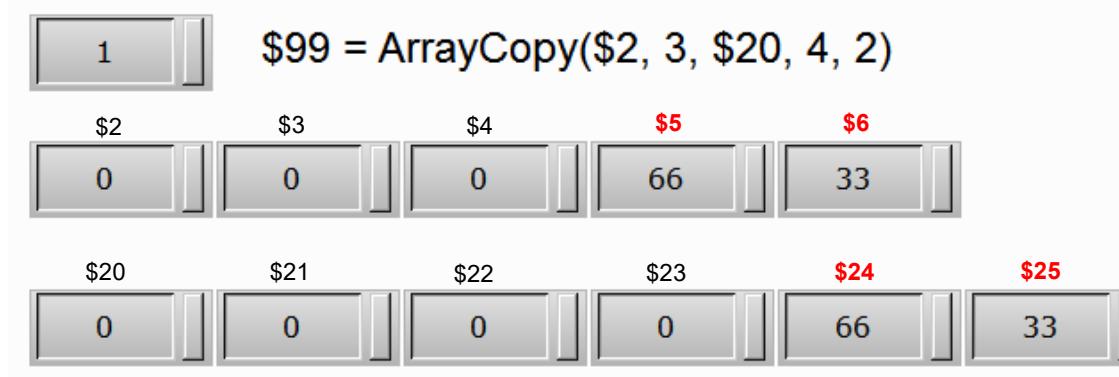
Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v			
Var2	v	v		
Var3	v	v		v
Var4	v	v		
Var5	v	v		v
Var6	v	v		v

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Address	\$0	\$1	\$2	\$3	\$4	\$5	\$6	\$7	...	...	\$20	\$21	\$22	\$23	\$24	\$25	\$26	...
Offset			+0	+1	+2	+3					+0	+1	+2	+3	+4			...

Copy the offset (4, address is \$24) specified by the source address (\$20) to the offset (3, address is \$5) specified by the destination address (\$2) and move 2 Words in length according to the start address determined by the offset, as shown in the following figure.



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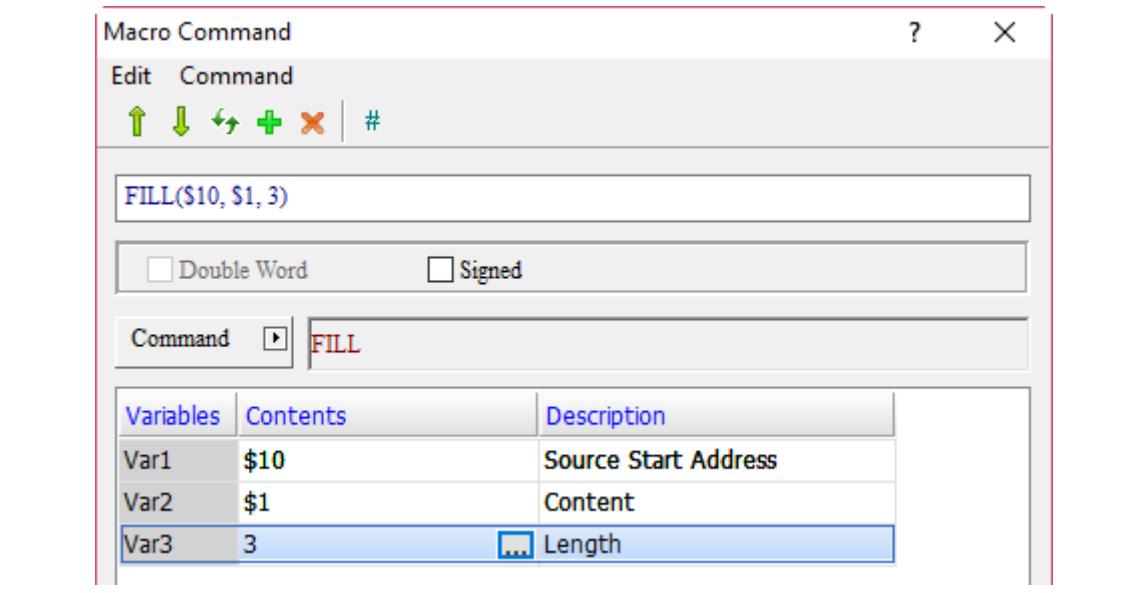
- FILL (fill block)

Expression	Meaning of variable		Note
FILL(Var1, Var2, Var3) (W) FILL(Var1, Var2, Var3) (Signed W)	Var1	Destination Start Address	W: Word  Store values of Var2 to the Var1 start address in sequence. The total length is Var3.
	Var2	Source	
	Var3	Length	
<b>Description of action</b>			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



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Example		
<ul style="list-style-type: none"> <li>■ Save the input value of \$1 for 3 data lengths in sequence to \$10, \$11, and \$12.</li> </ul>		
<b>FILL(\$10, \$1, 3)</b>		

- FILLASC (convert text to ASCII values)

Expression	Meaning of variable		Note	
FILLASC(Var1, "Var2") (W)	Var1	Destination address for storing string	W: Word	
	Var2	String		
	<b>Description of action</b>			
	Convert each character of Var2 string into an ASCII value, and put it in Var1 address.			

Variable	Type			
	Internal memory	PLC register	Constant	String
Var1	v	v		
Var2				v

Example		
<ul style="list-style-type: none"> <li>■ Var1 is the internal memory address and Var2 is a string.</li> </ul>		

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**Example**

- The results after operation are \$1 = 3231H and \$2 = 3433H.

**FILLASC(\$1, "1234")**

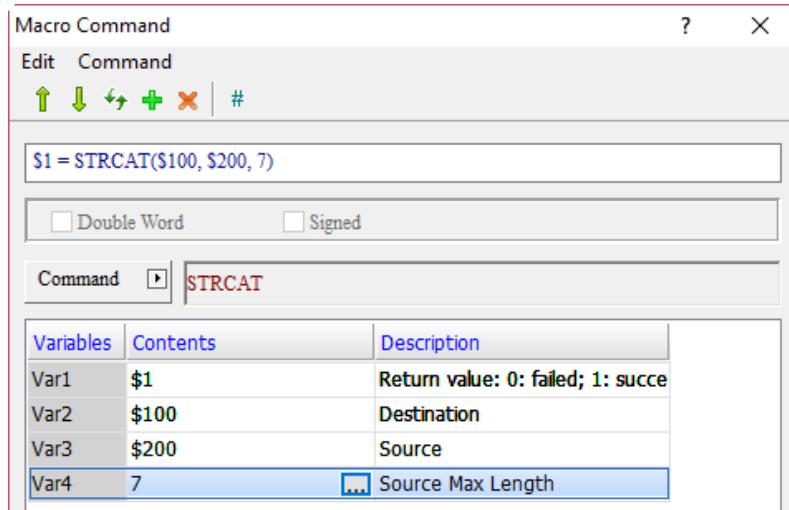
- STRCAT (connection string)

Expression	Meaning of variable		Note
Var1 = STRCAT(Var2, Var3, Var4)	Return value		
	Var1	Failed	0
		Succeeded	1
	Destination		
	Var3		
	Source		
	Var4		Maximum length of the destination string (unit: Char)
	<b>Description of action</b>		
	Connect the source address string to the destination address string.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		
Var4	v		v

**Example**

- Var1 is the internal memory address, Var2 and Var3 are strings, and Var4 is a constant.



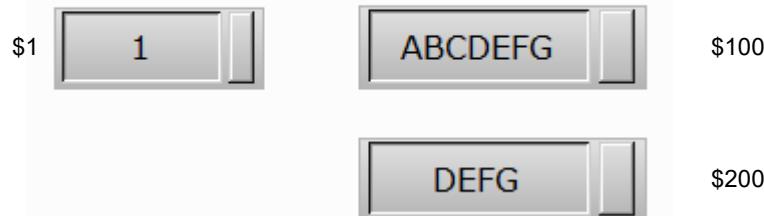
**Example**

- Create a Numeric Entry element with the address as \$1 and create Character Entry elements of \$100 and \$200.
- After execution, enter the following values.



- The results after operation are \$100 = ABCDEFG and \$1 = 1.

**\$1 = STRCAT(\$100, \$200, 7)**



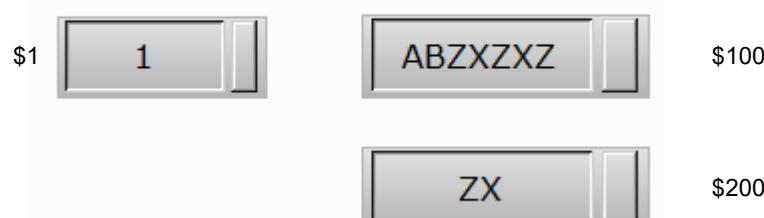
- A length of 7 indicates a maximum length of 7 characters in \$100. If the connection string is more than 7 characters, only 7 characters will be displayed.

**\$1 = STRCAT(\$100, \$200, 7)**



- If the total length is less than 7 characters, it will be added to 7 characters for display.

**\$1 = STRCAT(\$100, \$200, 7)**



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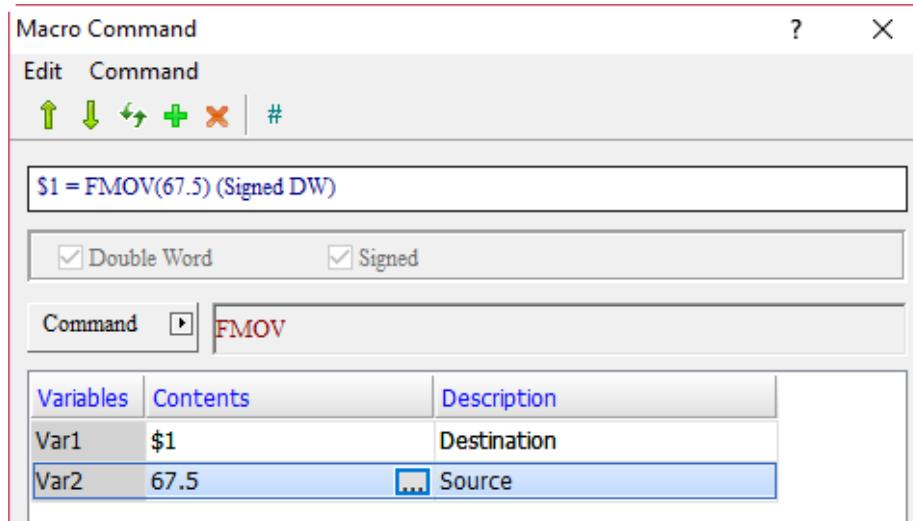
- FMOV (specify floating-point number data)

Expression	Meaning of variable		Note
Var1 = FMOV(Var2) (Signed DW)	Var1	Destination	DW: Double Word Signed: signed number
	Var2	Source	
	Description of action		
	Copy the floating-point number data of Var2 to Var1. The source data of Var2 will not be changed by the floating-point number data command.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

### Example

- Var1 is the internal memory address and Var2 is a constant.



- Store the floating-point number data of 67.5 to \$1, so \$1 = 67.5.

### 24.3.4 Data Conversion

Data Conversion includes conversion of Data Format, Maximum and Minimum, and value data swap commands, which are explained in detail as follows.

BCD	XCHG
BIN	MAX
TODWORD	MIN
TOWORD	TOHEX
TOBYTE	TOASC
SWAP	
	FCNV
	ICNV
	SPRINTF

Figure 24.3.4.1 Data Conversion

- BCD (convert decimal values to BCD values)

Expression	Meaning of variable		Note	
Var1 = BCD(Var2) (W) Var1 = BCD(Var2) (DW)	Var1	BCD Value	W: Word DW: Double Word	
	Var2	Decimal Value		
	<b>Description of action</b>			
	Convert the decimal value in Var2 to the BCD format value, and put it in Var1.			

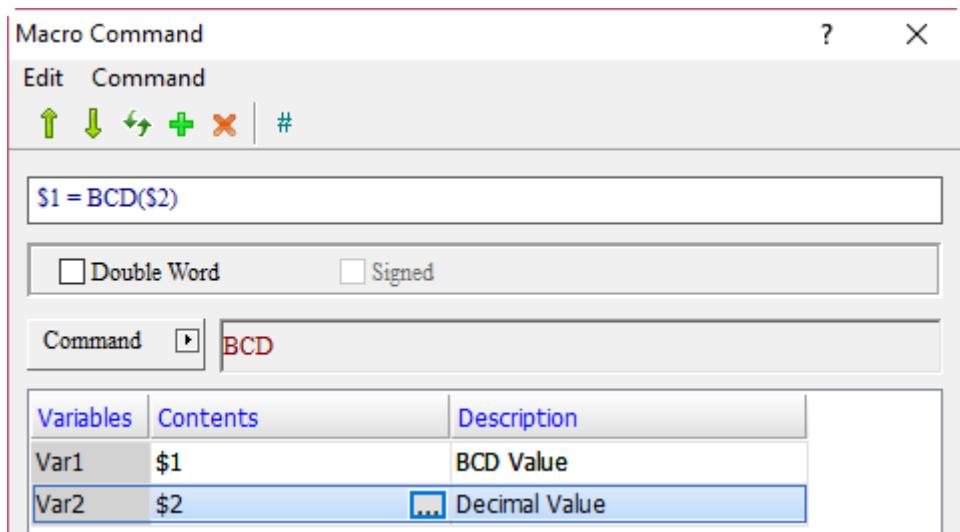
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

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---

## Example

- Var1 and Var2 are internal memory addresses.



- Convert the decimal value of \$2 to BCD and store it in \$1.

$\$1 = \text{BCD}(\$2)$

\$1  
(BCD) 55

55

\$2  
(Unsigned Decimal)

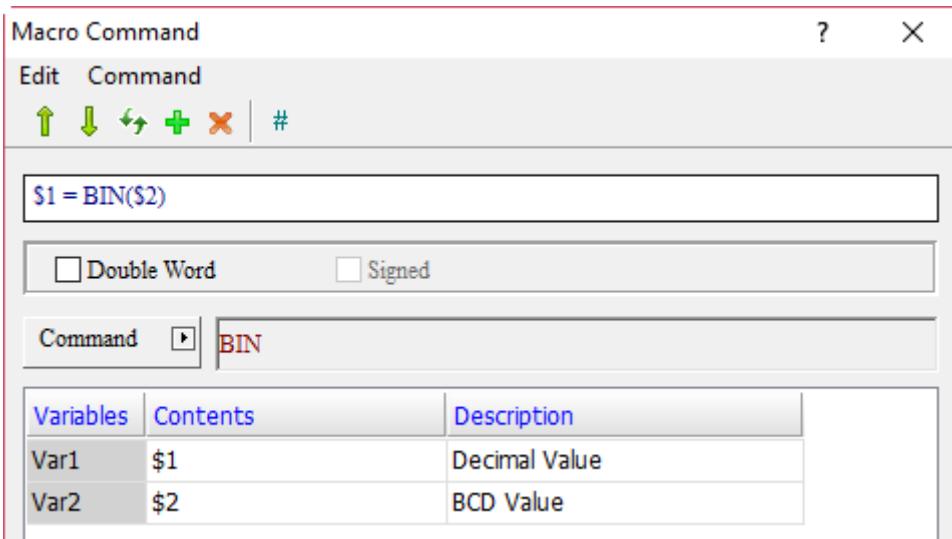
- BIN (convert BCD values to decimal values)

Expression	Meaning of variable		Note
Var1 = BIN(Var2) (W) Var1 = BIN(Var2) (DW)	Var1	Decimal Value	W: Word DW: Double Word
	Var2	BCD Value	
	<b>Description of action</b>		
Convert the BCD format value in Var2 to a decimal value and put it in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

### Example

- Var1 and Var2 are internal memory addresses.



- Convert the BCD value format of \$2 to decimal value format and save it in \$1.

**\$1 = BIN(\$2)**



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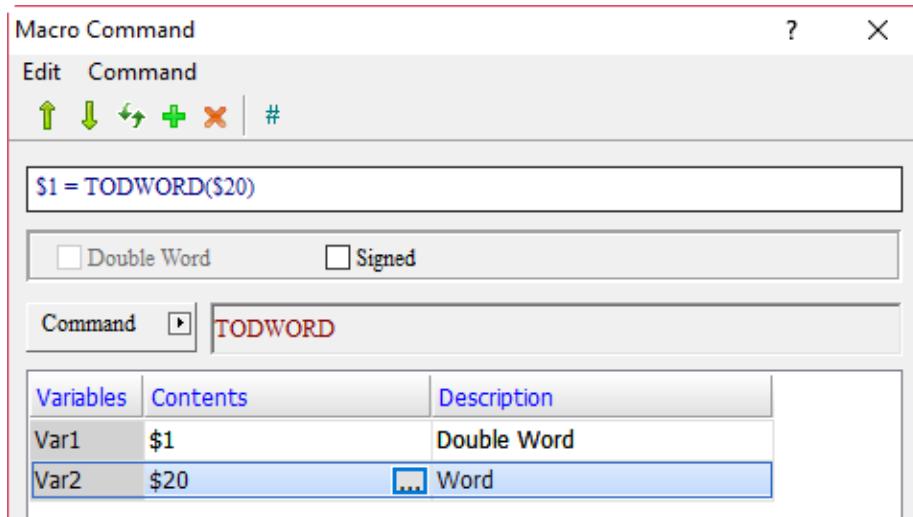
- TODWORD (convert values from Word to Double Word)

Expression	Meaning of variable		Note	
Var1 = TODWORD(Var2) (W) Var1 = TODWORD(Var2) (Signed W)	Var1	Double Word	W: Word Signed: signed number	
	Var2	Word		
	<b>Description of action</b>			
	Convert the Word format value in Var2 to the Double Word value and put it in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

### Example

- Var1 and Var2 are internal memory addresses.



- Convert the Word value of \$20 to Double Word value and store it in \$1. Because the value has been converted to Double Word format, it actually occupies two addresses, \$1 and \$2.

- TOWORD (convert values from Byte to Word)

Expression	Meaning of variable		Note
Var1 = TOWORD(Var2, Var3) (W)	Var1	Word value	W: Word
	Var2	Source Start Address	
	Var3	Length	
<b>Description of action</b>			
Starting from Var2 start address, convert a continuous Var3 bytes to Word value and save the result in Var1. Add 0 for the high byte of each Var1.			

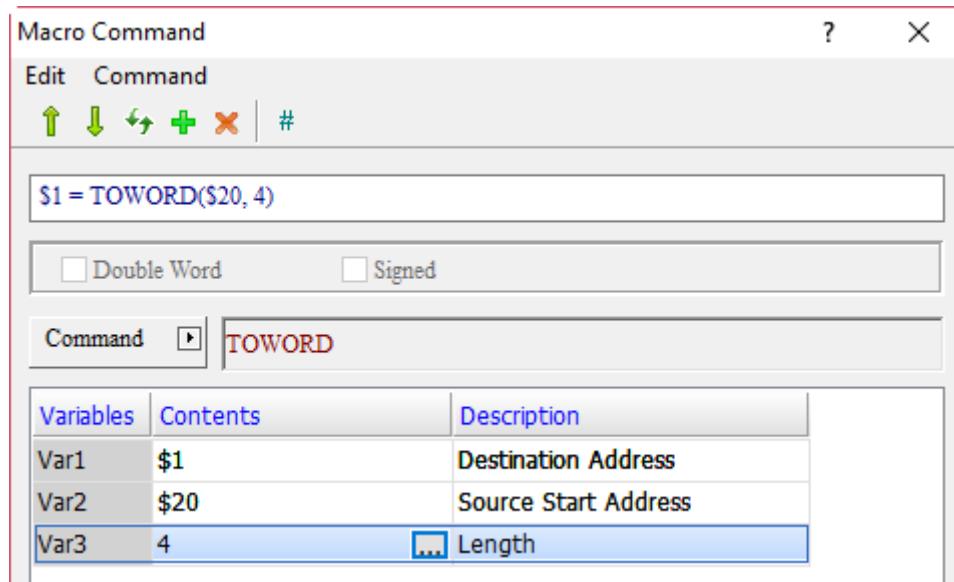
Note:

1. Since the unit of Var2 is Word, each Word of Var2 can be converted into 2 Words.
2. After data conversion, the high and low bytes of Word will be swapped.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

### Example

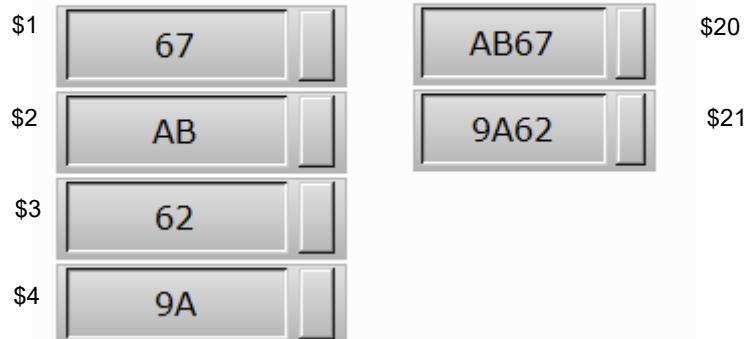
- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Convert a continuous 4 bytes from \$20 to Word value and put it in \$1.
- The Data Format of \$1 and \$20 is set to Hex.
- Suppose \$20 = AB67H and \$21 = 9A62H, read 4 bytes of data in \$20 with the TOWORD command and put them in \$1, \$2, \$3, and \$4. Accordingly, the data obtained are \$1 = 67H, \$2 = ABH, \$3 = 62H, and \$4 = 9AH.

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**Example**

$$\$1 = \text{TOWORD}(\$20, 4)$$


■ TOBYTE (convert values from Word to Byte)

Expression	Meaning of variable		Note
Var1 = TOBYTE(Var2, Var3) (W)	Var1	BYTE Value	W: Word
	Var2	Source Start Address	
	Var3	Length	
	Description of action		
Starting from the low byte of Var2, convert a continuous Var3 Words to byte values and ignore the high byte of Var2. The result is saved in Var1.			

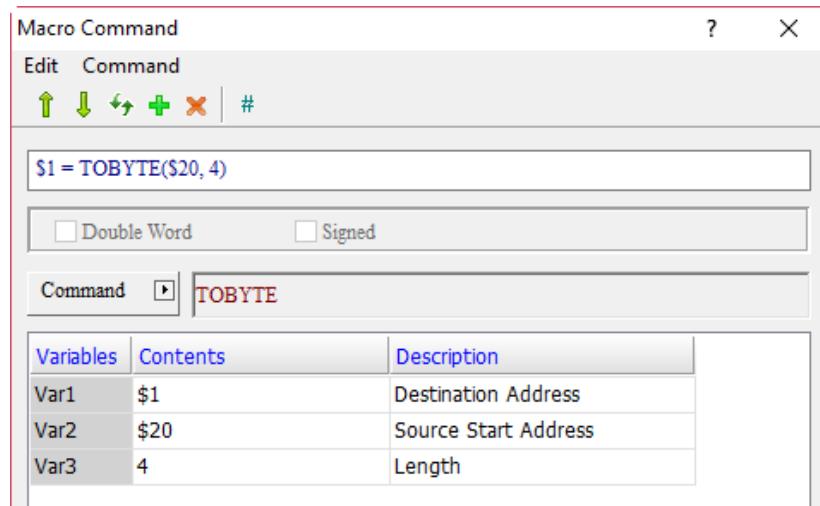
Note: after data conversion, the high and low bytes of Word will be swapped.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

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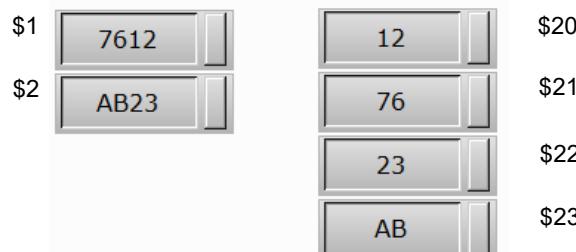
## Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Convert a continuous 4 Words from \$20 to byte value and put it in \$1.
- The Data Format of \$1 and \$20 is set to Hex.
- Suppose \$20 = 12H, \$21 = 76H, \$22 = 23H, and \$23 = ABH, read 4 Words of data in \$20 with the TOBYTE command and put them in \$1 and \$2. Accordingly, the data obtained are \$1 = 7612H and \$2 = AB23H.

**\$1 = TOBYTE(\$20, 4)**



- SWAP (swap high and low bytes of Word)

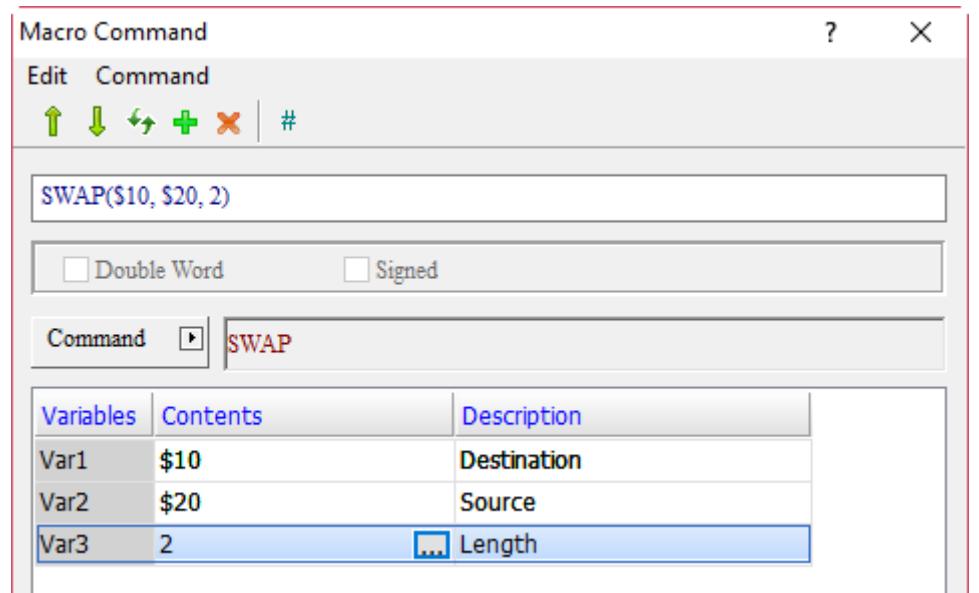
Expression	Meaning of variable		Note	
SWAP(Var1, Var2, Var3) (W)	Var1	Destination Start Address	W: Word	
	Var2	Source Start Address		
	Var3	Length		
	<b>Description of action</b>			
	Convert Var3 lengths from Var2 start address and swap high and low bytes of Var2 Word data to Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

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**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Swap high and low bytes of the value in \$20, and put them in \$10. Exchange 2 data lengths of values.
- The Data Format of \$10 and \$20 is set to Hex.
- Suppose \$20 = 5612H and \$21 = B723H, swap high and low bytes of the data in \$20 with the SWAP command and put them in \$10 and \$11. Accordingly, the data obtained are \$10 = 1256H and \$11 = 23B7H.

**SWAP(\$10, \$20, 2)**



- XCHG (exchange value data)

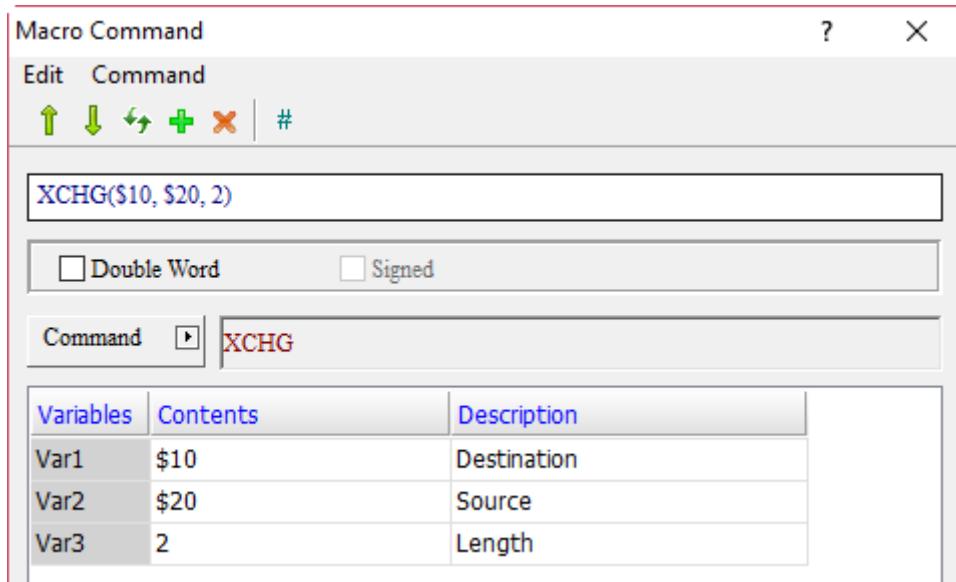
Expression	Meaning of variable		Note
XCHG(Var1, Var2, Var3) (W) XCHG(Var1, Var2, Var3) (DW)	Var1	Destination Start Address	W: Word DW: Double Word
	Var2	Source Start Address	
	Var3	Length	
<b>Description of action</b>			
Exchange Var2 start address data to Var1 destination start address according to Var3 lengths.			

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Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Exchange 2 data lengths of values in \$20 and \$10.
- The Data Formats of \$10 and \$27 is set to Hex.
- Suppose \$20 = 1234H, \$21 = 5678H, \$10 = ABCDH, and \$11 = EFDCH, exchange the data in \$20 and \$21 with the data in \$10 and \$11 with the SCHG command. Accordingly, the data obtained are \$20 = ABCDH, \$21 = EFDCH, \$10 = 1234H, and \$11 = 5678H.

XCHG(\$10, \$20, 2)



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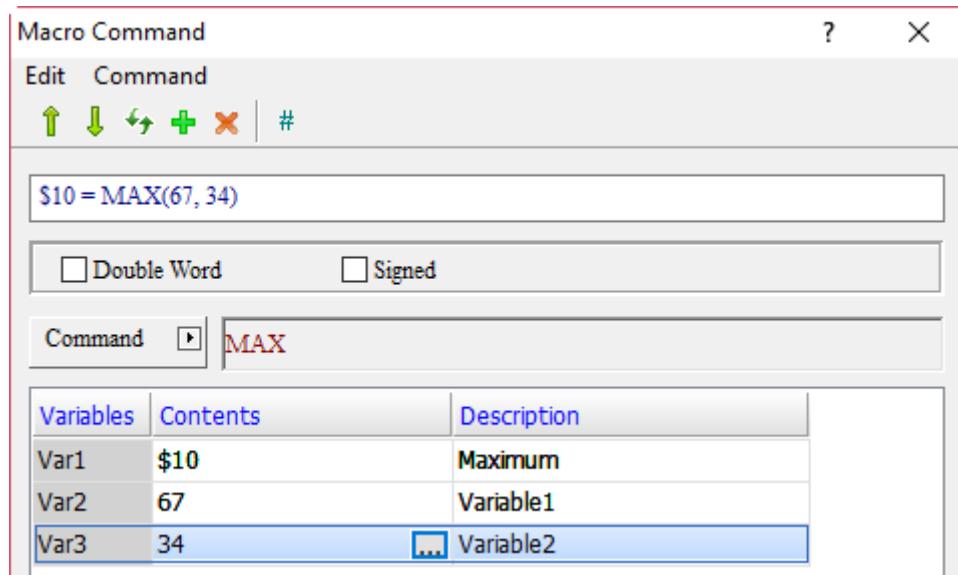
- MAX (get maximum)

Expression	Meaning of variable		Note
Var1 = MAX(Var2, Var3) (W) Var1 = MAX(Var2, Var3) (DW) Var1 = MAX(Var2, Var3) (Signed W) Var1 = MAX(Var2, Var3) (Signed DW)	Var1	Maximum	W: Word DW: Double Word
	Var2	Variable1	
	Var3	Variable2	
	<b>Description of action</b>		
Take the maximum value of Var2 and Var3, and put it in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- Put the maximum value of 67 and 34 in \$1, so \$1 = 67.

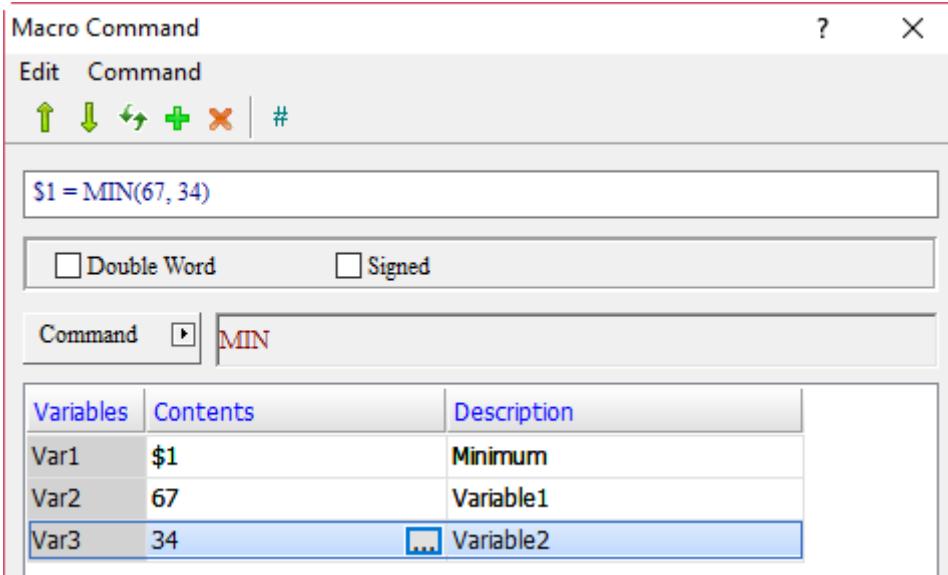
- MIN (get minimum)

Expression	Meaning of variable		Note
Var1 = MIN(Var2, Var3) (W) Var1 = MIN(Var2, Var3) (DW) Var1 = MIN(Var2, Var3) (Signed W) Var1 = MIN(Var2, Var3) (Signed DW)	Var1	Minimum	W: Word DW: Double Word
	Var2	Variable1	
	Var3	Variable2	
	<b>Description of action</b>		
Take the minimum value of Var2 and Var3 and put it in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- Put the minimum value of 67 and 34 in \$1, so \$1 = 34.

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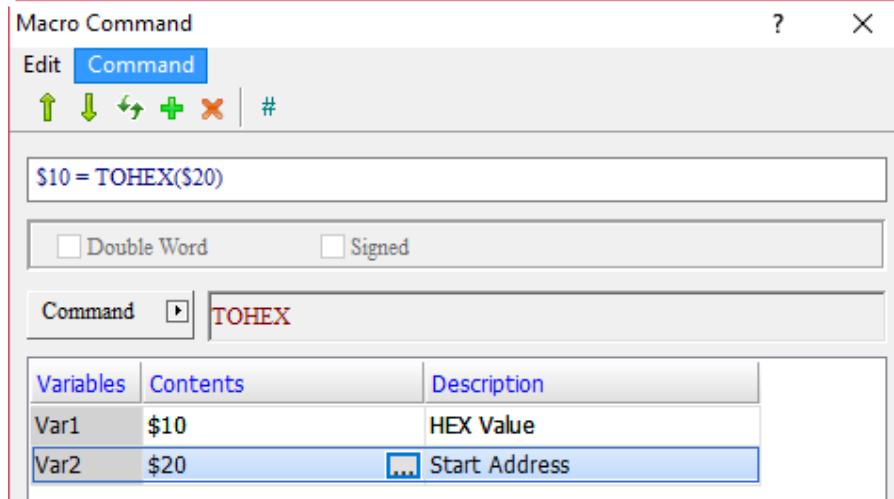
- TOHEX (convert 4 ASCII characters to HEX)

Expression	Meaning of variable		Note	
Var1 = TOHEX(Var2) (W)	Var1	HEX Value	W: Word Convert 4 ASCII characters of WORD to HEX from Var2 and put it in Var1.	
	Var2	ASCII Start Address		
	Description of action			
	Convert 4 ASCII characters of WORD to HEX from Var2 and put it in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

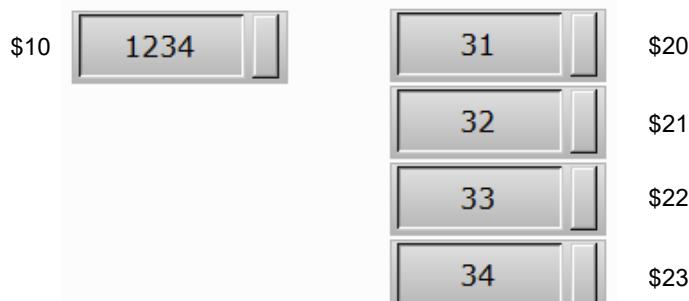
### Example

- Var1 and Var2 are internal memory addresses.



- Convert 4 consecutive ASCII characters of Word from the address of \$20 to HEX value and put it in \$10.
- The Data Format of \$10 and \$20 is set to Hex.
- Suppose \$20 = 31H, \$21 = 32H, \$22 = 33H, and \$23 = 34H, convert ASCII characters in \$20, \$21, \$22, and \$23 to HEX with the TOHEX command and put it in \$10. Accordingly, the data obtained is \$10 = 1234H.

$$\$10 = \text{TOHEX}(\$20)$$



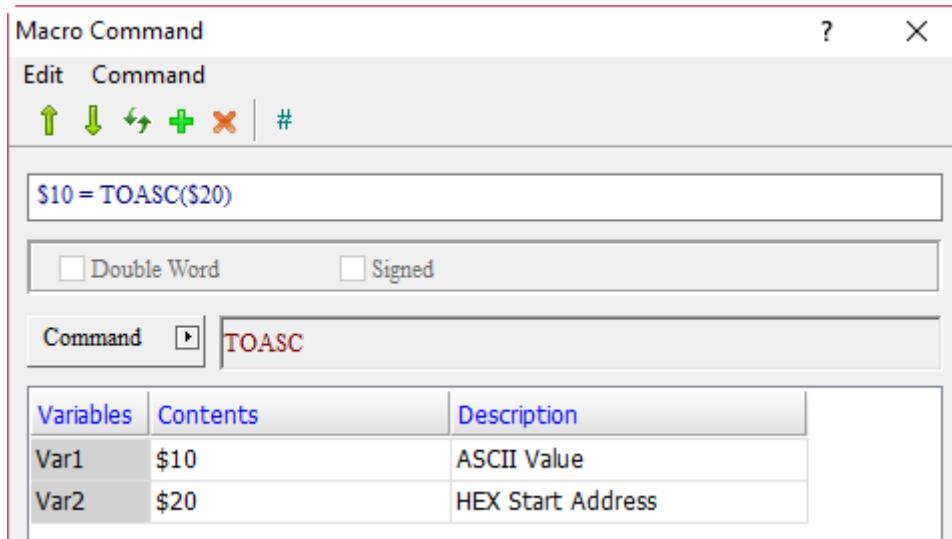
- TOASC (convert HEX to 4 ASCII characters of Word)

Expression	Meaning of variable		Note	
Var1 = TOASC(Var2) (W)	Var1	ASCII Value	W: Word Convert HEX from the address of Var2 to 4 ASCII characters of WORD and put them in Var1.	
	Var2	HEX Start Address		
	<b>Description of action</b>			
	Convert HEX from the address of Var2 to 4 ASCII characters of WORD and put them in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		

### Example

- Var1 and Var2 are internal memory addresses.



- Convert HEX value of \$20 into 4 consecutive ASCII characters of Word and put them in \$10.
- The Data Format of \$10 and \$20 is set to Hex.
- Suppose \$20 = 1234H, convert HEX in \$20 into ASCII characters with the TOASC command and put them in \$10, \$11, \$12, and \$13. Accordingly, the data obtained are \$10 = 31H, \$11 = 32H, \$12 = 33H, and \$13 = 34H.

**\$10 = TOASC(\$20)**



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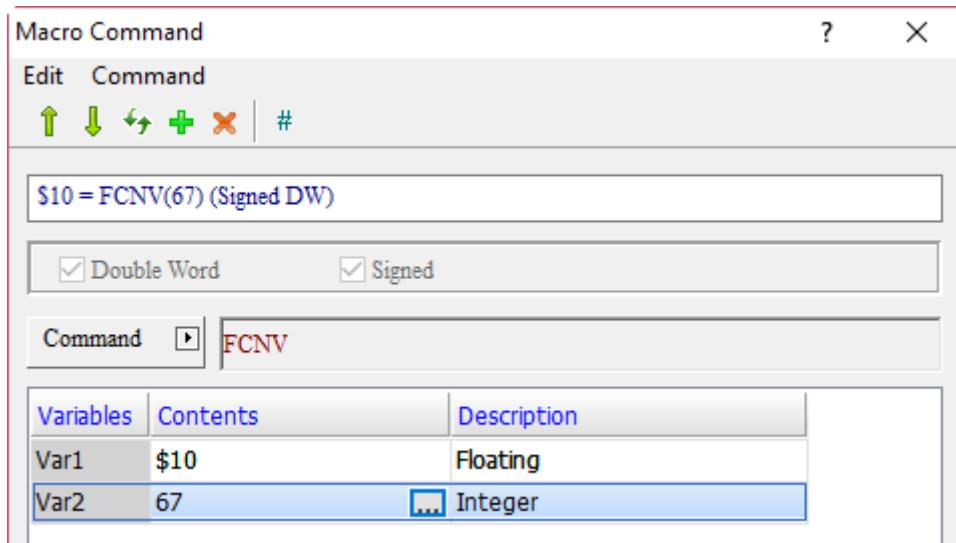
- FCNV (convert integer to floating-point number)

Expression	Meaning of variable		Note
Var1 = FCNV(Var2) (Signed DW)	Var1	Floating	DW: Double Word Signed: signed number
	Var2	Integer	
	<b>Description of action</b>		
Convert the integer in Var2 to floating-point number and put it in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

### Example

- Var1 and Var2 are internal memory addresses.



- Convert the integer value of 67 to a floating-point value and put it in \$10.
- The Data Format set for \$10 is Floating and the Data Type is Double Word.
- The result after the HMI operation is \$10 = 67.0.

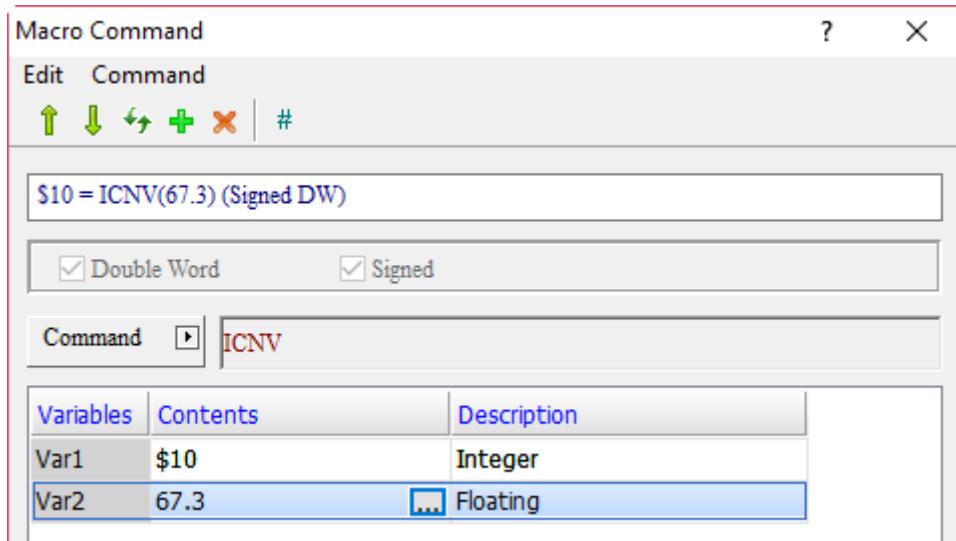
- ICNV (convert floating-point number to integer)

Expression	Meaning of variable		Note	
Var1 = ICNV(Var2) (Signed DW)	Var1	Integer	DW; Double Word Signed: signed number	
	Var2	Floating		
	<b>Description of action</b>			
	Convert the floating-point number in Var2 to integer and put it in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v

### Example

- Var1 and Var2 are internal memory addresses.



- Convert the floating-point value of 67.3 into an integer value and put it in \$10.
- The Data Format set for \$10 is Unsigned Decimal, and the Data Type is Word.
- The result after the HMI operation is \$10 = 67.

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■ SPRINTF (format string)

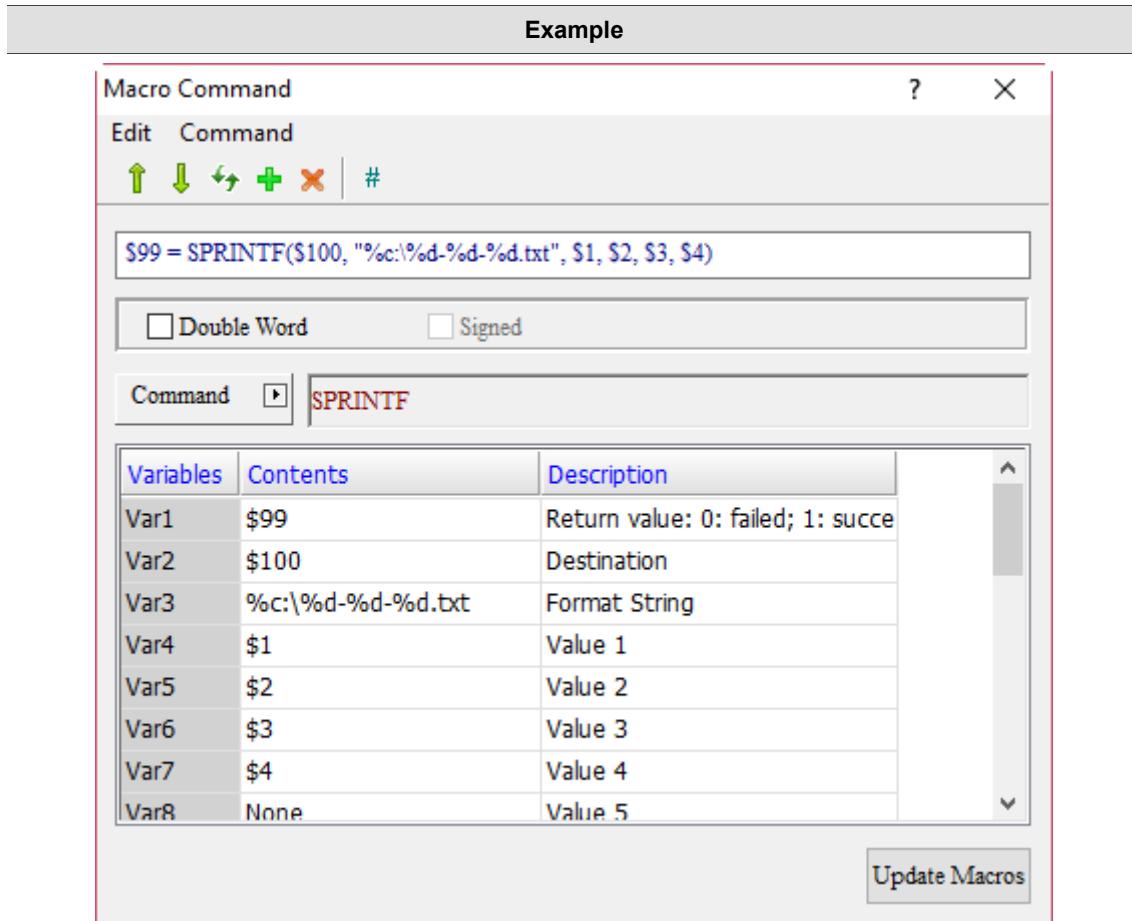
Expression	Meaning of variable			Note				
Var1 = SPRINTF(Var2, "%u", Var4) (DW)	Var1	Return value		DW: Double Word				
		Failed	0					
		Succeeded	1					
	Var2	Enter destination address of string						
	Var3	Format description string (Note 1)						
	Var4	Value 1						
	...	...						
Var1 = SPRINTF (Var2, "%u", Var4, ..., Var23) (DW) (Note 2)	Var23	Value 20						
	Description of action							
	Connect the values according to Var2 "format description string" and fill in the destination address.							

Note:

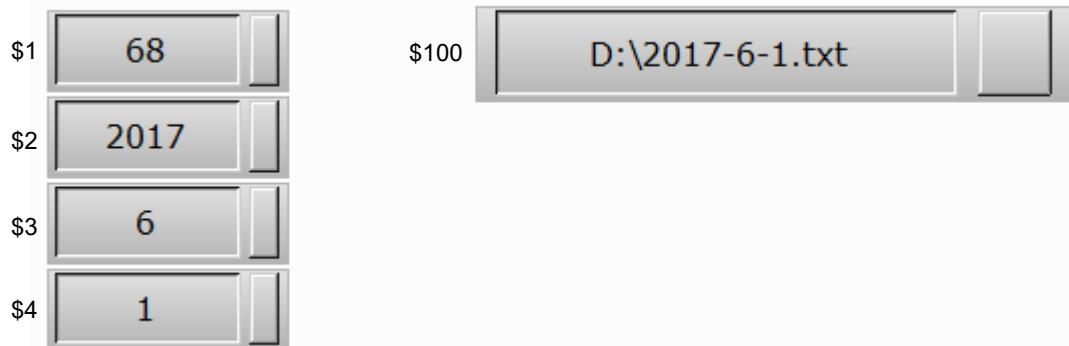
1. The supporting string formats are as follows:
  - %d: signed integer
  - %u: unsigned integer
  - %c: ASCII character
  - %x: hexadecimal value
2. Support up to 20 numeric variables.
3. The number of the parameters of variable conversion in the string contents should be consistent with the number of values.

Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v			
Var2	v	v		
Var3			v	
Var4	v	v		v
...	...	...		...
Var23	v	v		v

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- Create a Character Entry element, set the address as \$100, and set the length as 20.
- Create Numeric Entry elements of \$1, \$2, \$3, and \$4.
- After downloading the screen to the HMI, enter \$1 = 68 (representing D in ASCII code), \$2 = 2017, \$3 = 6, and \$4 = 1 on the HMI. The results are as follows.



### 24.3.5 Comparison

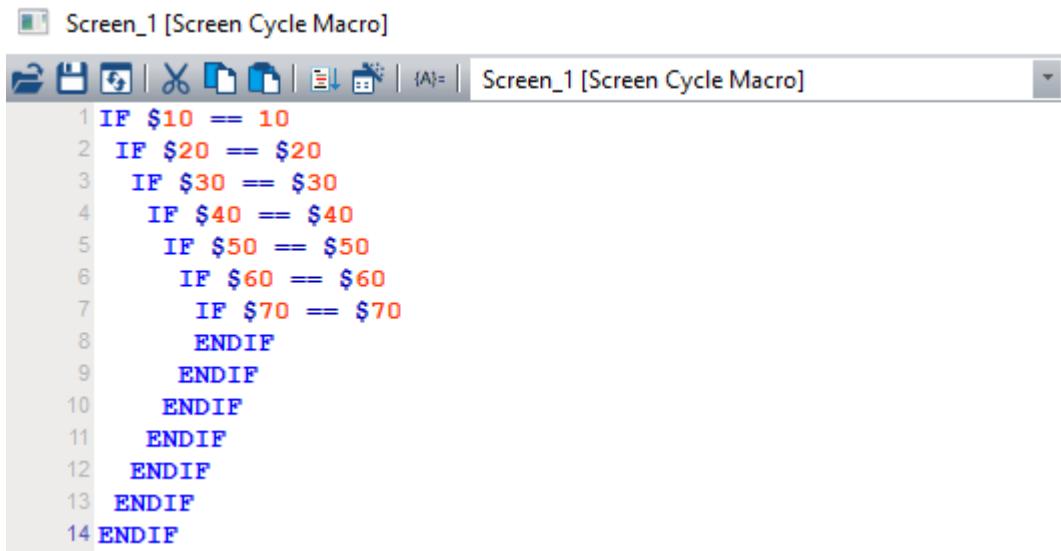
Comparison contains IF... THEN GOTO, IF... THEN CALL, IF..., ELSEIF... and other comparison commands, as detailed as follows.

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IF ... THEN GOTO	▶
IF ... THEN CALL	▶
IF ...	▶
ELSEIF ...	▶
ELSE	
ENDIF	
FCMP	

Figure 24.3.5.1 Comparison

- The nested structure of IF... supports up to 7 layers.



```

1 IF $10 == 10
2 IF $20 == $20
3 IF $30 == $30
4 IF $40 == $40
5 IF $50 == $50
6 IF $60 == $60
7 IF $70 == $70
8 ENDIF
9 ENDIF
10 ENDIF
11 ENDIF
12 ENDIF
13 ENDIF
14 ENDIF

```

- IF... THEN GOTO (if..., then execute according to the specified label name)

IF =	IF AND = 0
IF !=	IF AND != 0
IF >	IF = ON
IF >=	IF = OFF
IF <	IFB = ON
IF <=	IFB = OFF

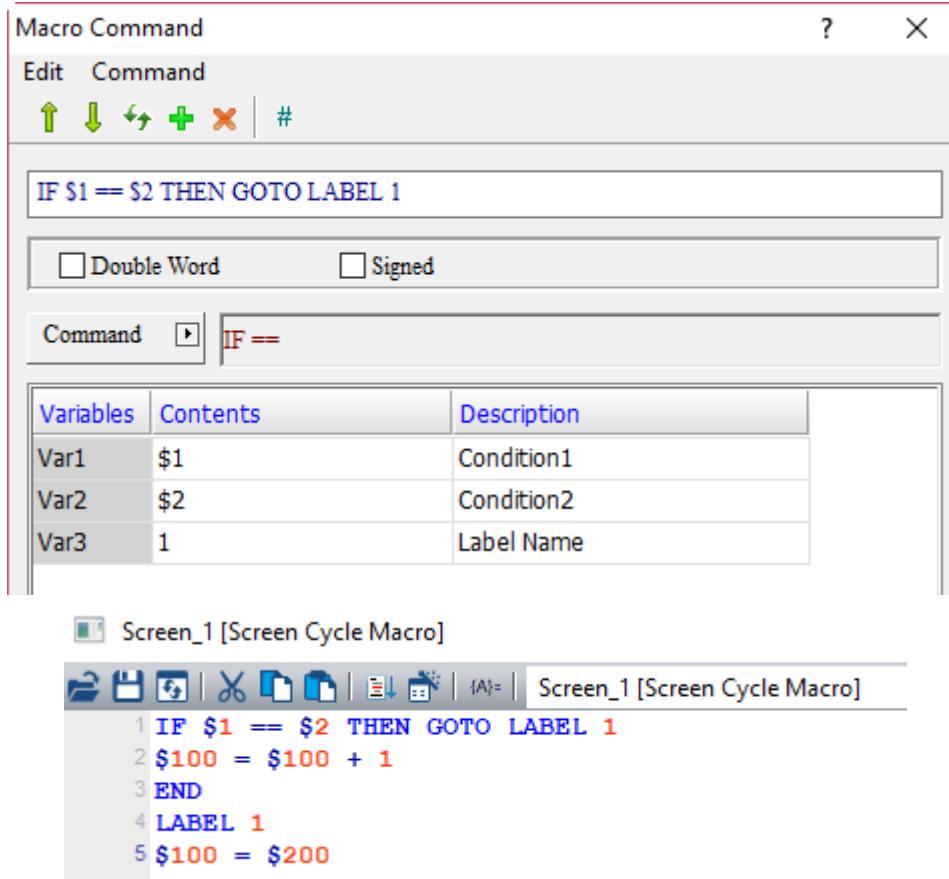
The following will introduce the 12 commands of the IF... THEN GOTO macro.

(1) IF ==				
Expression		Meaning of variable		Note
IF Var1 == Var2 THEN GOTO LABEL Var3 (W)	Var1	Condition1		W: Word DW: Double Word Signed: signed number
IF Var1 == Var2 THEN GOTO LABEL Var3 (DW)	Var2	Condition2		
IF Var1 == Var2 THEN GOTO LABEL Var3 (Signed W)	Var3	Label Name		
IF Var1 == Var2 THEN GOTO LABEL Var3 (Signed DW)	Description of action			
	If Condition1 equals Condition2, then GOTO executes LABEL Var3.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 equals \$2, execute LABEL1 (\$100 = \$200); if \$1 does not equal \$2, then execute \$100 = \$100 + 1.

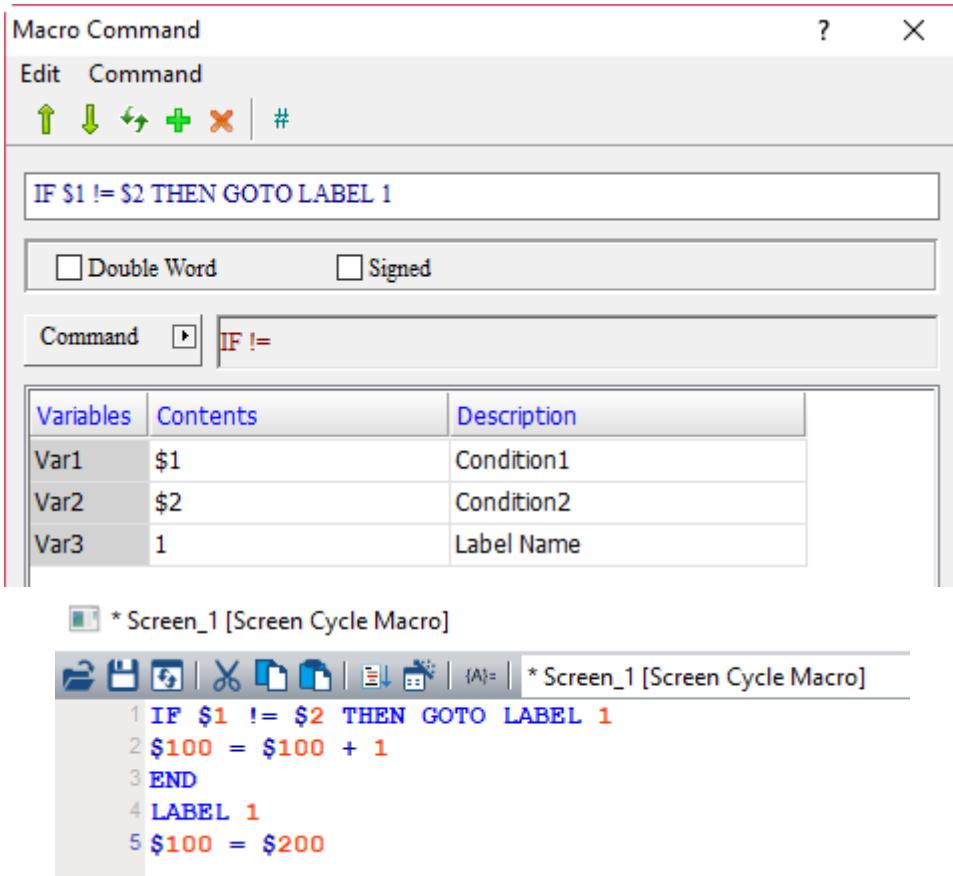
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(2) IF !=			
Expression	Meaning of variable		Note
IF Var1 != Var2 THEN GOTO LABEL Var3 (W) IF Var1 != Var2 THEN GOTO LABEL Var3 (DW) IF Var1 != Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 != Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	<b>Description of action</b>		
	If Condition1 does not equal Condition2, then GOTO executes LABEL Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 does not equal \$2, execute LABEL1 (\$100 = \$200); if \$1 equals \$2, then execute \$100 = \$100 + 1.

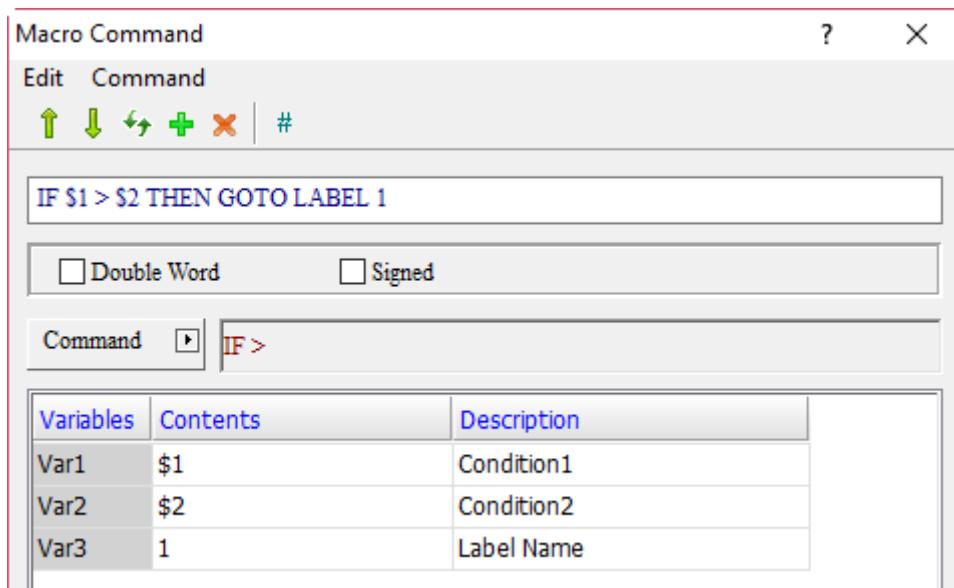
## (3) IF &gt;

Expression	Meaning of variable		Note	
IF Var1 > Var2 THEN GOTO LABEL Var3 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
IF Var1 > Var2 THEN GOTO LABEL Var3 (DW)	Var2	Condition2		
IF Var1 > Var2 THEN GOTO LABEL Var3 (Signed W)	Var3	Label index name		
IF Var1 > Var2 THEN GOTO LABEL Var3 (Signed DW)	<b>Description of action</b>			
	If Condition1 is greater than Condition2, then GOTO executes LABEL Var3.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

## Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



Screen\_1 [Screen Cycle Macro]

Screen\_1 [Screen Cycle Macro]

```

1 IF $1 > $2 THEN GOTO LABEL 1
2 $100 = $100 + 1
3 END
4 LABEL 1
5 $100 = $200

```

- If the value of \$1 is greater than \$2, execute LABEL1 (\$100 = \$200); if \$1 is less than or equal to \$2, then execute \$100 = \$100 + 1.

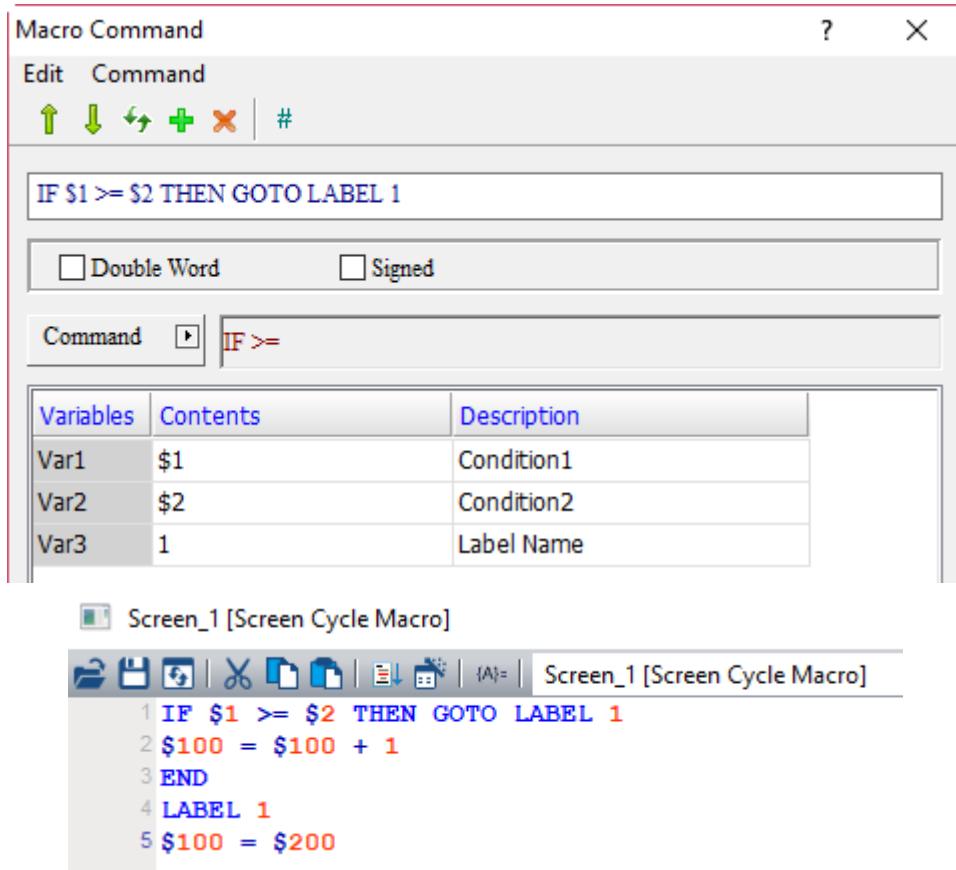
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(4) IF >=			
Expression	Meaning of variable		Note
IF Var1 >= Var2 THEN GOTO LABEL Var3 (W) IF Var1 >= Var2 THEN GOTO LABEL Var3 (DW) IF Var1 >= Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 >= Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
	If Condition1 is greater than or equal to Condition 2, then GOTO executes LABEL Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is greater than or equal to \$2, execute LABEL1 (\$100 = \$200); if \$1 is less than \$2, then execute \$100 = \$100 + 1.

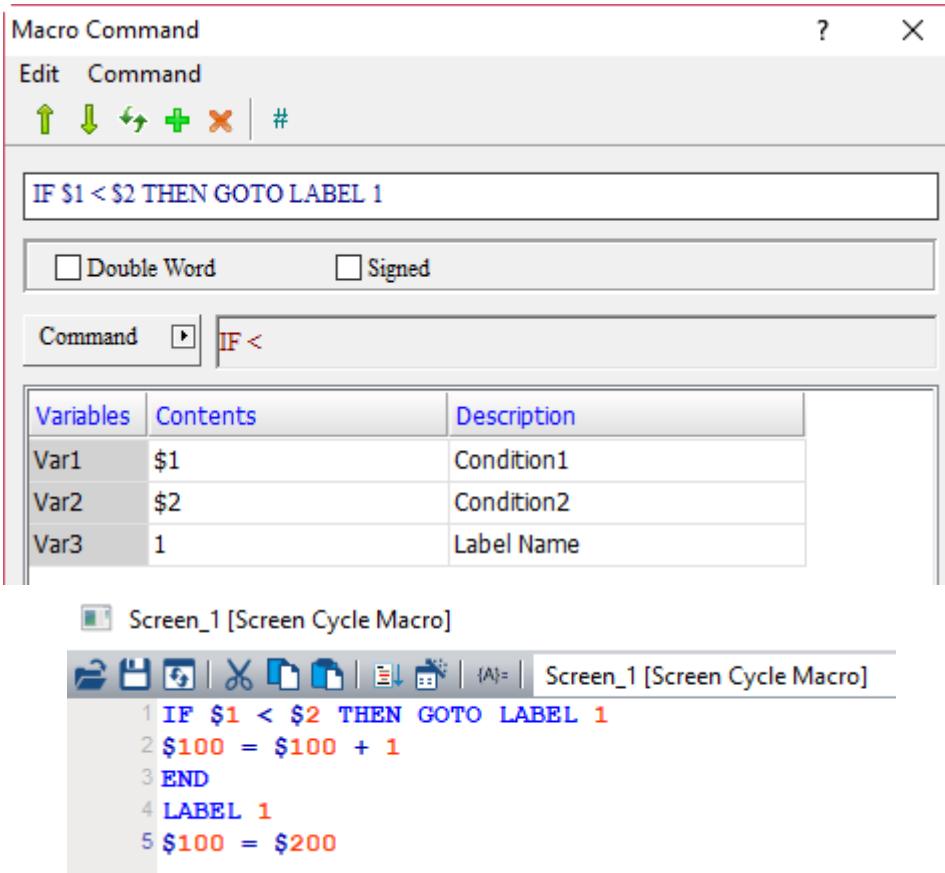
(5) IF <					
Expression		Meaning of variable		Note	
IF Var1 < Var2 THEN GOTO LABEL Var3 (W) IF Var1 < Var2 THEN GOTO LABEL Var3 (DW) IF Var1 < Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 < Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1		W: Word DW: Double Word Signed: signed number	
	Var2	Condition2			
	Var3	Label Name			
	Description of action				
	If Condition1 is less than Condition2, then GOTO executes LABEL Var3.				

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Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is less than \$2, execute LABEL1 (\$100 = \$200); If \$1 is greater than or equal to \$2, execute \$100 = \$100 + 1.

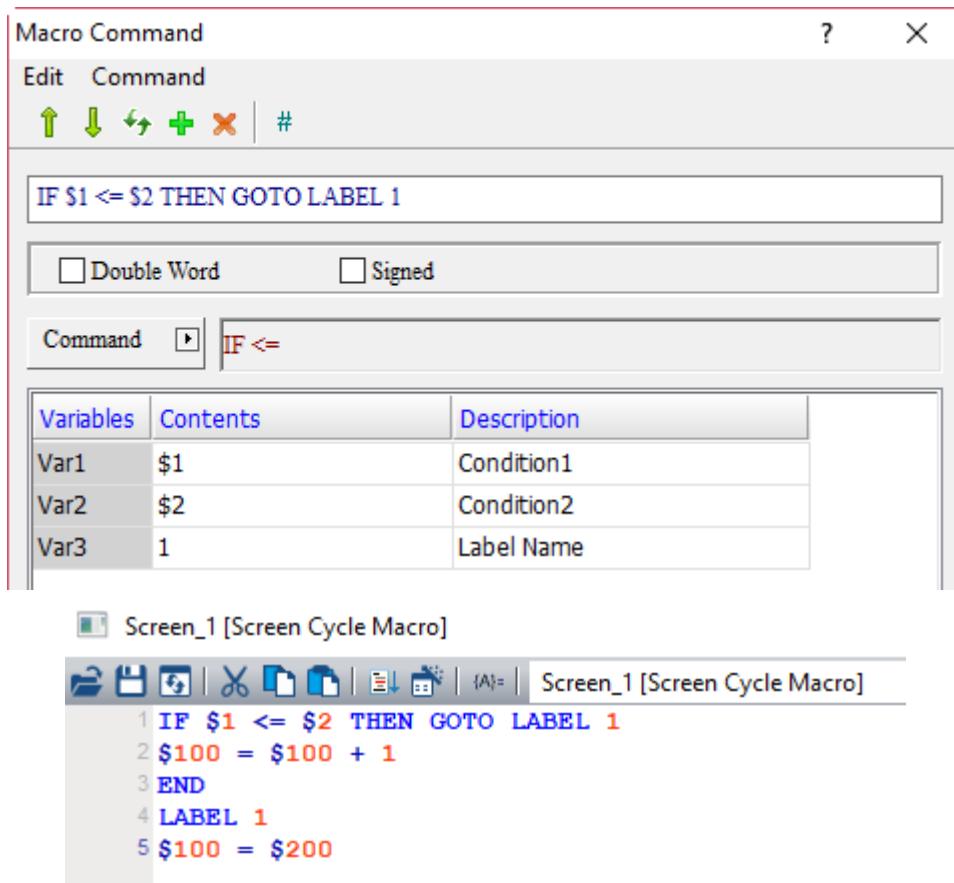
24

(6) IF <=				
Expression		Meaning of variable		Note
IF Var1 <= Var2 THEN GOTO LABEL Var3 (W) IF Var1 <= Var2 THEN GOTO LABEL Var3 (DW) IF Var1 <= Var2 THEN GOTO LABEL Var3 (Signed W) IF Var1 <= Var2 THEN GOTO LABEL Var3 (Signed DW)	Var1	Condition1		W: Word DW: Double Word Signed: signed number
	Var2	Condition2		
	Var3	Label Name		
	Description of action		If Condition1 is less than or equal to Condition2, then GOTO executes LABEL Var3.	

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is less than or equal to \$2, execute LABEL1 (\$100 = \$200); if \$1 is greater than \$2, then execute \$100 = \$100 + 1.

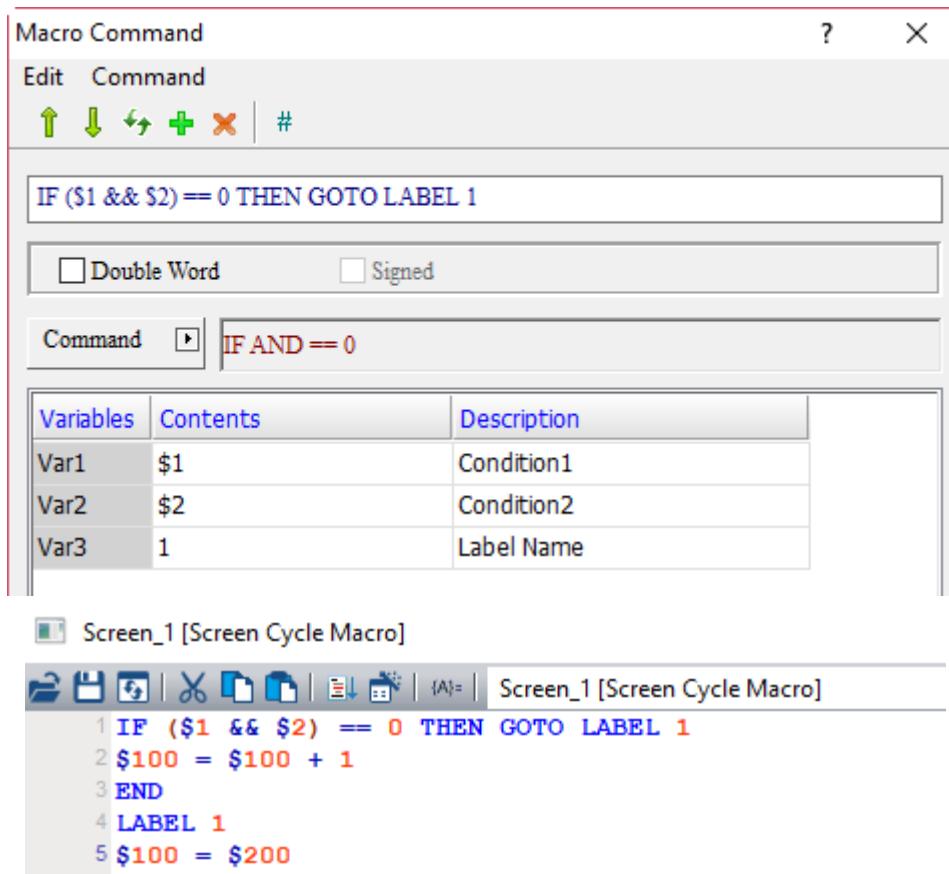
(7) IF AND == 0			
Expression	Meaning of variable		Note
IF (Var1 && Var2) == 0 THEN GOTO LABEL Var3 (W)  IF (Var1 && Var2) == 0 THEN GOTO LABEL Var3 (DW)	Var1	Condition1	W: Word DW: Double Word
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
	If the result of AND operation on Condition1 and Condition2 is 0, then GOTO executes LABEL Var3.		

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the result of AND operation on \$1 and \$2 is 0, execute LABEL1 (\$100 = \$200); if the result of AND operation on \$1 and \$2 is not 0, then execute \$100 = \$100 + 1.

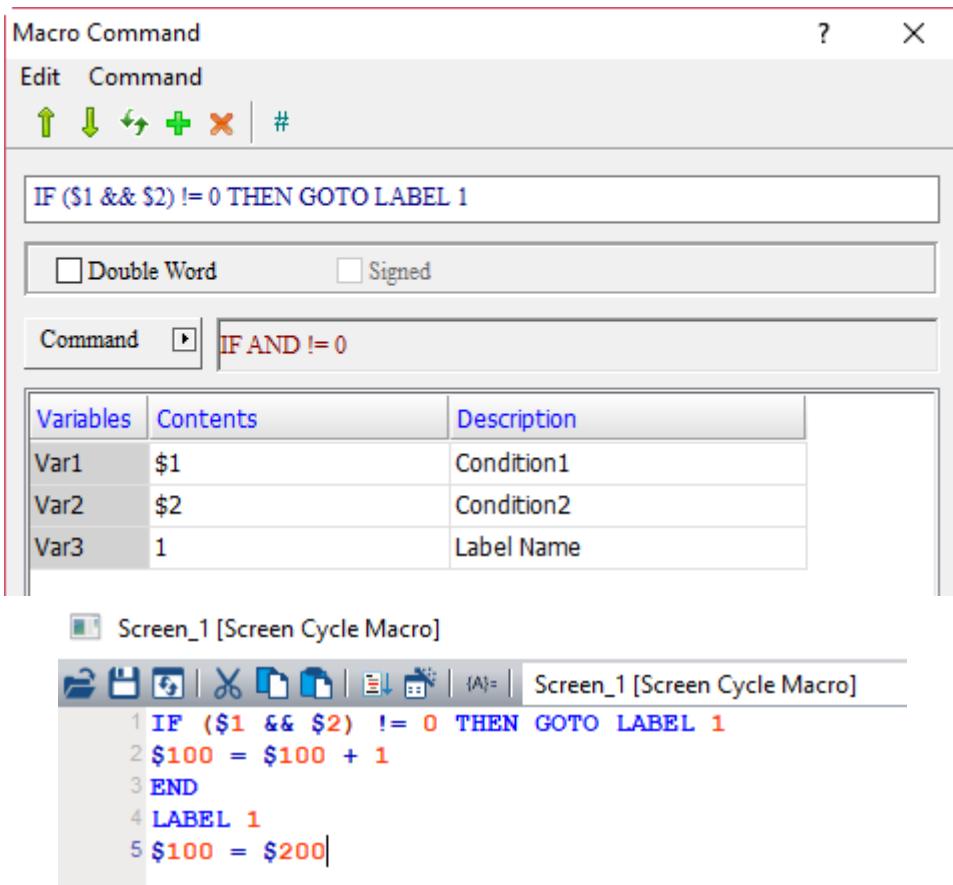
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(8) IF AND != 0					
Expression		Meaning of variable		Note	
IF (Var1 && Var2) != 0 THEN GOTO LABEL Var3 (W)  IF (Var1 && Var2) != 0 THEN GOTO LABEL Var3 (DW)	Var1 Var2 Var3	Condition1		W: Word DW: Double Word  Description of action  If the result after AND operation on Condition1 and Condition2 is not 0, then GOTO executes LABEL Var3.	
		Condition2			
		Label Name			
	Description of action				
	If the result after AND operation on Condition1 and Condition2 is not 0, then GOTO executes LABEL Var3.				

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the result of AND operation on \$1 and \$2 is not 0, execute LABEL1 (\$100 = \$200); if the result of AND operation on \$1 and \$2 is 0, then execute \$100 = \$100 + 1.

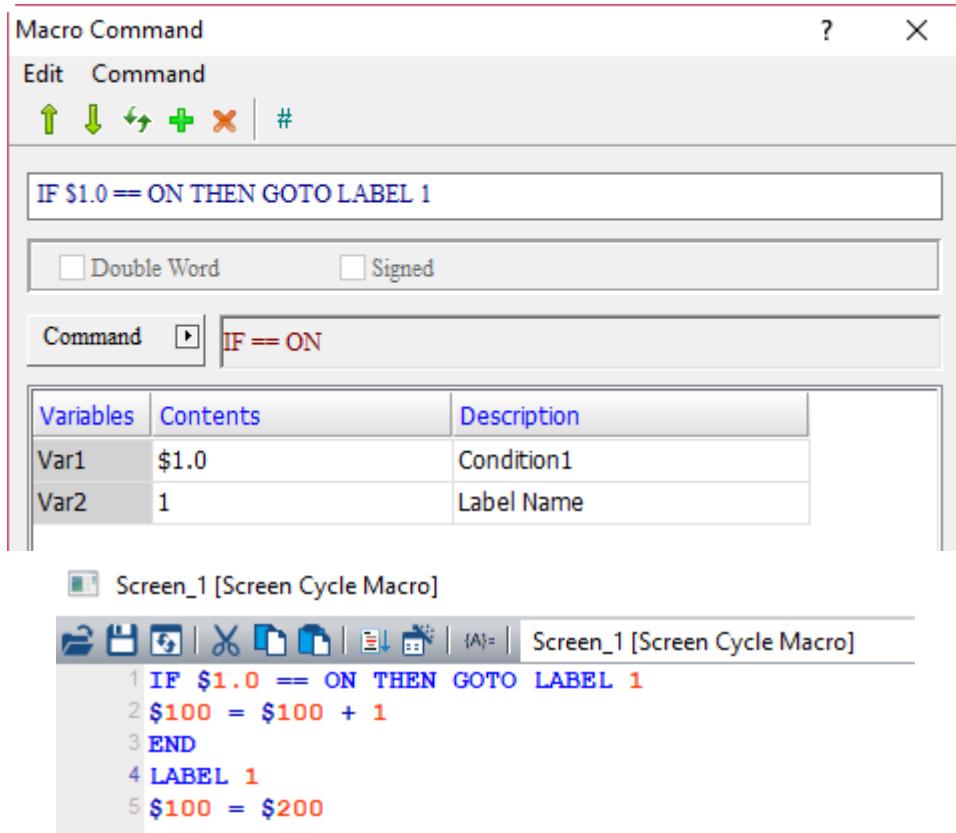
(9) IF == ON				
Expression	Meaning of variable		Note	
IF Var1 == ON THEN GOTO LABEL Var2 (W)	Var1	Condition1	W: Word If Condition1 is ON, then GOTO executes LABEL Var2.	
	Var2	Label Name		
	Description of action			
	If Condition1 is ON, then GOTO executes LABEL Var2.			

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		
Var2			v

### Example

- Var1 is the internal memory address and Var2 is a constant.

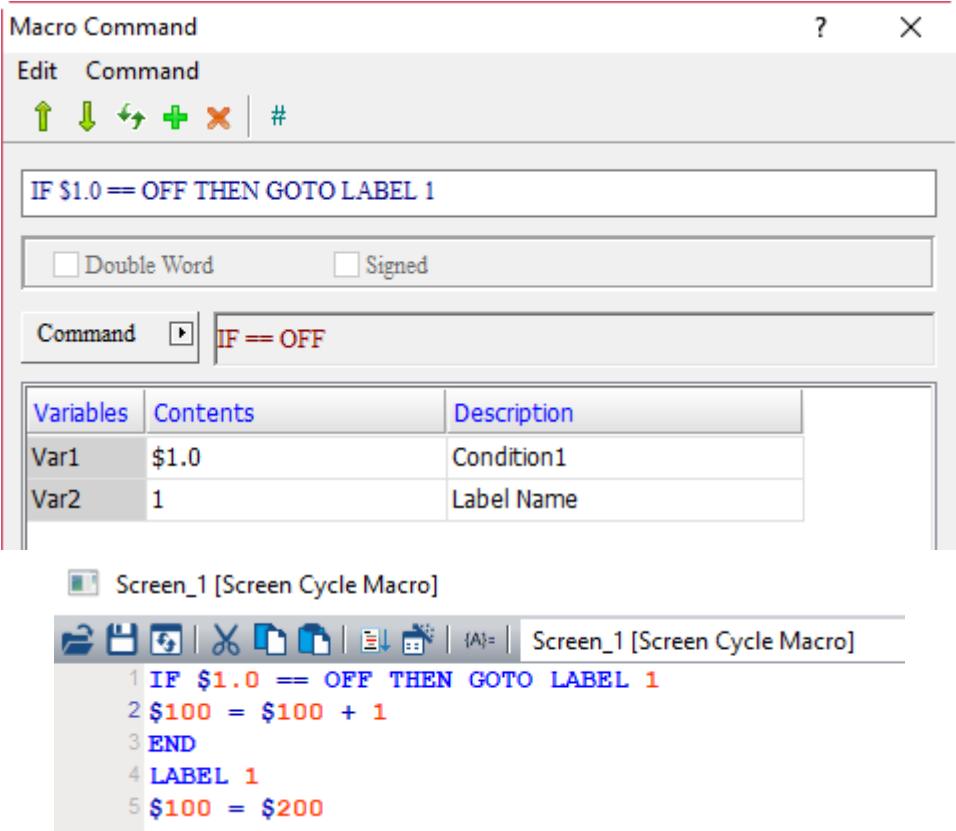


- If \$1.0 is ON, execute LABEL1 (\$100 = \$200); if \$1.0 is not ON, then execute \$100 = \$100 + 1.

24

(10) IF == OFF				
Expression		Meaning of variable	Note	
IF Var1 == OFF THEN GOTO LABEL Var2 (W)	Var1	Condition1	W: Word If Condition1 is OFF, then GOTO executes LABEL Var2.	
	Var2	Label Name		
	Description of action			
	If Condition1 is OFF, then GOTO executes LABEL Var2.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		
Var2			v

Example			
<ul style="list-style-type: none"> <li>Var1 is the internal memory address and Var2 is a constant.</li> </ul>  <pre> Macro Command Edit  Command ↑ ↓ ↶ + ×   #  IF \$1.0 == OFF THEN GOTO LABEL 1  Double Word  Signed Command  IF == OFF  Variables  Contents  Description Var1  \$1.0  Condition1 Var2  1  Label Name  Screen_1 [Screen Cycle Macro] 1 IF \$1.0 == OFF THEN GOTO LABEL 1 2 \$100 = \$100 + 1 3 END 4 LABEL 1 5 \$100 = \$200 </pre>			

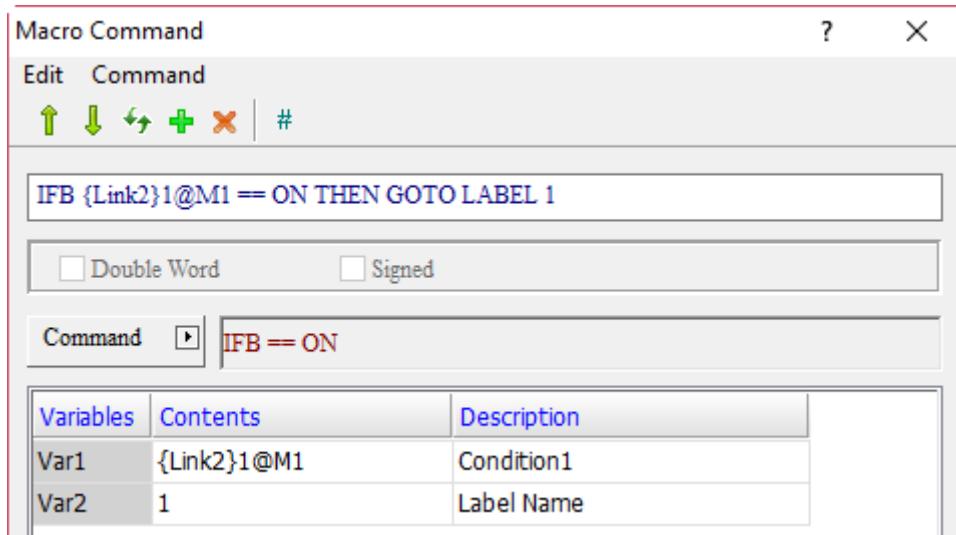
(11) IFB == ON				
Expression		Meaning of variable		Note
IFB Var1 == ON THEN GOTO LABEL Var2 (W)	Var1	Condition1		W: Word If Condition1 is ON, then GOTO executes LABEL Var2.
	Var2	Label Name		
	Description of action			
	If Condition1 is ON, then GOTO executes LABEL Var2.			

Note: for the IFB == ON command, its Bit address of Var1 can support the setting of external PLC register.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	
Var2			v

### Example

- Var1 is the address of PLC register and Var2 is a constant.



Screen\_1 [Screen Cycle Macro]

```

1 IFB {Link2}1@M1 == ON THEN GOTO LABEL 1
2 $100 = $100 + 1
3 END
4 LABEL 1
5 $100 = $200

```

- If M1 is ON, execute LABEL1 (\$100 = \$200); if M1 is not ON, then execute \$100 = \$100 + 1.

24

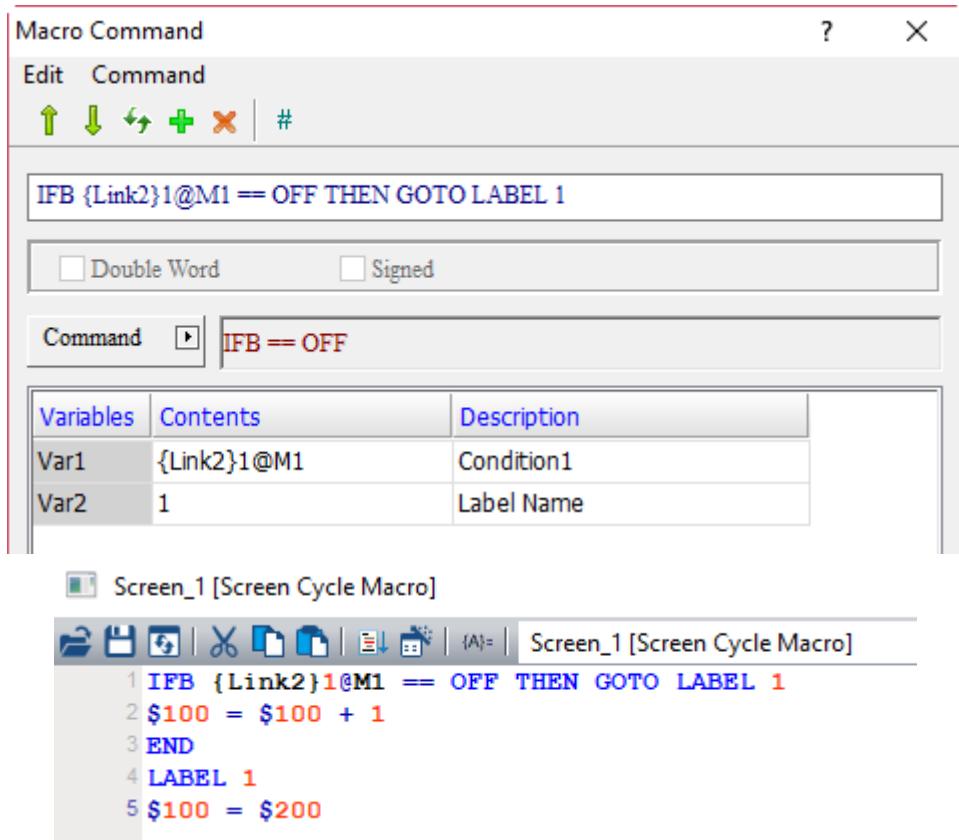
(12) IFB == OFF					
Expression		Meaning of variable		Note W: Word	
		Var1	Condition1		
		Var2	Label Name		
Description of action					
If Condition 1 is OFF, then GOTO executes LABEL Var2.					
IFB Var1 == OFF THEN GOTO LABEL Var2 (W)					

Note: for the IFB == OFF command, its Bit address of Var1 can support the setting of external PLC register.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	
Var2			v

### Example

- Var1 is the address of PLC register and Var2 is a constant.



- If M1 is OFF, execute LABEL1 ( $\$100 = \$200$ ); if M1 is not OFF, then execute  $\$100 = \$100 + 1$ .

- IF... THEN CALL (If...call submacro)

IF = CALL
IF != CALL
IF > CALL
IF >= CALL
IF < CALL
IF <= CALL
IF AND = 0 CALL
IF AND != 0 CALL
IF = ON CALL
IF = OFF CALL

24

The following will introduce the 10 commands of the IF... THEN CALL macro.

(1) IF ==				
Expression	Meaning of variable		Note	
IF Var1 == Var2 THEN CALL Var3 (W) IF Var1 == Var2 THEN CALL Var3 (DW) IF Var1 == Var2 THEN CALL Var3 (Signed W) IF Var1 == Var2 THEN CALL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
	Var2	Condition2		
	Var3	Label Name		
	Description of action			
	If Condition1 equals Condition2, then call Submacro Var3.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

24

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.

The screenshot shows the DOPSoft Macro Command window. The main area displays the command `IF $1 == $2 THEN CALL 1`. Below it, under "Command", is `IF == CALL`. A table titled "Variables" lists `Var1` (\$1), `Var2` (\$2), and `Var3` (1) with their respective descriptions: Condition1, Condition2, and Call Submacro. At the bottom, there are two tabs: [Submacro 1] which contains the code `1 $100 = $200` and `2 END`, and Screen\_1 [Screen Cycle Macro] which contains the code `1 IF $1 == $2 THEN CALL 1`, `2 $100 = $100 + 1`, and `3 END`.

- If the value of \$1 equals \$2, call Submacro 1 ( $\$100 = \$200$ ); if \$1 does not equal \$2, then execute  $\$100 = \$100 + 1$ .

**(2) IF !=**

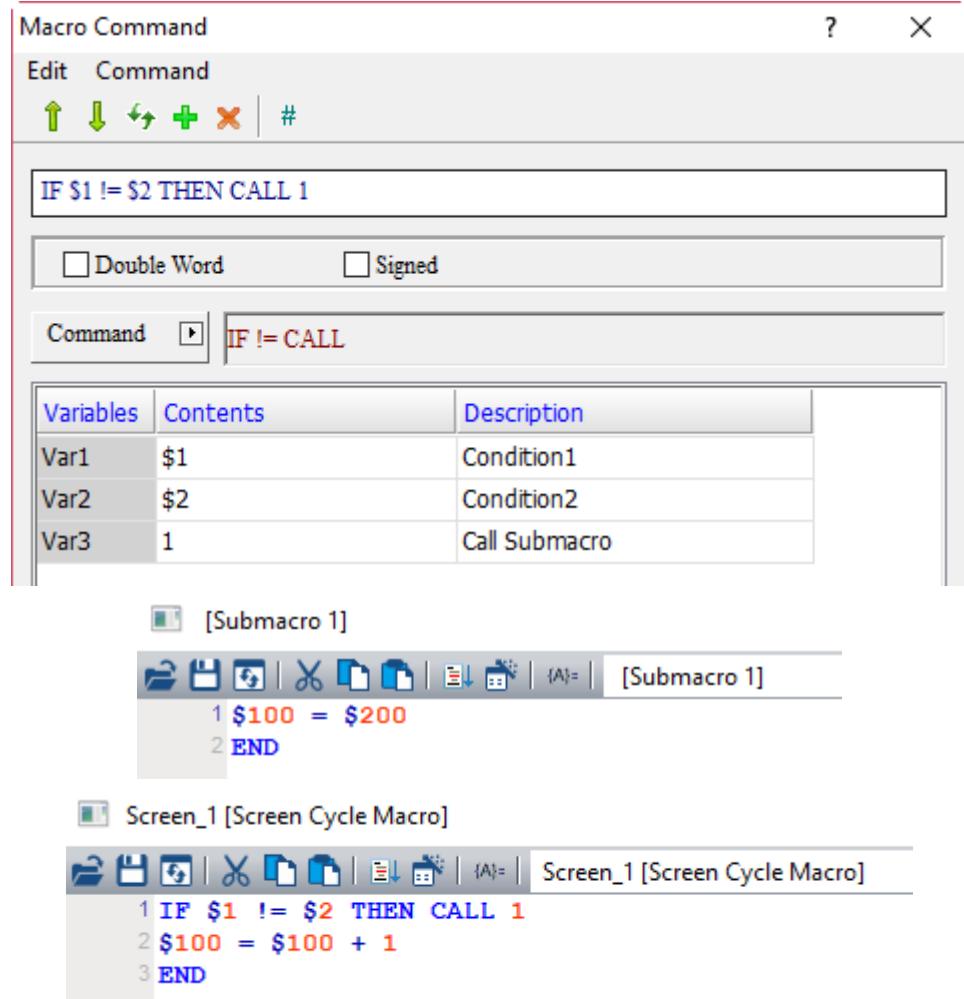
Expression	Meaning of variable		Note	
IF Var1 != Var2 THEN CALL Var3 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
IF Var1 != Var2 THEN CALL Var3 (DW)	Var2	Condition2		
IF Var1 != Var2 THEN CALL Var3 (Signed W)	Var3	Label Name		
IF Var1 != Var2 THEN CALL Var3 (Signed DW)	<b>Description of action</b>			
	If Condition1 does not equal Condition2, call Submacro Var3.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

24

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 does not equal \$2, call Submacro 1 (\$100 = \$200); if \$1 equals \$2, then execute \$100 = \$100 + 1.

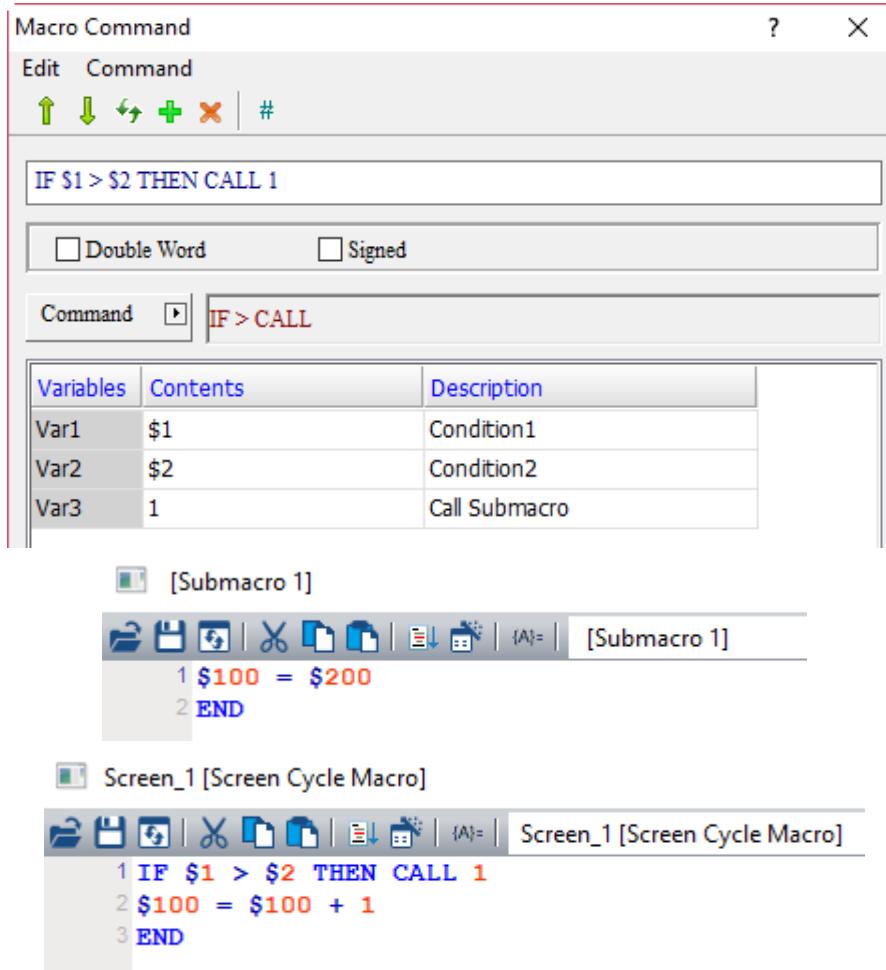
24

(3) IF >				
Expression	Meaning of variable		Note	
IF Var1 > Var2 THEN CALL Var3 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
IF Var1 > Var2 THEN CALL Var3 (DW)	Var2	Condition2		
IF Var1 > Var2 THEN CALL Var3 (Signed W)	Var3	Label Name		
IF Var1 > Var2 THEN CALL Var3 (Signed DW)	Description of action			
	If Condition1 is greater than Condition2, call Submacro Var3.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is greater than \$2, call Submacro 1 ( $\$100 = \$200$ ); if \$1 is less than or equal to \$2, then execute  $\$100 = \$100 + 1$ .

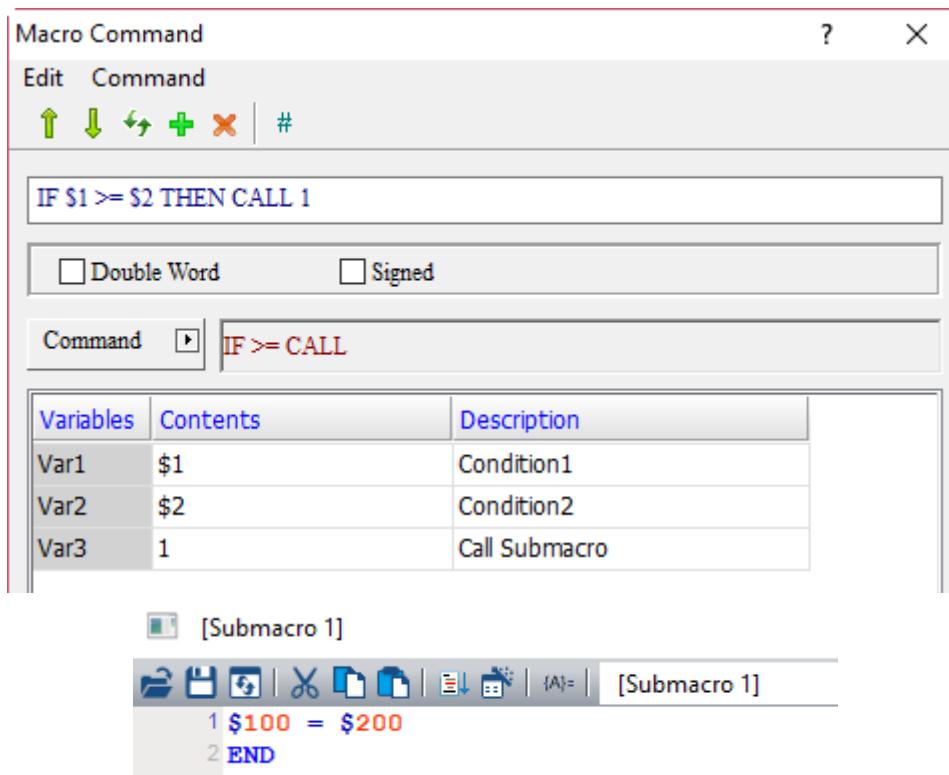
(4) IF >=			
Expression	Meaning of variable		Note
IF Var1 >= Var2 THEN CALL Var3 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
IF Var1 >= Var2 THEN CALL Var3 (DW)	Var2	Condition2	
IF Var1 >= Var2 THEN CALL Var3 (Signed W)	Var3	Label Name	
IF Var1 >= Var2 THEN CALL Var3 (Signed DW)	Description of action		
	If Condition1 is greater than or equal to Condition2, call Submacro Var3.		

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is greater than or equal to \$2, call Submacro 1 (\$100 = \$200); if \$1 is less than \$2, then execute \$100 = \$100 + 1.

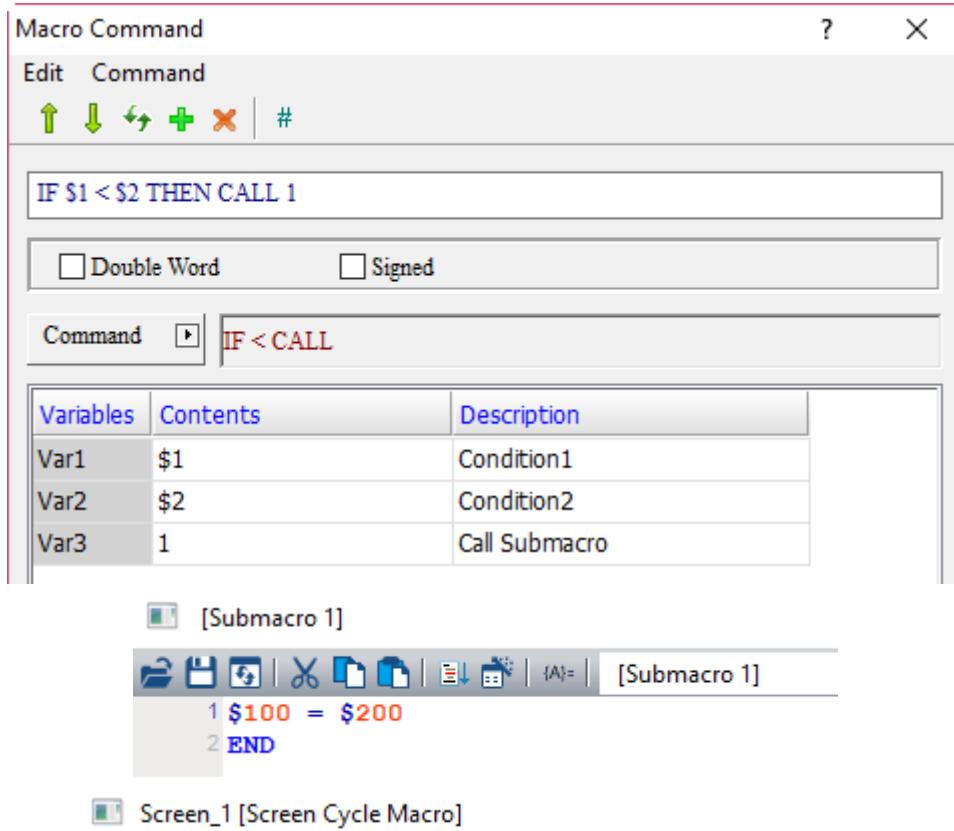
24

(5) IF <			
Expression	Meaning of variable		Note
IF Var1 < Var2 THEN CALL Var3 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
IF Var1 < Var2 THEN CALL Var3 (DW)	Var2	Condition2	
IF Var1 < Var2 THEN CALL Var3 (Signed W)	Var3	Label Name	
IF Var1 < Var2 THEN CALL Var3 (Signed DW)	<b>Description of action</b>		
	If Condition1 is less than Condition2, call Submacro Var3.		

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is less than \$2, call Submacro 1 (\$100 = \$200); if \$1 is greater than or equal to \$2, then execute \$100 = \$100 + 1.

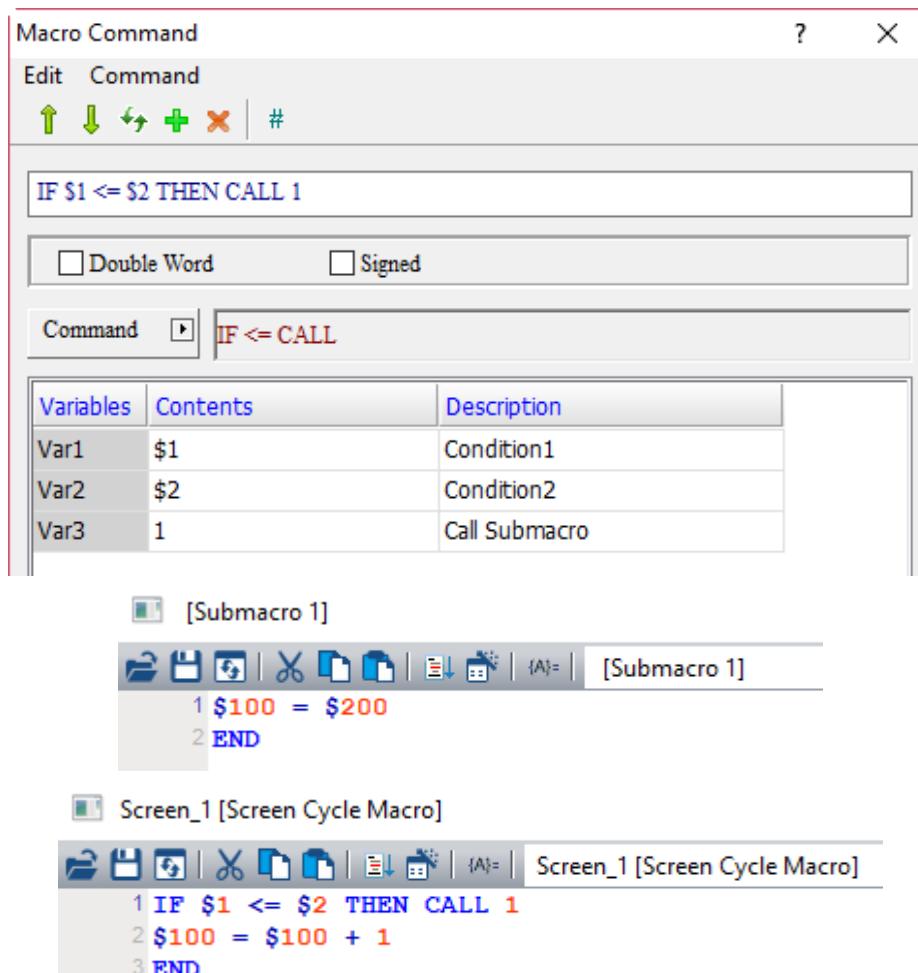
(6) IF <=			
Expression	Meaning of variable		Note
IF Var1 <= Var2 THEN CALL Var3 (W) IF Var1 <= Var2 THEN CALL Var3 (DW) IF Var1 <= Var2 THEN CALL Var3 (Signed W) IF Var1 <= Var2 THEN CALL Var3 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
	Var3	Label Name	
	Description of action		
	If Condition1 is less than or equal to Condition2, call Submacro Var3.		

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is less than or equal to \$2, call Submacro 1 ( $\$100 = \$200$ ); if \$1 is greater than \$2, then execute  $\$100 = \$100 + 1$ .

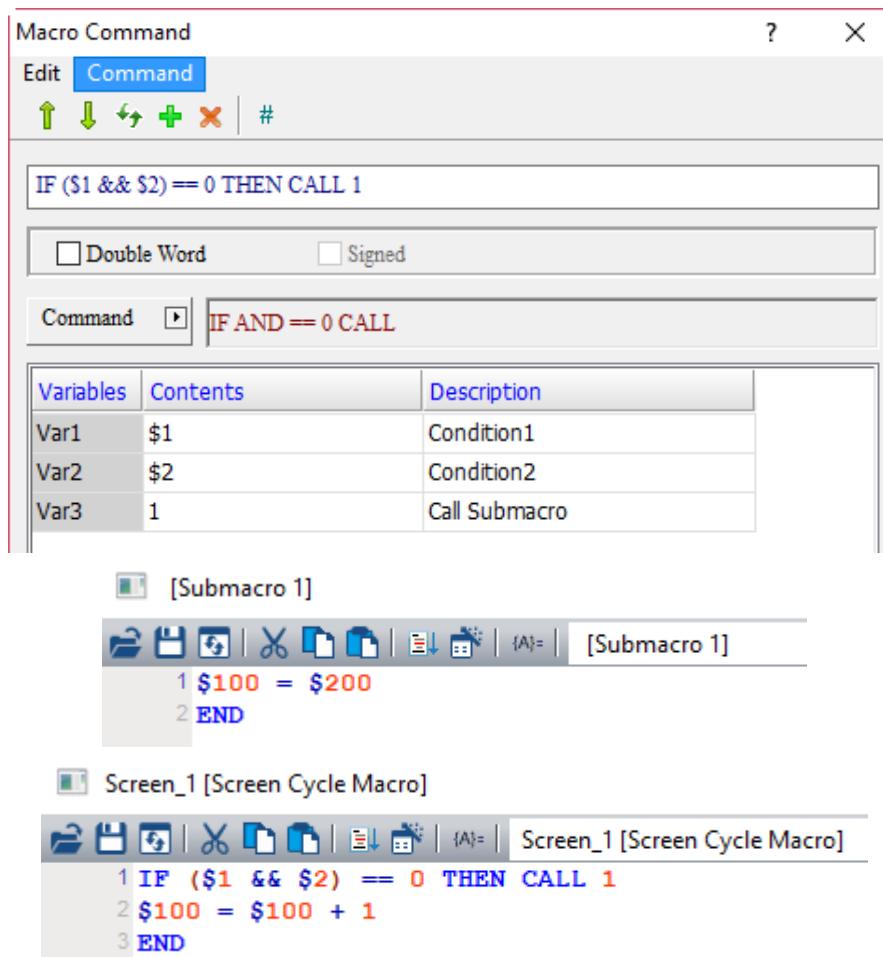
24

(7) IF AND == 0				
Expression	Meaning of variable		Note	
IF (Var1 && Var2) == 0 THEN CALL Var3 (W)  IF (Var1 && Var2) == 0 THEN CALL Var3 (DW)	Var1	Condition1	W: Word DW: Double Word	
	Var2	Condition2		
	Var3	Label Name		
	Description of action			
	If the result of the AND operation on Condition1 and Condition2 is 0, call Submacro Var3.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the result of the AND operation on \$1 and \$2 is 0, call Submacro 1 (\$100 = \$200); if the result of the AND operation on \$1 and \$2 is not 0, then execute \$100 = \$100 + 1.

## (8) IF AND != 0

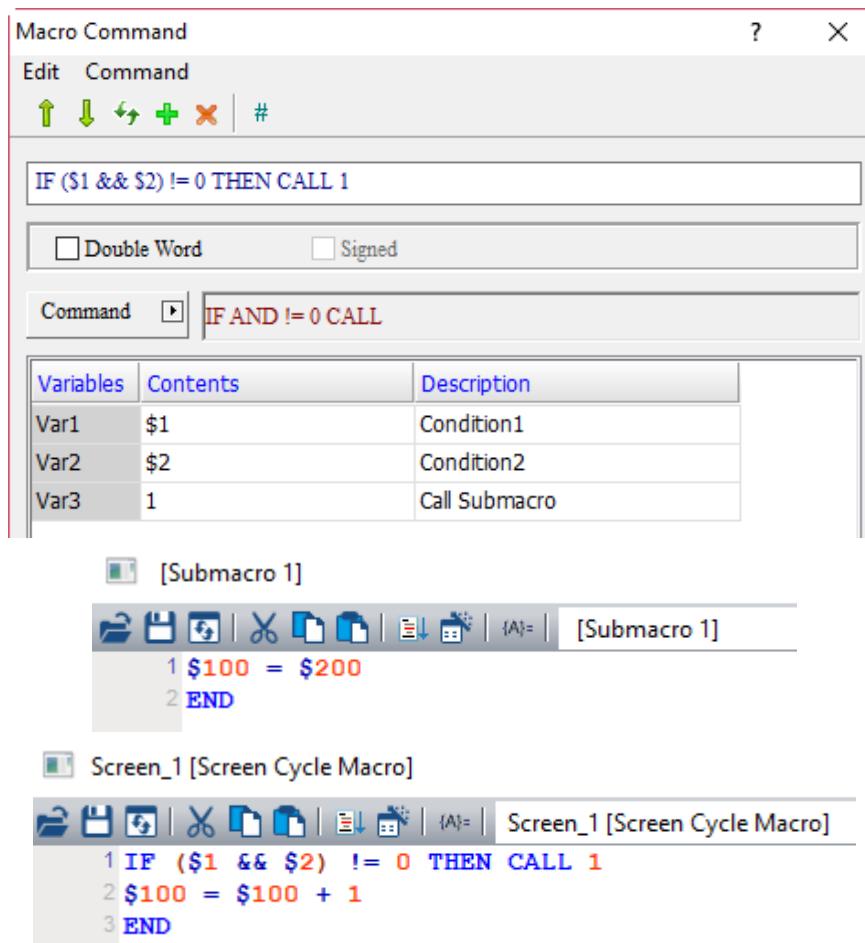
Expression	Meaning of variable		Note	
IF (Var1 && Var2) != 0 THEN CALL Var3 (W)  IF (Var1 && Var2) != 0 THEN CALL Var3 (DW)	Var1	Condition1	W: Word DW: Double Word	
	Var2	Condition2		
	Var3	Label Name		
	Description of action			
	If the result of the AND operation on Condition1 and Condition2 is not 0, call Submacro Var3.			

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

## Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the result of the AND operation on \$1 and \$2 is not 0, call Submacro 1 (\$100 = \$200); if the result of the AND operation on \$1 and \$2 is 0, then execute \$100 = \$100 + 1.

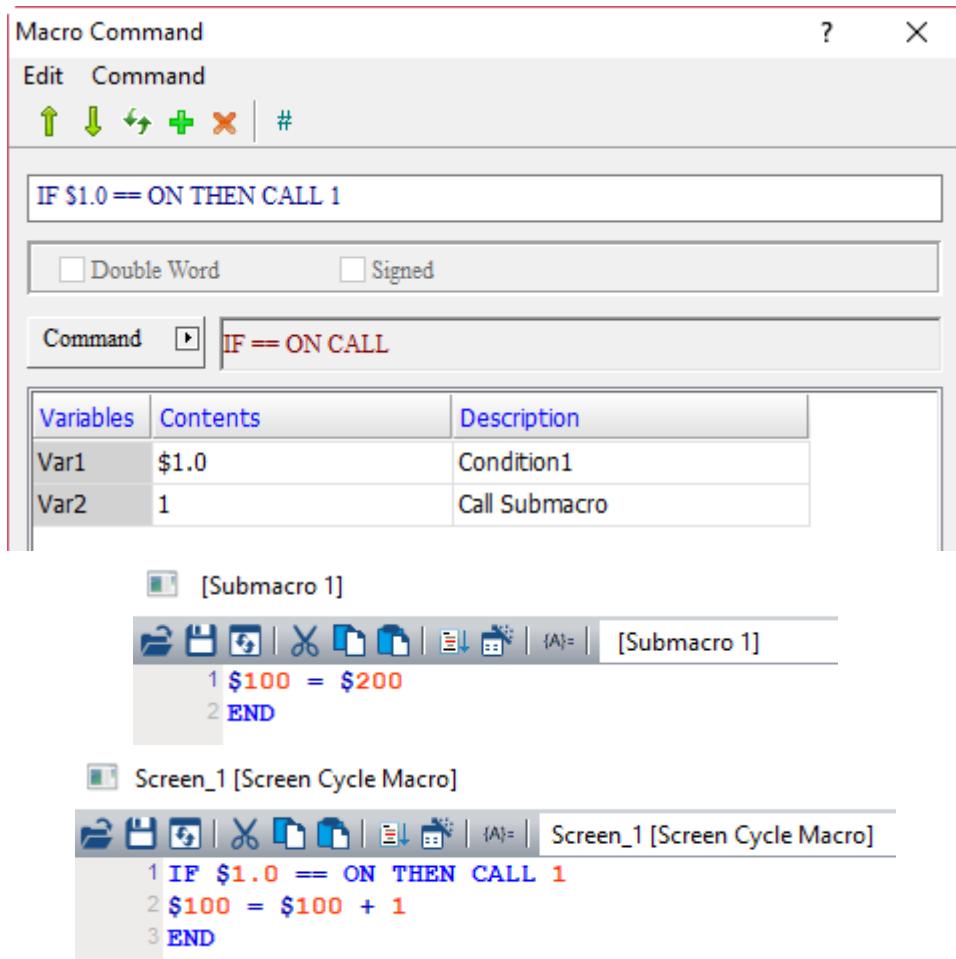
24

(9) IF == ON				
Expression	Meaning of variable		Note	
IF Var1 == ON THEN CALL Var2 (W)	Var1	Condition1	W: Word If Condition1 is ON, call Submacro Var2.	
	Var2	Label Name		
	Description of action			
	If Condition1 is ON, call Submacro Var2.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		
Var2			v

**Example**

- Var1 is the internal memory address and Var2 is a constant.



- If \$1.0 is ON, call Submacro 1 (\$100 = \$200); if \$1.0 is not ON, then execute \$100 = \$100 + 1.

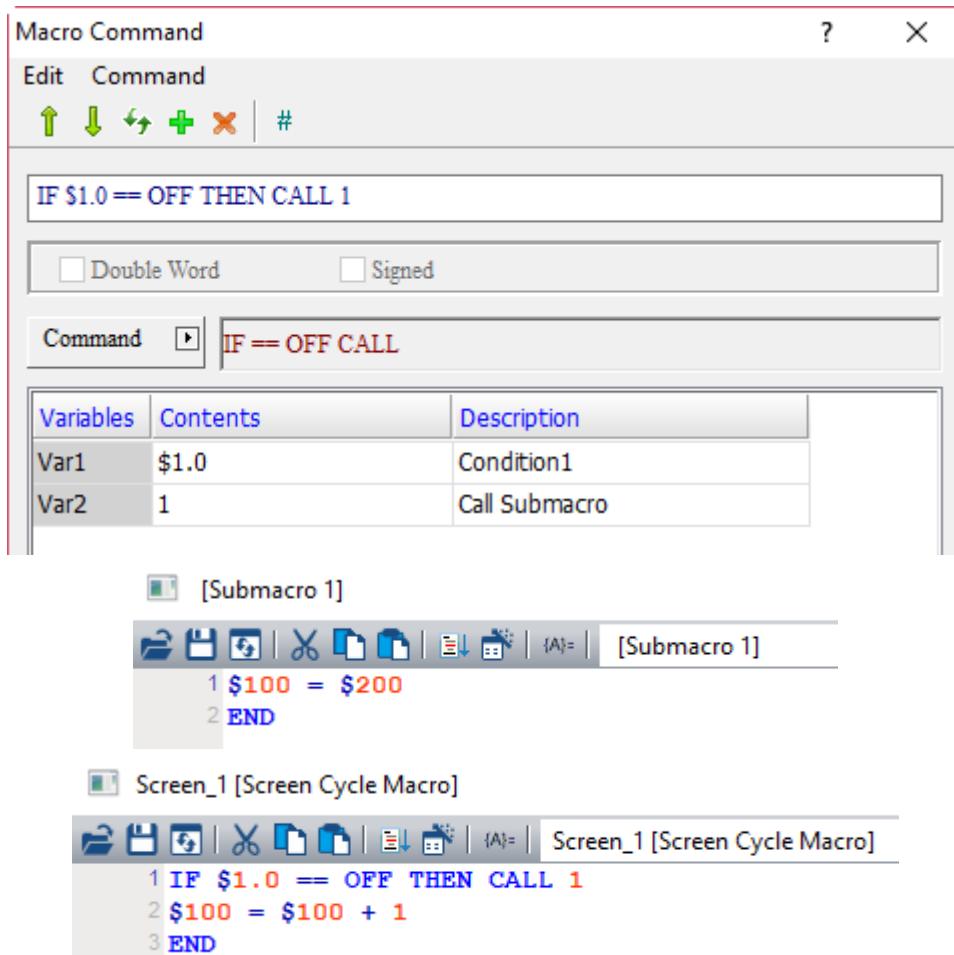
(10) IF == OFF				
Expression	Meaning of variable		Note	
IF Var1 == OFF THEN CALL Var2 (W)	Var1	Condition1	W: Word If Condition1 is OFF, call Submacro Var2.	
	Var2	Label Name		
	Description of action			
	If Condition1 is OFF, call Submacro Var2.			

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		
Var2			v

**Example**

- Var1 is the internal memory address and Var2 is a constant.



- If \$1.0 is OFF, call Submacro 1 (\$100 = \$200); if \$1.0 is not OFF, then execute \$100 = \$100 + 1.

24

- IF... (If...)

IF ==  
 IF !=  
 IF >  
 IF >=   
 IF <  
 IF <=   
 IF AND == 0  
 IF AND != 0  
 IF == ON  
 IF == OFF

The following will introduce the 10 commands of the IF... macro.

(1) IF ==				
Expression	Meaning of variable		Note	
IF Var1 == Var2 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
IF Var1 == Var2 (DW)	Var2	Condition2		
IF Var1 == Var2 (Signed W)	<b>Description of action</b>			
IF Var1 == Var2 (Signed DW)	If Condition1 equals Condition2, execute...			

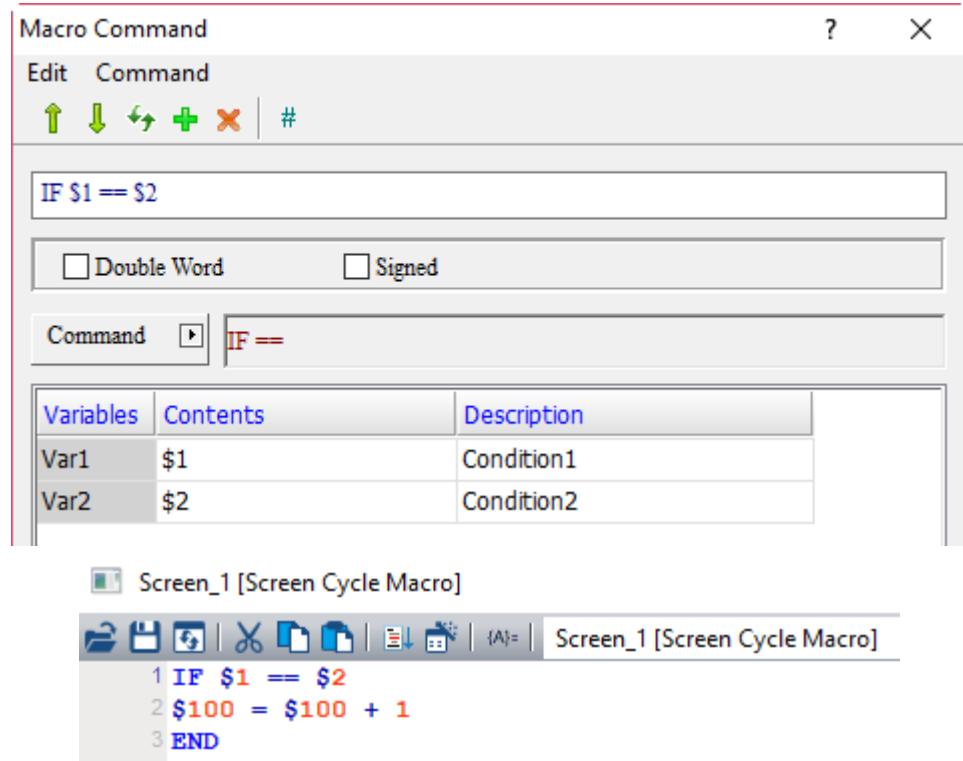
Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

24

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 equals \$2, execute \$100 = \$100 + 1; if \$1 is greater than or less than \$2, then \$100 = \$100 + 1 will not be executed.

24

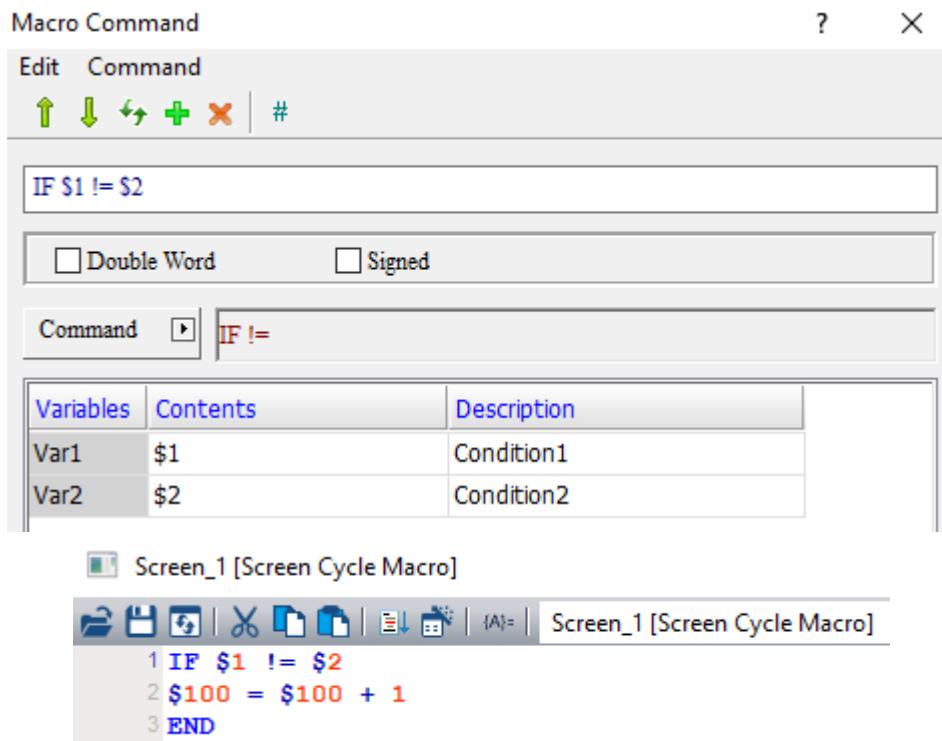
(2) IF !=				
Expression	Meaning of variable		Note	
IF Var1 != Var2 (W) IF Var1 != Var2 (DW) IF Var1 != Var2 (Signed W) IF Var1 != Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
	Var2	Condition2		
	<b>Description of action</b>			
	If Condition1 does not equal Condition2, execute...			

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 does not equal \$2, execute \$100 = \$100 + 1; if \$1 is greater than or less than \$2, then \$100 = \$100 + 1 will not be executed.

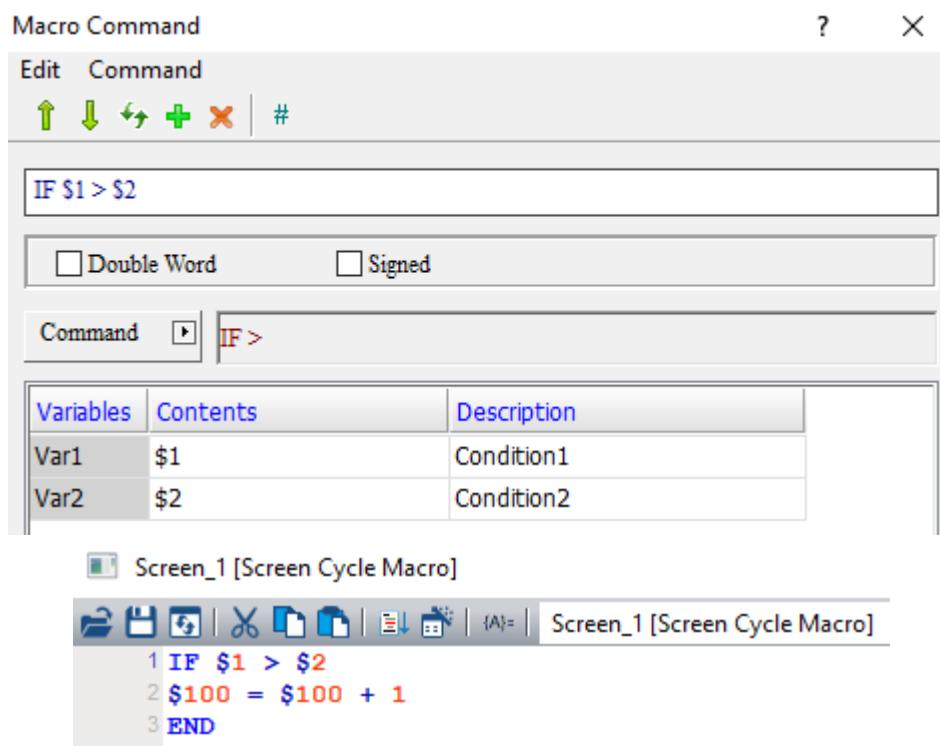
(3) IF >				
Expression	Meaning of variable		Note	
IF Var1 > Var2 (W) IF Var1 > Var2 (DW) IF Var1 > Var2 (Signed W) IF Var1 > Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
	Var2	Condition2		
	<b>Description of action</b>			
	If Condition1 is greater than Condition2, execute...			

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is greater than \$2, execute \$100 = \$100 + 1; if \$1 is less than or equal to \$2, then \$100 = \$100 + 1 will not be executed.

24

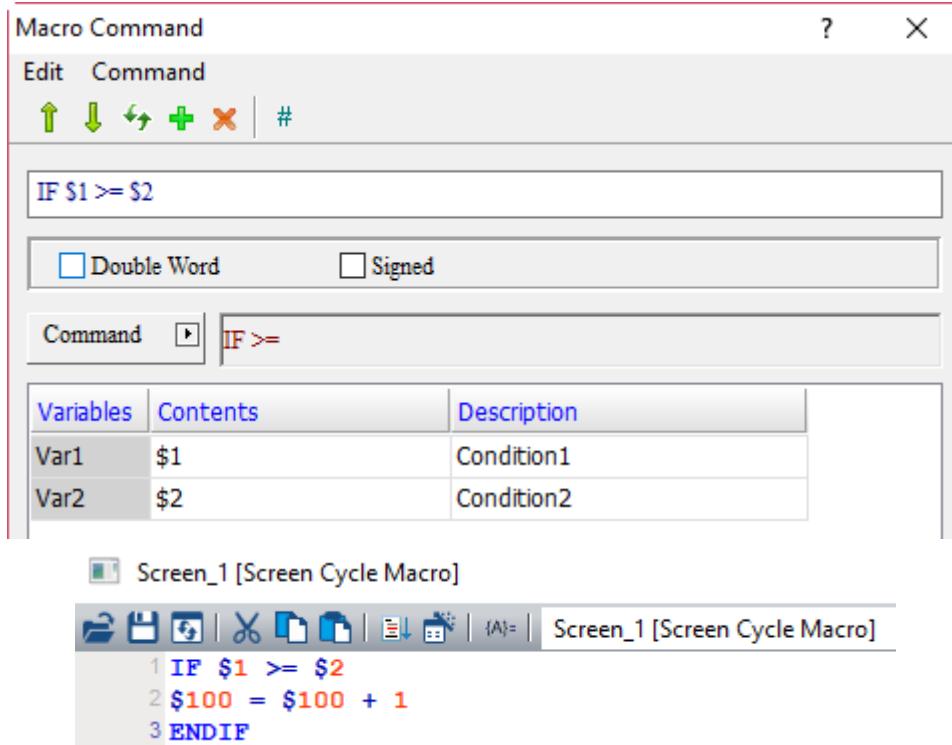
(4) IF >=				
Expression	Meaning of variable		Note	
IF Var1 >= Var2 (W) IF Var1 >= Var2 (DW) IF Var1 >= Var2 (Signed W) IF Var1 >= Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
	Var2	Condition2		
	<b>Description of action</b>			
	If Condition1 is greater than or equal to Condition2, execute...			

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is greater than or equal to \$2, execute \$100 = \$100 + 1; if \$1 is less than \$2, then \$100 = \$100 + 1 will not be executed.

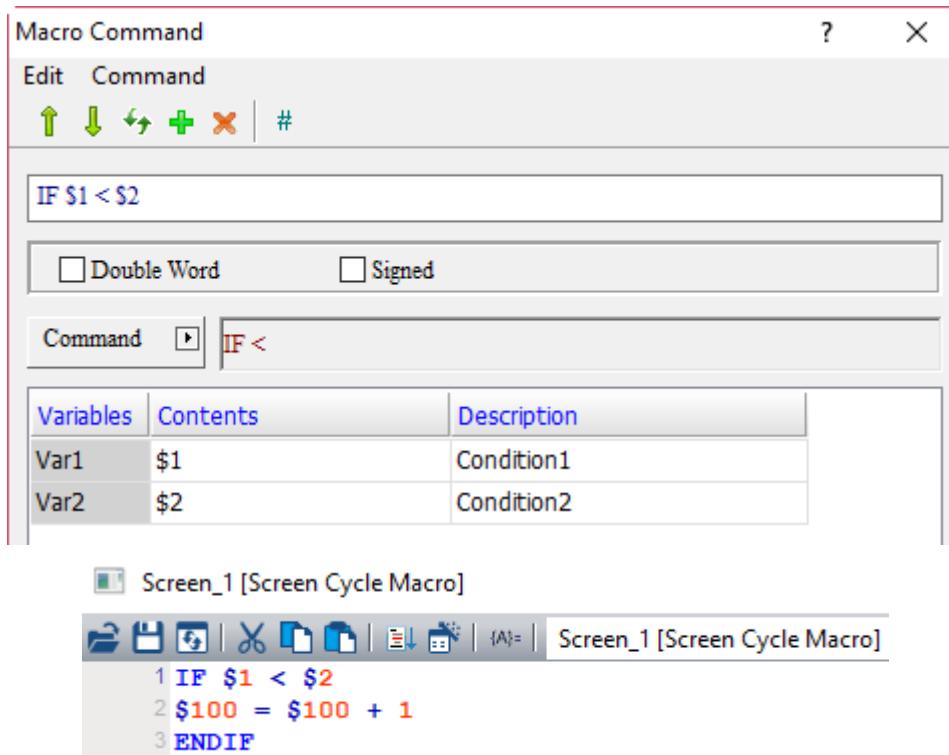
(5) IF <				
Expression	Meaning of variable		Note	
IF Var1 < Var2 (W)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
IF Var1 < Var2 (DW)	Var2	Condition2		
IF Var1 < Var2 (Signed W)	<b>Description of action</b>			
IF Var1 < Var2 (Signed DW)	If Condition1 is less than Condition2, execute...			

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is less than \$2, execute \$100 = \$100 + 1; if \$1 is greater than or equal to \$2, then \$100 = \$100 + 1 will not be executed.

24

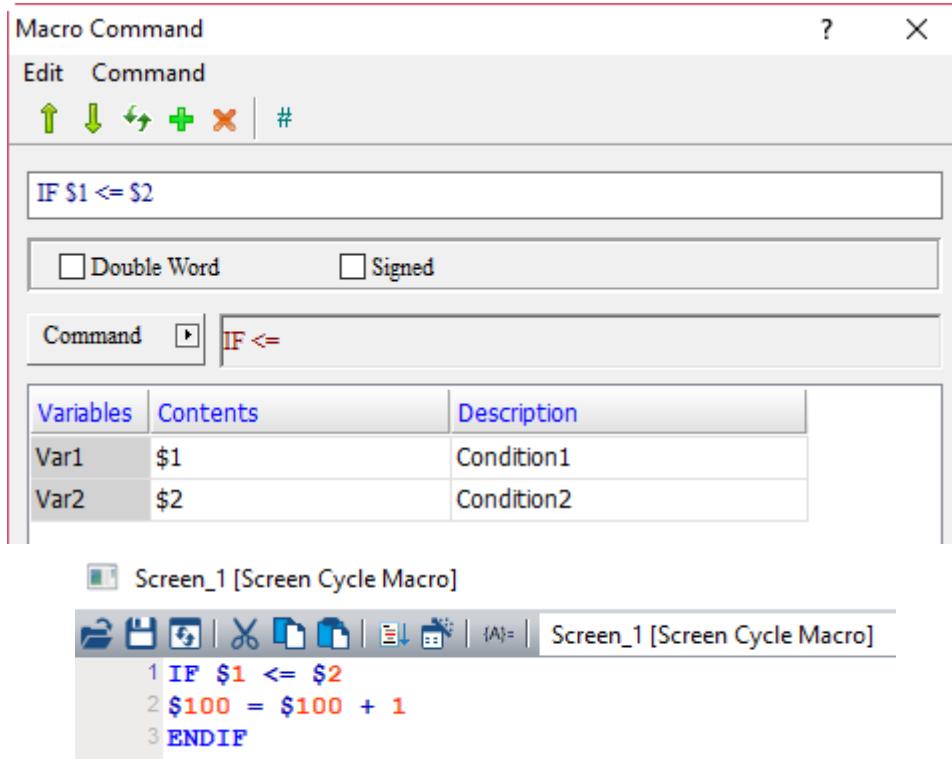
(6) IF <=			
Expression	Meaning of variable		Note
IF Var1 <= Var2 (W) IF Var1 <= Var2 (DW) IF Var1 <= Var2 (Signed W) IF Var1 <= Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number
	Var2	Condition2	
<b>Description of action</b>			
If Condition1 is less than or equal to Condition2, execute...			

Note: the IF macro command must be used with ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v
Var3			v

### Example

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- If the value of \$1 is less than or equal to \$2, execute \$100 = \$100 + 1; if \$1 is greater than \$2, then \$100 = \$100 + 1 will not be executed.

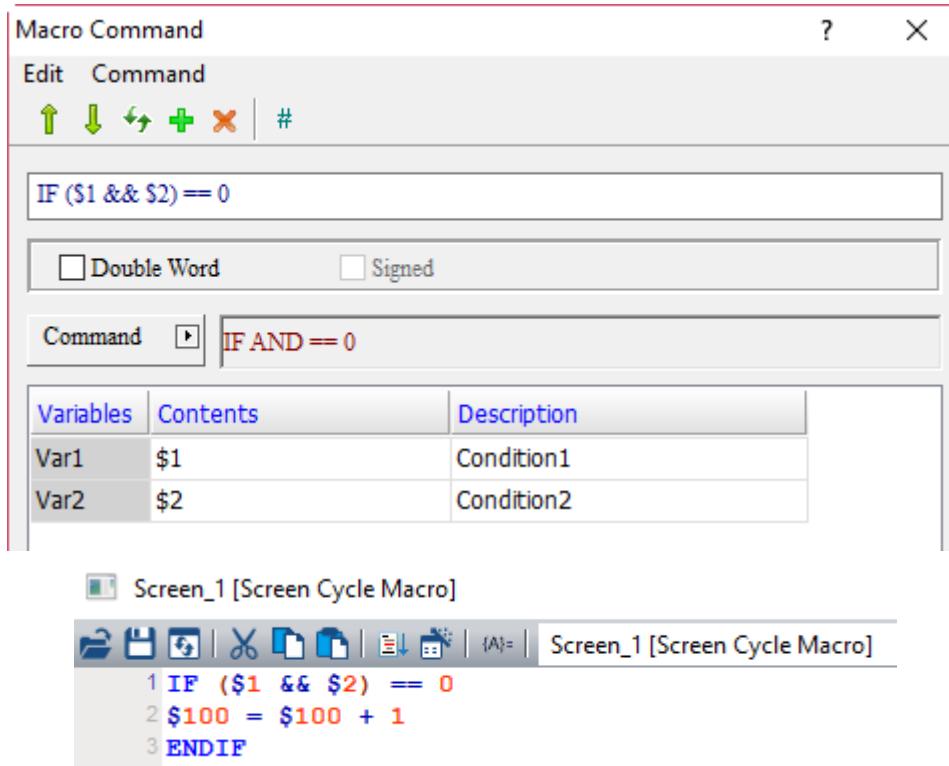
(7) IF AND == 0				
Expression	Meaning of variable		Note	
IF (Var1 && Var2) == 0 (W) IF (Var1 && Var2) == 0 (W)	Var1	Condition1	W: Word DW: Double Word	
	Var2	Condition2		
	Description of action			
	If the result of the AND operation on Condition1 and Condition2 is 0, execute...			

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

**Example**

- Var1 and Var2 are internal memory addresses.



- If the result of the AND operation on \$1 and \$2 is 0, execute \$100 = \$100 + 1; if the result of the AND operation on \$1 and \$2 is not 0, then \$100 = \$100 + 1 will not be executed.

24

(8) IF AND != 0				
Expression	Meaning of variable		Note	
IF (Var1 && Var2) != 0 (W) IF (Var1 && Var2) != 0 (DW)	Var1	Condition1	W: Word DW: Double Word	
	Var2	Condition2		
	<b>Description of action</b>			
	If the result of the AND operation on Condition1 and Condition2 is not 0, execute...			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

**Example**

- Var1 and Var2 are internal memory addresses.

Variables	Contents	Description
Var1	\$1	Condition1
Var2	\$2	Condition2

```

Screen_1 [Screen Cycle Macro]
1 IF ($1 && $2) != 0
2 $100 = $100 + 1
3 ENDIF

```

- If the result of the AND operation on \$1 and \$2 is not 0, execute \$100 = \$100 + 1; if the result of the AND operation on \$1 and \$2 is 0, then \$100 = \$100 + 1 will not be executed.

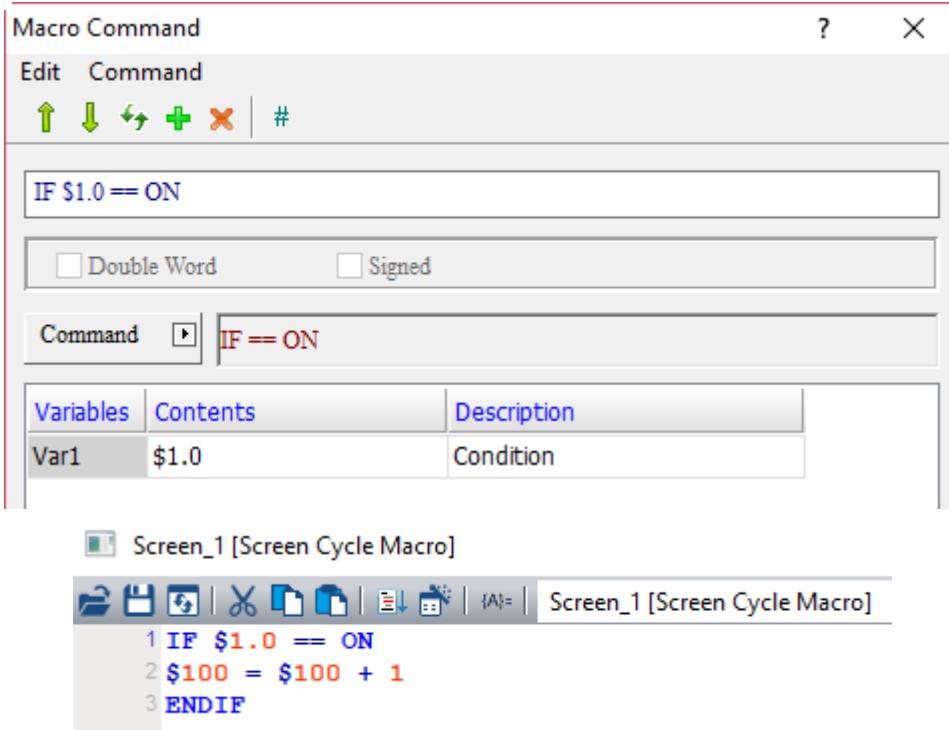
(9) IF == ON				
Expression	Meaning of variable		Note	
IF Var1 == ON (W)	Var1	Condition1	W: Word If Condition1 is ON, execute...	
	Description of action			
	If Condition1 is ON, execute...			

24

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		

**Example**

- Var1 is the internal memory address.



- If \$1.0 is ON, execute \$100 = \$100 + 1; if \$1.0 is not ON, then \$100 = \$100 + 1 will not be executed.

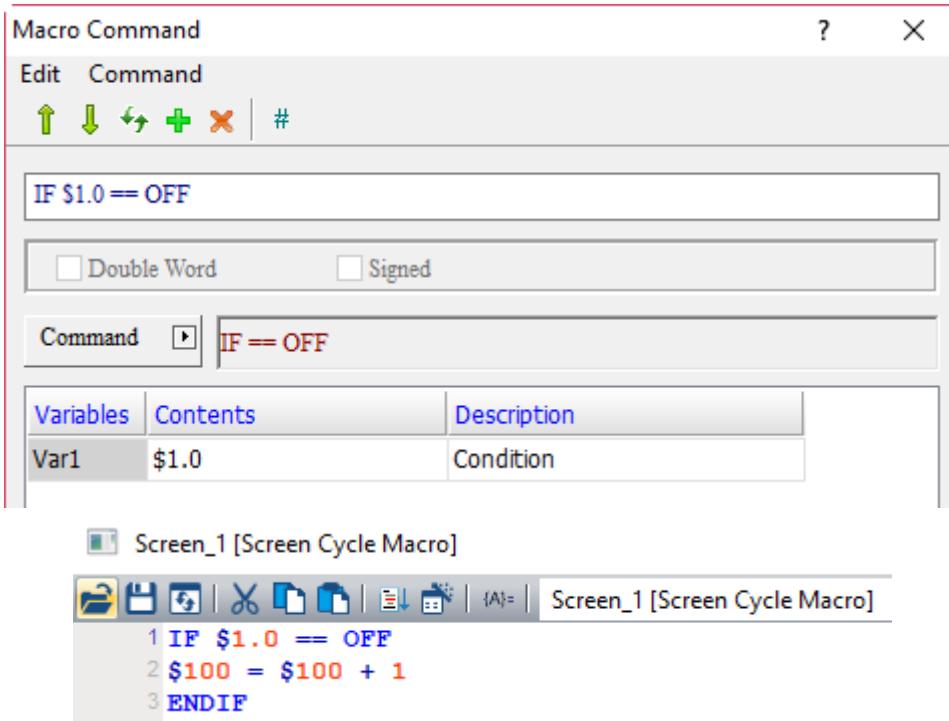
24

(10) IF == OFF				
Expression	Meaning of variable		Note	
IF Var1 == OFF (W)	Var1	Condition1	W: Word If Condition1 is OFF, execute...	
	Description of action			
	If Condition1 is OFF, execute...			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		

### Example

- Var1 is the internal memory address.



- If \$1.0 is OFF, execute \$100 = \$100 + 1; if \$1.0 is not OFF, then \$100 = \$100 + 1 will not be executed.

- ELSEIF... (else if...)

```

ELSEIF ==
ELSEIF !=
ELSEIF >
ELSEIF >=
ELSEIF <
ELSEIF <=
ELSEIF AND ==0
ELSEIF AND !=0
ELSEIF ==ON
ELSEIF ==OFF

```

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The following will introduce the 10 commands of ELSEIF... macro.

#### (1) ELSEIF ==

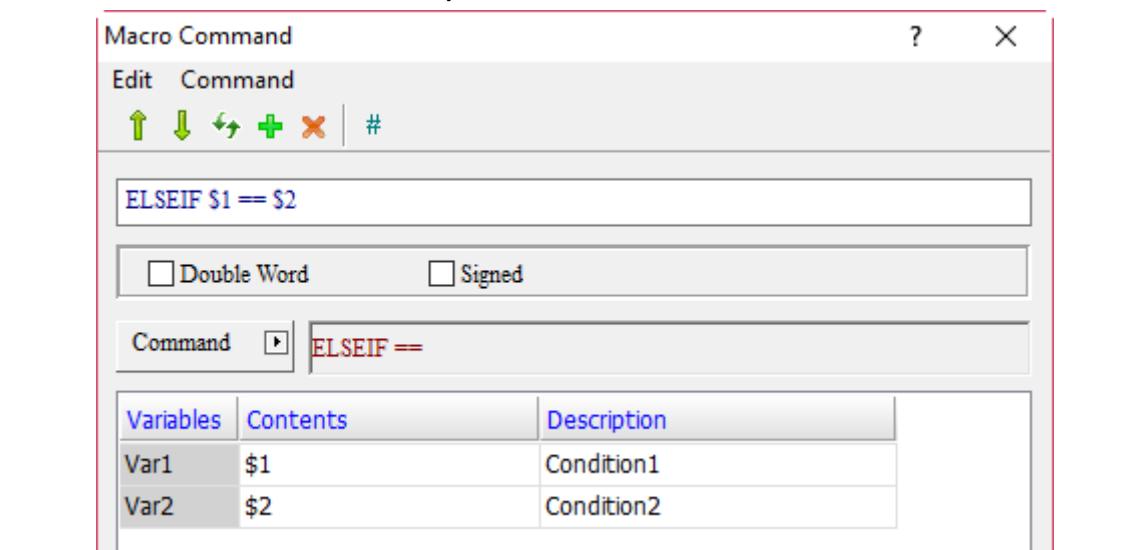
Expression	Meaning of variable		Note	
ELSEIF Var1 == Var2 (W) ELSEIF Var1 == Var2 (DW) ELSEIF Var1 == Var2 (Signed W) ELSEIF Var1 == Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
	Var2	Condition2		
	<b>Description of action</b>			
	Else if Condition1 equals Condition2, execute...			

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

#### Example

- Var1 and Var2 are internal memory addresses.



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**Example**

```

1 IF $1 != $2
2 $200 = $200 + 1
3 ELSEIF $1 == $2
4 $100 = $100 + 1
5 ENDIF

```

- If the value of \$1 does not equal \$2, execute \$200 = \$200 + 1; else if \$1 equals \$2, then execute \$100 = \$100 + 1.

**(2) ELSEIF !=**

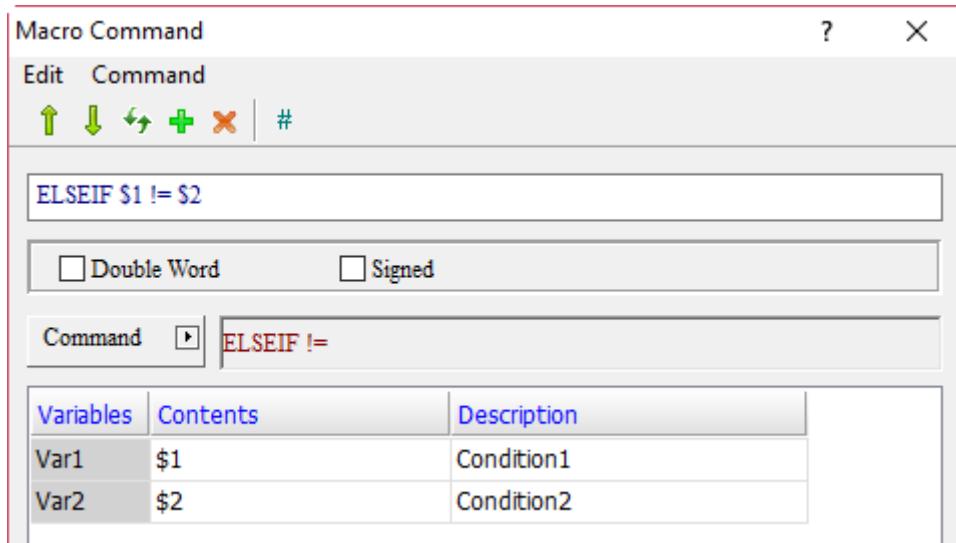
Expression	Meaning of variable		Note	
ELSEIF Var1 != Var2 (W) ELSEIF Var1 != Var2 (DW) ELSEIF Var1 != Var2 (Signed W) ELSEIF Var1 != Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
	Var2	Condition2		
	<b>Description of action</b>			
	Else if Condition1 does not equal Condition2, execute...			

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

**Example**

- Var1 and Var2 are internal memory addresses.



**Example**

```

Screen_1 [Screen Cycle Macro]
1 IF $1 == $2
2 $200 = $200 + 1
3 ELSEIF $1 != $2
4 $100 = $100 + 1
5 ENDIF

```

- If the value of \$1 equals \$2, execute  $\$200 = \$200 + 1$ ; else if \$1 does not equal \$2, then execute  $\$100 = \$100 + 1$ .

**(3) ELSEIF >**

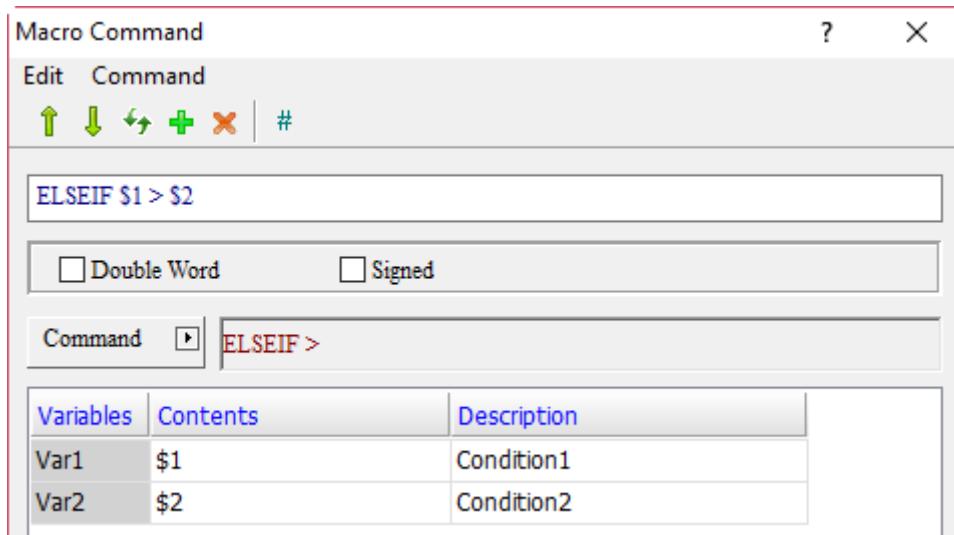
Expression	Meaning of variable		Note	
ELSEIF Var1 > Var2 (W) ELSEIF Var1 > Var2 (DW) ELSEIF Var1 > Var2 (Signed W) ELSEIF Var1 > Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
	Var2	Condition2		
	<b>Description of action</b>			
	Else if Condition1 is greater than Condition2, execute...			

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

**Example**

- Var1 and Var2 are internal memory addresses.



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**Example**

Screen\_1 [Screen Cycle Macro]

```

1 IF $1 == $2
2 $200 = $200 + 1
3 ELSEIF $1 > $2
4 $100 = $100 + 1
5 ENDIF

```

- If the value of \$1 equals \$2, execute \$200 = \$200 + 1; else if \$1 is greater than \$2, then execute \$100 = \$100 + 1.

**(4) ELSEIF >=**

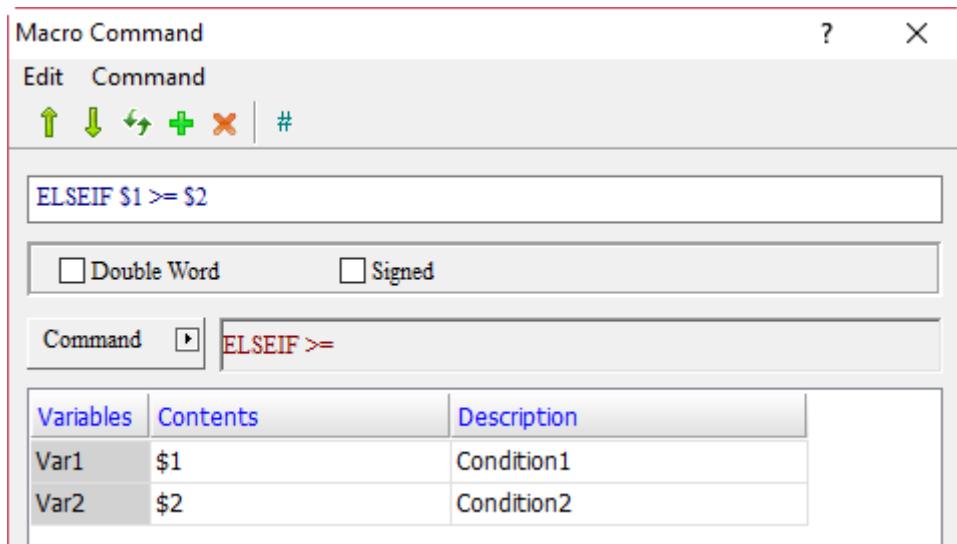
Expression	Meaning of variable		Note	
ELSEIF Var1 >= Var2 (W) ELSEIF Var1 >= Var2 (DW) ELSEIF Var1 >= Var2 (Signed W) ELSEIF Var1 >= Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
	Var2	Condition2		
	<b>Description of action</b>			
	Else if Condition1 is greater than or equal to Condition2, execute...			

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

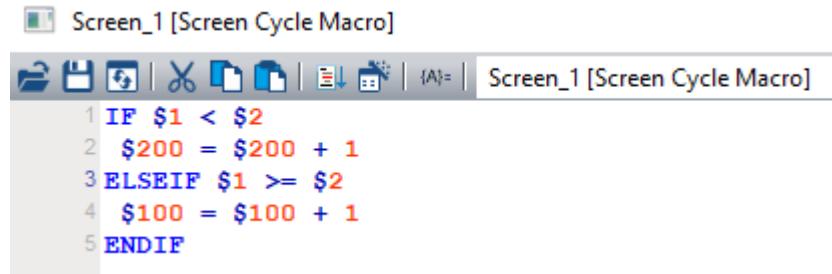
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

**Example**

- Var1 and Var2 are internal memory addresses.



**Example**



```

1 IF $1 < $2
2 $200 = $200 + 1
3 ELSEIF $1 >= $2
4 $100 = $100 + 1
5 ENDIF

```

- If the value of \$1 is less than \$2, execute \$200 = \$200 + 1; else if \$1 is greater than or equal to \$2, then execute \$100 = \$100 + 1.

**(5) ELSEIF <**

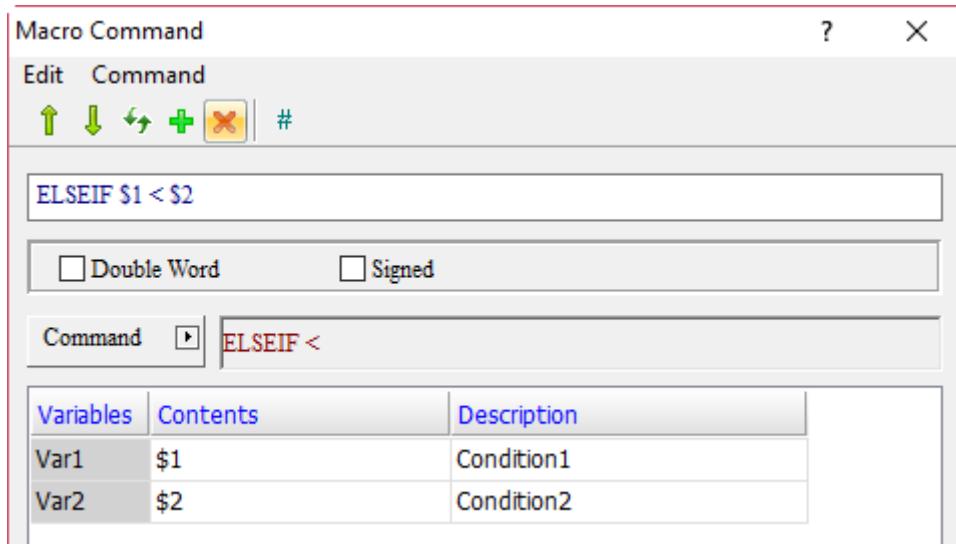
Expression	Meaning of variable		Note	
ELSEIF Var1 < Var2 (W) ELSEIF Var1 < Var2 (DW) ELSEIF Var1 < Var2 (Signed W) ELSEIF Var1 < Var2 (Signed DW)	Var 1	Condition 1	W: Word DW: Double Word Signed: signed number	
	Var 2	Condition 2		
	<b>Description of action</b>			
	Else if Condition1 is less than Condition2, execute...			

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

**Example**

- Var1 and Var2 are internal memory addresses.



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**Example**

Screen\_1 [Screen Cycle Macro]

```

1 IF $1 >= $2
2 $200 = $200 + 1
3 ELSEIF $1 < $2
4 $100 = $100 + 1
5 ENDIF

```

- If the value of \$1 is greater than or equal to \$2, execute \$200 = \$200 + 1; else if \$1 is less than \$2, then execute \$100 = \$100 + 1.

**(6) ELSEIF <=**

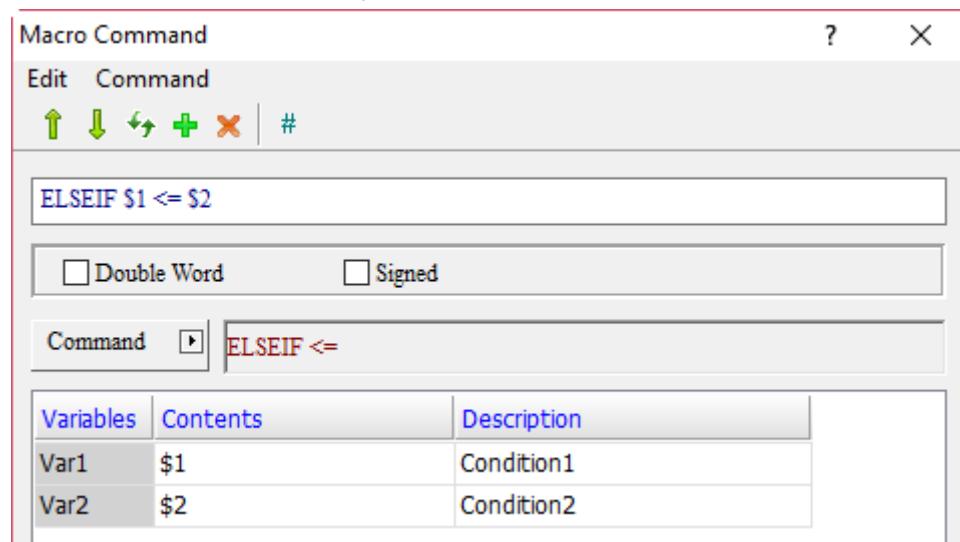
Expression	Meaning of variable		Note	
ELSEIF Var1 <= Var2 (W) ELSEIF Var1 <= Var2 (DW) ELSEIF Var1 <= Var2 (Signed W) ELSEIF Var1 <= Var2 (Signed DW)	Var1	Condition1	W: Word DW: Double Word Signed: signed number	
	Var2	Condition2		
	<b>Description of action</b>			
	Else if Condition1 is less than or equal to Condition2, execute...			

Note: the ELSEIF macro command must be used with IF...ENDIF, otherwise an error message will pop up while compiling.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	◎		◎
Var2	◎		◎

**Example**

- Var1 and Var2 are internal memory addresses.



**Example**

```

1 IF $1 > $2
2 $200 = $200 + 1
3 ELSEIF $1 <= $2
4 $100 = $100 + 1
5 ENDIF

```

- If the value of \$1 is greater than \$2, execute \$200 = \$200 + 1; else if \$1 is less than or equal to \$2, then execute \$100 = \$100 + 1.

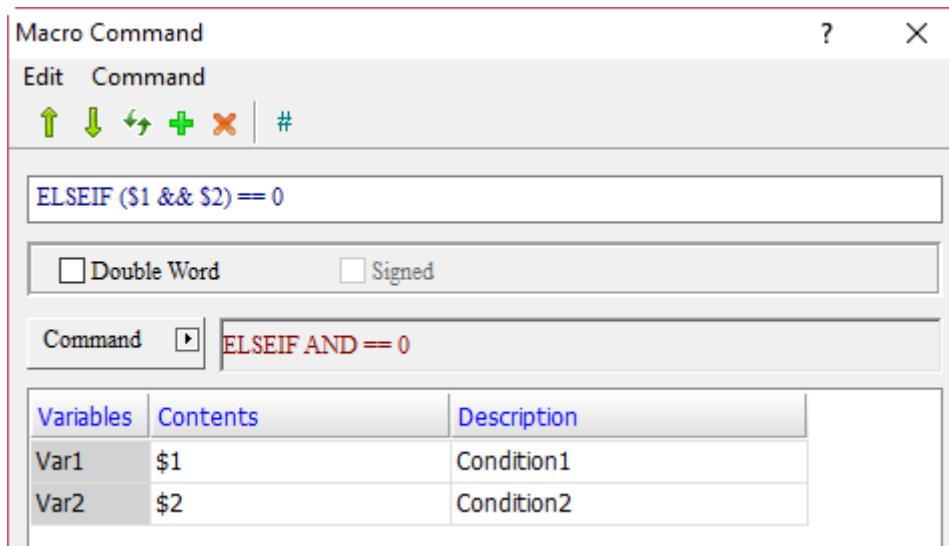
**(7) ELSEIF AND == 0**

Expression	Meaning of variable		Note	
ELSEIF (Var1 && Var2) == 0 (W) ELSEIF (Var1 && Var2) == 0 (DW)	Var1	Condition1	W: Word DW: Double Word	
	Var2	Condition2		
	Description of action			
	Else if the result of the AND operation on Condition1 and Condition2 is 0, execute...			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

**Example**

- Var1 and Var2 are internal memory addresses.



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**Example**

Screen\_1 [Screen Cycle Macro]

```

1 IF ($1 && $2) != 0
2 $200 = $200 + 1
3 ELSEIF ($1 && $2) == 0
4 $100 = $100 + 1
5 ENDIF

```

- If the result of the AND operation on \$1 and \$2 is not 0, execute \$200 = \$200 + 1; else if the result of the AND operation on \$1 and \$2 is 0, then execute \$100 = \$100 + 1.

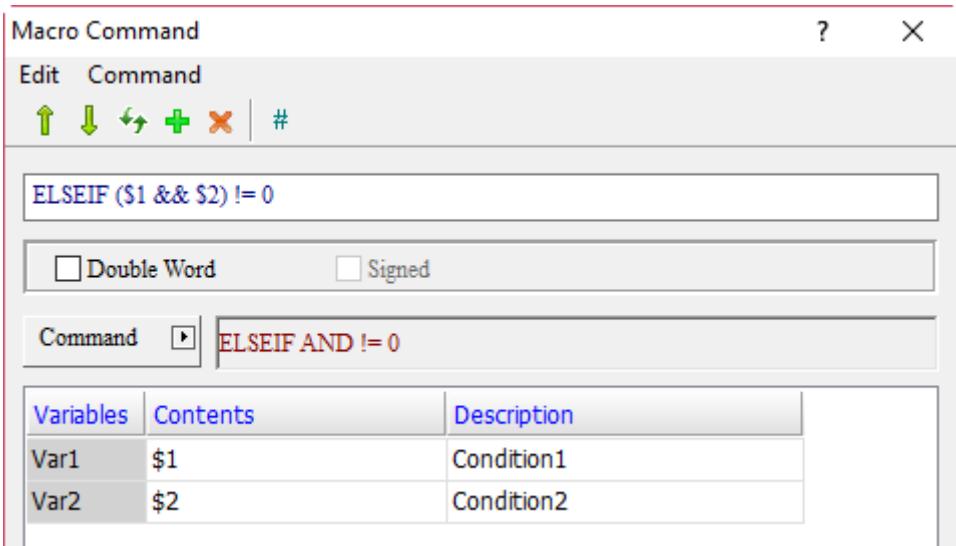
**(8) ELSEIF AND != 0**

Expression	Meaning of variable		Note	
ELSEIF (Var1 && Var2) != 0 (W) ELSEIF (Var1 && Var2) != 0 (DW)	Var1	Condition1	W: Word DW: Double Word	
	Var2	Condition2		
	Description of action			
	Else if the result of the AND operation on Condition1 and Condition2 is not 0, execute...			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

**Example**

- Var1 and Var2 are internal memory addresses.



**Example**

Screen\_1 [Screen Cycle Macro]

```

1 IF ($1 && $2) == 0
2 $200 = $200 + 1
3 ELSEIF ($1 && $2) != 0
4 $100 = $100 + 1
5 ENDIF

```

- If the result of the AND operation on \$1 and \$2 is 0, execute \$200 = \$200 + 1; else if the result of the AND operation on \$1 and \$2 is not 0, then execute \$100 = \$100 + 1.

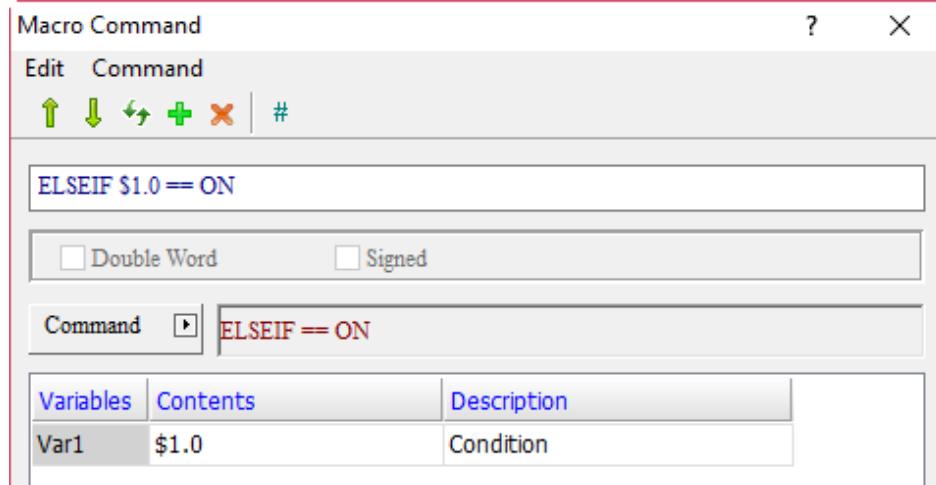
**(9) ELSEIF ==ON**

Expression	Meaning of variable		Note	
ELSEIF Var1 == ON (W)	Var1	Condition1	W: Word	
	Description of action			
	Else if Condition1 is ON, execute...			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)		

**Example**

- Var1 is the internal memory address.



Screen\_1 [Screen Cycle Macro]

```

1 IF $1.0 == OFF
2 $200 = $200 + 1
3 ELSEIF $1.0 == ON
4 $100 = $100 + 1
5 ENDIF

```

- If \$1.0 is OFF, execute \$200 = \$200 + 1; else if \$1.0 is ON, then execute \$100 = \$100 + 1.

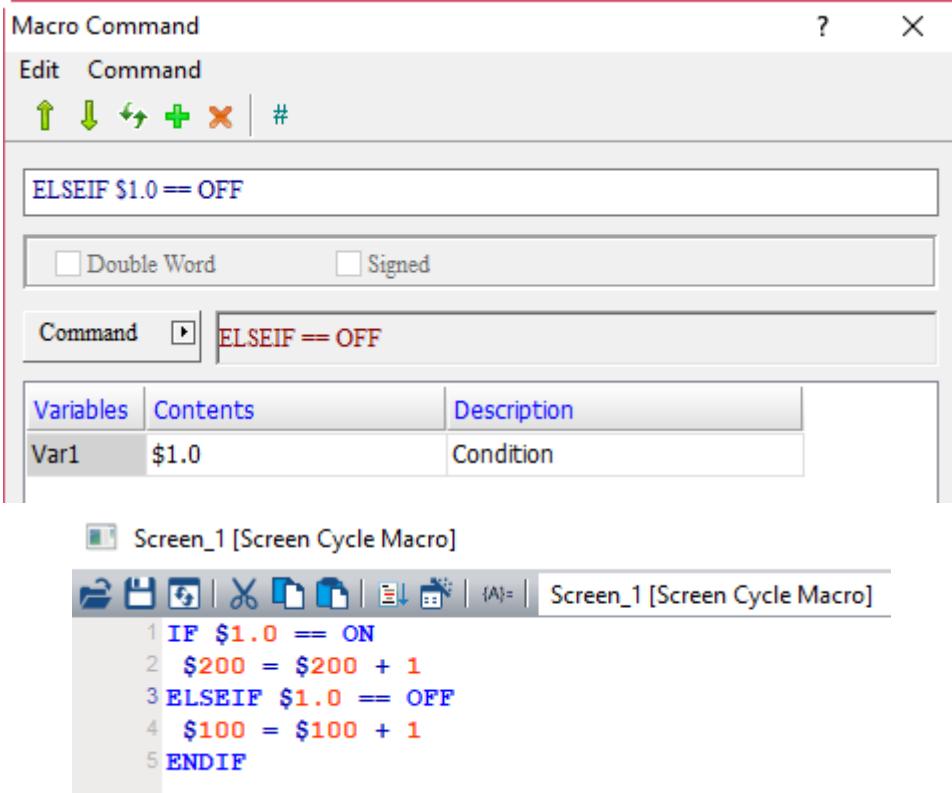
24

(10) ELSEIF == OFF				
Expression	Meaning of variable		Note	
ELSEIF Var1 == OFF (W)	Var1	Condition1	W: Word Else if Condition1 is OFF, execute...	
	Description of action			
	Else if Condition1 is OFF, execute...			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	V (can only be Bit)		

### Example

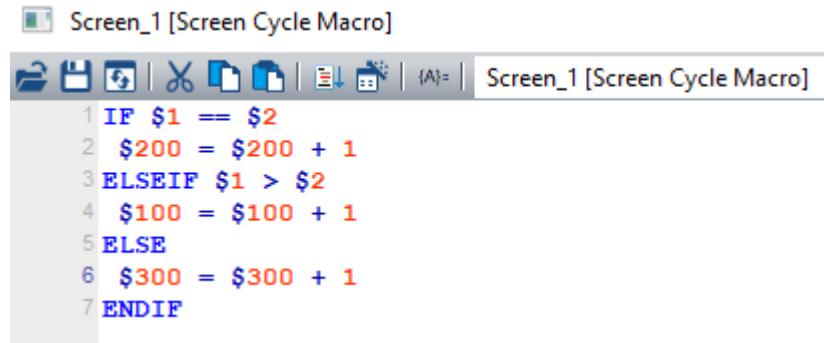
- Var1 is the internal memory address.



- If \$1.0 is ON, execute \$200 = \$200 + 1; else if \$1.0 is OFF, then execute \$100 = \$100 + 1.

## ■ ELSE

The ELSE command is mainly used to execute other programs when conditions of IF... or ELSEIF are not met. ELSE must be used together with IF... and ENDIF, otherwise the software will prompt a syntax error message while compiling.

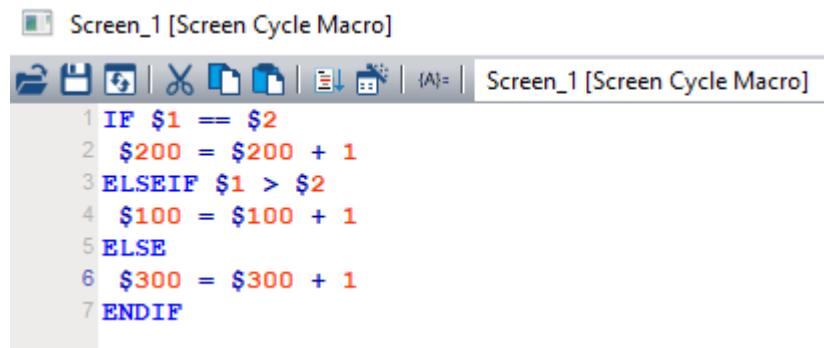


```
Screen_1 [Screen Cycle Macro]
File Save Open Cut Copy Paste Find {A} Screen_1 [Screen Cycle Macro]
1 IF $1 == $2
2 $200 = $200 + 1
3 ELSEIF $1 > $2
4 $100 = $100 + 1
5 ELSE
6 $300 = $300 + 1
7 ENDIF
```

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## ■ ENDIF

ENDIF is mainly used together with IF..., ELSE, and ELSEIF... commands.



```
Screen_1 [Screen Cycle Macro]
File Save Open Cut Copy Paste Find {A} Screen_1 [Screen Cycle Macro]
1 IF $1 == $2
2 $200 = $200 + 1
3 ELSEIF $1 > $2
4 $100 = $100 + 1
5 ELSE
6 $300 = $300 + 1
7 ENDIF
```

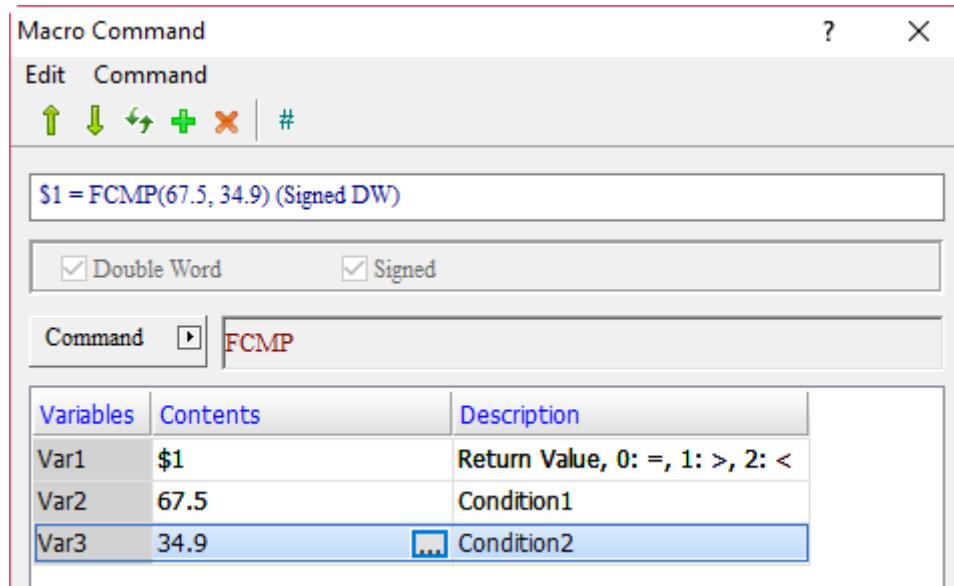
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- FCMP (comparison of floating-point value)

Expression	Meaning of variable		Note	
Var1 = FCMP(Var2, Var3) (Signed DW)	Var1	Return value of comparison result	DW: Double Word Signed: signed number	
		= 0		
		> 1		
		< 2		
	Var2	Condition1		
	Var3	Condition2		
Description of action				
Compare Var2 and Var3, and put the result in Var1.				

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.



- Compare the floating-point values of 67.5 and 34.9.  $67.5 > 34.9$ , and the return value is 1, so  $\$1 = 1$ .

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v

### 24.3.6 Flow Control

FlowControl includes commands such as GOTO, LABEL, CALL, RET, FOR, NEXT, END, etc., which you can use to control the execution process while writing macro programs. The details will be provided as follows.



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Figure 24.3.6.1 FlowControl

- GOTO LABEL (unconditionally execute a label name)

Expression	Meaning of variable		Note	
GOTO LABEL Var1 (W)	Var1	Goto Label	W: Word Directly execute the specified label name.	
	<b>Description of action</b>			
	Directly execute the specified label name.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1			v

#### Example

- Var1 can only be a constant.



```

Screen_1 [Screen Cycle Macro]
1 GOTO LABEL 1
2 LABEL 1
3 $100 = $100 + 1
  
```

- Execute LABEL 1 directly. The command of LABEL 1 is  $\$100 = \$100 + 1$ .

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■ LABEL (label name)

Expression	Meaning of variable		Note	
LABEL Var1 (W)	Var 1	Label name	W: Word	
	Description of action			
	Specify the label name.			

Note: the same label name shall not be used in the same macro.

Variable	Type		
	Internal memory	PLC register	Constant
Var1			v

**Example**

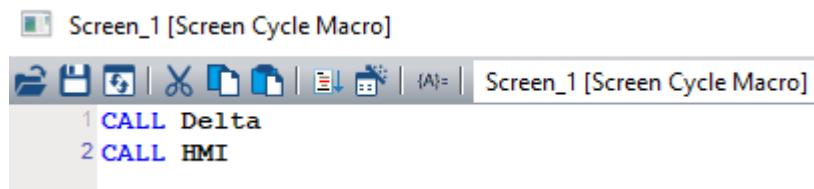
Var1 can only be a constant.



■ CALL (call submacro)

Expression	Meaning of variable		Note	
CALL Var1 (W)	Var1	Submacro number (1 - 512)	W: Word	
	Description of action			
	Specify the names of submacros.			

Note: Var1 can support the input of Chinese and English names. If you want to input Chinese and English names, please enter its macro alias manually. The Macro Wizard only supports the input of submacro numbers.

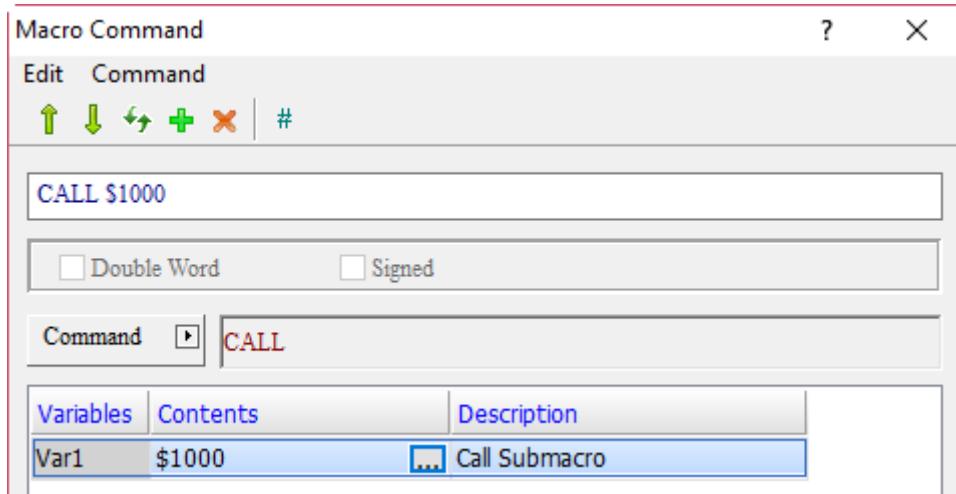


Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v

**Example**

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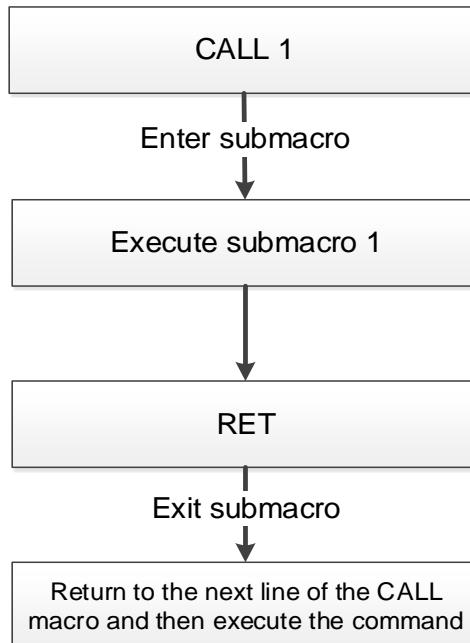
- Var1 is the internal memory address.



- You can execute the submacro commands by entering submacro numbers via the internal memory address \$1000 (Numeric Entry element).

- RET (exit submacro)

Expression	Description of action	Note
RET	Exit submacro and return to the next line of the CALL submacro and then execute the command.	RET should be added at the end of the submacro, and must be used together with the CALL command.



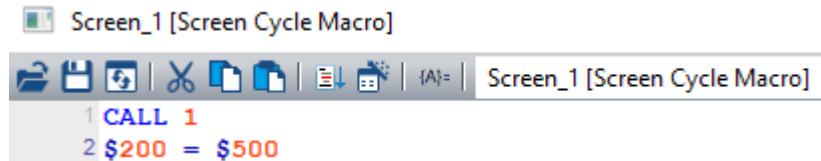
# 24

## Example

- The RET command must be written at the end of the submacro.



- Return and execute the next line of the CALL macro command after exiting the submacro.



- FOR, NEXT (program loop)

Expression	Meaning of variable		Note	
FOR Var1 (W)	Var1	Loop Counter	W: Word Execute the statement for Var1 times continuously.	
	<b>Description of action</b>			
	Execute the statement for Var1 times continuously.			
Expression	<b>Description of action</b>		Note	
NEXT	It must be used together with the FOR command.			

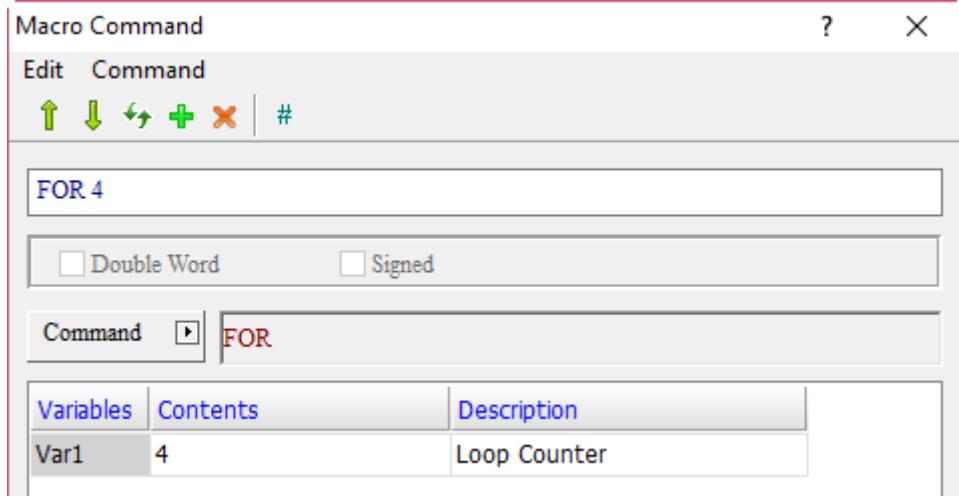
Note: the multilayer loops can be used to support up to 10 layers.

## Memory usage

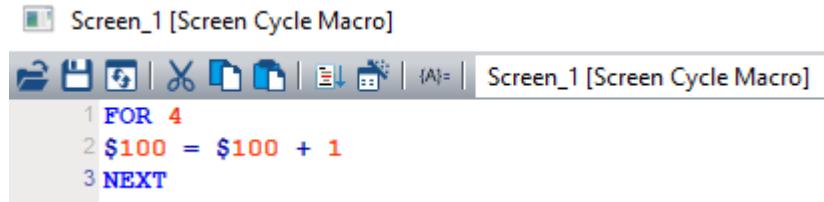
Variable	Internal memory	PLC register	Constant
Var1	v		v

## Example

- Var1 is a constant.



**Example**



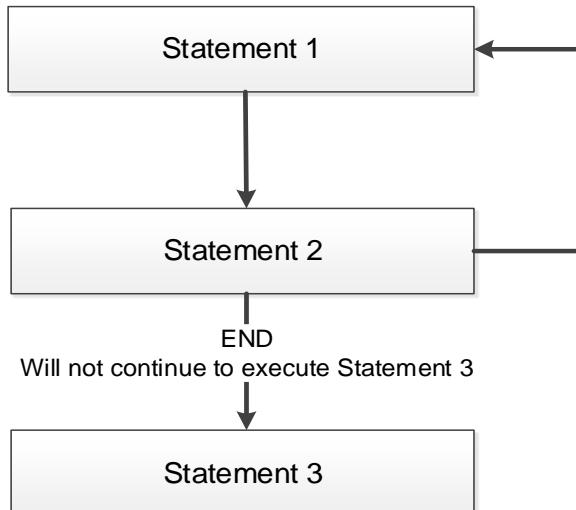
```

1 FOR 4
2 $100 = $100 + 1
3 NEXT

```

- FOR 4 means that the  $\$100 = \$100 + 1$  command is executed for four times, so the result obtained is 4.
- END (end macro programs)

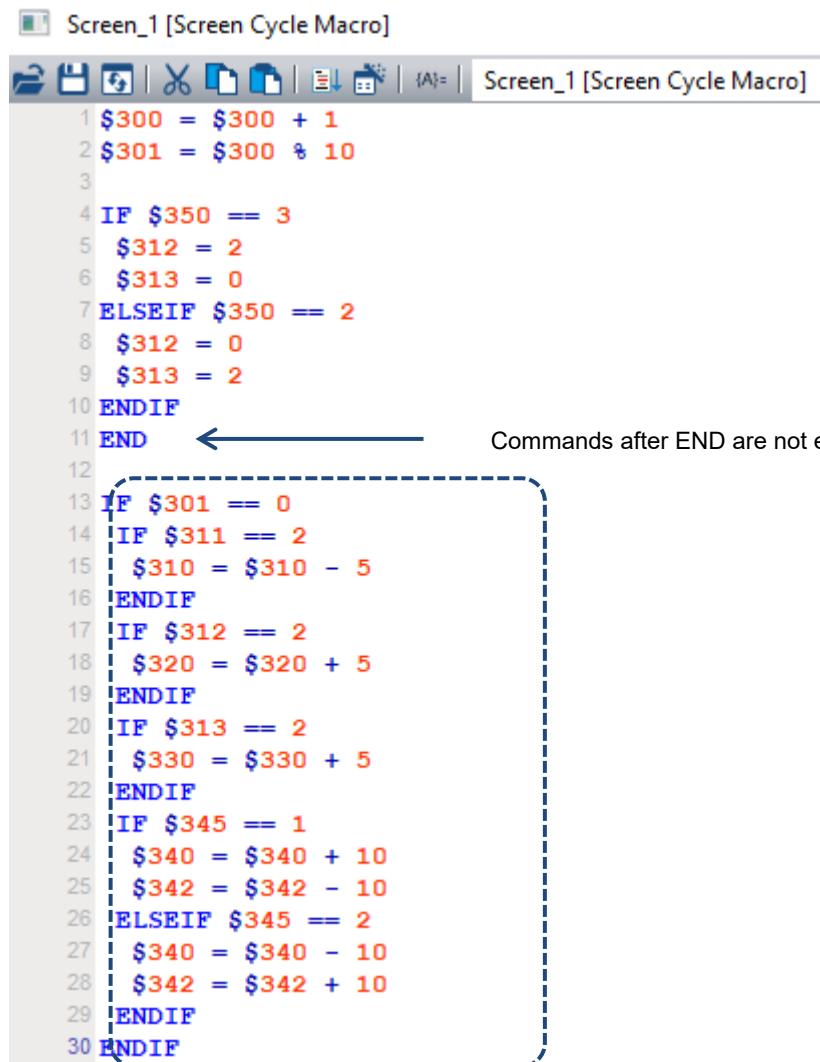
Expression	Description of action	Note
END	End macro programs.	Adding END to the submacro means the program will not return to the original macro command to continue executing the next line.



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**Example**

- The commands after END are not executed.

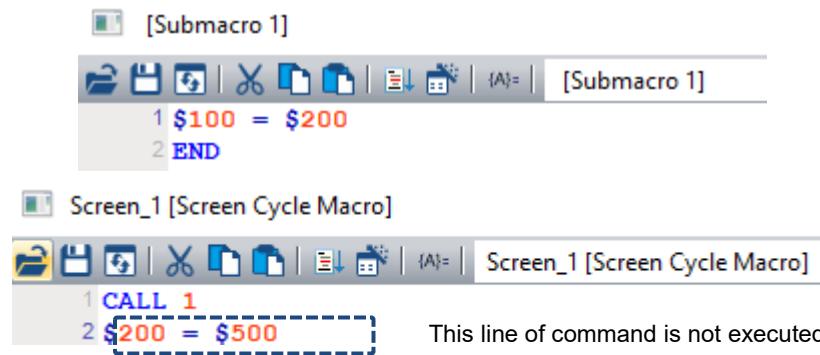


```

1 $300 = $300 + 1
2 $301 = $300 % 10
3
4 IF $350 == 3
5   $312 = 2
6   $313 = 0
7 ELSEIF $350 == 2
8   $312 = 0
9   $313 = 2
10 ENDIF
11 END ← Commands after END are not executed
12
13 IF $301 == 0
14 IF $311 == 2
15   $310 = $310 - 5
16 ENDIF
17 IF $312 == 2
18   $320 = $320 + 5
19 ENDIF
20 IF $313 == 2
21   $330 = $330 + 5
22 ENDIF
23 IF $345 == 1
24   $340 = $340 + 10
25   $342 = $342 - 10
26 ELSEIF $345 == 2
27   $340 = $340 - 10
28   $342 = $342 + 10
29 ENDIF
30 ENDIF

```

- When the END command is written to the end of a submacro, it means the program will not return to execute the previous macro command.



[Submacro 1]

```

1 $100 = $200
2 END

```

Screen\_1 [Screen Cycle Macro]

```

1 CALL 1
2 $200 = $500

```

This line of command is not executed

### 24.3.7 Bit Setting

Bit Setting includes BITON, BITOFF, BITNOT, GETB and other instructions, which allow you to set the On / Off state of bit, inverse bit, and get the value represented by the bit. The details are provided as follows.



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Figure 24.3.7.1 Bit Setting

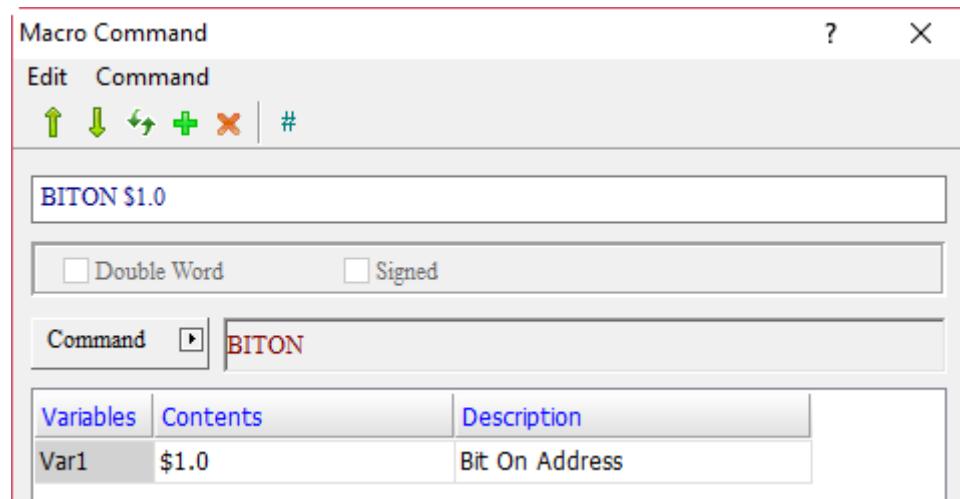
- BITON (set bit as On)

Expression	Meaning of variable		Note	
BITON Var1 (W)	Var1	Bit setting	W: Word	
	Description of action			
	Set Var1 to ON.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	

#### Example

- Var1 is the internal memory address.



- Create a Maintained button and set the Write Address to \$1.0. When BITON \$1.0 is executed, the result is as follows.



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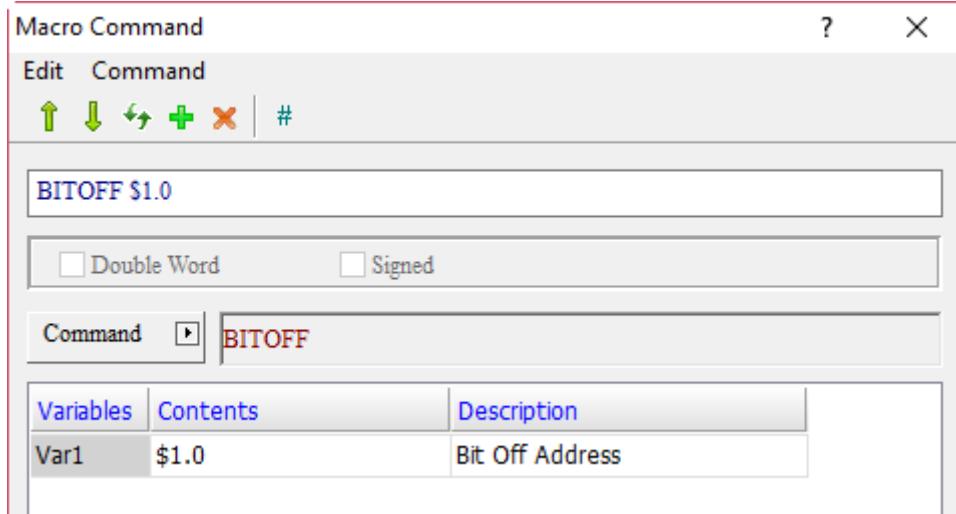
- BITON (set bit as Off)

Expression	Meaning of variable		Note	
BITOFF Var1 (W)	Var1	Bit setting	W: Word Set Var1 to Off.	
	Description of action			
	Set Var1 to Off.			

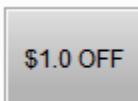
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	

### Example

- Var1 is the internal memory address.



- Create a Maintained button and set the Write Address to \$1.0. When BITOFF \$1.0 is executed, the result is as follows.



- BITNOT (inverse bit, ON→OFF, OFF→ON)

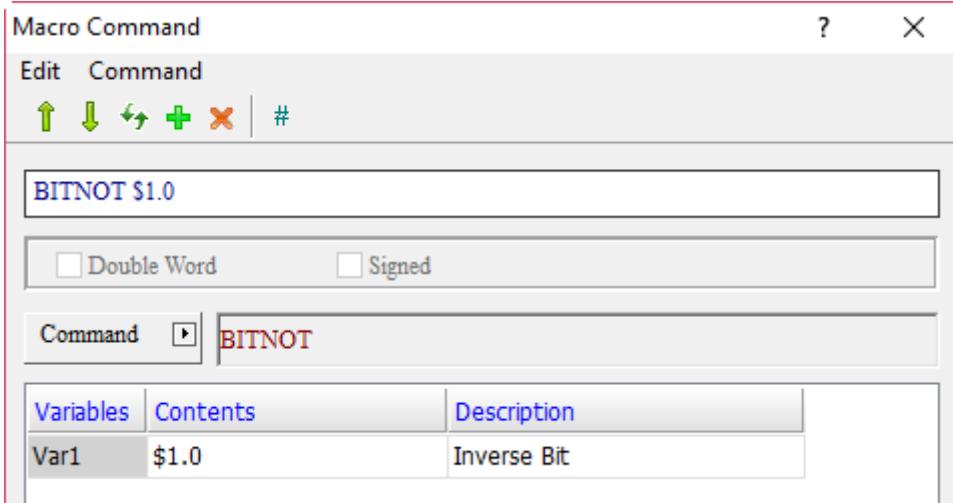
Expression	Meaning of variable		Note	
BITNOT Var1 (W)	Var1	Bit setting	W: Word Set Var1 bit from On to Off and from Off to On.	
	<b>Description of action</b>			
	Set Var1 bit from On to Off and from Off to On.			

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Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	

### Example

- Var1 is the internal memory address.



- Create a Maintained button and set the Write Address to \$1.0. When BITNOT \$1.0 is executed, the actions of the Maintained button will be continuously switched from On to Off and from Off to On.

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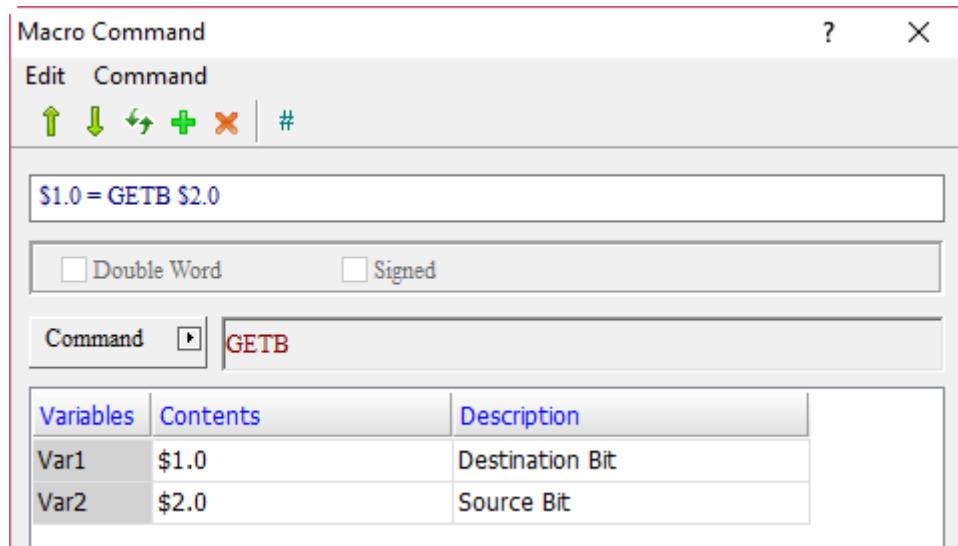
- GETB (get bit value)

Expression	Meaning of variable		Note	
(Var1) = GETB (Var2) (W)	Var1	Bit setting	W: Word Put the Var2 bit value in Var1.	
	Description of action			
	Put the Var2 bit value in Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v (can only be Bit)	v (can only be Bit)	
Var2	v (can only be Bit)	v (can only be Bit)	

### Example

- Var1 and Var2 are internal memory addresses.



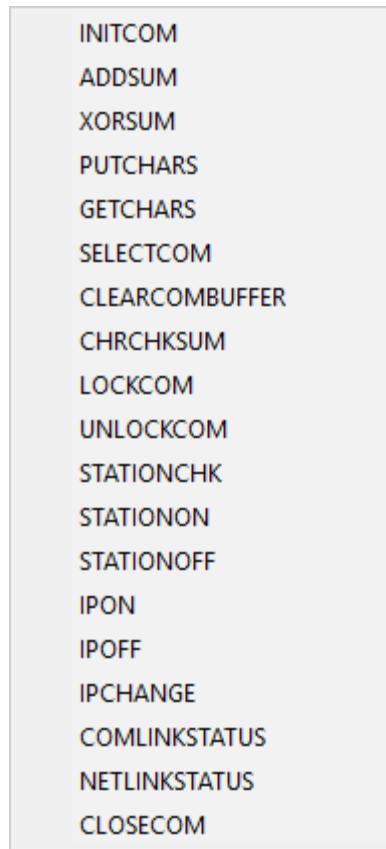
- Set \$1.0 and \$2.0 as Set to On button elements. When executing \$1.0 = GETB \$2.0, press the \$2.0 button, then \$1.0 will be triggered to ON.

**\$1.0 = GETB \$2.0**



### 24.3.8 Communication

The Communication macro command provides several macros related to COM Port and network IP control, as detailed as follows.



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Figure 24.3.8.1 Communication

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■ INITCOM (COM Port initialization)

Expression	Meaning of variable			Note		
Var1 = INITCOM(Var2, Var3, Var4, Var5, Var6, Var7, Var8) (W)	Var1	Return value		W: Word		
		Failed	0			
		Succeeded	1			
	Var2	COM Port				
	Var3	Interface				
	Var4	Data Bits				
	Var5	Parity Bits				
	Var6	Stop Bits				
	Var7	Baud Rate				
	Var8	Flow Control				
Description of action						
The initialization of COM Port is used to open the communication port, set the communication protocol (Var2 - Var8), and put the return value of the initialization result in Var1.						

Note: the INITCOM command can only be issued once. If it is used again, the command is invalid.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

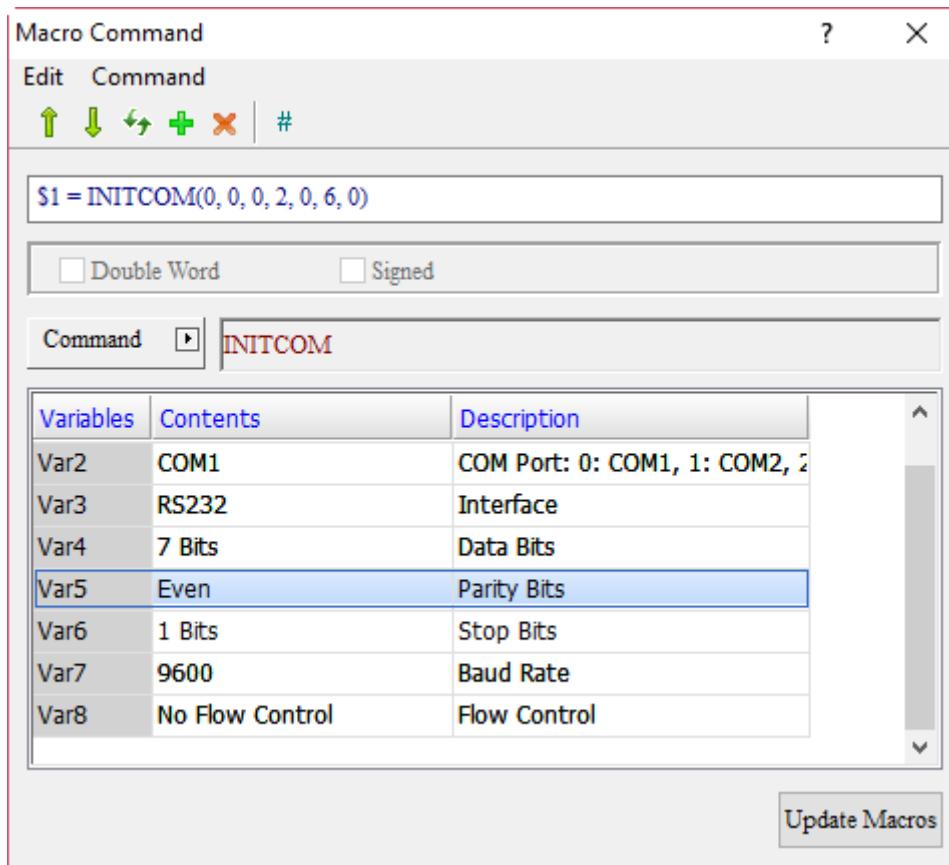
Parameter setting			
Variable	Option	Option content	Corresponding code
Var2	COM Port	COM1	0
		COM2	1
		COM3	2
Var3	Interface	RS232	0
		RS422	1
		RS485	2
Var4	Data Bits	7 Bits	0
		8 Bits	1
Var5	Parity Bits	None	0
		Old	1
		Even	2
Var6	Stop Bits	1 Bits	0
		2 Bits	1
Var7	Baud Rate	300	0
		600	1
		900	2
		1200	3
		2400	4
		4800	5
		9600	6
		14400	7
		19200	8
		28800	9
		38400	10
		57600	11
		115200	12
Var8	Flow Control	No Flow Control	0
		CTS RTS Flow Control	1
		DTR DSR Flow Control	2
		Xon Xoff Flow Control	3

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Notes for Flow Control	
No Flow Control	Flow Control is not set.
Flow Control	While using serial port to transmit data, real-time compression, debugging, and other transmission processing technologies greatly increase the speed and accuracy of communication, but also make the speed of data transmission between the computer and the HMI greater than the real data transfer speed. In order to ensure the security and integrity of data in transmission, the transfer flow must be controlled.
Flow Control	CTS / RTS Flow Control Flow control for the hardware, which is achieved by the electrical pulse wave generated by the hardware flowing to internal modem or to external modem through a connecting cable.
	DSR / DTR Flow Control Flow control for the hardware, which is achieved by a cable directly connecting the computer and the HMI.
	Xon / Xoff Flow Control Flow control for the software, which is only used in 2400 bps modem. It is achieved by adding the control code generated by software to the data in transmission.

## Example

- Var1 is the internal memory address.



- After executing the INITCOM command, 0 or 1 will be returned to \$1 for failure or success, respectively.

- ADDSUM (get CHECKSUM through addition)

Expression	Meaning of variable		Note
Var1 = ADDSUM(Var2, Var3) (W)	Var1	CHECKSUM Value	W: Word Get CHECKSUM through addition. Var1 is the CHECKSUM value after calculation, Var2 is the start address of the data to be calculated, and Var3 is the length of the data.
	Var2	Source Start Address	
	Var3	Data Length	
Description of action			

Note: the value of CHECKSUM calculated by ADDSUM is based on Byte. If the length of data is 6, it has to be divided by 2, so the actual length is 3.

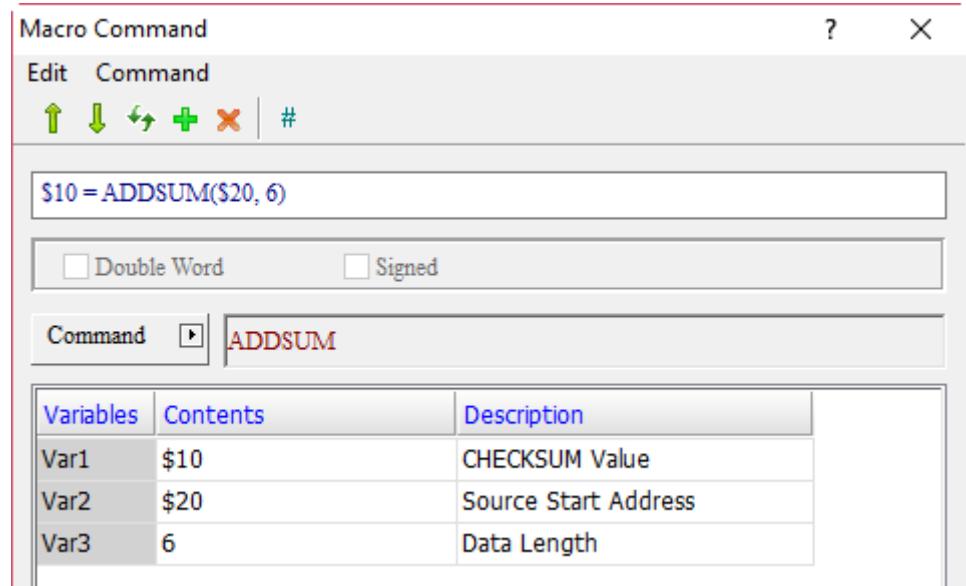
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

24

24

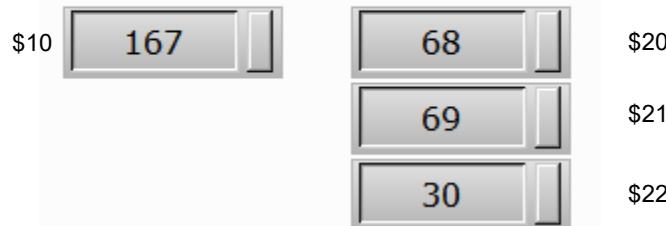
**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Conduct addition operation for 3 ( $6 / 2 = 3$ ) consecutive data length from the start address of \$20 and put the value result in \$10. The expression is  $\$20 + \$21 + \$22 = \$10$ .

$$\$10 = \text{ADDSUM}(\$20, 6)$$



- XORSUM (get CHECKSUM through XOR)

Expression	Meaning of variable		Note
Var1	Var1	CHECKSUM Value	
Var2	Var2	Source Start Address	
Var3	Var3	Data Length	
Var1 = XORSUM(Var2, Var3) (W)	<b>Description of action</b>		W: Word
	Get CHECKSUM through addition. Var1 is the CHECKSUM value after calculation, Var2 is the start address of the data to be calculated, and Var3 is the length of the data.		

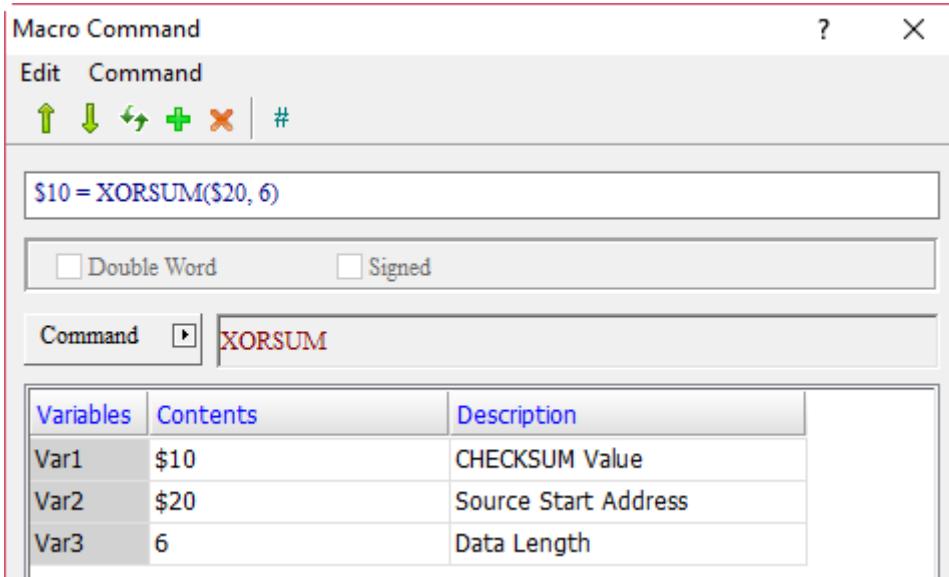
Note: the value of CHECKSUM calculated by XORSUM is based on Byte. If the length of data is 6, it has to be divided by 2, so the actual length is 3.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v

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**Example**

- Var1 and Var2 are internal memory addresses, and Var3 is a constant.



- Conduct XOR operation for 3 ( $6 / 2 = 3$ ) consecutive data length from the start address of \$20 and put the value result in \$10.

- PUTCHARS (output characters via the communication port)

Expression	Meaning of variable			Note			
Var1 = PUTCHARS(Var2, Var3, Var4) (W)	Var1	Return value		W: Word			
		Failed	0				
		Succeeded	1				
	Var2	Source Start Address					
	Var3	Data Length					
	Var4	Communication Time					
	Description of action						
By the selected communication port, output characters of Var3 data length to Var2 start address within the required Var4 communication time, and put the return value in Var1.							

Note:

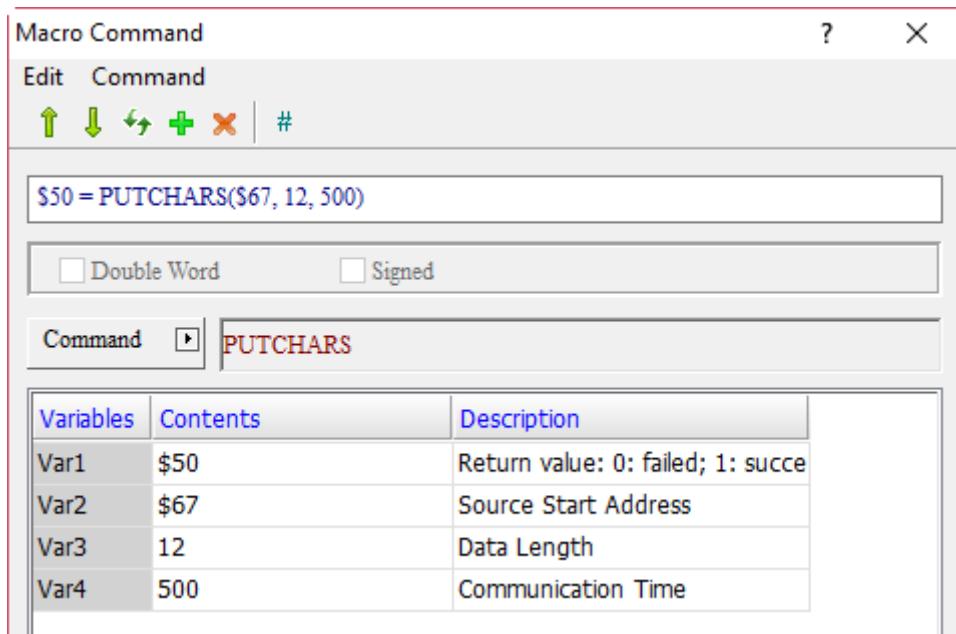
1. The PUTCHARS command must be used together with INITCOM and SELECTCOM.
2. The unit of Var3 is Byte.
3. The unit of Var4 is ms, which means to complete the macro execution within a specific time and end the execution when the time is up, so as to avoid delaying the execution of macros afterwards.

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Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v
Var4	v		v

**Example**

- Var1 and Var2 are internal memory addresses, and Var3 and Var4 are constants.



Screen\_1 Maintained\_001 {} [After Execute Macro]

```

1 $1 = INITCOM(0, 0, 0, 2, 0, 6, 0)
2 SELECTCOM(0)
3 FILLASC($67, ":FFE0020")
4 $71 = 0D30H
5 $72 = 000AH
6 $50 = PUTCHARS($67, 12, 500)

```

- In the case of \$50 = PUTCHARS(\$67, 12, 500), its action is to send 12 bytes (6 words) data and write them to \$67. If 12 bytes cannot be sent within 500 ms, the program will exit the macro command when the time is up and write 0 to \$50; if 12 bytes are sent successfully, it will exit this command immediately and write 1 to \$50.

■ GETCHARS (get characters via the COM Port )

Expression	Meaning of variable			Note				
Var1 = GETCHARS(Var2, Var3, Var4) (W)	Var1	Return value		W: Word      				
		Failed	0					
		Succeeded	1					
	Var2	Source Start Address						
	Var3	Data Length						
	Var4	Communication Time						
<b>Description of action</b>								
By the selected communication port, obtain characters of Var3 data length to Var2 start address within the required Var4 communication time, and put the return value in Var1.								

Note:

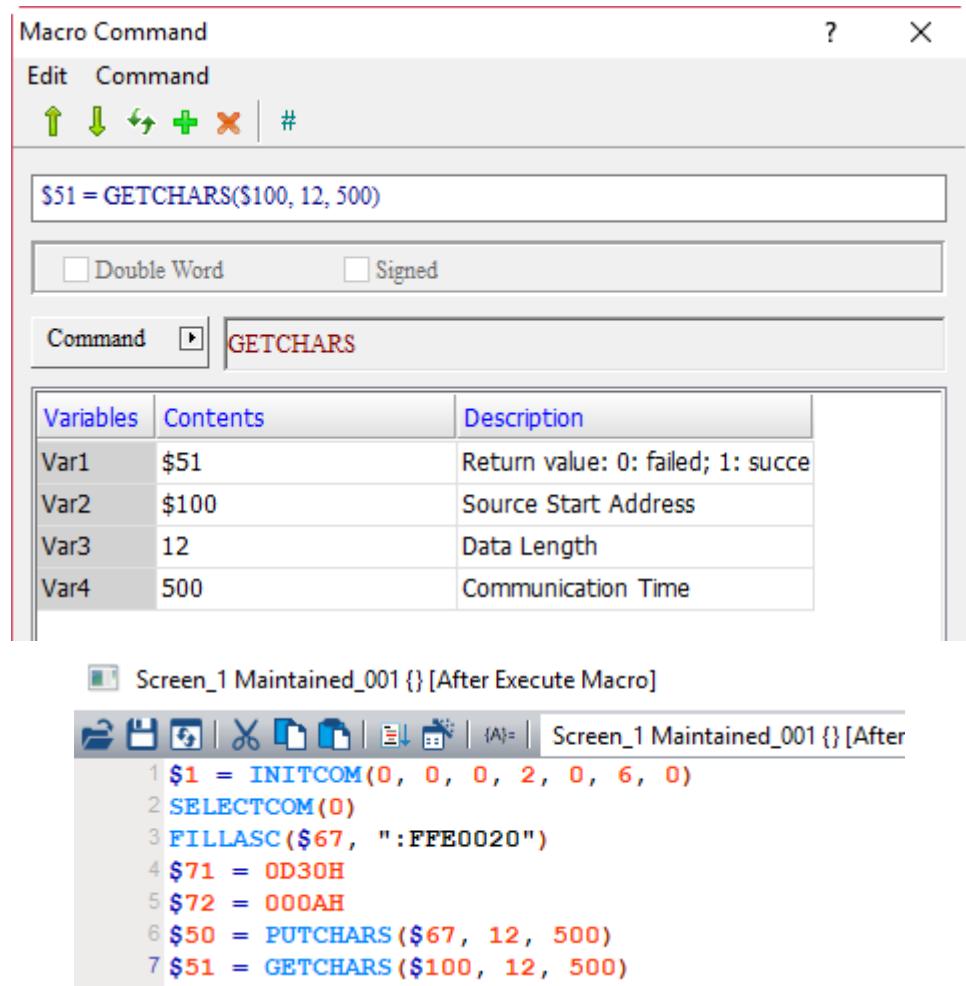
1. The GETCHARS command must be used together with INITCOM and SELECTCOM.
2. The unit of Var3 is Byte.
3. The unit of Var4 is ms, which means to complete the macro execution within a specific time and end the execution when the time is up, so as to avoid delaying the execution of macros afterwards.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		v
Var4	v		v

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**Example**

- Var1 and Var2 are internal memory addresses, and Var3 and Var4 are constants.



- In the case of \$51 = GETCHARS(\$100, 12, 500), its action is to collect 12 bytes (6 words) data and write them to \$100. If 12 bytes cannot be collected within 500 ms, the program will exit the macro command when the time is up and write 0 to \$51; if 12 bytes are collected successfully, it will exit this command immediately and write 1 to \$51.

- **SELECTCOM (select COM Port )**

Expression	Meaning of variable			Note	
SELECTCOM(Var1) (W)	Var 1	COM1	0	W: Word	
		COM2	1		
		COM3	2		
	Description of action				
	Select the communication port.				

## Note:

1. The SELECTCOM command must be used together with INITCOM.
2. The specified COM Port cannot be the same as the one used by the system. The selected COM Port will process relevant communication commands, so the SELECTCOM command in different macros will not support or interfere with each other.

Variable	Type		
	Internal memory	PLC register	Constant
Var1			v

Example
---------

Var1 can only be a constant.



Screen\_1 Maintained\_001 {} [After Execute Macro]

```

1 $1 = INITCOM(0, 0, 0, 2, 0, 6, 0)
2 SELECTCOM(0)
3 FILLASC($67, ":FFE0020")
4 $71 = 0D30H
5 $72 = 000AH
6 $50 = PUTCHARS($67, 12, 500)

```

#### ■ CLEARCOMBUFFER (clear buffer of COM Port )

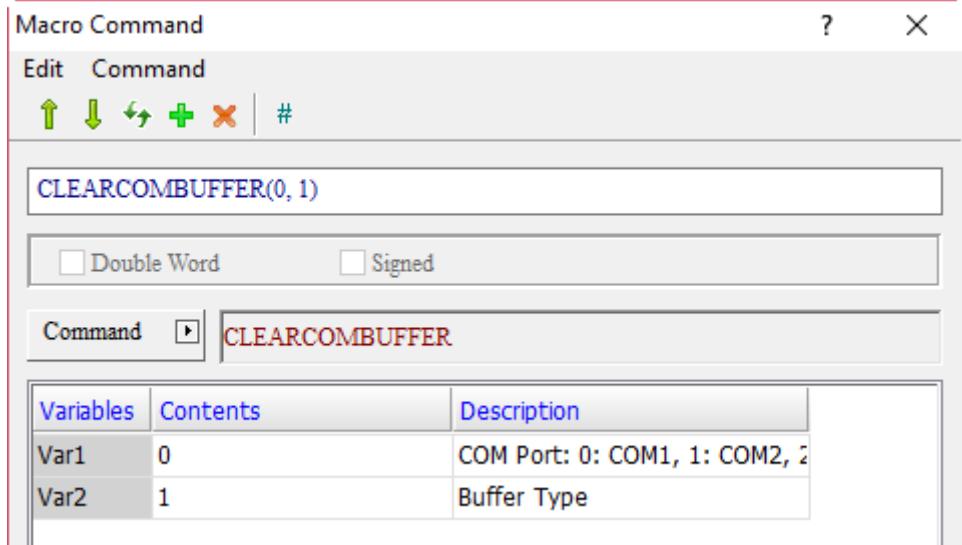
Expression	Meaning of variable			Note	
CLEARCOMBUFFER(Var1, Var2) (W)	Var1	COM1	0	W: Word	
		COM2	1		
		COM3	2		
	Var2	Receive Buffer	0		
		Transmit Buffer	1		
	Description of action				
	Clear buffer of Var1 COM Port.				

Variable	Type		
	Internal memory	PLC register	Constant
Var1			v
Var2			v

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**Example**

- Var1 and Var2 can only be constants.



- CHRCHKSUM (calculate the length and CHECKSUM value of the string)

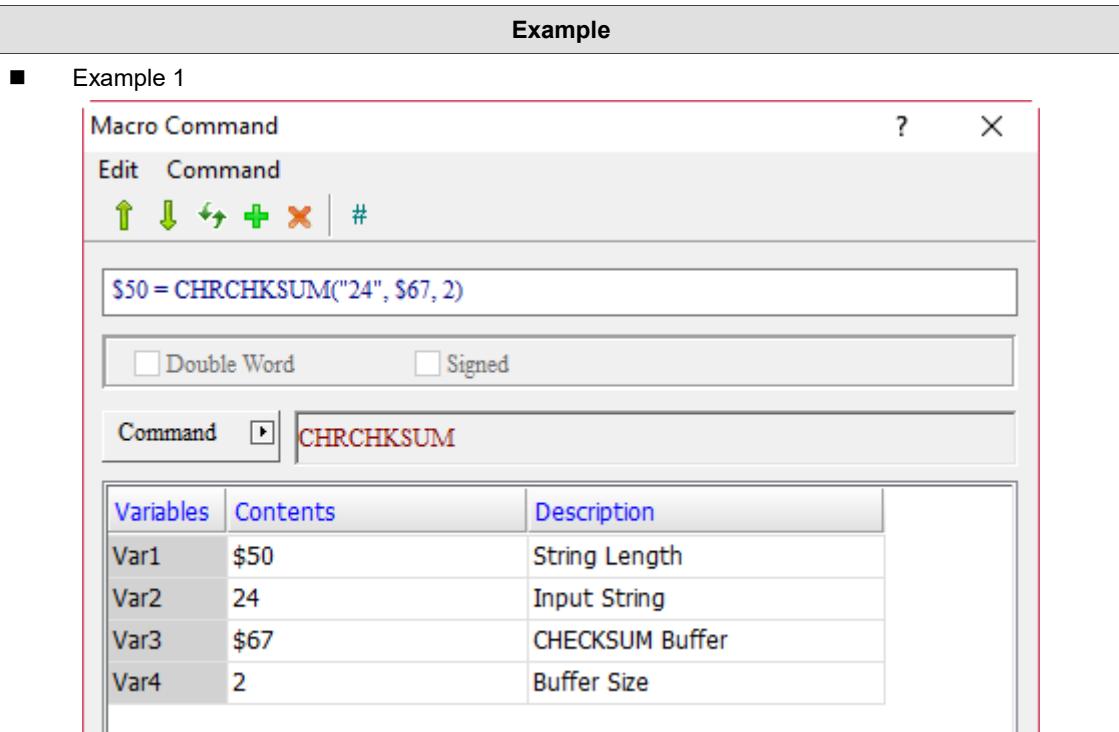
Expression	Meaning of variable				Note	
Var1 = CHRCHKSUM("Var2", Var3, Var4) (W)	Var1	String Length			W: Word	
	Var2	Input String				
	Var3	Memory address for storing strings				
	Var4	Select the display format for CHECKSUM result	1 BYTE	1		
			2 BYTES (WORD)	2		
	Description of action					
Calculate string length and CHECKSUM value, and put them in Var1.						

Note:

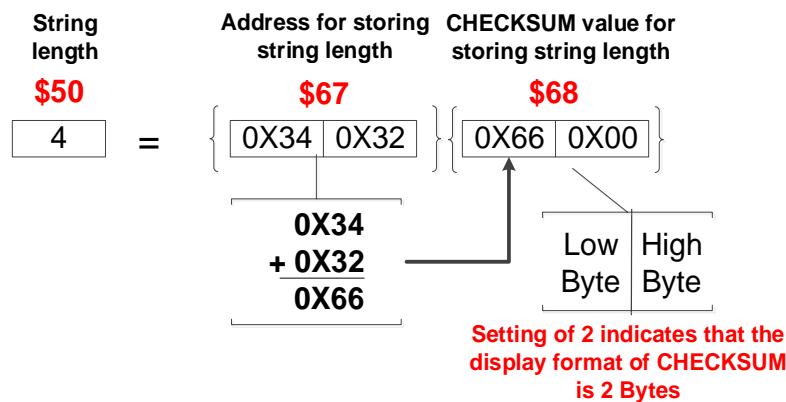
1. The string length of Var1 varies according to the format set by Var4.
2. If the input string is "345", Var4 is set as 2, the result value of the string length of Var1 is 5. On the contrary, if Var4 is set as 1, the result value is 4. (Unit based on Byte.)

Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v			
Var2			v	
Var3	v			
Var4				v (can only input 1 and 2)

24



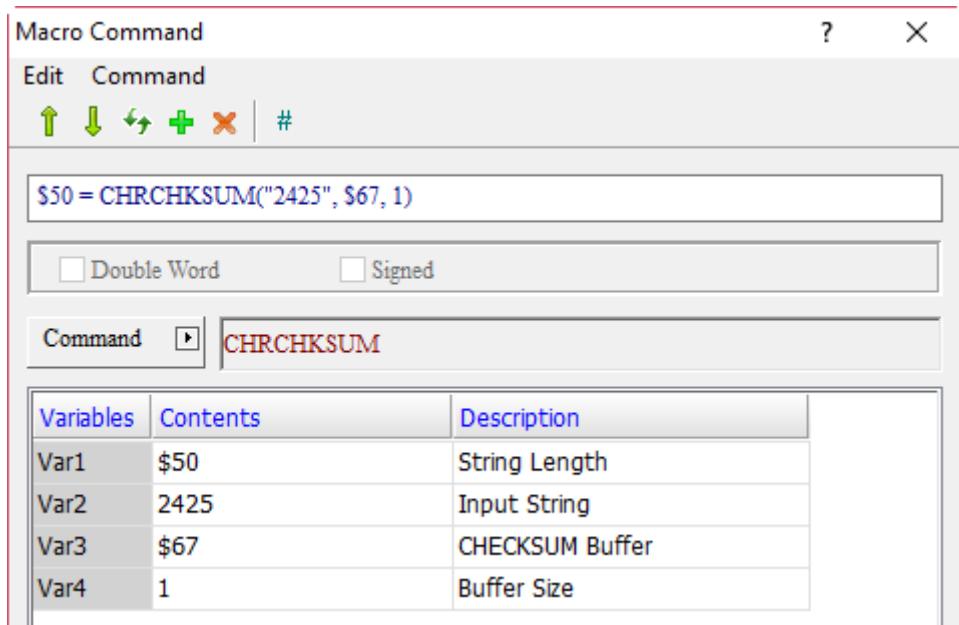
**\$50 = CHRCHKSUM ( "24" , \$67, 2)**



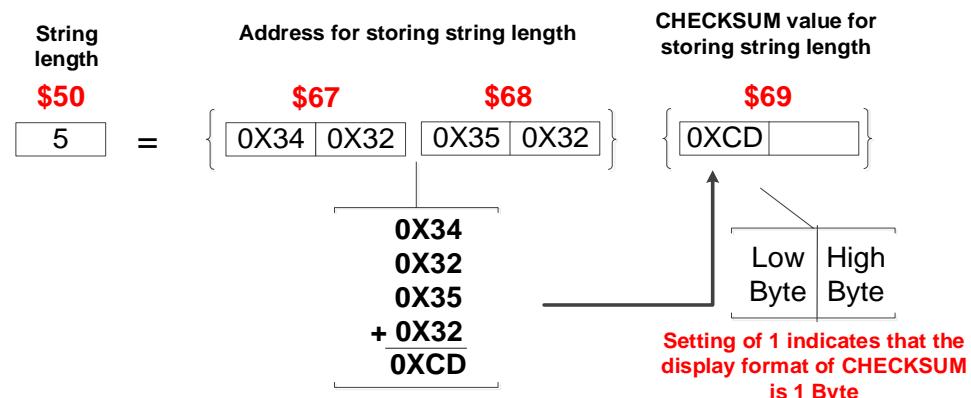
24

**Example**

## ■ Example 2



**\$50 = CHRCHKSUM ( "2425" , \$67, 1)**



■ LOCKCOM / UNLOCKCOM (lock COM Port / unlock COM Port)

Expression	Meaning of variable			Note	
Var1 = LOCKCOM(Var2, Var3) (W)	Var1	Return value		W: Word 24	
		Failed	0		
		Succeeded	1		
	Var2	COM1	0		
		COM2	1		
		COM3	2		
UNLOCKCOM(Var1) (W)	Var3	Time Out		W: Word 24	
		Description of action			
		Lock COM port.			
	Var1	COM1	0		
		COM2	1		
		COM3	2		
	Description of action				
	Unlock COM port.				

Note:

1. If the LOCKCOM command is set to infinite waiting (i.e. Var3 = 0), it means LOCKCOM will be executed twice in the same macro which will cause the HMI unable to respond.
2. If there are communication commands in more than one macro at the same time, it may cause interference of the communication data. To prevent this problem, LOCKCOM and UNLOCKCOM can be added before and after the communication commands. This can avoid communication interruption and execution of other communication actions in the same period of time to ensure the integrity of communication contents.
3. Please use LOCKCOM and UNLOCKCOM together, otherwise the HMI cannot execute the download action.
4. The unit of Var3 Time Out value is ms.

Variable	LOCKCOM command type		
	Internal memory	PLC register	Constant
Var1	v		
Var2			v
Var3			v

Variable	UNLOCKCOM command type		
	Internal memory	PLC register	Constant
Var1			v

The following are examples of the proper, improper, and incorrect usages of the LOCKCOM / UNLOCKCOM macro commands.

#### LOCKCOM / UNLOCKCOM example (proper use)

Background Macro	Element On Macro	Screen Cycle Macro
\$50 = LOCKCOM(0,500) \$51 = PUTCHARS(\$67, 3, 300) UNLOCKCOM(0)	\$50 = LOCKCOM(0,500) \$51 = GETCHARS(\$67, 3, 300) UNLOCKCOM(0)	\$50 = LOCKCOM(0,500) \$51 = PUTCHARS(\$67, 3, 300) UNLOCKCOM(0)

Suppose that communication commands are currently executed in three macros, when the Background macro executes LOCKCOM(0, 500) first, then COM 1 is locked. As a result, LOCKCOM(0, 500) in Element On Macro and Screen Cycle Macro will stop, which will not be executed until Background macro executes UNLOCKCOM(0) to unlock COM 1. This action can avoid data interference or receiving error.

#### LOCKCOM / UNLOCKCOM example (improper use)

Element On Macro	Screen Cycle Macro
\$51 = GETCHARS(\$67, 3, 300)	\$50 = LOCKCOM(0,500) \$51 = PUTCHARS(\$67, 3, 300) UNLOCKCOM(0)

Suppose that communication commands are currently executed in two macros, when Screen Cycle Macro executes LOCKCOM(0, 500) first, COM 1 is locked. However, because Element On Macro is not locked by LOCKCOM, the GETCHARS command can still be executed, meaning it does not need to wait until the Screen Cycle Macro executes the UNLOCKCOM command. This will result in data interference and errors, so please avoid the above usage.

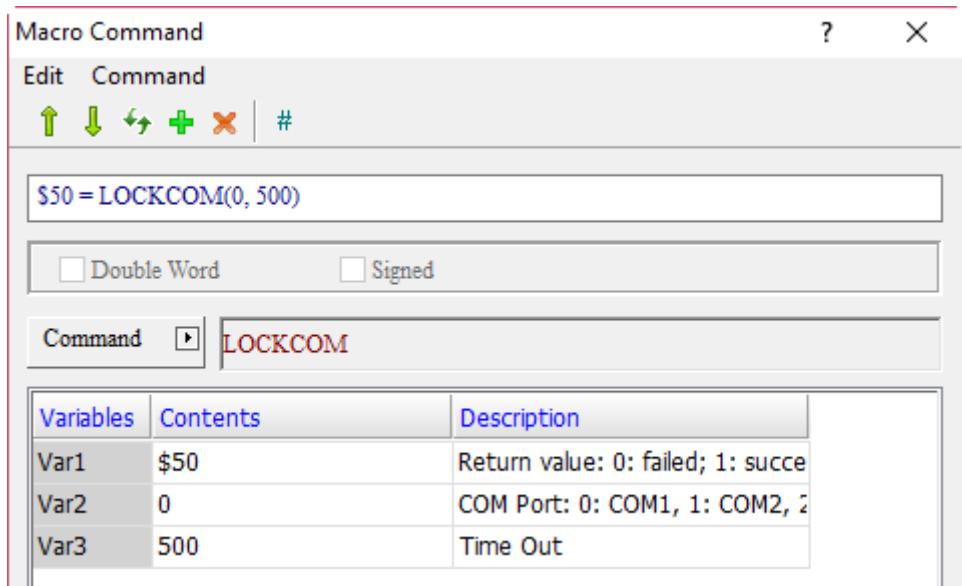
#### LOCKCOM / UNLOCKCOM example (Incorrect use)

Background Macro	Element On Macro
\$50 = LOCKCOM(0, 500) \$51 = PUTCHARS(\$67, 3, 300)	UNLOCKCOM(0)

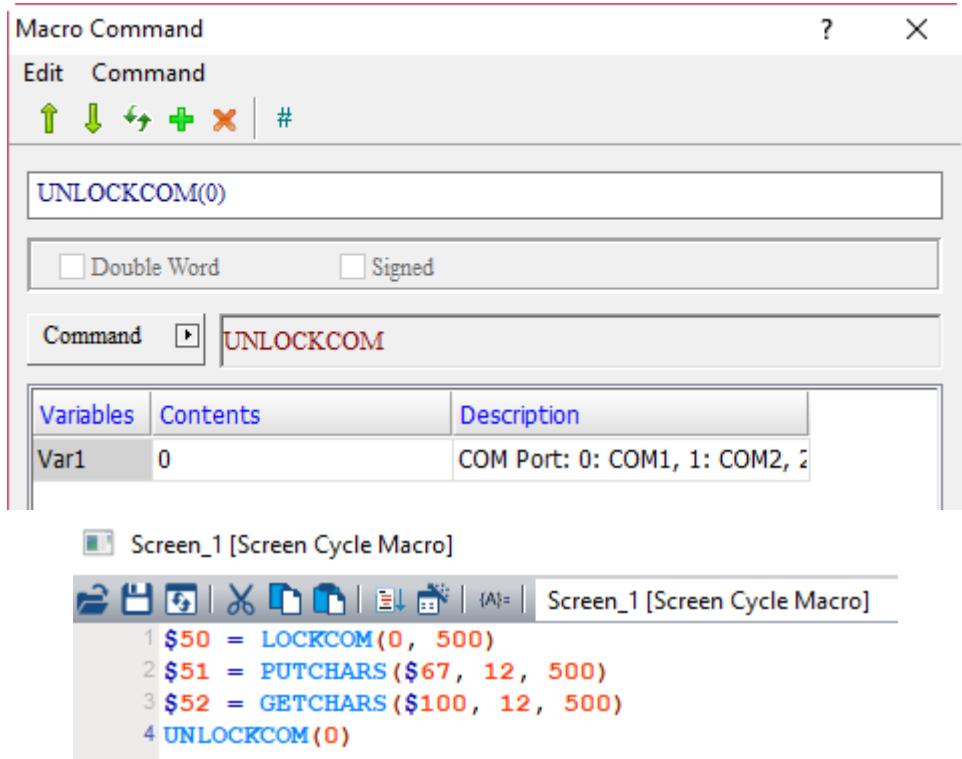
Suppose you lock COM Port in the Background macro and transmits data through COM Port, but you cannot unlock COM Port in Element On Macro. This means that the two commands of locking COM Port and unlocking COM Port cannot be written separately.

24

- Var1 is the internal memory address, and Var2 and Var3 can only be constants.



- Var1 can only be a constant.



24

- STATIONCHK (check COM connection status)

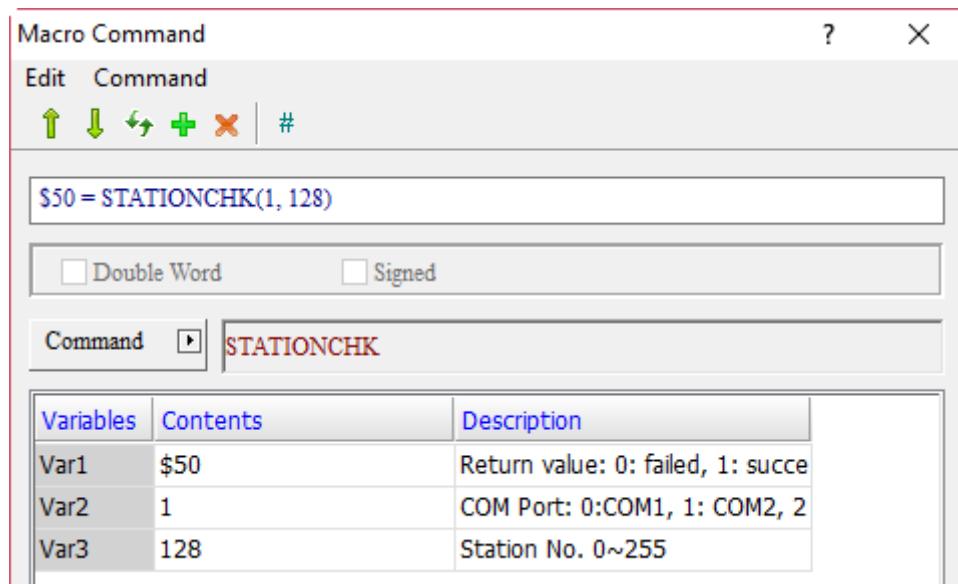
Expression	Meaning of variable			Note			
Var1 = STATIONCHK(Var2, Var3) (W)	Var1	Return value		W: Word			
		Failed	0				
		Succeeded	1				
	Var2	COM1	0				
		COM2	1				
		COM3	2				
Var 3		Station No.					
Description of action							
Check COM connection status.							

Note: this command reads internal memory parameters without increasing the HMI communication.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v

### Example

- Var1 is the internal memory address, and Var2 and Var3 are constants.

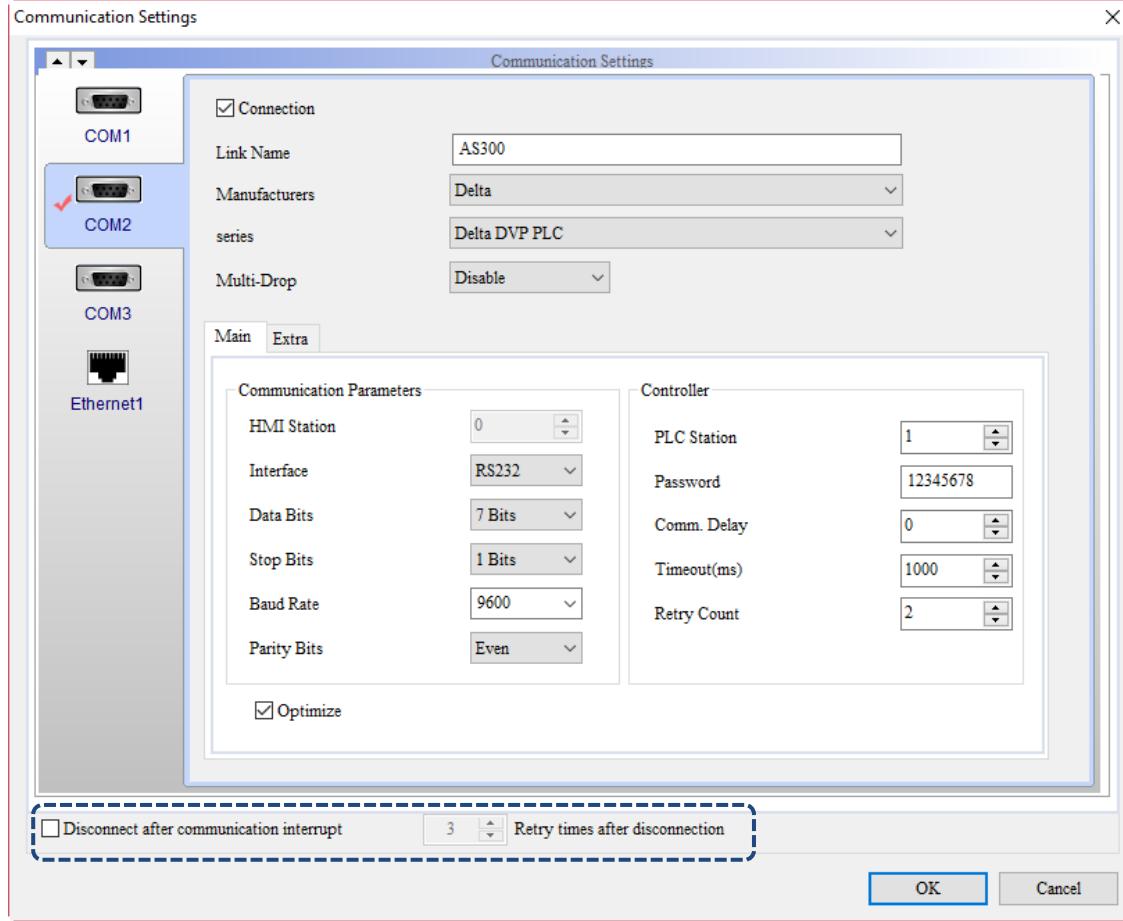


- After executing this macro, if the communication between the HMI COM2 and the PLC of Station No. 128 is normal, the return value is \$50 = 1; if the communication is abnormal, the return value is \$50 = 0.

■ STATIONON (station On)

Expression	Meaning of variable			Note				
STATIONON(Var1, Var2) (W)	Var1	COM1	0	W: Word 24				
		COM2	1					
		COM3	2					
	Var2	Station No.						
	Description of action							
	Enable Station No. Var2 of COM Var1 and the HMI can communicate with the station controller.							

Note: the STATIONON macro and the [Disconnect after communication interrupt] of [Options] > [Communication Settings] cannot be used at the same time.

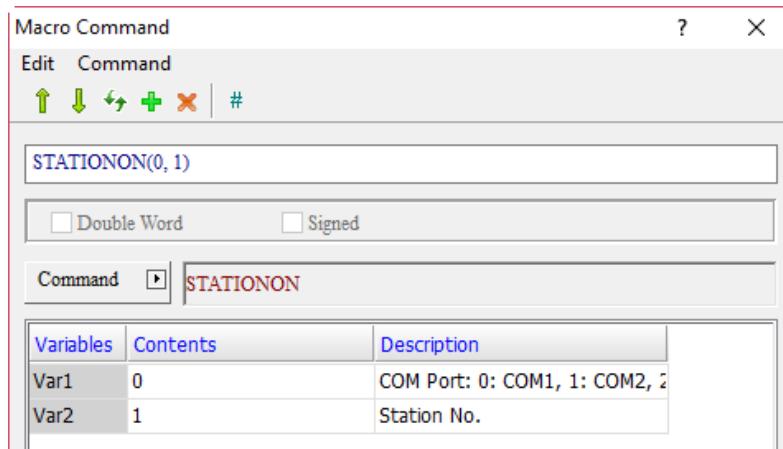


Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

24

**Example**

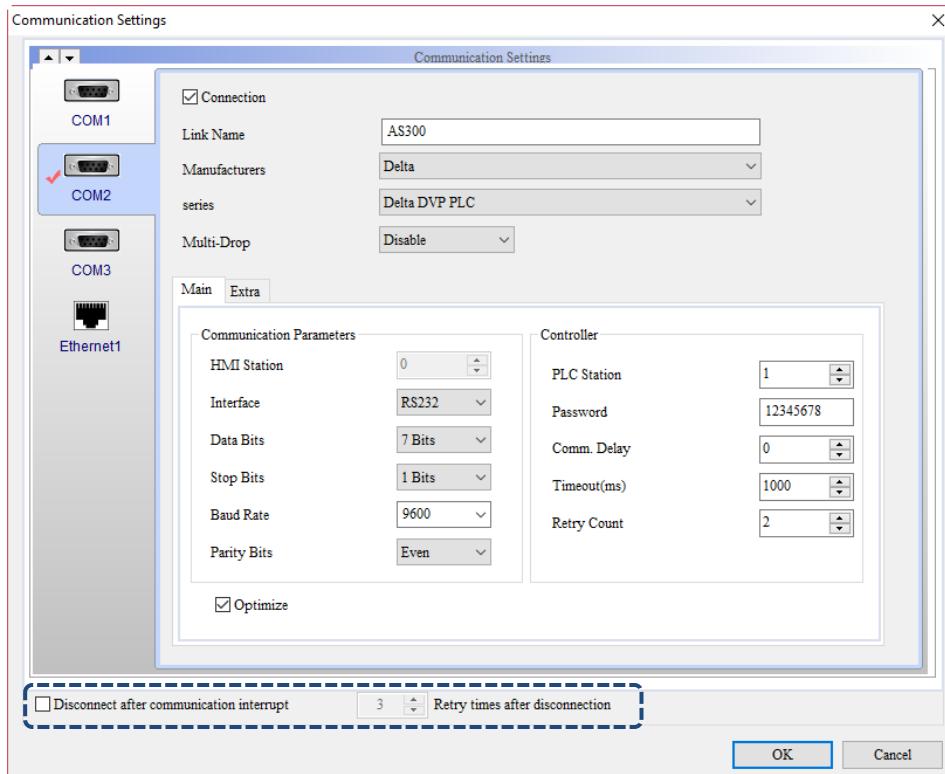
- Var1 and Var2 are constants. Enable Station No. 1 on COM 1.



- STATIONON (station OFF)**

Expression	Meaning of variable			Note		
STATIONOFF(Var1, Var2) (W)	Var1	COM1	0	W: Word		
		COM2	1			
		COM3	2			
Var2			Station No.	Disable Station No. Var2 of COM Var1, and the HMI cannot communicate with the station controller.		
			Description of action			
Disable Station No. Var2 of COM Var1, and the HMI cannot communicate with the station controller.						

Note: the STATIONOFF macro and the [Disconnect after communication interrupt] of [Options] > [Communication Settings] cannot be used at the same time.

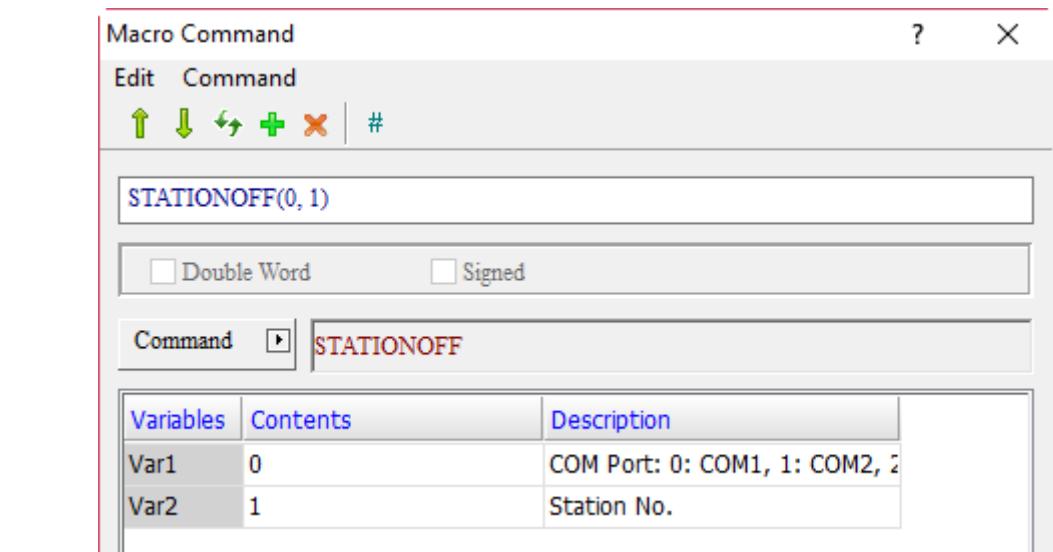


Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v
Var2	v		v

24

**Example**

- Var1 and Var2 are constants. Disable Station No. 1 on COM 1.



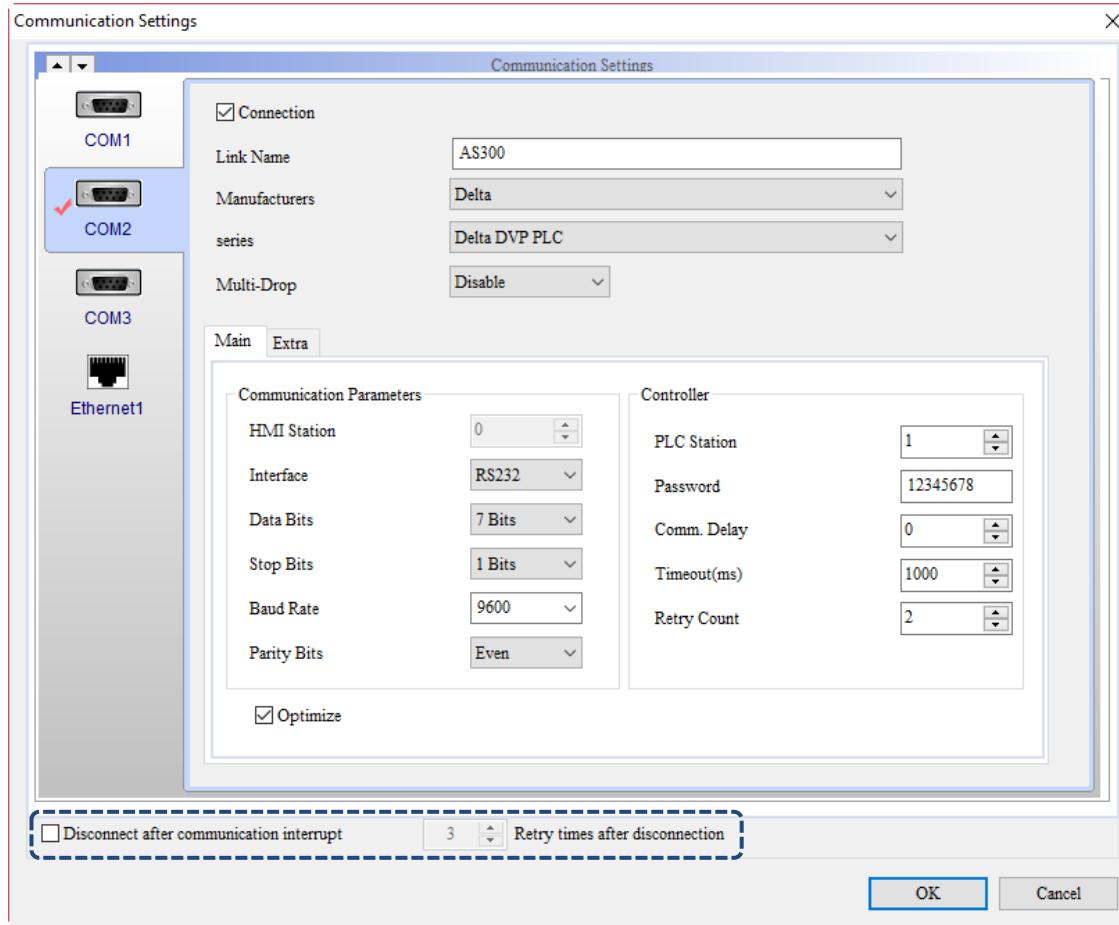
24

■ IPON (activate IP address)

Expression	Meaning of variable		Note	
Var1 = IPON(Var2, Var3, Var4, Var5, Var6)	Var1	Return value	W: Word	
		Failed	0	
		Succeeded	1	
	Var2	IP1		
	Var3	IP2		
	Var4	IP3		
	Var5	IP4		
	Var6	Port		
	<b>Description of action</b>			
Activate IP Var2, Var3, Var4, Var5, and Port Var6, and the HMI can communicate with the station controller.				

Note:

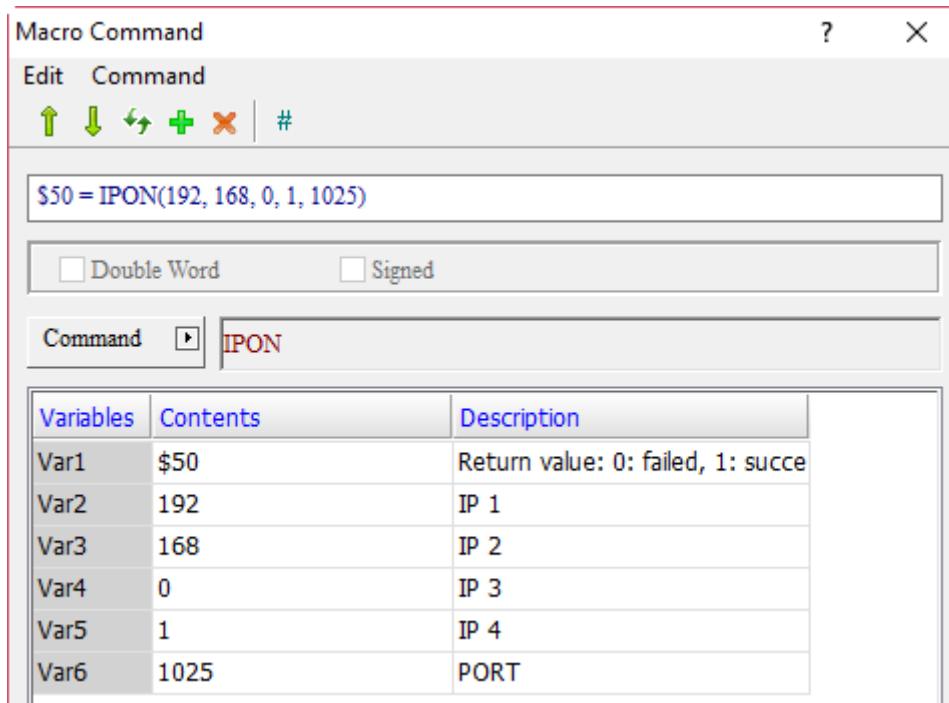
1. Using Var6 is not necessary. All ports under this IP will be activated when it is not in use.
2. The IPON macro and the [Disconnect after communication interrupt] of [Options] > [Communication Settings] cannot be used at the same time.



Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	v
Var5	v	v	v
Var6	v	v	v

### Example

- Var1 is the internal memory address, and Var2 to Var6 are constants. Activate IP 192.168.0.1 Port: 1025.



- If you are not using Var6, enter `$50 = IPON(192, 168, 0, 1)`, and all ports of IP 192.168.0.1 will be activated after the macro operation.

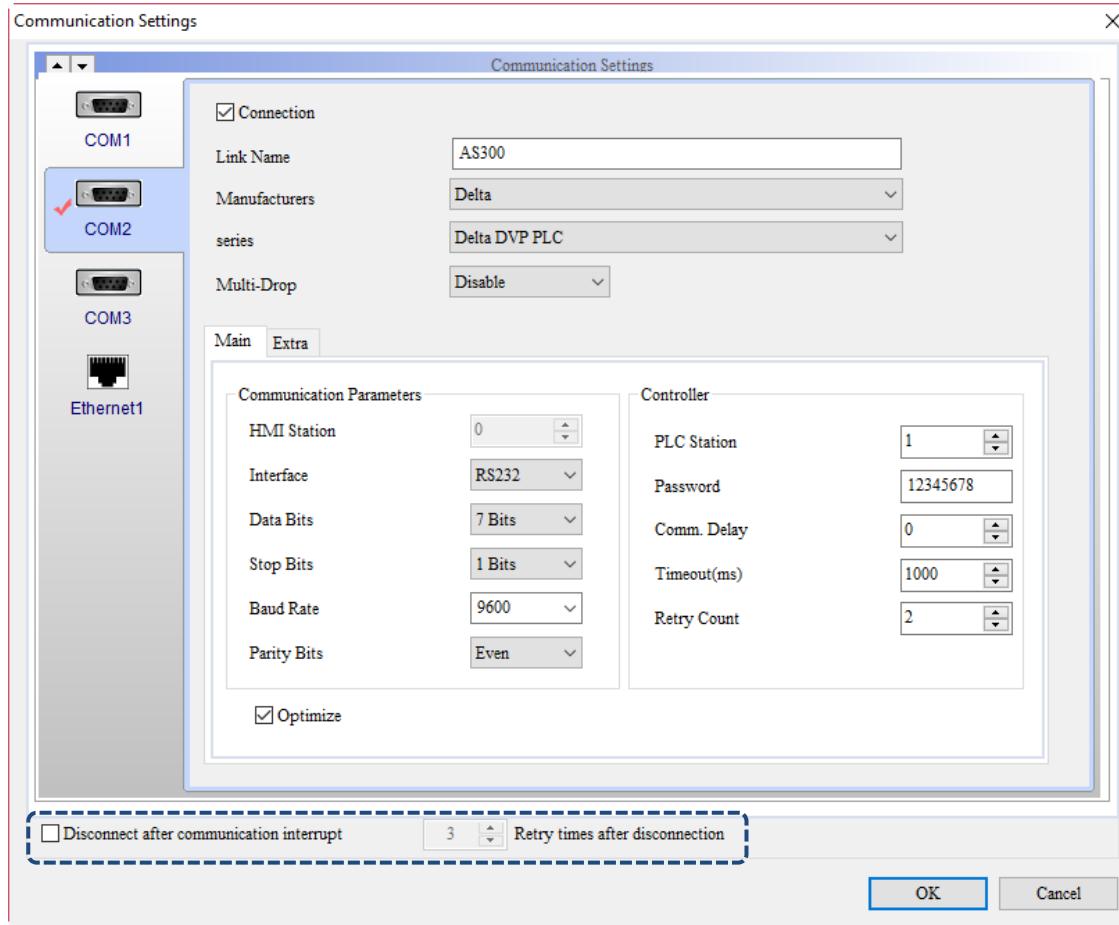
24

■ IPOFF (disable IP address)

Expression	Meaning of variable		Note	
Var1 = IPOFF(Var2,Var3,Var4,Var5,Var6) (W)	Var1	Return value	W: Word	
		Failed	0	
		Succeeded	1	
Var1 = IPOFF(Var2,Var3,Var4,Var5,Var6) (W)	Var2	IP1		
	Var3	IP2		
	Var4	IP3		
	Var5	IP4		
	Var6	Port		
	Description of action			
Disable IP Var2, Var3, Var4, Var5, and Port Var6, and the HMI cannot communicate with the station controller.				

Note:

1. Using Var6 is not necessary. All ports under this IP will be disabled when it is not in use.
2. The IPOFF macro and the [Disconnect after communication interrupt] of [Options] > [Communication Settings] cannot be used at the same time.

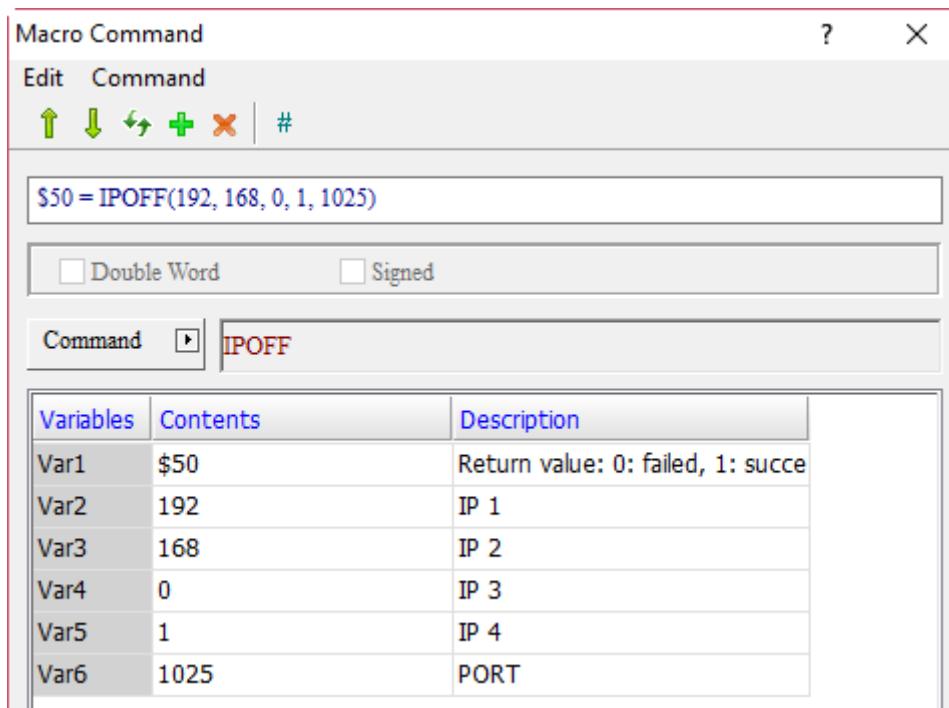


Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	v
Var5	v	v	v
Var6	v	v	v

24

**Example**

- Var1 is the internal memory address, and Var2 to Var6 are constants. Disable IP 192.168.0.1 Port: 1025.



- If you are not using Var6, enter \$50 = IPON(192, 168, 0, 1), and all ports in IP 192.168.0.1 will be disabled after the macro operation.

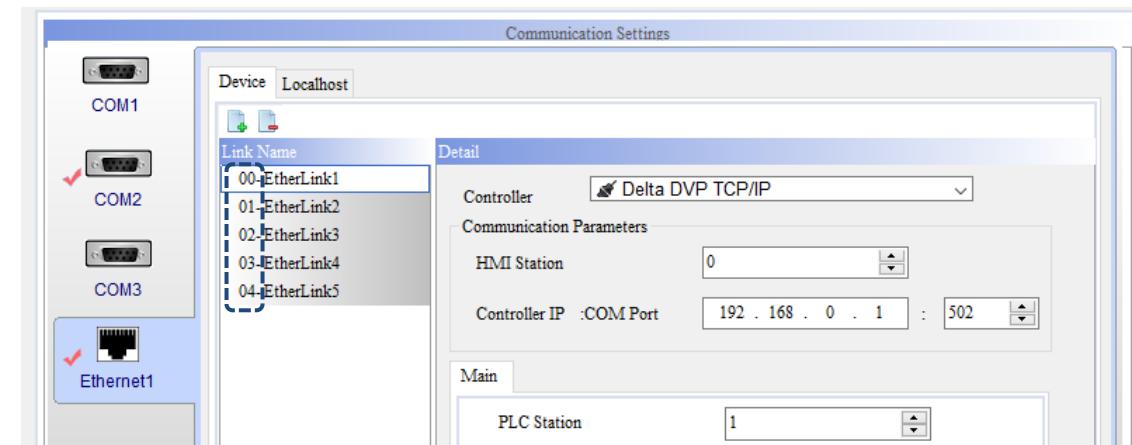
- IPCHANGE (change the connection IP and communication port of the connection controller)

Expression	Meaning of variable			Note			
Var1 = IPCHANGE(Var2, Var3, Var4, Var5, Var6, Var7) (W)	Return value			W: Word			
	Var1	Failed	0				
		Succeeded	1				
Var1 = IPCHANGE(Var2, Var3, Var4, Var5, Var6, Var7) (W)	Var2	Link No					
	Var3	IP1					
	Var4	IP2					
	Var5	IP3					
	Var6	IP4					
	Var7	Port					
	Description of action						
	Change the IP setting of PLC connection, Var3, Var4, Var5, Var6, and Port Var7, and the HMI can dynamically change the information of Link for the HMI to reconnect with another PLC.						

Note: Link No. starts from 0.

Communication Settings

X

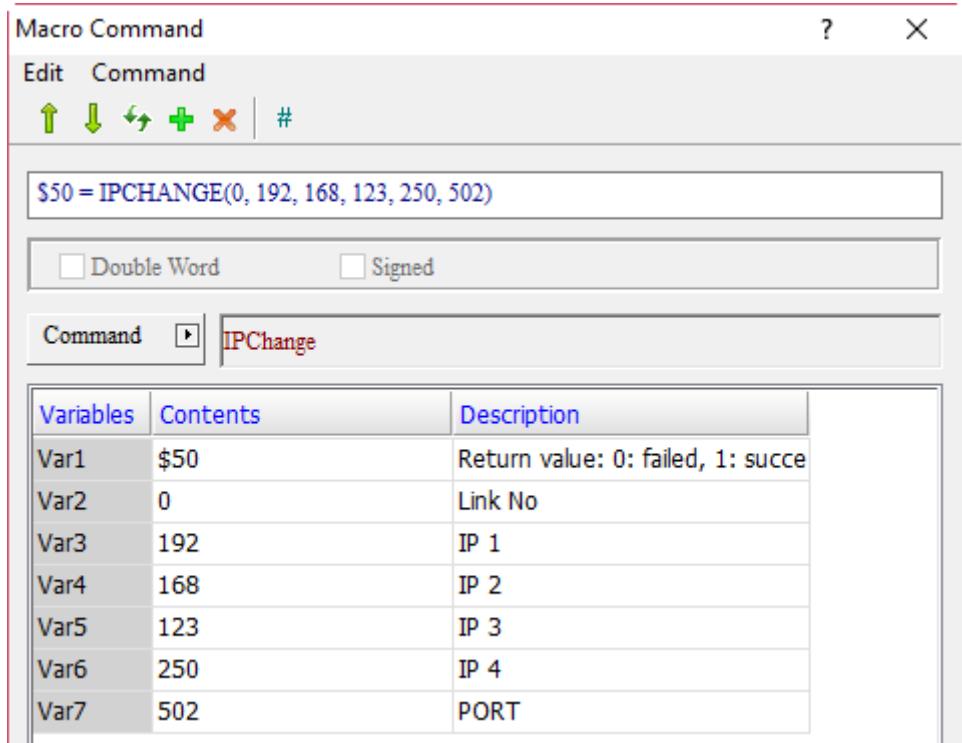


Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	v
Var5	v	v	v
Var6	v	v	v
Var7	v		

24

**Example**

- Var1 is the internal memory address, and Var2 to Var7 are constants.



- Change the IP of PLC connection to 192.168.123.250 Port: 502.

24

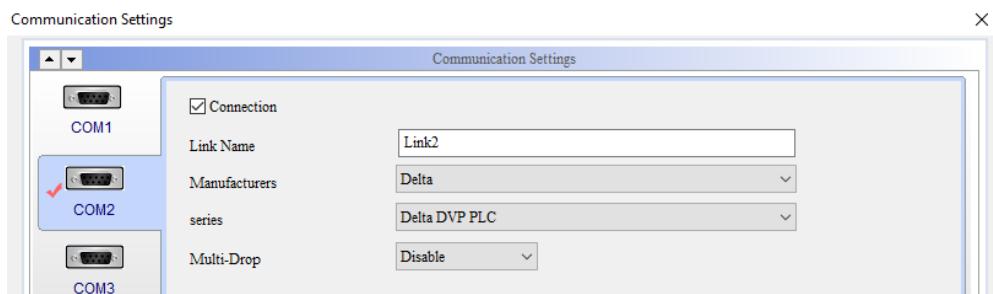
■ COMLINKSTATUS (Communication port connection status)

Expression	Meaning of variable			Note
Var1 = COMLINKSTATUS(Var2)	Var1	Communication error code. Return 0 when the communication is normal.		
	Var2	COM1	0	
		COM2	1	
		COM3	2	
Description of action				
Return the error code of COM Var2 to Var1				

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

**Example**

Step 1: in the Communication Settings, set the controller series to Delta DVP PLC.

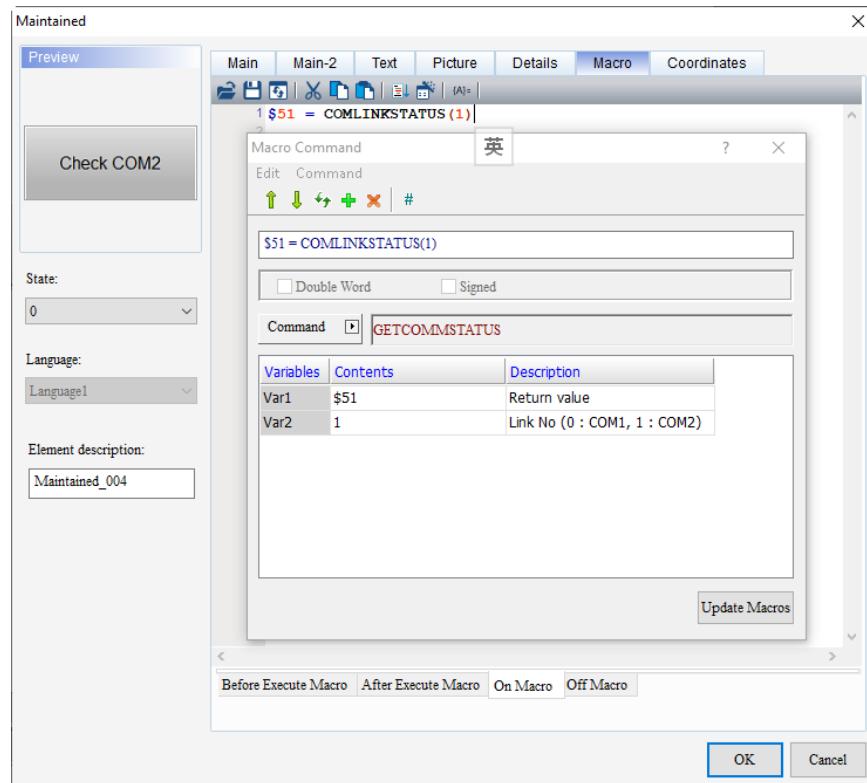


Step 2: create two Numeric Entry elements on the HMI screen with the addresses as \$51 and {Link2}1@D0 and the data formats as Hexadecimal.



### Example

Step 3: create a Maintained button, set the address to \$100.1, and add the On Macro to detect the communication status of COM2.

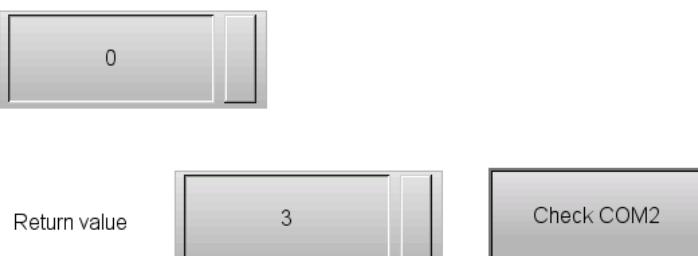


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Step 4: download the project to the HMI. Under normal communication, the return value is 0 when you execute the Maintained button.



Step 5: remove the communication cable. When the HMI displays "Communication error 3" and you execute the Maintained button, the return value is 3.

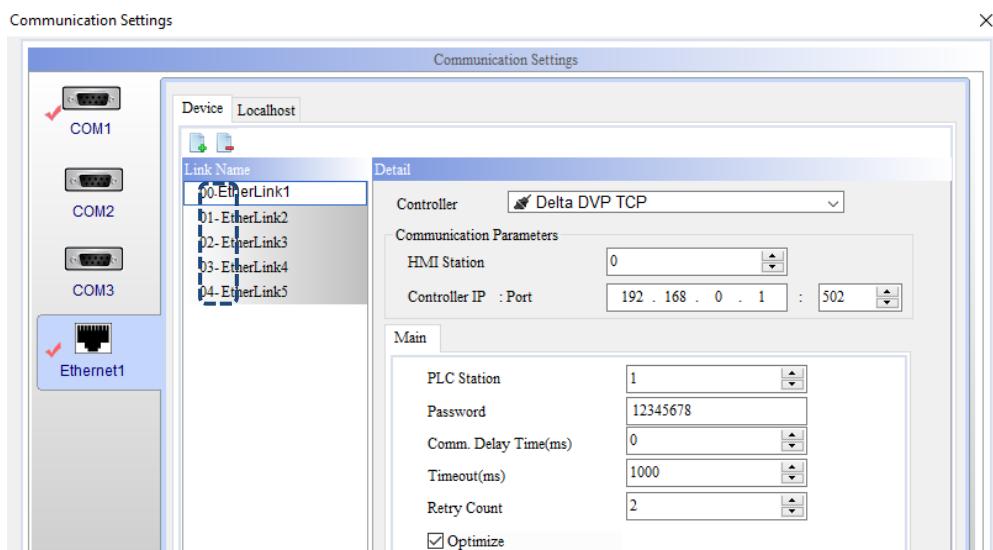


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■ NETLINKSTATUS (Network connection status)

Expression	Meaning of variable		Note
Var1 = NETLINKSTATUS(Var2)	Var1	Return value	
		Communication error code. When the return value is 0, it means the communication is normal.	
Var2	Var2	Link No	
	Description of action		
Return the error code of Var2 of the current Link No. to Var 1.			

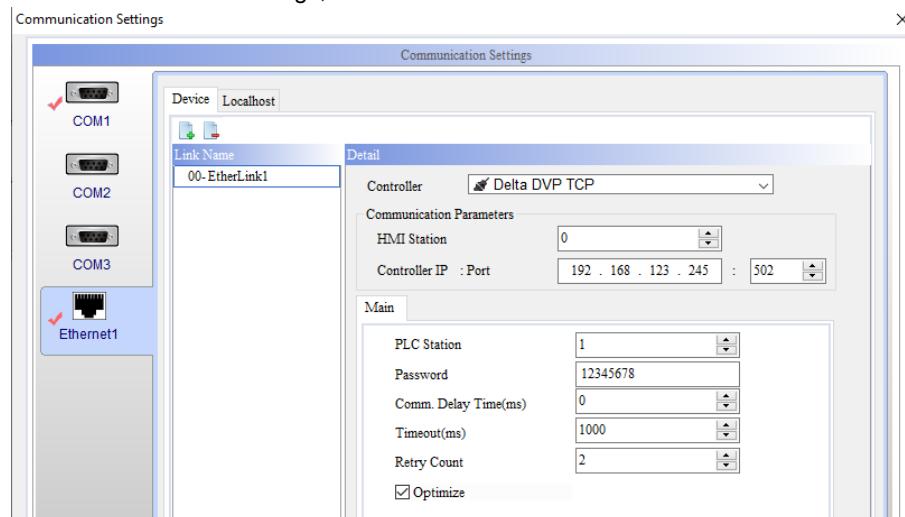
Note: the Link No. starts from 0.



Variable	Type		
	Internal memory	PLC register	Constant
Var1	V	V	
Var2	V	V	V

### Example

Step 1: in the Communication Settings, set the Controller to Delta DVP TCP/IP.



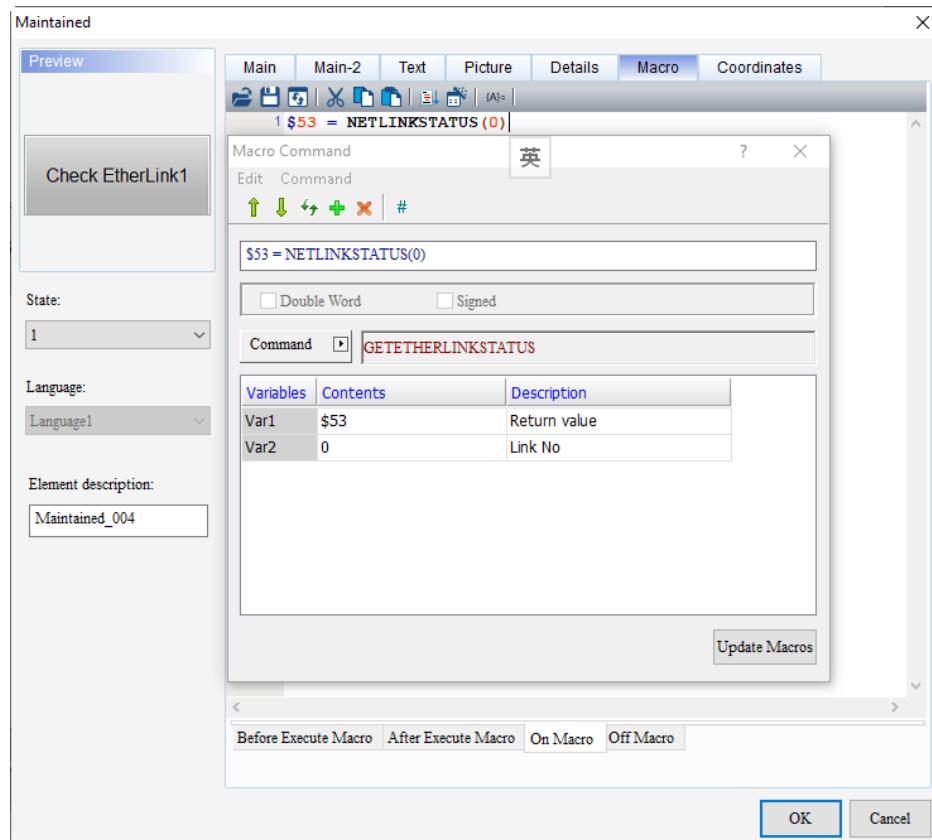
### Example

Step 2: create two Numeric Entry elements on the HMI screen with the addresses as \$53 and {EtherLink1}1@D0 and the data formats as Hexadecimal.

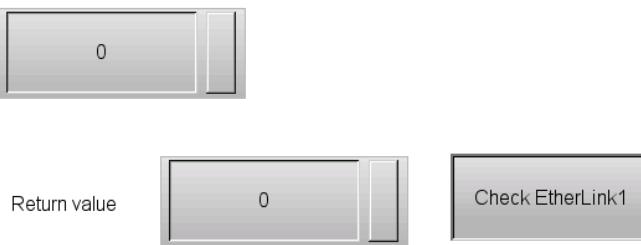


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Step 3: create a Maintained button, set the address to \$100.3, and add the On Macro to detect the communication status of Link No.0.



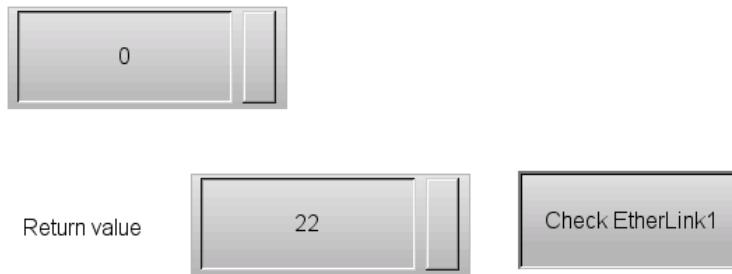
Step 4: download the project to the HMI. Under normal communication, the return value is 0 when you execute the Maintained button.



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**Example**

Step 5: remove the network cable. When the HMI displays “TCP reading error 22” and you execute the Maintained button, the return value is 22.



■ CLOSECOM (Disable the communication port)

Expression	Meaning of variable			Note		
Var1 = CLOSECOM(Var2)	Var1	Return value		Disable the communication port and return the value indicating success or failure to Var1.		
		Failed	0			
		Succeeded	1			
	Var2	COM 1	0			
		COM 2	1			
		COM 3	2			
<b>Description of action</b>						

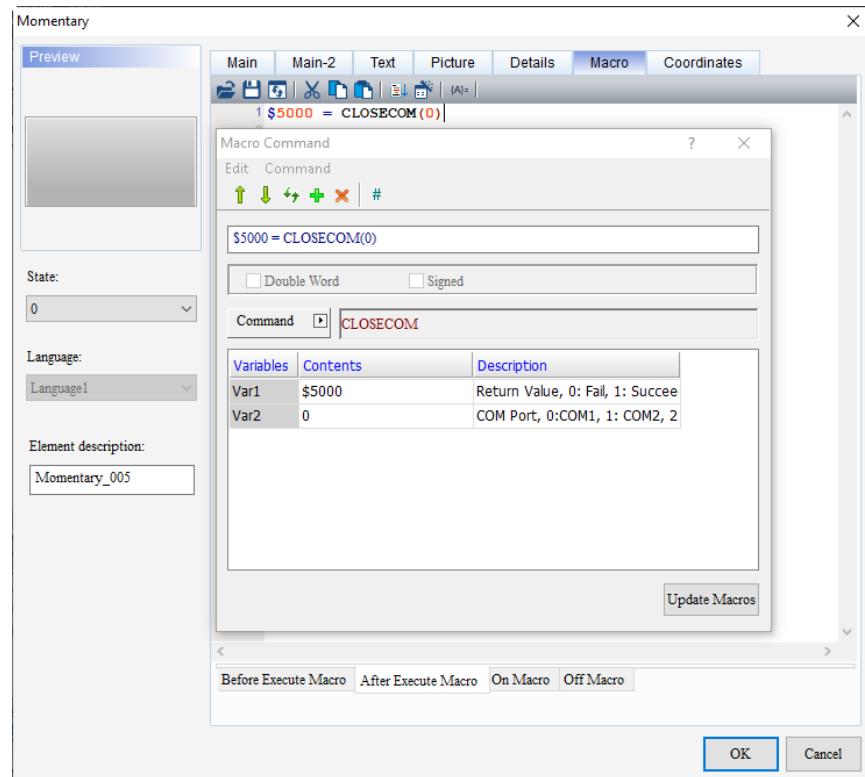
Note:

1. The CLOSECOM command must be used with INITCOM.
2. The communication port you specify must be different from the port used for the system. All communication commands are processed based on the selected communication ports, so there are no interference or reference between the specified communication port commands used in different macros.
3. If you need to change to another communication, each time you complete the INITCOM communication, execute the CLOSECOM macro to disable the current COM communication. Next, execute the INITCOM macro for the communication parameters to be used next time.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	v
Var2	v	v	v

**Example**

- Var1 and Var2 can be external memory, internal memory, or constants.



The screenshot shows the 'Macro' tab of the DOPSoft User Manual dialog box. The macro command is set to \$5000 = CLOSECOM(0). The variables section lists Var1 (\$5000) and Var2 (0). The 'Update Macros' button is located at the bottom right of the macro editor window.

```
1 $1 = INITCOM(0,0,0,2,0,6,0)
2 SELECTCOM(0)
3 FILLASC($67, ":FFE0020")
4 $71 = 0D30H
5 $72 = 000AH
6 $50 = PUTCHARS($67,12,500)
7 $2 = CLOSECOM(0)
```

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# 24

## 24.3.9 Drawing

Drawing includes commands such as RECTANGLE, LINE, POINT, CIRCLE, etc., which allow you to draw figures. The commands are described in detail as follows.

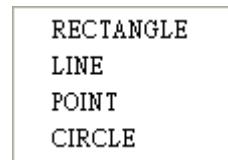


Figure 24.3.9.1 Drawing

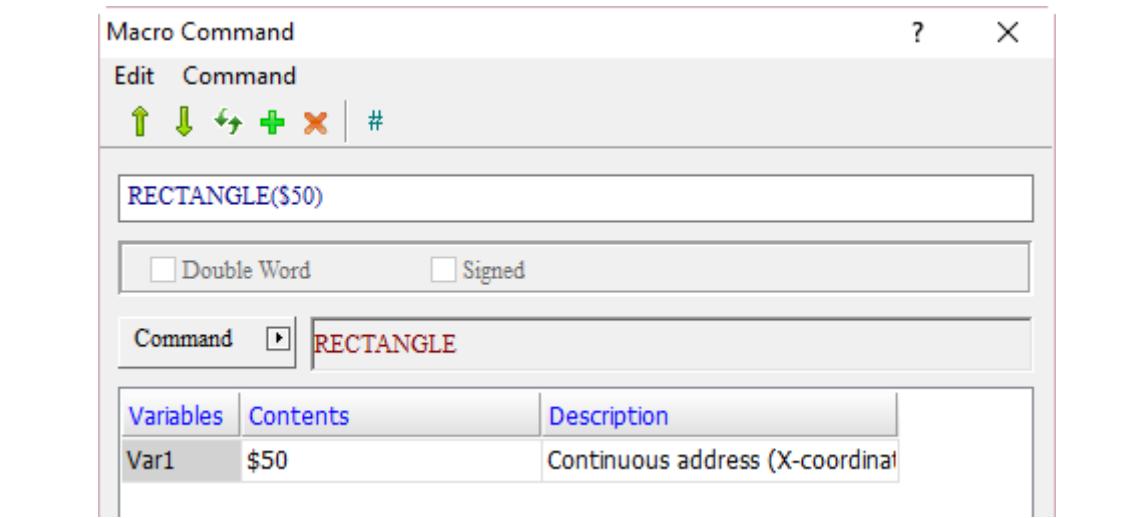
### ■ RECTANGLE (rectangle)

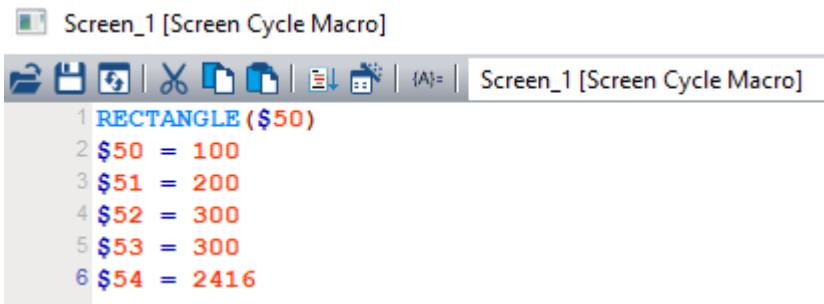
Expression	Meaning of variable		Note
RECTANGLE(Var1)(W)	Var1	Upper-left X-coordinate	W: Word
	Var1+ 1	Upper-left Y-coordinate	
	Var1+ 2	Rectangle width	
	Var1+ 3	Rectangle height	
	Var1+ 4	Rectangle color	
	Description of action		
Draw a rectangle with continuous addresses.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

### Example

- Var1 is the internal memory address.



**Example**

```
1 RECTANGLE($50)
2 $50 = 100
3 $51 = 200
4 $52 = 300
5 $53 = 300
6 $54 = 2416
```

RECTANGLE(\$50)



100	\$50
200	\$51
300	\$52
300	\$53
2416	\$54

24

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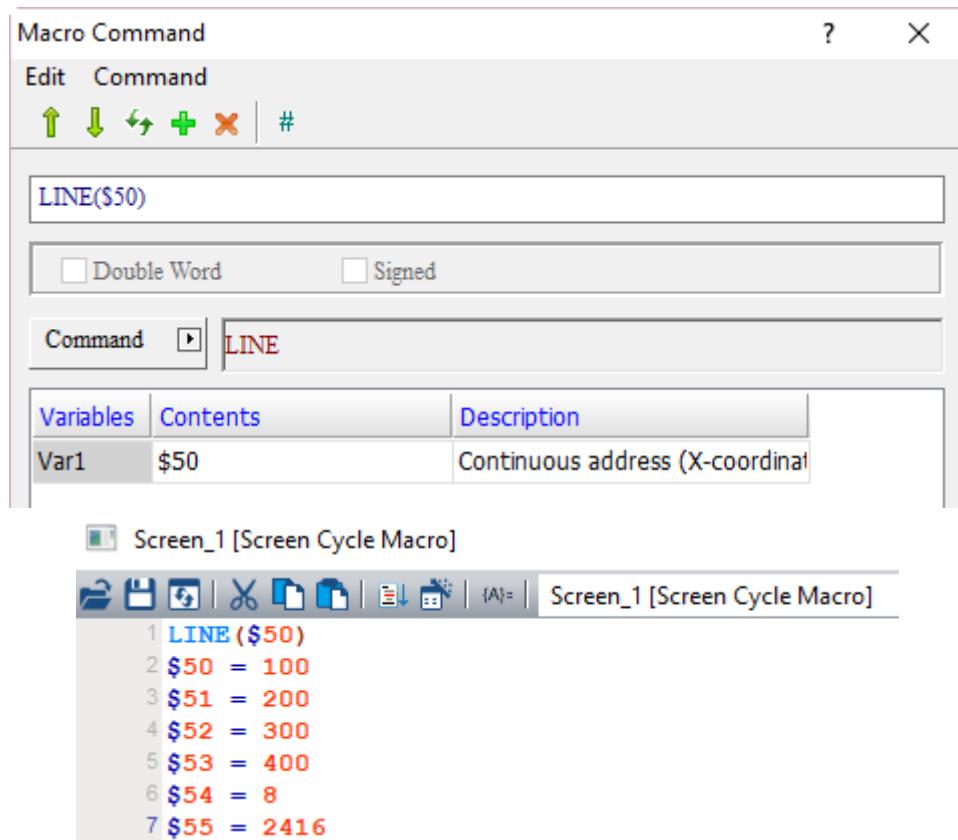
■ LINE (line)

Expression	Meaning of variable		Note
LINE(Var1) (W)	Var1	X-coordinate of starting point	W: Word Draw a line with continuous addresses.
	Var1+ 1	Y-coordinate of starting point	
	Var1+ 2	X-coordinate of end point	
	Var1+ 3	Y-coordinate of end point	
	Var1+ 4	Line width	
	Var1 + 5	Line color	
Description of action			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

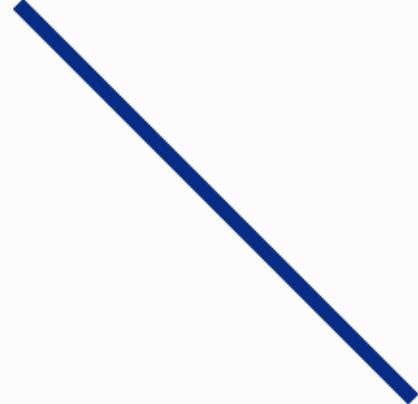
Example

- Var1 is the internal memory address.



**Example**

**LINE(\$50)**



100	\$50
200	\$51
300	\$52
400	\$53
8	\$54
2416	\$55

- POINT (point)

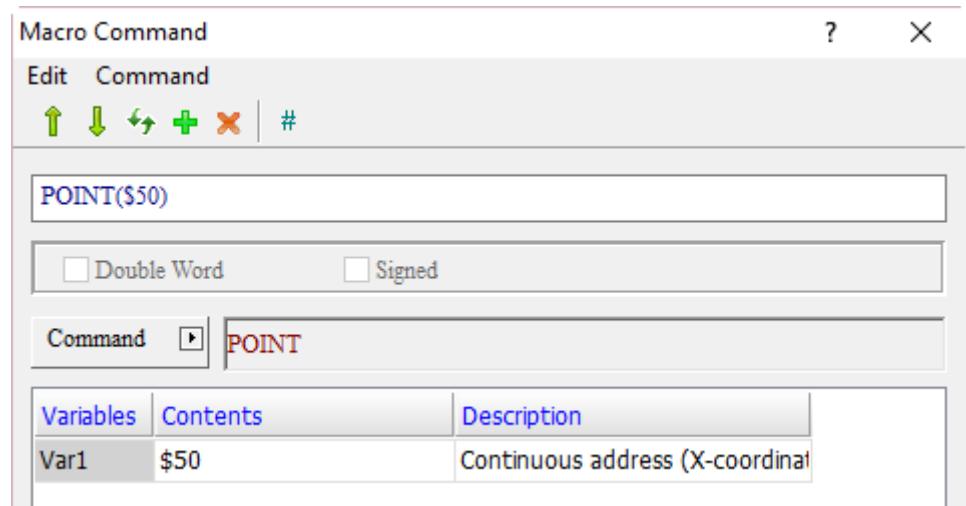
Expression	Meaning of variable		Note	
POINT(Var1) (W)	Var1	X-coordinate	W: Word	
	Var1+ 1	Ycoordinate		
	Var1+ 2	Point color		
	Description of action			
	Draw a point with continuous addresses.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

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**Example**

- Var1 is the internal memory address.

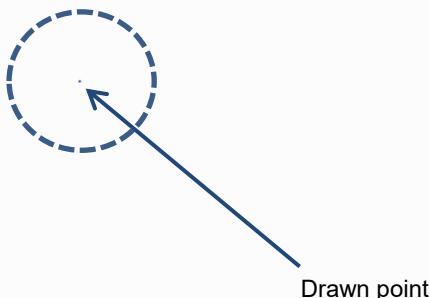


The screenshot shows the Macro Editor window titled 'Screen\_1 [Screen Cycle Macro]'. It contains the following code:

```
1 POINT ($50)
2 $50 = 100
3 $51 = 200
4 $52 = 2416
```

POINT(\$50)

100	\$50
200	\$51
2416	\$52



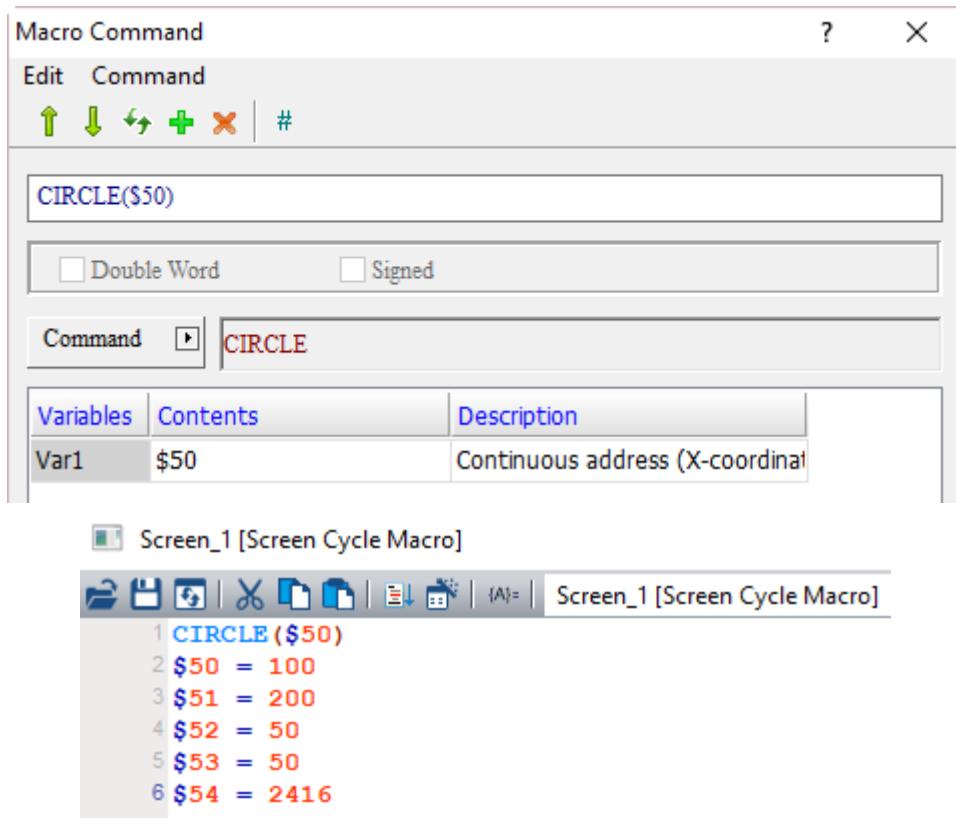
- CIRCLE (circle)

Expression	Meaning of variable		Note
CIRCLE(Var1) (W)	Var1	X-coordinate at the center of a circle	W: Word W: Word
	Var1+ 1	Y-coordinate at the center of a circle	
	Var1+ 2	Circle length	
	Var1+ 3	Circle width	
	Var1+ 4	Circle color	
	Description of action		
Draw a circle with continuous addresses.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

### Example

- Var1 is the internal memory address.



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**Example**

CIRCLE(\$50)

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100	\$50
200	\$51
50	\$52
50	\$53
2416	\$54

### 24.3.10 File Access

File Access includes FileSlotRead, FileSlotWrite, FileSlotRemove, FileSlotGetLength, FileSlotExport, FileSlotImport and other FileSlot related commands. The commands are described in detail as follows.

FileSlotRead
FileSlotWrite
FileSlotRemove
FileSlotGetLength
FileSlotExport
FileSlotImport
FileSlotGetName
FileSlotSetName
FileSlotGetID

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#### 24.3.10.1 File Access

##### ■ FileSlotRead (read the file)

Expression	Meaning of variable			Note				
Var1 = FileSlotRead (Var2, Var3, Var4, Var5) (W)	Var1	Return value		W: Word				
		Failed	0					
		Succeeded	1					
	Var2	FileSlot ID						
	Var3	Destination						
	Var4	FileSlot content start address (DW)						
	Var5	Word data length						
Description of action								
Read FileSlot contents of Var2 for Var5 Word data starting from Var4 to Var3 destination address and return the results to Var1.								

Note: if the specified FileSlot file does not exist yet, use the FileSlotWrite command to create the file.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	
Var4	v	v	v
Var5	v	v	v

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- FileSlotWrite (write the file)

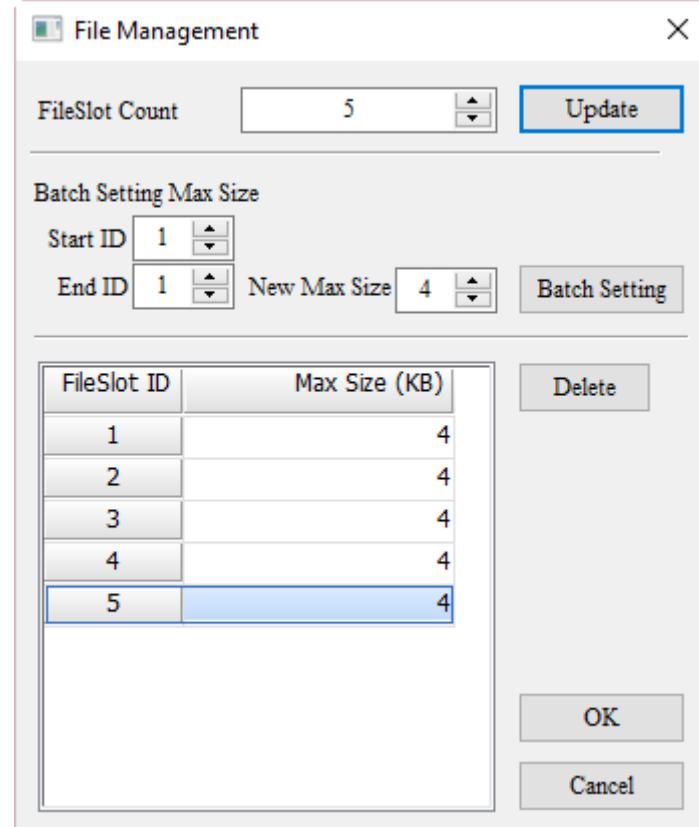
Expression	Meaning of variable			Note			
	Var1	Return value					
	Var1	Failed	0				
	Var1	Succeeded	1				
Var1 = FileSlotWrite (Var2, Var3, Var4, Var5) (W)	Var2	FileSlot ID					
	Var3	Source					
	Var4	FileSlot content start address (DW)					
	Var5	Word data length					
	<b>Description of action</b>						
	Read Var5 Word data starting from Var3, write in Var2 FileSlot from Var4 start address, and return the results to Var1.						

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	
Var4	v	v	v
Var5	v	v	v

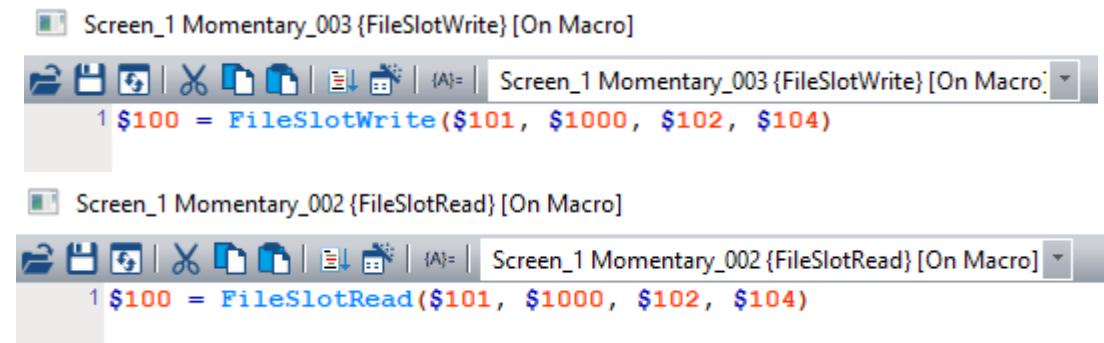
**Example**

- You must use FileSlotWrite to create a file before using FileSlotRead to read the data. The procedures are introduced as follows.

1. Go to [Options] > [File Management] to set FileSlot.



2. Create two Momentary buttons and write the On Macros.



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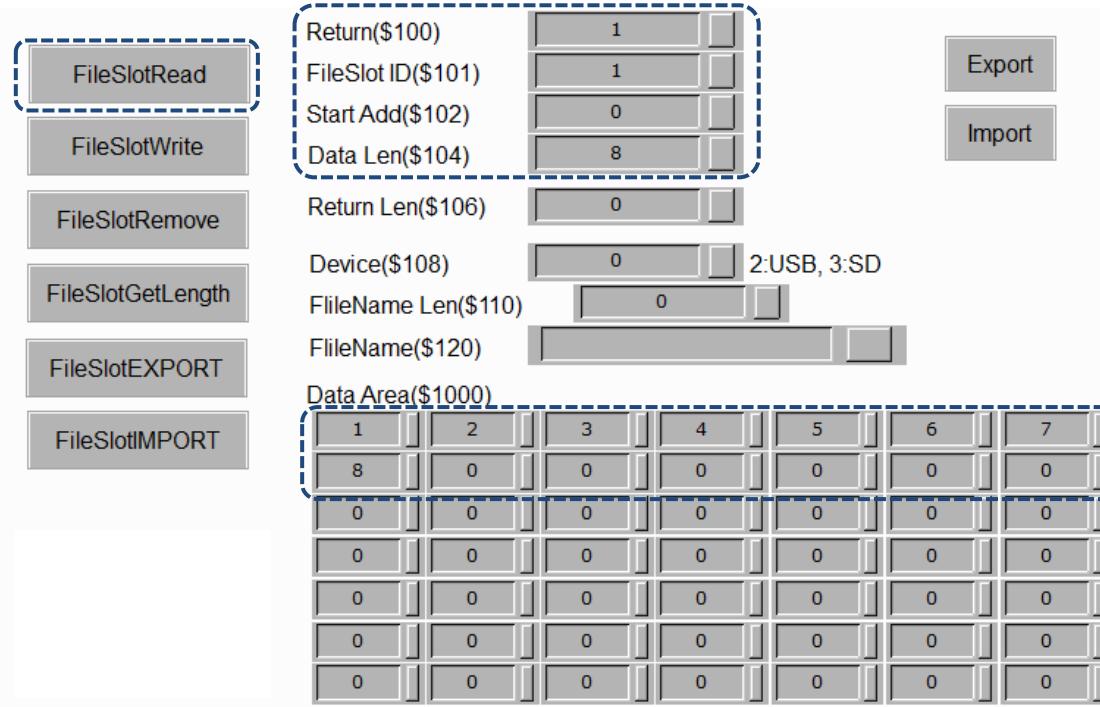
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**Example**

3. After compiling the screen and downloading it to the HMI, edit the data of 10 Words with \$1000 as the start address. Set \$101 as 1, \$102 as 0, and \$104 as 10. By triggering FileSlotWrite, the data of \$1,000 - \$1009 will be written to the FileSlot ID 1 starting from the 0<sup>th</sup> address.



4. Reset the data of \$1000 - \$1009 to zero, and then set \$104 as 8. By triggering FileSlotRead, the data of 8 Words starting from the 0<sup>th</sup> address of the FileSlot ID 1 will be written to \$1000 to \$1007.



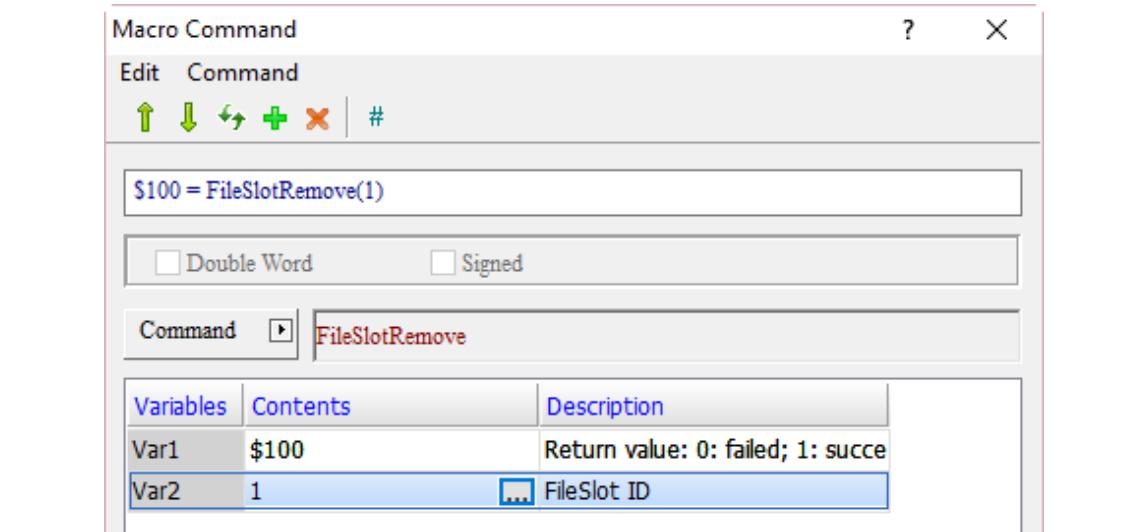
- FileSlotRemove (remove the file)

Expression	Meaning of variable			Note				
Var1 = FileSlotRemove (Var2) (W)	Var1	Return value		W: Word				
		Failed	0					
		Succeeded	1					
	Var2	FileSlot ID						
Description of action								
Remove the FileSlot of Var2 and return the result to Var1.								

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v

### Example

- Var1 is the internal memory address and Var2 is a constant. Remove FileSlot ID 1 (Var2) and put the return value in \$100 (Var1).



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- FileSlotGetLength (read the file length)

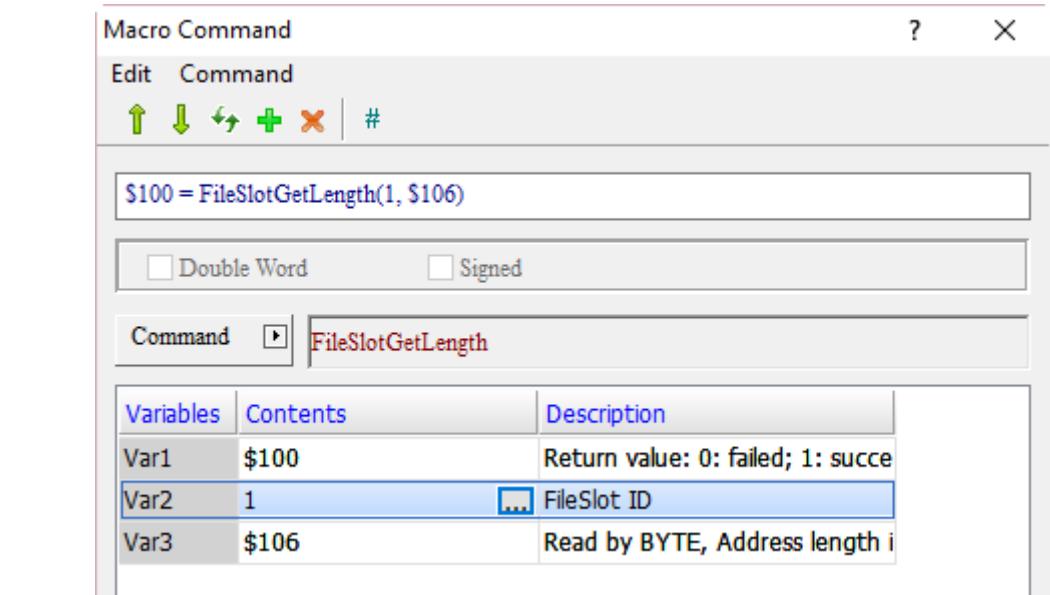
Expression	Meaning of variable			Note			
Var1 = FileSlotGetLength (Var2, Var3) (W)	Var1	Return value		W: Word      			
		Failed	0				
		Succeeded	1				
	Var2	FileSlot ID					
	Var3	FileSlot length return value(DW)					
	Description of action						
Store the length of the Var2 FileSlot to Var3 and return the result to Var1.							

Note: unit of read length is Byte.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	

### Example

- Var1 and Var3 are internal memory addresses, and Var2 is a constant. Get the length of FileSlot ID 1 (Var2) and save it to \$106, and put the return value in \$100 (Var1). If the FileSlot length is 10 words, the value returned to \$106 is 20 (Byte).



- FileSlotExport (export the file)

Expression	Meaning of variable			Note		
Var1 = FileSlotExport (Var2, Var3, Var4, Var5) (W)	Var1	Return value				
		Failed	0			
		Succeeded	1			
Var1 = FileSlotExport (Var2, Var3, Var4, Var5) (W)	Var2	FileSlot ID				
		Var3	File export device	USB Disk 2		
			SD Card	3		
Var1 = FileSlotExport (Var2, Var3, Var4, Var5) (W)	Var4	Name of the file exported				
	Var5	Name length of the file exported				
	Description of action					
Export the Var2 FileSlot to the external storage device Var3, name the file as Var4, and return the result to Var1.						

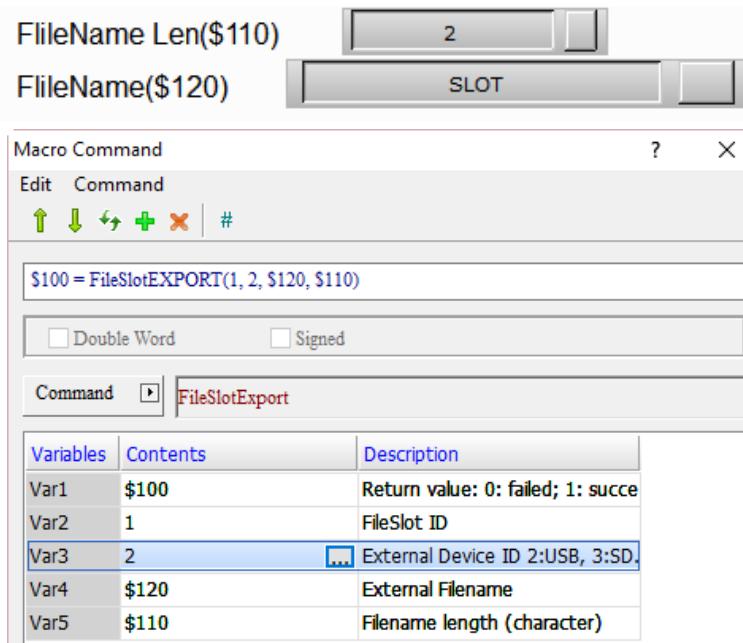
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W: Word

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	
Var5	v	v	v

### Example

- Var1, Var4, and Var5 are internal memory addresses, and Var2 and Var3 are constants. Export FileSlot ID 1 (Var2) to USB Disk (Var3), which name length of the file is 2 (Var5) and file name is Slot (Var4), and put the return value in \$100 (Var1).



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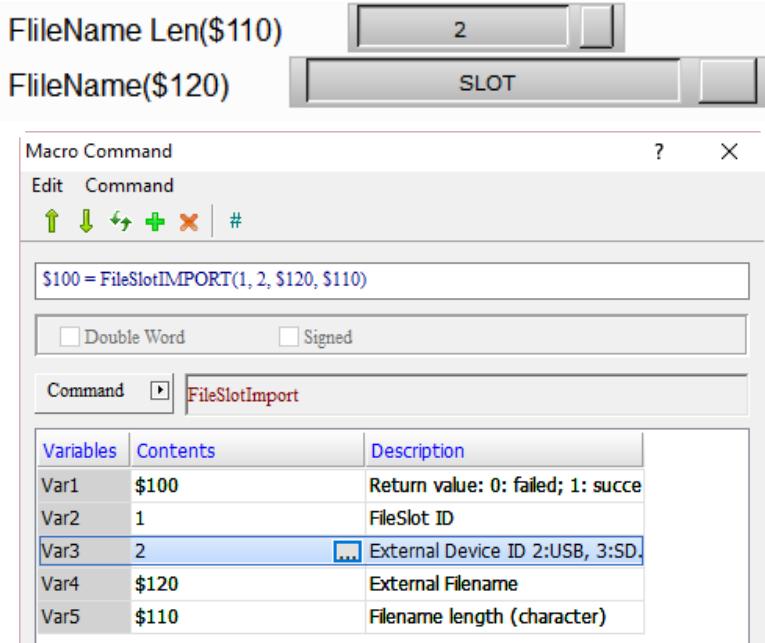
- FileSlotImport (import the file)

Expression	Meaning of variable				Note					
Var1 = FileSlotImport (Var2, Var3, Var4, Var5) (W)	Var1	Return value			W: Word					
		Failed	0							
		Succeeded	1							
	Var2	FileSlot ID								
	Var3	Device to export the file	USB Disk	2						
			SD Card	3						
	Var4	Name of the file imported								
	Var5	Length of the filename to be imported								
<b>Description of action</b>										
Import the file named Var4 in the external storage device Var3 to the Var2 FileSlot and send the return value to Var1.										

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	
Var5	v	v	v

### Example

- Var1, Var4, and Var5 are internal memory addresses, and Var2 and Var3 are constants. Import the file named Slot (Var4) with the length of 2 (Var5) in USB Disk (Var3) to the FileSlot ID 1 (Var2), and put the return value in \$100 (Var1).



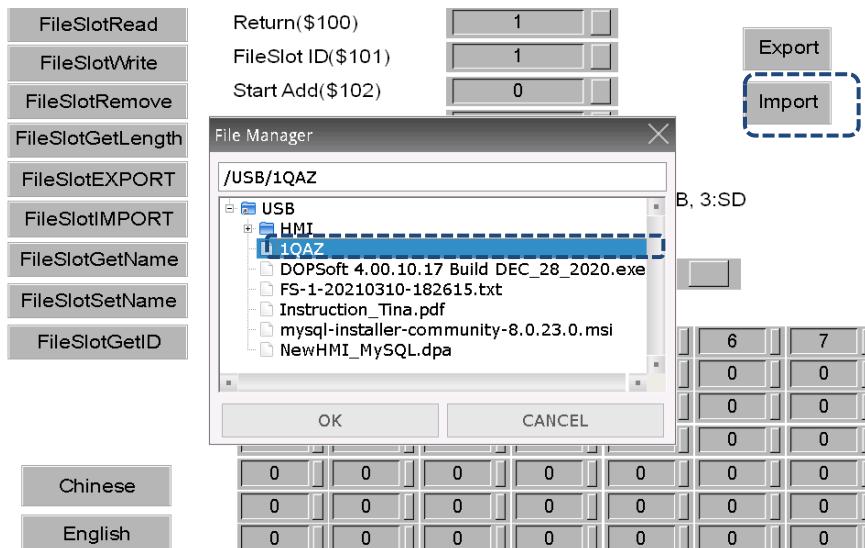
■ FileSlotGetName (get the filename)

Expression	Meaning of variable			Note
Var1 = FileSlotGetName(Var2, Var3, Var4)	Var1	Return value		
		Failed	0	
		Succeeded	1	
Var1 = FileSlotGetName(Var2, Var3, Var4)	Var2	FileSlot ID		
	Var3	Filename		
	Var4	Length of the filename (read in units of Byte)		
	<b>Description of action</b>			
Store the filename of Var2 (FileSlot ID) referencing the length specified by Var4 and return the result to Var1.				

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	
Var4	v	v	v

**Example**

- Import the FileSlot file, and then get the the filename through the imported FileSlot ID.



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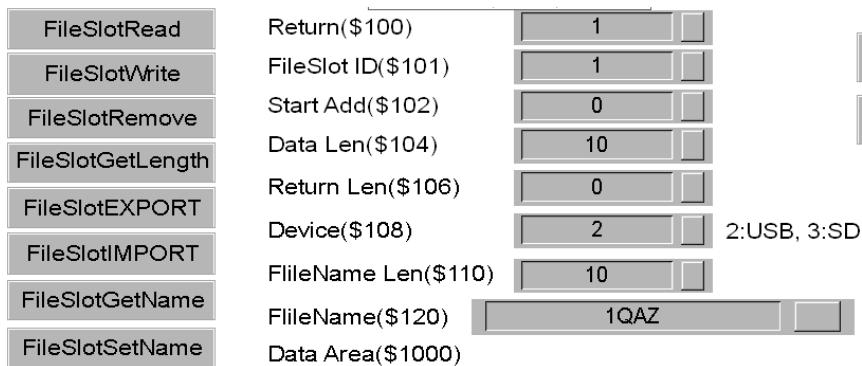
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**Example**

- When the import is successful, the following message appears.



- Execute the FileSlotGetName command, and you can get the filename of the file you just imported.



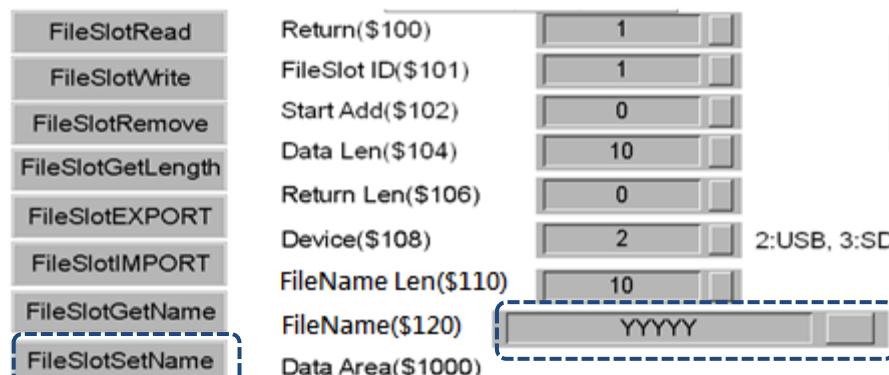
■ FileSlotSetName (set the filename)

Expression	Meaning of variable			Note		
Var1 = FileSlotSetName(Var2, Var3, Var4)	Var1	Return value				
		Failed	0			
		Succeeded	1			
Var1 = FileSlotSetName(Var2, Var3, Var4)	Var2	FileSlot ID				
	Var3	Filename				
	Var4	Length of the filename (read in units of Byte)				
	<b>Description of action</b>					
Set the filename of Var2 (FileSlot ID) to Var3 referencing the length specified by Var4, and then return the result to Var1.						

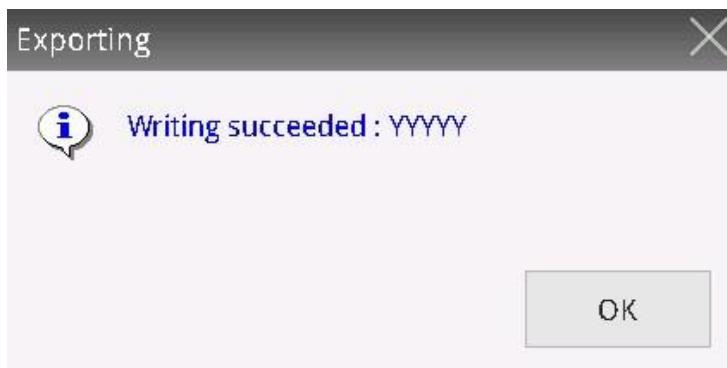
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	
Var4	v	v	v

**Example**

- This command modifies the name of the imported FileSlot file.



- After you modified the filename, export the file to the USB Disk or SD Card.



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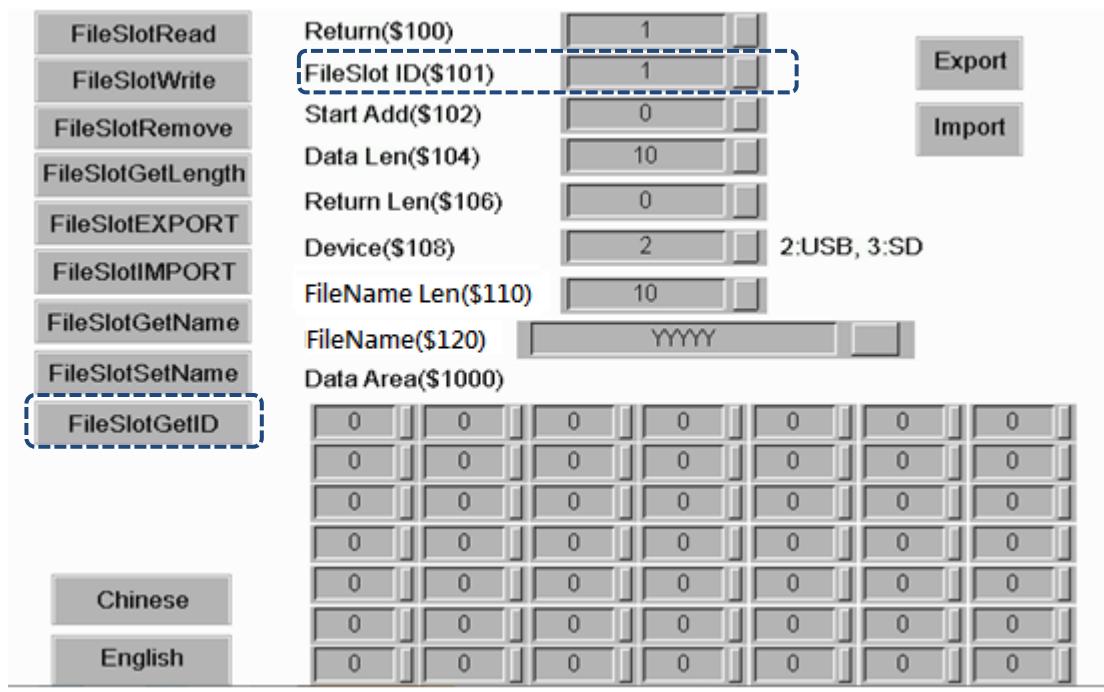
■ FileSlotGetID (get the file ID)

Expression	Meaning of variable			Note
Var1 = FileSlotGetID (Var2, Var3, Var 4) (W)	Var1	Return value		
		Failed	0	
		Succeeded	1	
Var1 = FileSlotGetID (Var2, Var3, Var 4) (W)	Var2	Filename		
	Var3	Length of the filename (read in units of Byte)		
	Var4	FileSlot ID		
	Description of action			Refer to the length of the filename specified by Var3, store the FileSlot ID of the filename specified by Var2 to Var4, and return the result to Var1.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v	v	v
Var3	v	v	v
Var4	v	v	

### Example

- Use the filename of the FileSlot file to get the corresponding FileSlot ID.



### 24.3.11 Others

Others include Time Tick, GETLASTERROR, Comment, Delay, GETSYSTEMTIME, SETSYSTEMTIME, GETHISTORY, EXPORT, EXRCP, IMRCP, EXENRCP, IMENRCP, EXHISTORY, EXALARM, EXALARMGROUP, DISKFORMAT, BMPCAPTURE, PLCDOWNLOAD, OPENSCREEN, CLOSESUBSCREEN, GetCircleCenter, VAR, and other commands.

The commands are described in detail as follows.

Time Tick
GETLASTERROR
Comment
Delay
GETSYSTEMTIME
SETSYSTEMTIME
GETHISTORY
EXPORT
EXRCP16
IMRCP16
EXRCP32
IMRCP32
EXENRCP
IMENRCP
EXHISTORY
EXALARM
EXALARMGROUP
DISKFORMAT
BMPCAPTURE
PLCDOWNLOAD
OPENSCREEN
CLOSESUBSCREEN
GetCircleCenter
VAR

Figure 24.3.11.1 Others

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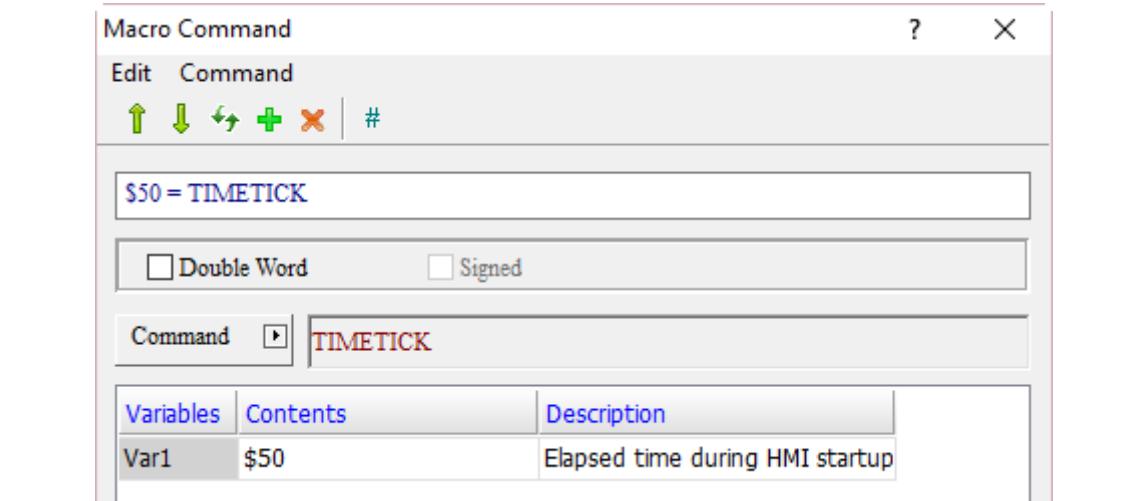
- Time Tick (get the time from the start of the system up to now)

Expression	Meaning of variable		Note	
Var1 = TIMETICK (W) Var1 = TIMETICK (DW)	Var1	Elapsed time during HMI startup	W: Word DW: Double Word	
	<b>Description of action</b>			
	Get the time from the start of the system up to now and put it in Var1 (unit: ms).			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

### Example

- Var1 is the internal memory address. Put elapsed time during the HMI startup in \$50.



- GETLASTERROR (get error value of previous command)

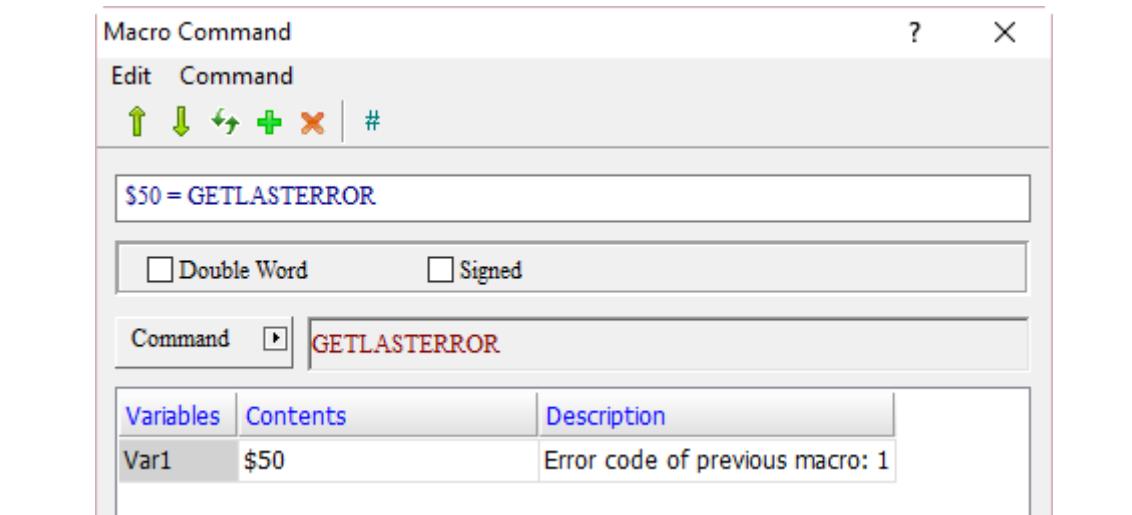
Expression	Meaning of variable	Note	
Var1 = GETLASTERROR (W) Var1 = GETLASTERROR (DW) Var1 = GETLASTERROR (Signed W) Var1 = GETLASTERROR (Signed DW)	Var1 Error code of previous macro 1: Succeeded Negative value: error (See Section 24.4 Macro error codes for the meaning of negative value.)	W: Word DW: Double Word Signed: signed number	
	<b>Description of action</b>		
	Get the error value of the previous macro command and put the result in Var1.		

Note: this command must follow a macro command with an error in order to obtain its error value.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

### Example

- Var1 is the internal memory address. Get the result of the error value of the previous macro command and put it in \$50.



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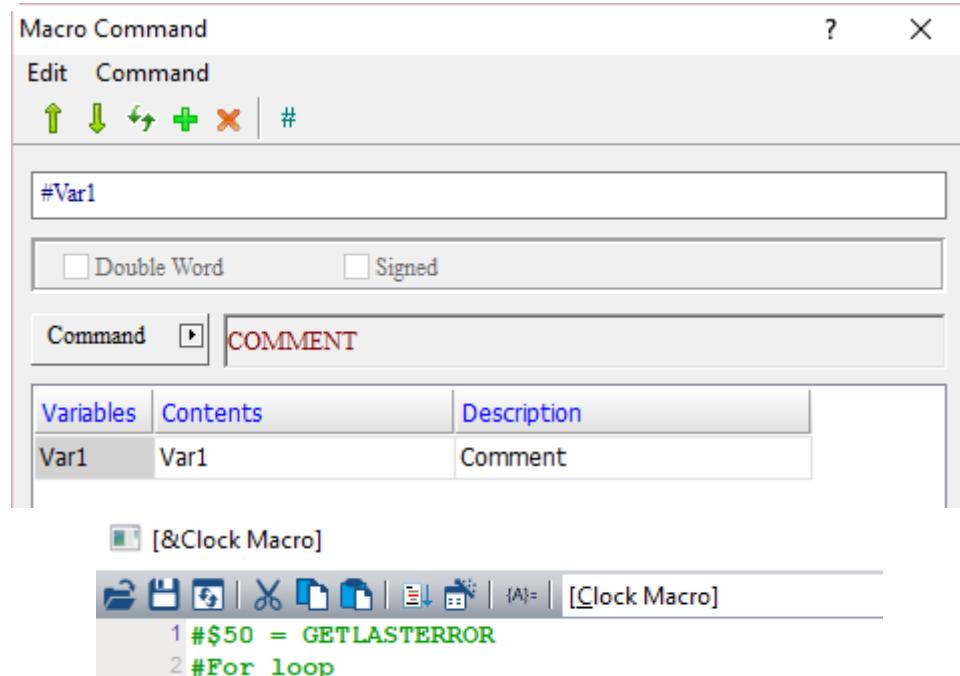
■ COMMENT (comments)

Expression	Meaning of variable		Note	
#Var1 (W)	Var1	Contents of command	W: Word	
	Description of action			
	Comment Var1.			

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

Example

Add # before the command to make a comment on the command. # can also be used for describing the purpose of a macro.



■ Delay (delay)

Expression	Meaning of variable		Note	
Delay(Var1) (W)	Var1	Delay time	W: Word Delay the time of Var1 before executing commands of the next line. The unit is ms.	
	<b>Description of action</b>			
	Delay the time of Var1 before executing commands of the next line. The unit is ms.			

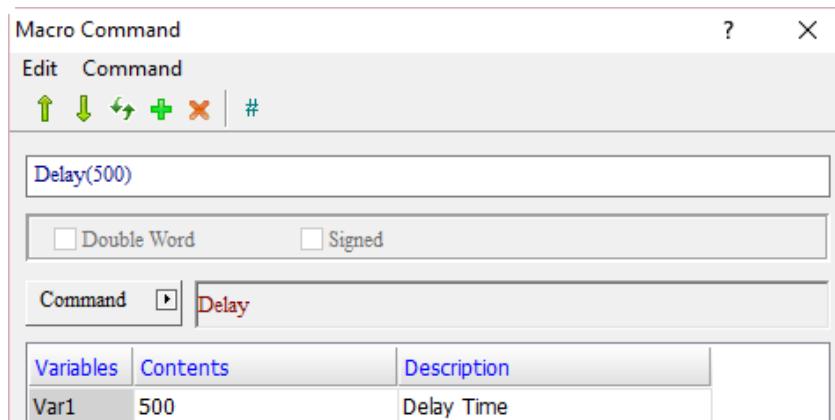
Note:

1. Due to the multitasking of the HMI, a system delay may occur by default. If you set this Delay command, the delay time may increase because of the busy operations of the system, and the command will not be executed in advance.
2. Excessive Delay setting will result in slow response of the HMI.
3. When the Delay command is executed, the HMI will suspend all actions until the Delay time is over.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v

**Example**

- Var1 is a constant and set the Delay time to 500 ms.



■ GETSYSTEMTIME (get system time)

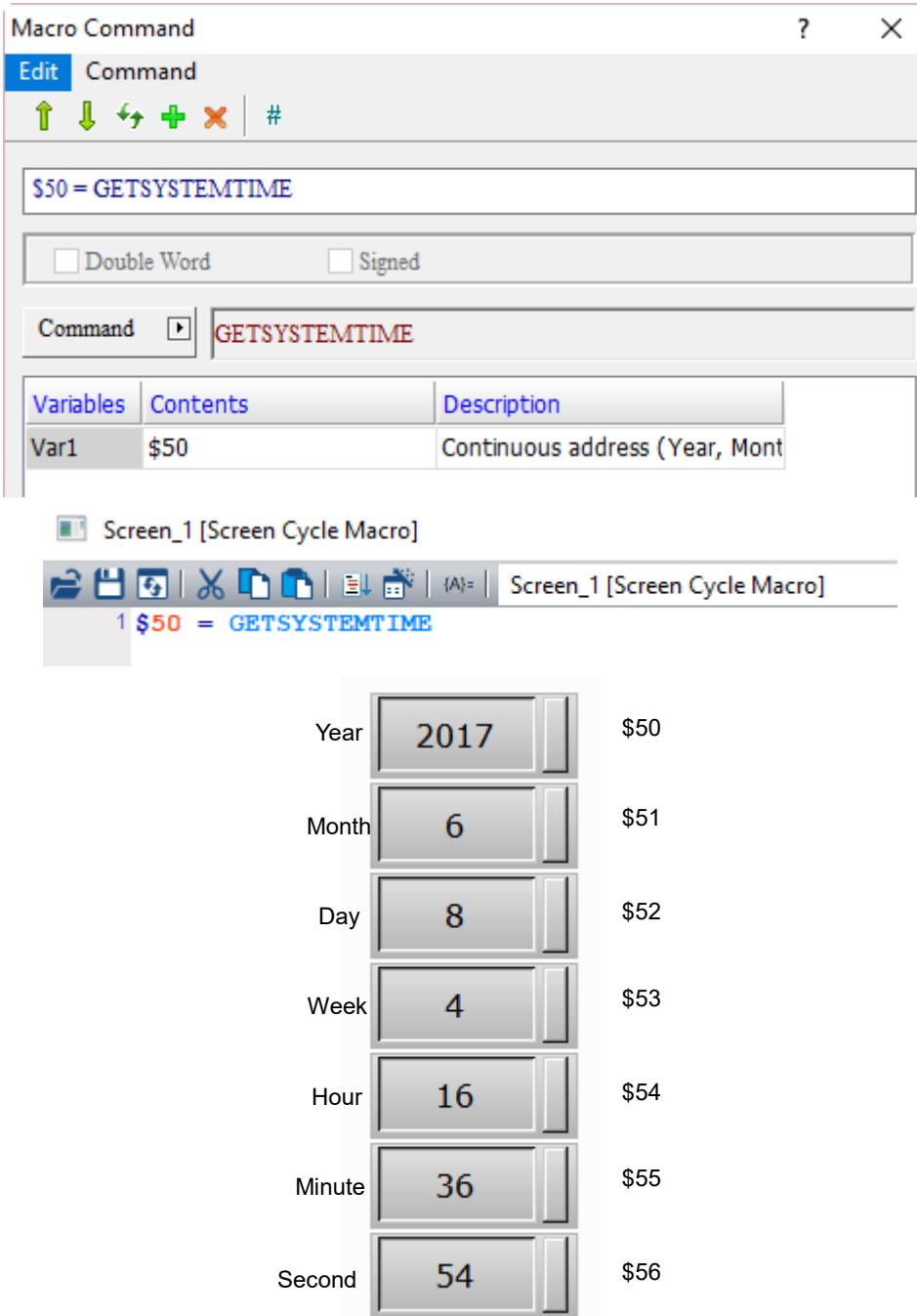
Expression	Meaning of variable		Note
Var1 = GETSYSTEMTIME (W)	Var1	Year	W: Word Get the system time from Var1 to Var7 for 7 consecutive Words address.
	Var1 + 1	Month	
	Var1 + 2	Day	
	Var1 + 3	Week	
	Var1 + 4	Hour	
	Var1 + 5	Minute	
	Var1 + 6	Second	
	<b>Description of action</b>		
Get the system time from Var1 to Var7 for 7 consecutive Words address.			

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Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

**Example**

- Var1 is the internal memory address. Put the current system time in \$50 to \$56.



■ SETSYSTEMTIME (set system time)

Expression	Meaning of variable		Note	
Var1 = SETSYSTEMTIME (W)	Var1	Year	W: Word	
	Var1 + 1	Month		
	Var1 + 2	Day		
	Var1 + 3	Week		
	Var1 + 4	Hour		
	Var1 + 5	Minute		
	Var1 + 6	Second		
Description of action				
Set the system time from Var1 to Var7 for 7 consecutive Words address.				

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		

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**Example**

- Var1 is the internal memory address. Set the current system time and put it in \$50 to \$56.

**Macro Command**

Edit   Command

↑ ↓ ↶ + × #

SETSYSTEMTIME(\$50)

Double Word    Signed

Command   **SETSYSTEMTIME**

Variables	Contents	Description
Var1	\$50	Continuous address (Year, Mont

**Screen\_1 [Screen Cycle Macro]**

File   Save   Open   Cut   Copy   Paste   Delete   Find   {A}={

```

1 SETSYSTEMTIME ($50)
2 $50 = 2016
3 $51 = 5
4 $52 = 5
5 $53 = 2
6 $54 = 20
7 $55 = 56
8 $56 = 30

```

	Year	Month	Day	Week	Hour	Minute	Second	
	2016	5	5	2	20	56	30	\$50
								\$51
								\$52
								\$53
								\$54
								\$55
								\$56

- GETHISTORY (get history data)

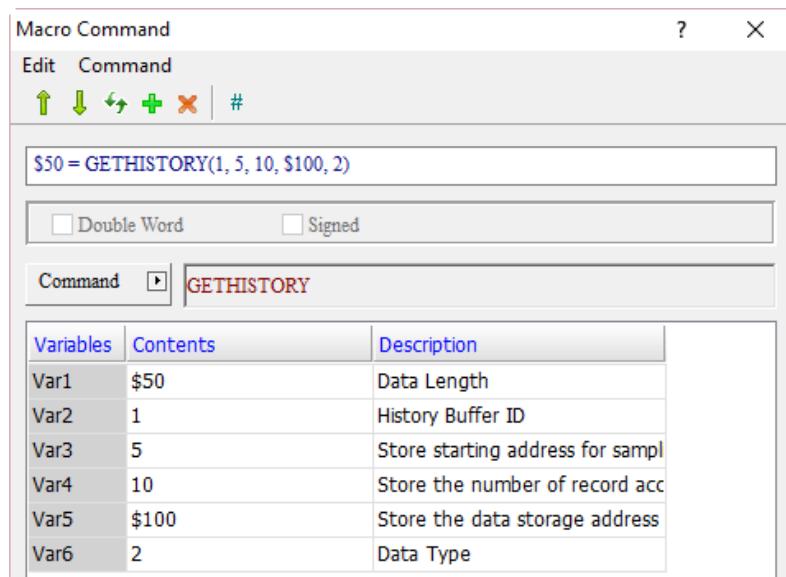
Expression	Meaning of variable			Note		
Var1	Store Data Length					
Var2	History Buffer ID					
Var3	Read starting address for sampling					
Var4	Read the number of record accessing point					
Var5	Data storage address					
Var6	Data Type	Data	0	W: Word		
		Time	1			
		Data and time	2			
Description of action						
Get history data.						

Note: Double Word is recommended to be used for Var1, Var3, and Var4. If the continuous address of Word is used, data may be overwritten and the result may be affected.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		v
Var3	v		v
Var4	v		v
Var5	v	v	
Var6	v		v

### Example

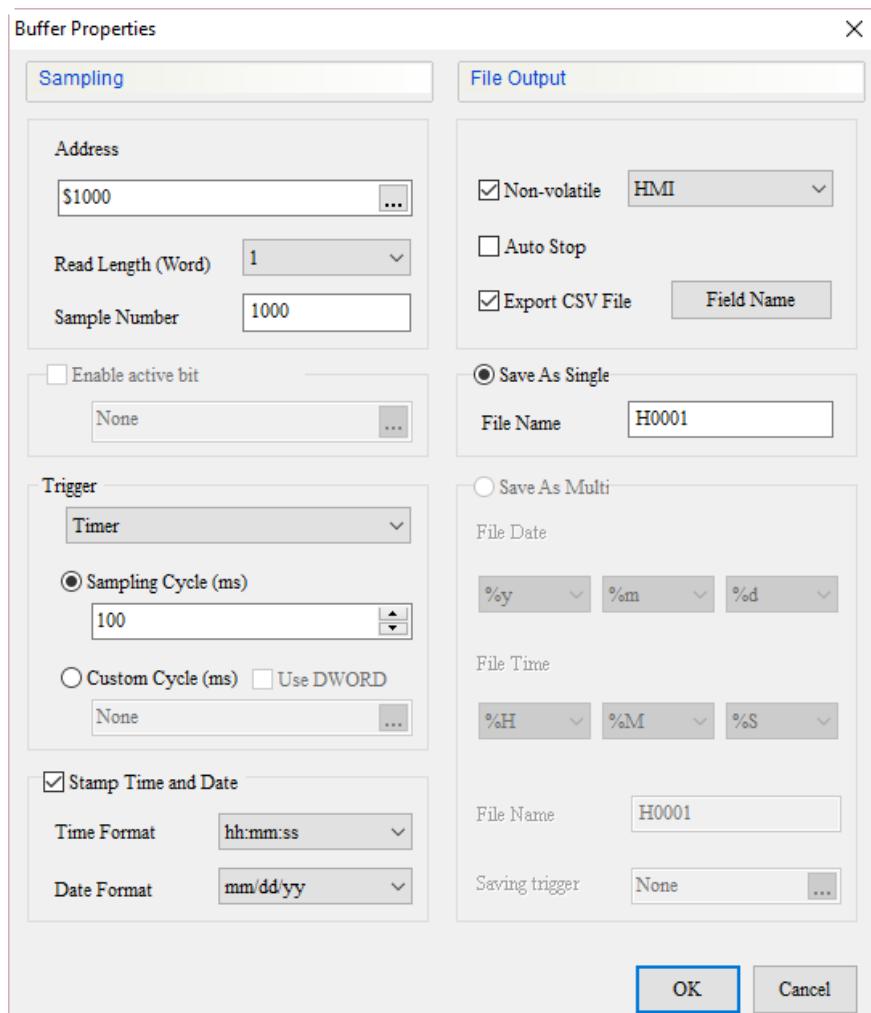
- Var1 and Var5 are internal memory addresses, and Var2, Var3, Var4, and Var6 are constants. Set the History Buffer ID as 1 (Var2), sample from the fifth data (Var2) to the tenth data (Var3), put the data type (including time and data) set as 2 (Var6) in the continuous address (Var5) of \$100, and finally put the obtained data length in \$50 (Var1).



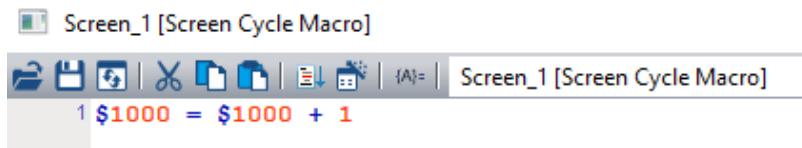
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**Example**

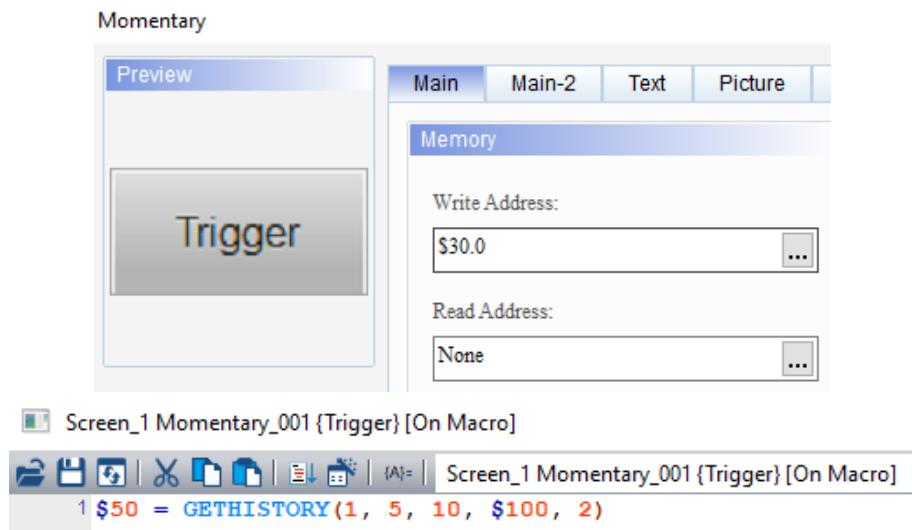
- Set the Read Address \$1000 as the history buffer sampling data address.



- Edit the Screen Cycle Macro to add up the history data of \$1000.

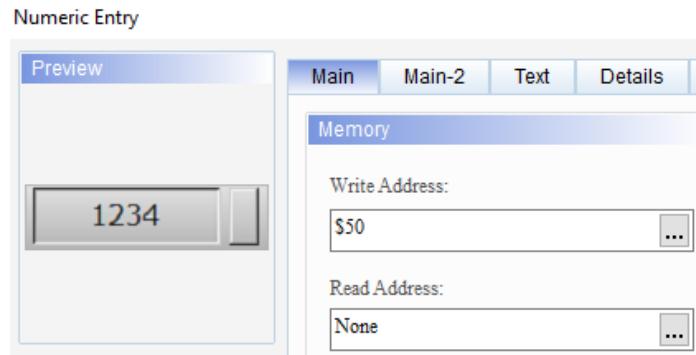


- Create a Momentary button, edit the On Macro, and set the GETHISTORY command as follows.



**Example**

- Create a Numeric Entry element and set the Write Address as \$50.



- Create Numeric Entry elements of \$100 to \$134, as shown as follows.

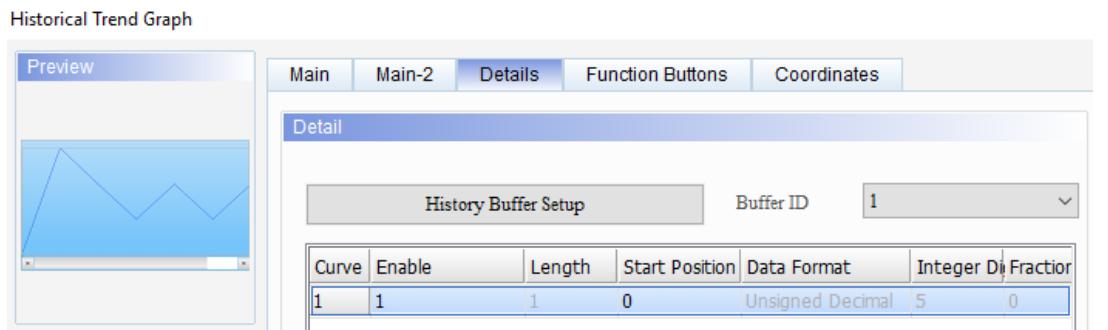
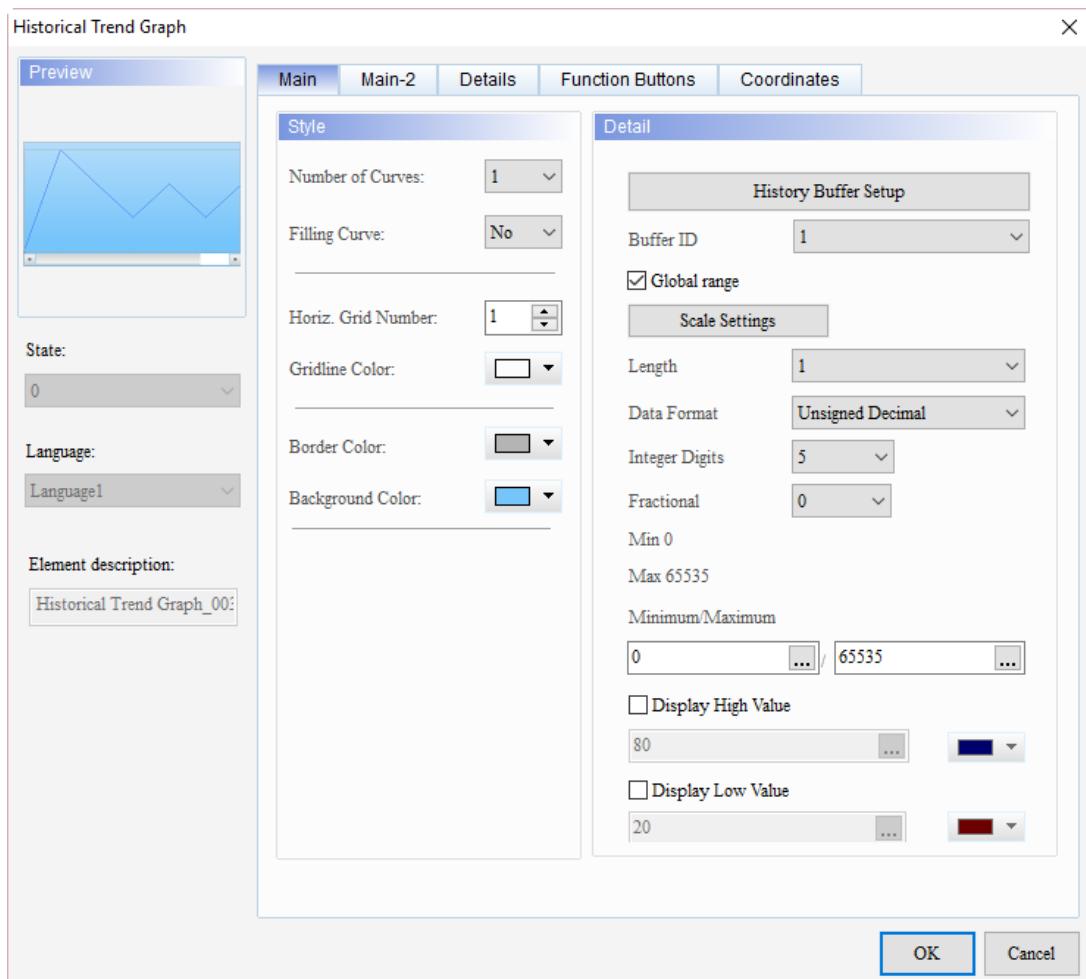
W:\$100 #####	W:\$101 #####	W:\$102 #####	W:\$103 #####	W:\$104 #####	W:\$105 #####	W:\$106 #####
W:\$107 #####	W:\$108 #####	W:\$109 #####	W:\$110 #####	W:\$111 #####	W:\$112 #####	W:\$113 #####
W:\$114 #####	W:\$115 #####	W:\$116 #####	W:\$117 #####	W:\$118 #####	W:\$119 #####	W:\$120 #####
W:\$121 #####	W:\$122 #####	W:\$123 #####	W:\$124 #####	W:\$125 #####	W:\$126 #####	W:\$127 #####
W:\$128 #####	W:\$129 #####	W:\$130 #####	W:\$131 #####	W:\$132 #####	W:\$133 #####	W:\$134 #####

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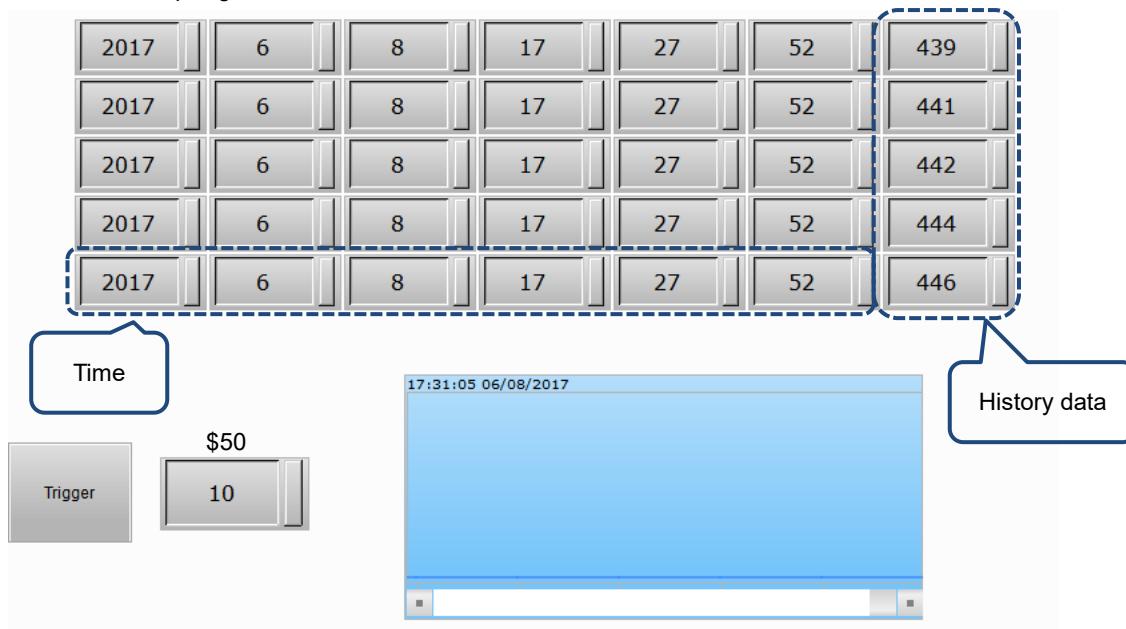
**Example**

- Create a Historical Trend Graph and enable it.



### Example

- After compiling the screen, the execution result is as follows:



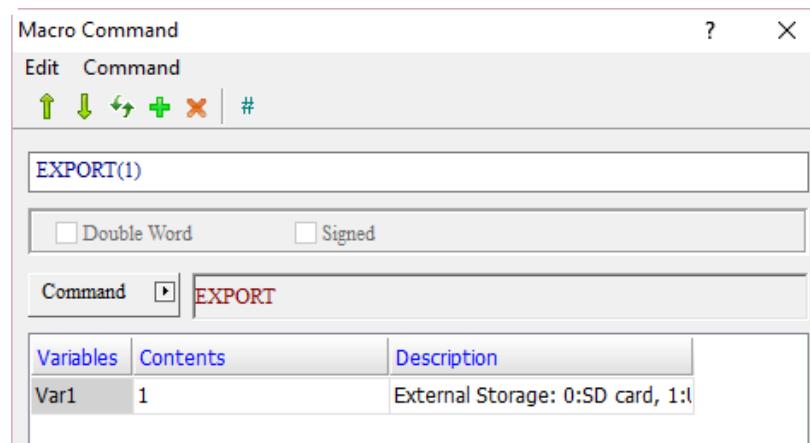
- EXPORT (export data)

Expression	Meaning of variable				Note		
EXPORT(Var1) (W)	Var1	Data export device	SD Card	0	W: Word		
			USB Disk	1			
			Printer	2			
	<b>Description of action</b>						
	Export and print historical and alarm data to external storage device Var1.						

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		v

### Example

- Var1 is a constant. Export data to the USB Disk.



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- EXRCP16 / EXRCP32 (export 16-bit Recipe / export 32-bit Recipe)

Expression	Meaning of variable			Note		
Var1 = EXRCP16(Var2, Var3) (W) Var1 = EXRCP32(Var2, Var3) (W)	Var1	Return value		W: Word  File name of the exported 16-bit Recipe / 32-bit Recipe		
		Failed	0			
		Succeeded	1			
Var2	Var3	File name of the exported 16-bit Recipe / 32-bit Recipe				
		Recipe export storage device	USB Disk	2		
			SD Card	3		
Description of action						
Export the 16-bit Recipe / 32-bit Recipe and store in Var3, and return the result to Var1.						

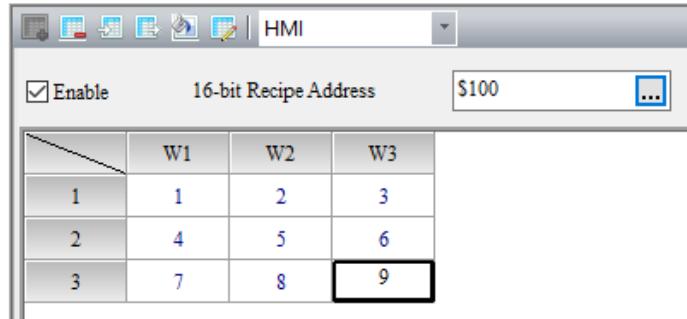
Note: the exported 16-bit and 32-bit Recipe files will be stored in the root directory of the external storage device.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v	v	v

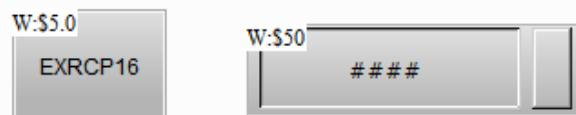
#### Example

- The following example shows the export command of 16-bit Recipe, which is the same as that of 32-bit Recipe.
- Export the 16-bit Recipe data to the USB Disk, and the file name is Delta. The steps are as follows:

1. Go to [Options] > [Recipe] and set the recipe data.



2. Create a Momentary button (\$5.0) and a Numeric Entry element (\$50).



3. Go to the Momentary button and write the On Macro as follows. Put the "Delta" string in \$200 and store the data in the USB Disk by exporting 16-bit Recipe, and the file name is Delta.

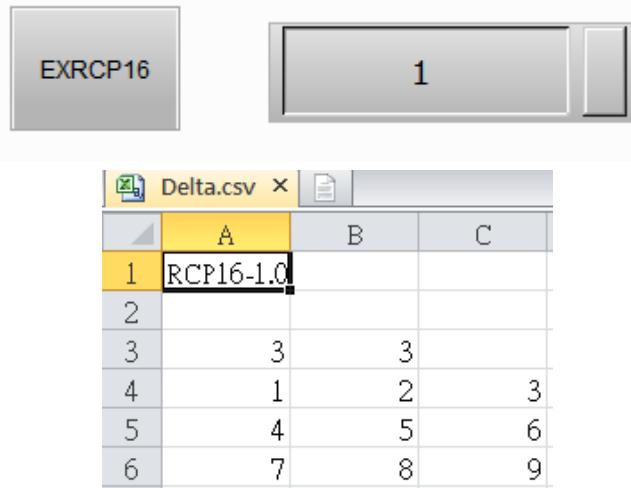
**Example**

```

1 FILLASC($200, "Delta")
2 $50 = EXRCP16($200, 2)

```

4. After compiling the screen and downloading the recipe data to the HMI, trigger the \$5.0 button and \$50 shows 1, representing successful action, and then the HMI export the 16-bit Recipe data to the USB Disk.



■ IMRCP16 / IMRCP32 (import 16-bit Recipe / Import 32-bit Recipe)

Expression	Meaning of variable			Note			
Var1 = IMRCP16(Var2, Var3) (W) Var1 = IMRCP32(Var2, Var3) (W)	Var1	Return value		W: Word  File name of the imported 16-bit Recipe / 32-bit Recipe			
		Failed	0				
		Succeeded	1				
	Var2	File name of the imported 16-bit Recipe / 32-bit Recipe					
		Var3	USB Disk				
			SD Card				
<b>Description of action</b>							
Import the 16-bit Recipe / 32-bit Recipe from Var3 to the HMI, and return the result to Var1.							

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v	v	v

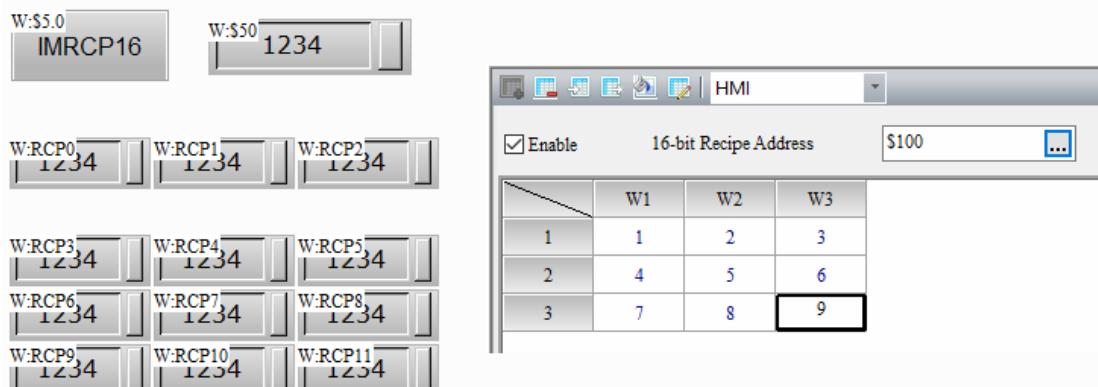
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### Example

- The following example shows the import command of 16-bit Recipe, which is the same as that of 32-bit Recipe.
  - Import 16-bit Recipe data from the USB Disk to the HMI, and the file name is HMI. The steps are as follows:
1. Refer to the following figure, use Excel to make a recipe file called HMI.csv and store it to the USB Disk.

	A	B	C
1	RCP16-1.0		
2		1	2
3		3	3
4		11	12
5		14	15
6		17	18

2. Create a Momentary button (\$5.0), a Numeric Entry element (\$50), and recipe addresses RCP0 to RCP11. This is the default recipe content of the software.



3. Go to the Momentary button and write the On Macro as follows. Put the "HMI" string in \$200 and import 16-bit Recipe data from the USB Disk.

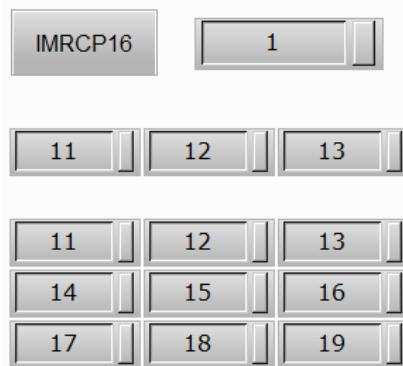
Screen\_1 Momentary\_001 {IMRCP16} [On Macro]

```

1 FILLASC($200, "HMI")
2 $50 = IMRCP16($200, 2)

```

4. After compiling the screen and downloading the recipe data to the HMI, trigger the \$5.0 button and \$50 shows 1, representing successful action, and then the 16-bit Recipe data is imported to the HMI. The recipe data of the HMI is then changed to the HMI recipe file.



■ EXENRCP (export enhanced recipe)

Expression	Meaning of variable			Note		
Var1 = EXENRCP(Var2, Var3) (W)	Var1	Return value				
		Failed	0	W: Word Var2: File name of the exported enhanced recipe Var3: Recipe export storage device 2: USB Disk 3: SD Card		
		Succeeded	1			
Var1 = EXENRCP(Var2, Var3) (W)	Var2	File name of the exported enhanced recipe				
	Var3	Recipe export storage device	USB Disk	2		
			SD Card	3		
<b>Description of action</b>						
Export the enhanced recipe and store it in Var3, and return the result to Var1.						

Note: the exported enhanced recipe file will be stored in the root directory of the external storage device.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v	v	v

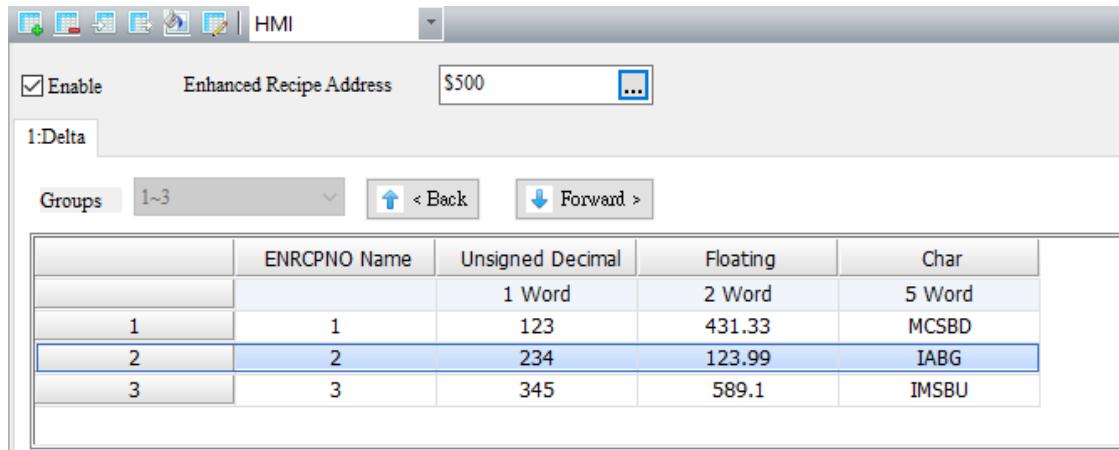
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**Example**

- Export the enhanced recipe data to the USB Disk, and the file name is ABC. The steps are as follows:

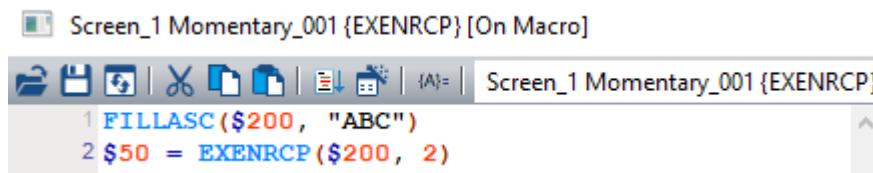
1. Go to [Options] > [Enhanced recipe] and set the recipe data.



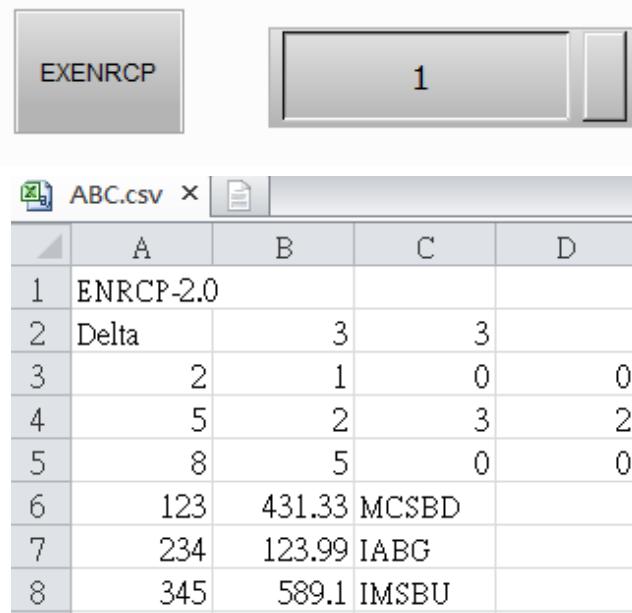
2. Create a Momentary button (\$6.0) and a Numeric Entry element (\$50).



3. Go to the Momentary button to write the On Macro as follows. Put the "ABC" string in \$200 and store the data in the USB Disk by exporting the enhanced recipe, and the file name is ABC.



4. After compiling the screen and downloading the recipe data to the HMI, trigger the \$5.0 button and \$50 shows 1, representing successful action, and then the HMI export the enhanced recipe data to the USB Disk.



**Example**

- For each Data Format and the corresponding defined value, refer to the following table.

Data Format	DOPSoft defined value
BCD	0
Signed Decimal	1
Unsign Decimal	2
Hexdecimal	3
Binary	4
Floating	5
Char	8

- Each cell of the exported CSV file is explained as follows:

	A	B	C	D
1	ENRCP-2.0			
2	Delta	3	3	
3	2	1	0	0
4	5	2	3	2
5	8	5	0	0
6	123	431.33	MCSBD	
7	234	123.99	IABG	
8	345	589.1	IMSBU	

Excel cell	Definition	Content
A-1	Version	ENRCP-2.0
A-2	Enhanced recipe group name	Delta
B-2	Column number	3
C-2	Group number	3
A-3	Data Format of Column 1	2 (Unsigned Decimal)
B-3	Data Length of Column 1	1 (Word)
C-3	Integer Digits of Column 1	0
D-3	Fractional (Digits) of Column 1	0
A-4	Data Format of Column 2	5 (Floating)
B-4	Data Length of Column 2	2 (Word)
C-4	Integer Digits of Column 2	3
D-4	Fractional (Digits) of Column 2	2
A-5	Data Format of Column 3	8 (Char)
B-5	Data Length of Column 3	5 (Word)
C-5	Integer Digits of Column 3	0
D-5	Fractional (Digits) of Column 3	0

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■ IMENRCP (import enhanced recipe)

Expression	Meaning of variable			Note	
Var1 = IMENRCP(Var2, Var3) (W)	Var1	Return value			
		Failed	0	W: Word	
		Succeeded	1		
	Var2	File name of the imported enhanced recipe			
	Var3	Recipe import storage device	USB Disk SD Card	2 3	
Description of action					
Import the enhanced recipe from Var3 to the HMI and return the result to Var1.					

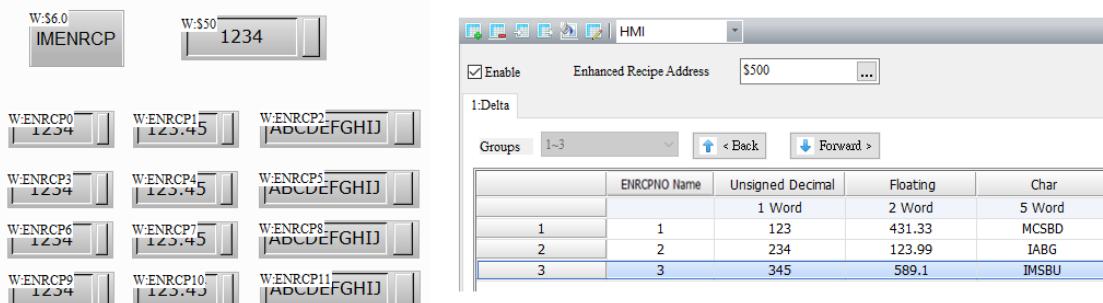
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	
Var3	v	v	v

**Example**

- Import the enhanced recipe from the USB Disk to the HMI, and the file name is DEF. The steps are as follows:
1. Refer to the following figure, use Excel to make a recipe file called DEF.csv and store it to the USB Disk.

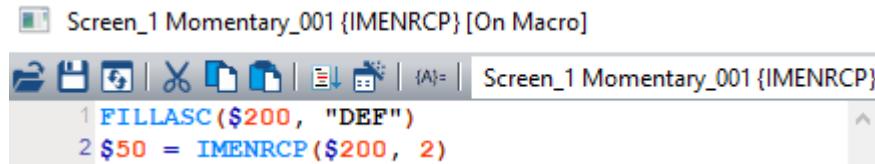
	A	B	C	D
1	ENRCP-2.0			
2	Delta	3	3	
3	2	1	0	0
4	5	2	3	2
5	8	5	0	0
6	1123	31.33	HMI	
7	1234	23.99	DOP-B	
8	1345	89.1	DOP-W	

2. Create a Momentary button (\$6.0), a Numeric Entry element (\$50), and recipe addresses RCP0 to RCP11.



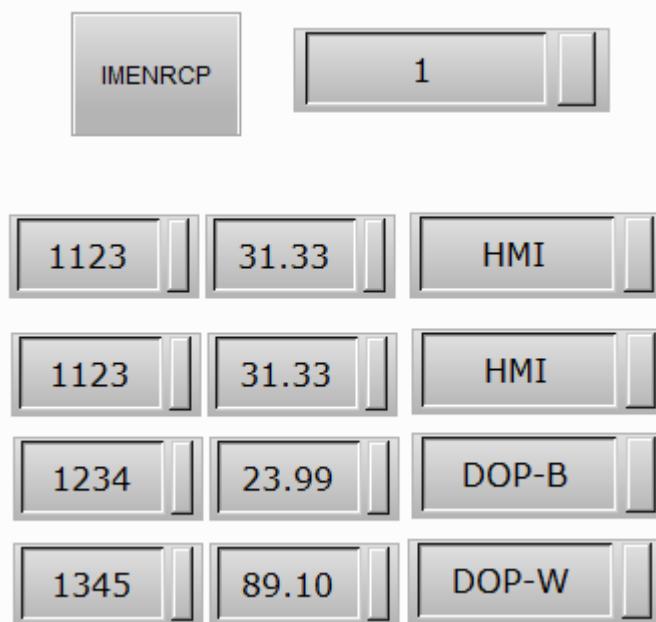
**Example**

3. Go to the Momentary button to write the On Macro as follows. Put the “DEF” string in \$100 and import the enhanced recipe from the USB Disk.



```
1 FILLASC($200, "DEF")
2 $50 = IMENRCP($200, 2)
```

4. After compiling the screen and downloading the recipe data to the HMI, trigger the \$5.0 button and \$50 shows 1, representing the successful action, and then the enhanced recipe data is imported to the HMI. The recipe data of the HMI is then changed to the DEF recipe file.



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■ EXHISTORY (export history data)

Expression	Meaning of variable			Note		
Var1 = EXHISTORY(Var2, Var3, Var4)	Var1	Return value				
		Failed	0			
		Succeeded	1			
Var1 = EXHISTORY(Var2, Var3, Var4)	Var2	History Buffer ID				
	Var3	Exported file name				
	Var4	External storage device	USB Disk	2		
Var1 = EXHISTORY(Var2, Var3, Var4)			SD Card	3		
Description of action						
Export history data to an external storage device.						

Note:

1. You must select the check box for **Export CSV File** in the Buffer Properties setting. If not, execution of this macro will only export the .dat file.
2. When you input 0 to the History Buffer ID, it means to export all history buffers. If 3 history buffers are opened, 3 files will be exported after execution. The file names are "Export file name 1.csv", "Export file name 2.csv," and "Export file name 3.csv" respectively. When you input a non-0 number, it represents that the specified ID of history buffer will be exported. After execution, one file will be exported with the name of "Export file name.csv"
3. File extension ".csv" will be added automatically after exporting. The file name cannot contain characters such as \, /, :, \*, ?, ", <, >, and ].  
x00 indicates the end of the file name string.

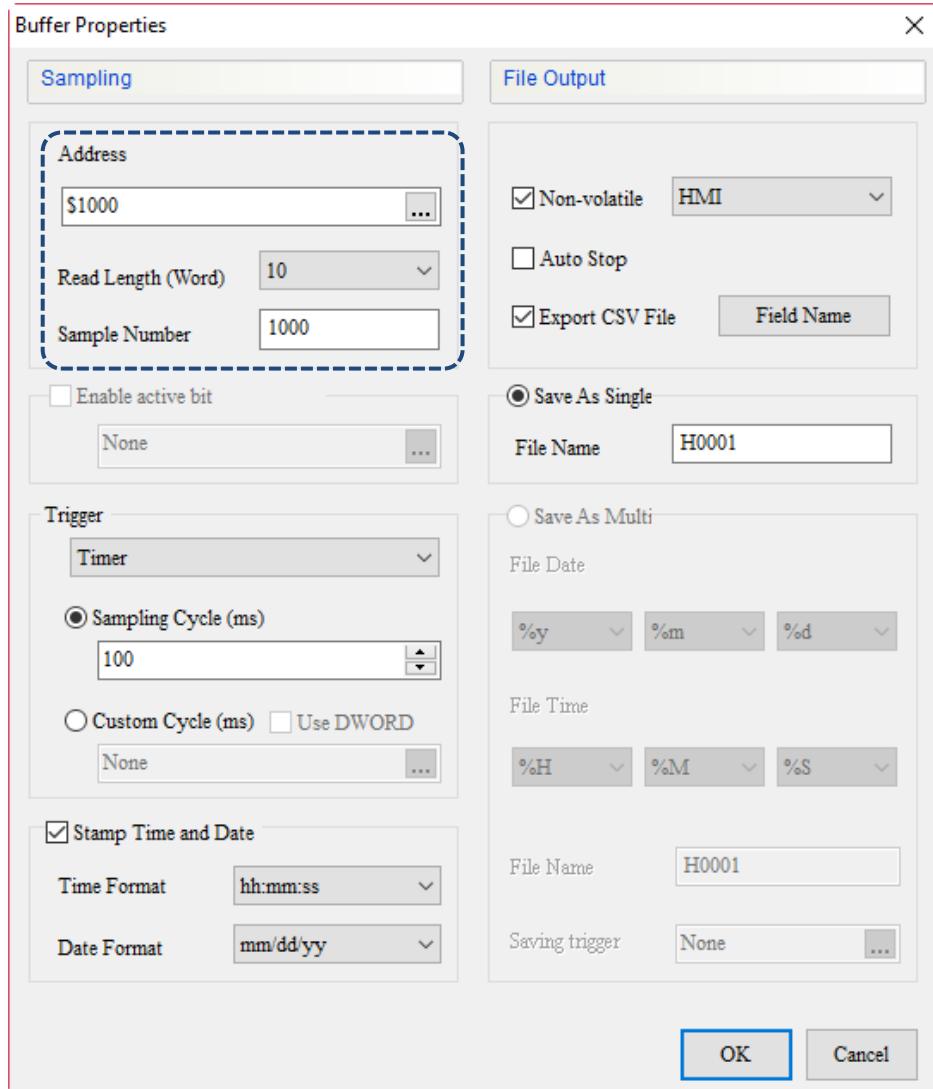
Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v	v		
Var2	v	v		v
Var3	v	v		
Var4	v	v		v

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**Example**

Step 1: set three history buffers as follows:

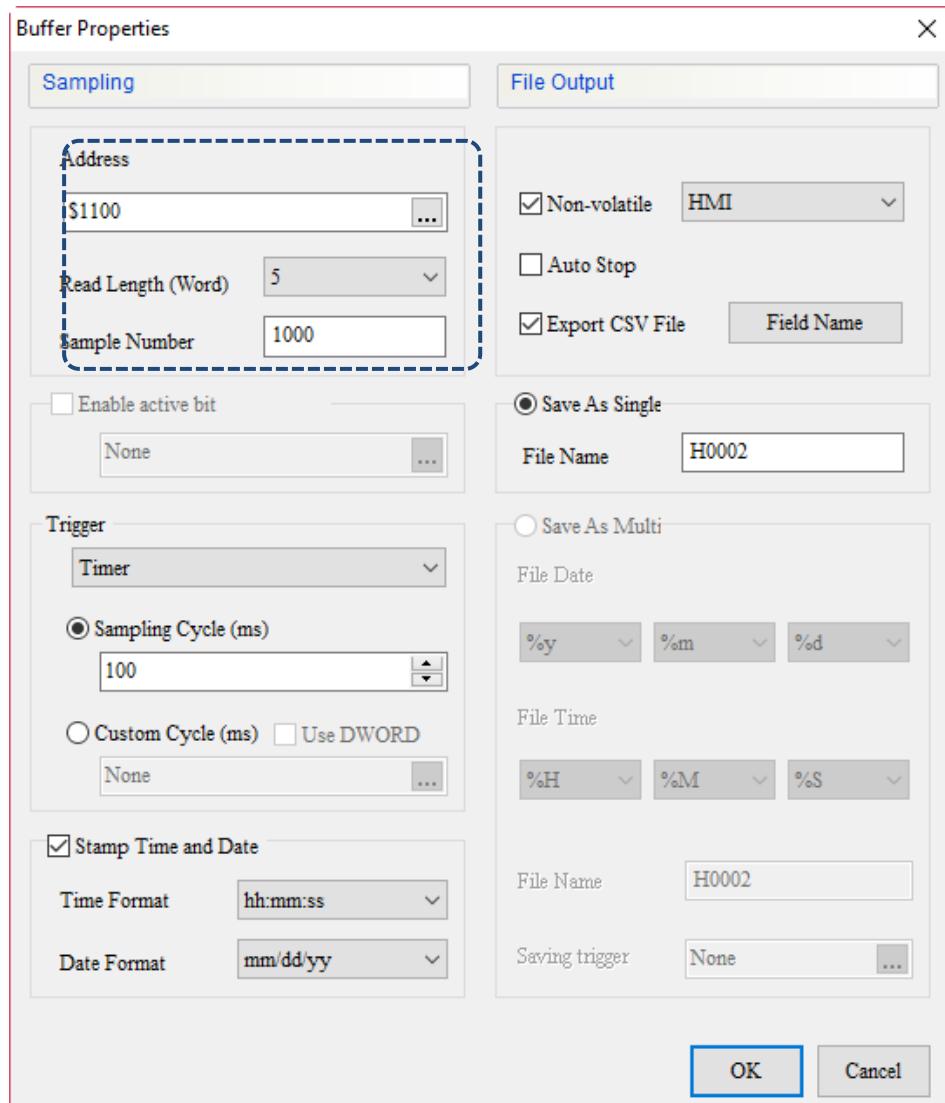
1. For History data buffer 1, set the Address to \$1000, Read Length (Word) to 10, and select the check box of **Export CSV File**.



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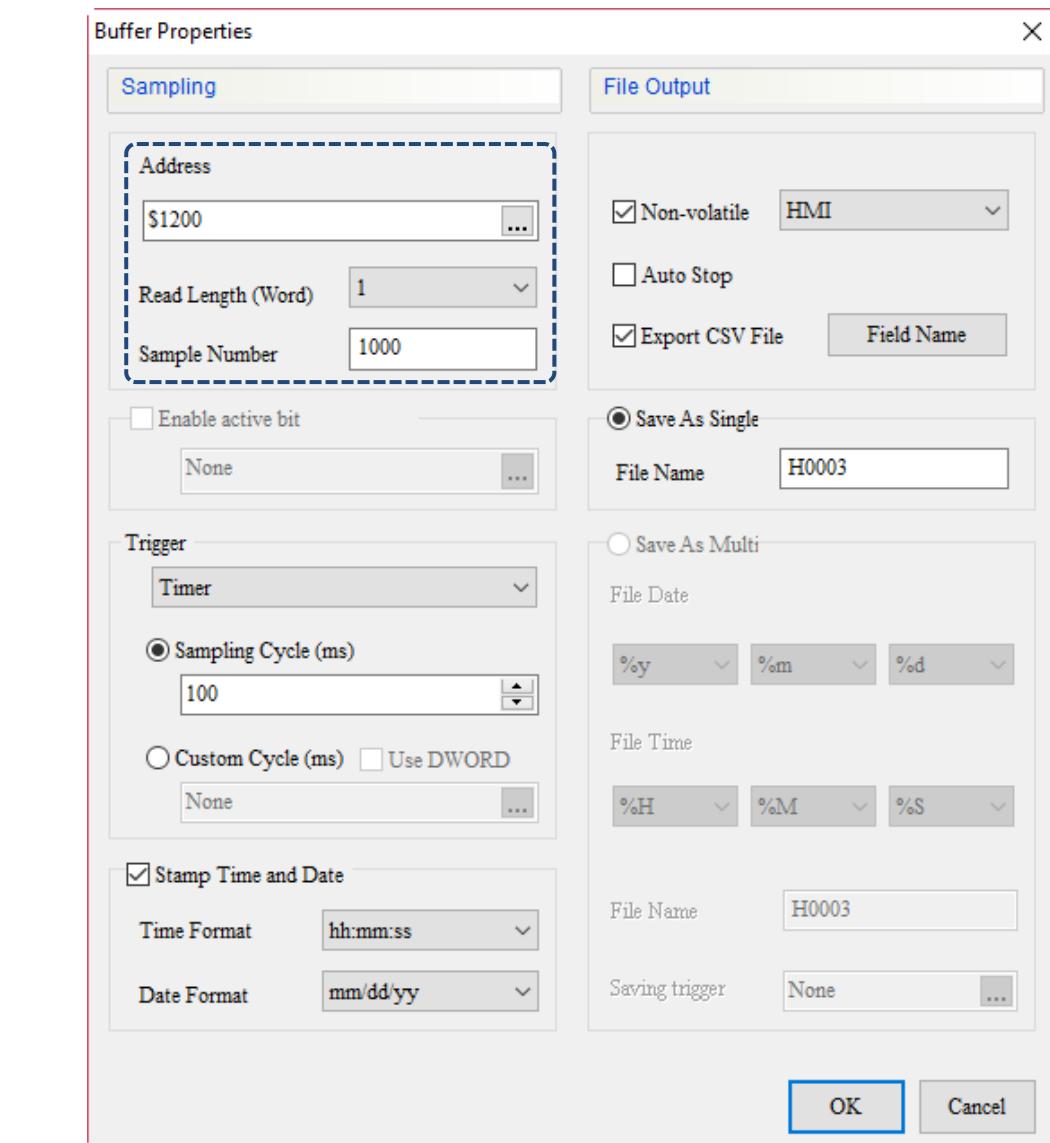
**Example**

2. For History data buffer 2, set the Address to \$1100, Read Length (Word) to 5, and select the check box of **Export CSV File**.



**Example**

3. For History data buffer 3, set the Address to \$1200, Read Length (Word) to 1, and select the check box of **Export CSV File**.

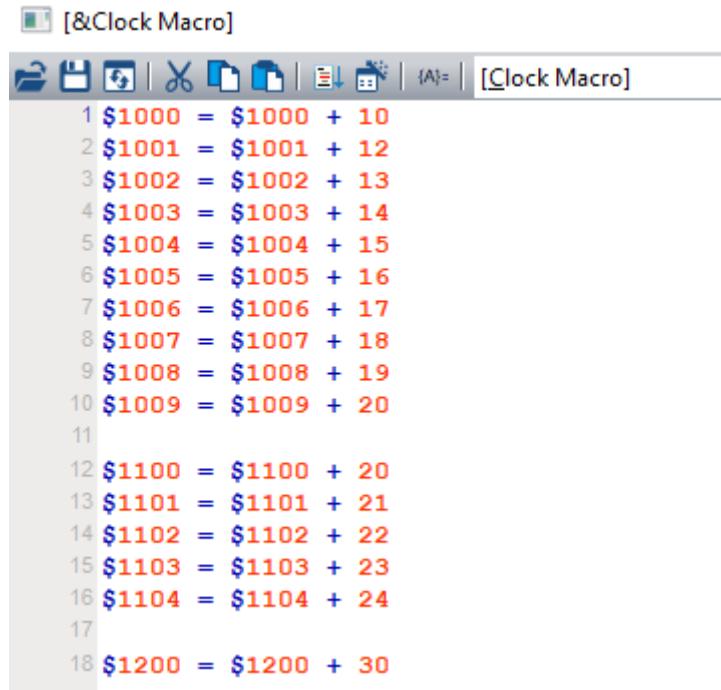


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**Example**

Step 2: add up history data in the Clock Macro.



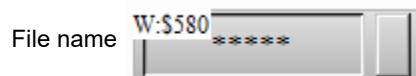
```

[&Clock Macro]
[Clock Macro]

1 $1000 = $1000 + 10
2 $1001 = $1001 + 12
3 $1002 = $1002 + 13
4 $1003 = $1003 + 14
5 $1004 = $1004 + 15
6 $1005 = $1005 + 16
7 $1006 = $1006 + 17
8 $1007 = $1007 + 18
9 $1008 = $1008 + 19
10 $1009 = $1009 + 20
11
12 $1100 = $1100 + 20
13 $1101 = $1101 + 21
14 $1102 = $1102 + 22
15 $1103 = $1103 + 23
16 $1104 = $1104 + 24
17
18 $1200 = $1200 + 30

```

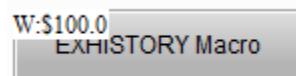
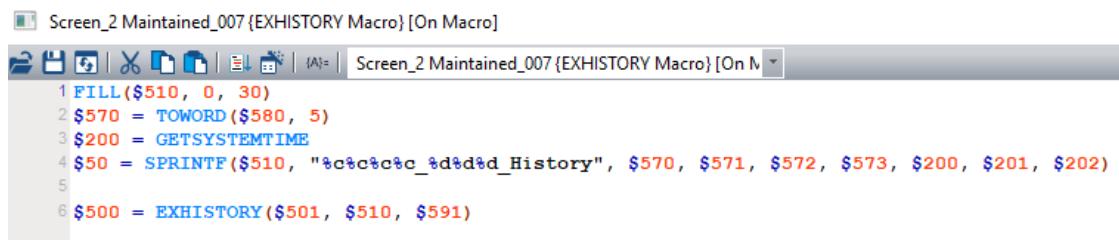
Step 3: create a Character Entry element on the screen with the address as \$580 and string length as 5.



Step 4: create 3 Numeric Entry elements on the screen with the addresses of \$500, \$591, and \$501.



Step 5: create a Maintained button element on the screen with the address of \$100.0, and add the On Macro.

```

Screen_2 Maintained_007 {EXHISTORY Macro} [On Macro]
[Screen_2 Maintained_007 {EXHISTORY Macro} [On Macro]]

1 FILL($510, 0, 30)
2 $570 = TOWORD($580, 5)
3 $200 = GETSYSTEMTIME
4 $50 = SPRINTF($510, "%c%c%c%c_%d%d%d_History", $570, $571, $572, $573, $200, $201, $202)
5
6 $500 = EXHISTORY($501, $510, $591)

```

### Example

Macro commands description:

Line 1: clear \$510 - \$539.

Line 2: convert the unit of \$580 (file name string) from byte to word.

Line 3: move the system time to \$200 - \$206 (year, month, day, week, hour, minute, second).

Line 4: add "\_year, month, day" and "\_History" to "three characters of device name" to form a continuous string and assign it to the \$510 start address.

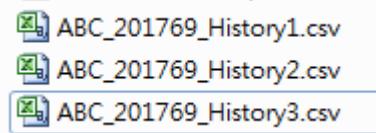
Line 6: export the history data to the specified external device and file name.

Step 6: download the editing screen to the HMI and insert the USB Disk into the HMI.

Step 7: enter the device name as "ABC" on the screen, and select "2" to use the USB Disk for the external storage device. Set the buffer ID as 0 (export all) and press the **EXHISTORY** button. The return value becomes 1 after the action.

Return Value	<input type="text" value="1"/>
Buffer ID	<input type="text" value="0"/>
File Name	<input type="text" value="ABC"/>
External Storage ID 2 : USB ID 3 : SD	<input type="text" value="2"/>

Step 8: after the USB Disk is removed, the files exported to the USB Disk are as follows:



#### ■ EXALARM (export alarm data)

Expression	Meaning of variable			Note		
Var1 = EXALARM(Var2, Var3)	Return value					
	Var1	Failed	0			
	Succeeded	1				
	Var2	Exported file name				
	Var3	External storage device	USB Disk	2		
			SD Card	3		
<b>Description of action</b>						
Export alarm data to external storage devices.						

Note:

1. You must select the check box of **Export CSV File** in the alarm settings.
2. File extension ".csv" will be added automatically after exporting. The file name cannot contain characters such as \, /, :, \*, ?, ", <, >, and ].  
x00 indicates the end of the file name string.

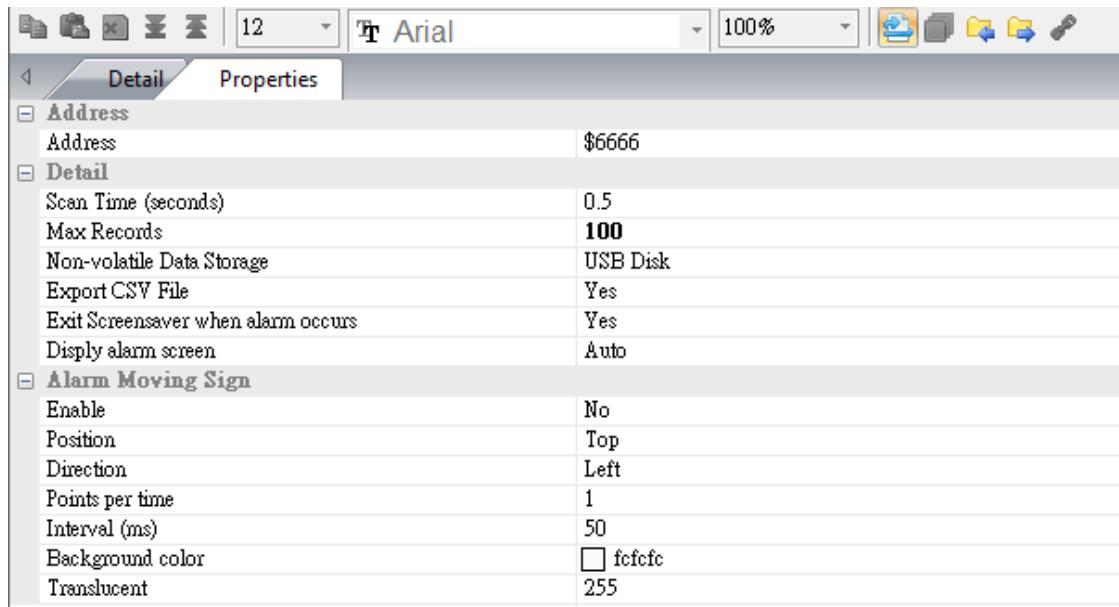
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Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v	v		
Var2	v	v		
Var3	v	v		v

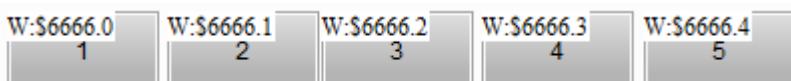
**Example**

- The steps are as follows:

- The alarm settings are as follows. Set the Address as \$6666 and set the Export CSV File to Yes.



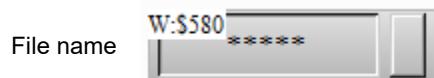
- Create Maintained elements that trigger alarm bits on the screen to trigger alarms. Set the addresses as \$6666.0, \$6666.1, \$6666.2, \$6666.3, and \$6666.4 in sequence.



- Create an Alarm History Table element on the screen to display the current history alarm.

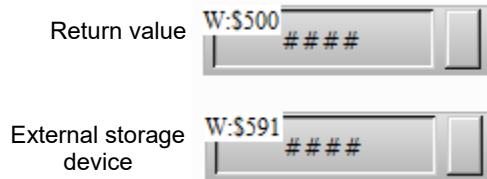
No	Trigger	Message	Recovery	Frequency
1	hh:mm:ss mm/dd/yy	####	hh:mm:ss mm/dd/yy	#

- Create a Character Entry element on the screen with the address as \$580 and string length of 5.



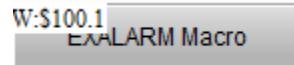
### Example

5. Create 2 Numeric Entry elements on the screen with the addresses as \$500 and \$591.



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6. Create a Maintained button element on the screen with the address as \$100.1, and add the On Macro.



Screen\_3 Maintained\_005 {EXALARM Macro} [On Macro]

```

1 FILL($510, 0, 30)
2 $570 = TOWORD($580, 5)
3 $200 = GETSYSTEMTIME
4 $50 = SPRINTE($510, "%c%c%c%c_%d%d%d_Alarm", $570, $571, $572, $573, $200, $201, $202)
5
6 $500 = EXALARM($510, $591)

```

The macro commands are described as follows:

Line 1: clear \$510 - \$539.

Line 2: convert the unit of \$580 (device name string) from byte to word.

Line 3: move the system time to \$200 - \$206 (year, month, day, week, hour, minute, second).

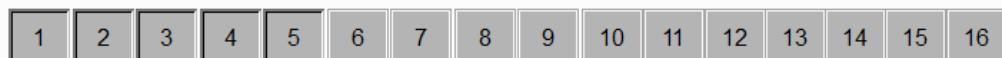
Line 4: add "\_year, month, day" and "\_Alarm" to "three characters of device name" to form a continuous string and assign to the \$510 start address.

Line 6: export the history alarm to the specified external device and file name.

7. Download the editing screen to the HMI and insert the USB Disk into the HMI.

8. Trigger the alarm and enter the device name as "AAA" on the screen, and select "2" to use the USB Disk for the external storage device.

No	Message	Trigger	Recovery	Ack
0001	Alarm 1	15:11:37 06/13/2018		
0002	Alarm 2	15:11:37 06/13/2018		
0003	Alarm 3	15:11:38 06/13/2018		
0004	Alarm 4	15:11:39 06/13/2018		
0005	Alarm 5	15:11:39 06/13/2018		



512 1024 2048

<input type="button" value="EXALARM Macro"/>	Return Value <input type="text" value="0"/>
<input type="button" value="Export Macro"/>	File Name <input type="text" value="AAA"/>
<input type="button" value="Remove Storage USB"/>	External Storage ID 2 : USB ID 3 : SD <input type="text" value="2"/>

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**Example**

9. Press the **EXALARM Macro** button and the return value becomes 1 after the action.

No	Message	Trigger	Recovery	Ack
0001	Alarm 1	15:11:37 06/13/2018		
0002	Alarm 2	15:11:37 06/13/2018		
0003	Alarm 3	15:11:38 06/13/2018		
0004	Alarm 4	15:11:39 06/13/2018		
0005	Alarm 5	15:11:39 06/13/2018		



512 1024 2048

**EXALARM Macro**      Return Value      1

**Export Macro**      File Name      AAA

**Remove Storage USB**  
ID 2 : USB      2  
ID 3 : SD

10. After the USB Disk is removed, the file exported to the USB Disk is as follows:

AAA\_2017612\_Alarm.csv

■ EXALARMGROUP (export group data specified by alarm)

Expression	Meaning of variable			Note			
Var1 = EXALARMGROUP(Var2, Var3,Var4)	Return value						
	Var1	Failed	0				
		Succeeded	1				
	Var2	Alarm group number					
	Var3	Exported file name					
	Var4	External storage device	USB Disk				
			SD Card				
<b>Description of action</b>							
Export the alarm data to the external storage device in accordance with the specified group.							

Note:

1. You must select check box of **Export CSV File** in the alarm settings.
2. File extension of "- group number" and ".csv " will be added automatically after exporting. The file name cannot contain characters such as \, /, :, \*, ?, <, >, and |.  
x00 indicates the end of the file name string.

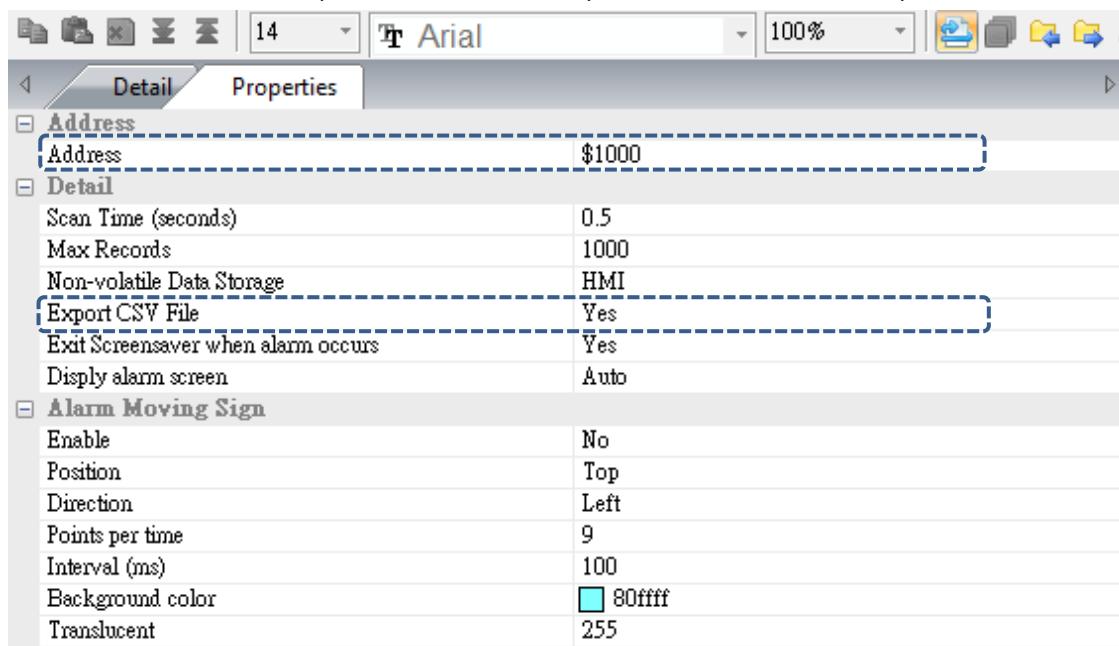
Variable	Type			
	Internal memory	PLC register	String	Constant
Var1	v	v		
Var2	v	v		v
Var3	v	v		
Var4	v	v		v

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**Example**

The steps are as follows:

1. The alarm settings are as follows. Set the Address to \$1000 and set the Export CSV File to Yes. Set Alarms 1 - 3 as Group 1, Alarms 4 - 6 as Group 2, and Alarms 7 - 9 as Group 3.



No.	Message Content	Category	Trigger Condition
1*	Alarm 1	1	On
2*	Alarm 2	1	On
3*	Alarm 3	1	On
4*	Alarm 4	2	On
5*	Alarm 5	2	On
6*	Alarm 6	2	On
7*	Alarm 7	3	On
8*	Alarm 8	3	On
9*	Alarm 9	3	On
10*	Alarm 10	0	On
11*	Alarm 11	0	On
12*	Alarm 12	0	On
13*	Alarm 13	0	On
14*	Alarm 14	0	On
15*	Alarm 15	0	On

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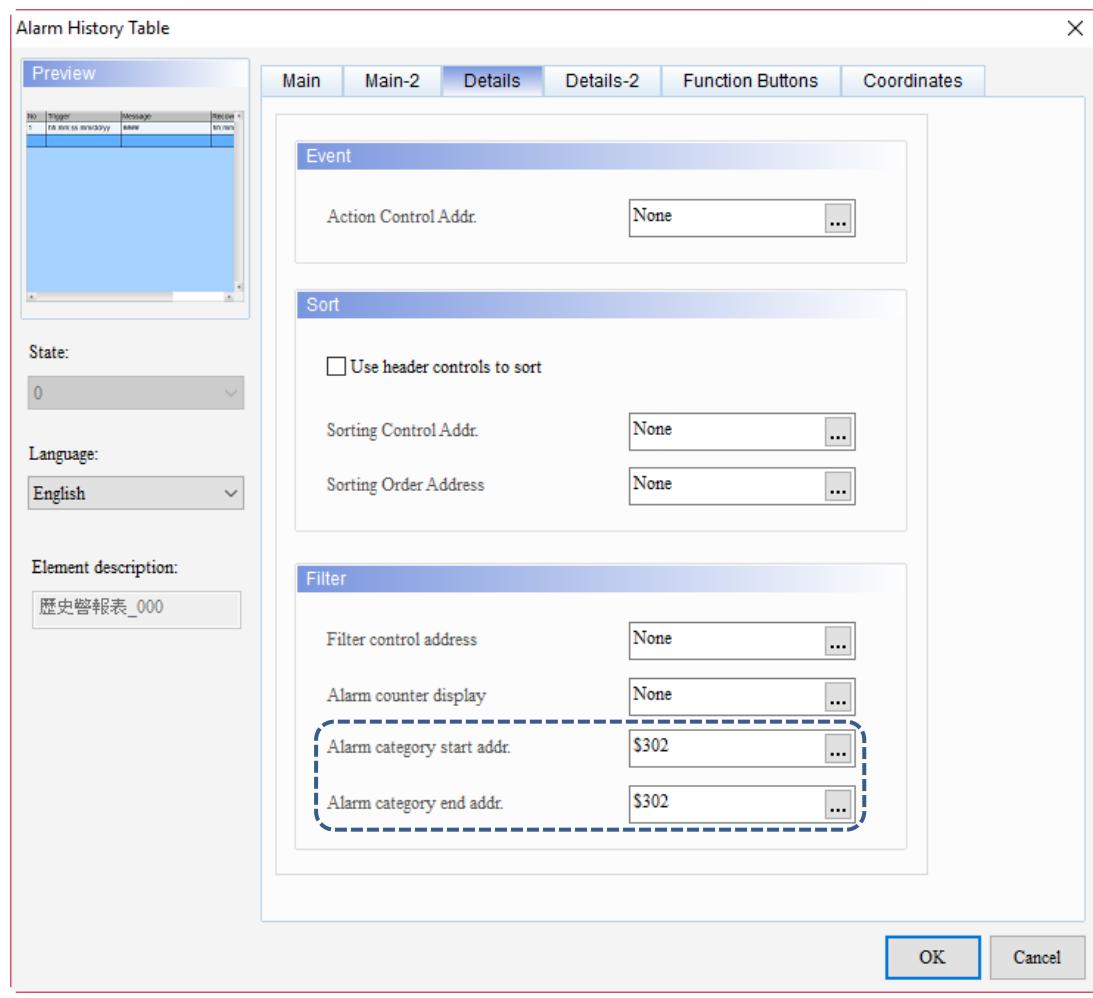
**Example**

2. Create Maintained elements that trigger alarm bits on the screen to trigger alarms. Set the Write addresses as \$1000.0, \$1000.1, \$1000.2 to \$1000.9 in sequence.



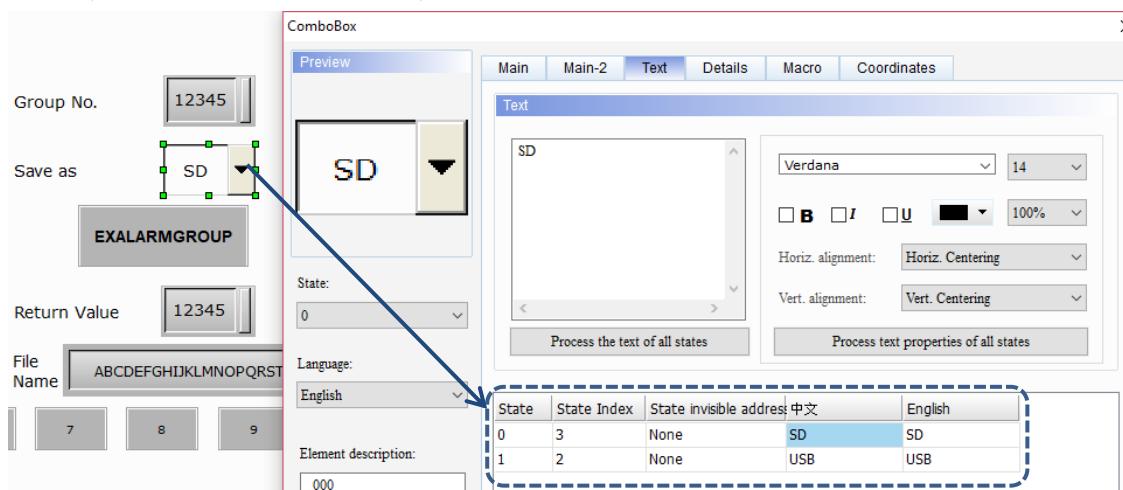
3. Create an Alarm History Table element on the screen to display the current history alarm and set the group number as variable and the read address as \$302.

No	Trigger	Message	Recovery	Group
1	hh:mm:ss m...	####	hh:mm:ss m...	



### Example

4. Create a Character Display element on the screen with the address as \$304 and the string length as 20; create 2 Numeric Entry elements with the addresses as \$302 and \$301; create a ComboBox with the address as \$303. The total number of State is 2, the State Index of State 1 is 3, the text is SD, the State Index of State 2 is 2, and the text is USB.



5. Create a Maintained button element on the screen with the address as \$300.0, and add the On Macro.

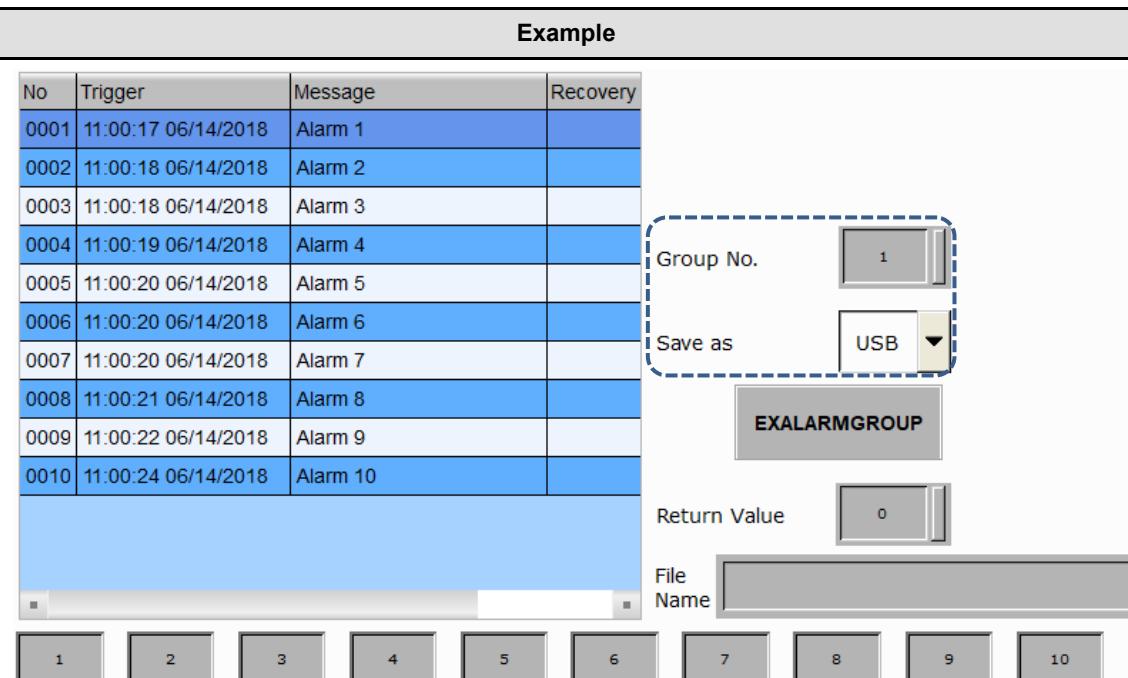


The macro commands are described as follows:

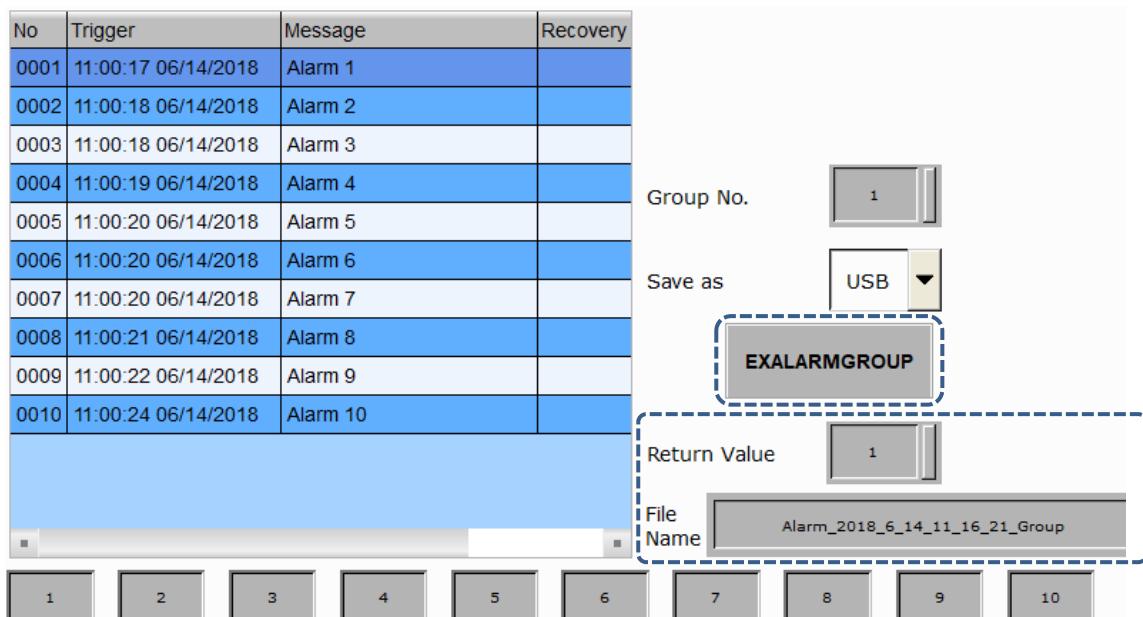
- Line 1: record the system time to \$200 - \$206 (year, month, day, week, hour, minute, second).  
 Line 2: add "\_year, month, day, hour, minute, second" and "\_Group" to "Alarm" to form a continuous string and assign to the \$304 start address as file name.  
 Line 3: export history alarm to the specified external device according to the specified group number and file name.

6. Download the editing screen to the HMI and insert the USB Disk into the HMI.  
 7. Trigger Alarm 1 to Alarm 10, enter group number "1" on the screen, and select USB for the external storage device.

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8. Press the **EXALARMGROUP** button and the file name will be displayed, and the return value will become 1 after the action.



9. Then, set group numbers as 2 and 3 as in Step 8, and press the button **EXALARMGROUP** respectively.

10. After the USB Disk is removed, the files exported to the USB Disk are as follows:

 Alarm_2018_6_14_11_18_33_Group-1.csv	6/14/2018 11:18 AM	Microsoft Excel Comma Separated Values File	2 KB
 Alarm_2018_6_14_11_18_46_Group-2.csv	6/14/2018 11:18 AM	Microsoft Excel Comma Separated Values File	2 KB
 Alarm_2018_6_14_11_18_55_Group-3.csv	6/14/2018 11:18 AM	Microsoft Excel Comma Separated Values File	2 KB

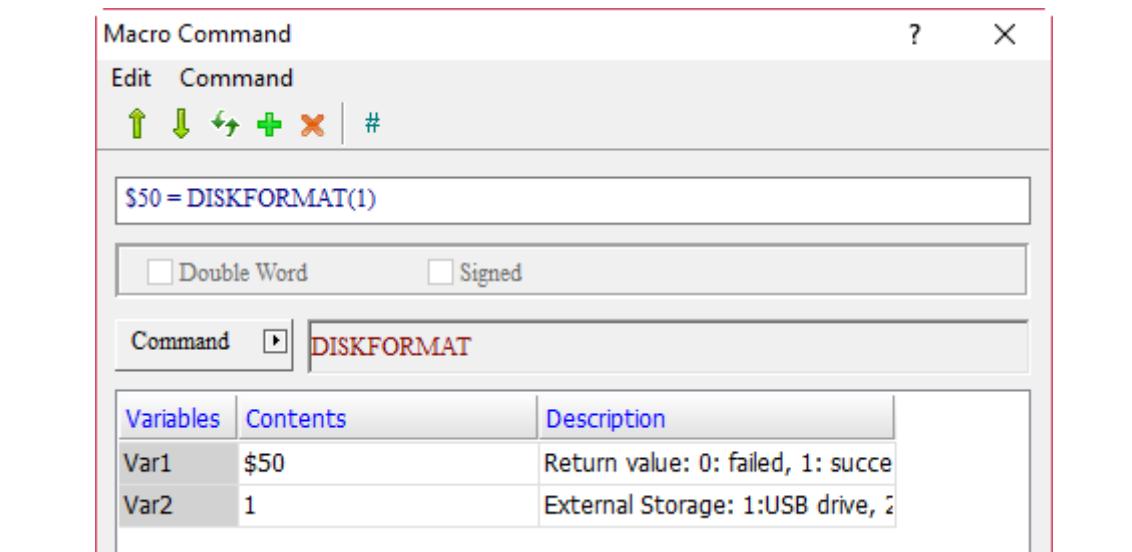
■ DISKFORMAT (disk format)

Expression	Meaning of variable				Note	
Var1 = DISKFORMAT(Var2) (W)	Var1	Return value			W: Word Var2 External storage device USB Disk 1 SD Card 2 Select Var2 device to be formatted and return the result value to Var1.	
		Failed	0			
		Succeeded	1			
Var1 = DISKFORMAT(Var2) (W)	Var2	External storage device	USB Disk	1		
			SD Card	2		
	Description of action					
Select Var2 device to be formatted and return the result value to Var1.						

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

Example

- Var1 is the internal memory address and Var2 is a constant. Format the USB Disk and put the return value in \$50.



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■ BMP\_CAPTURE (screen capture)

Expression	Meaning of variable			Note		
Var1 = BMP_CAPTURE(Var2) (W)	Var1	Return value				
		Failed	0	W: Word		
		Succeeded	1			
	Var2	External storage device	USB Disk	1		
			SD Card	2		
<b>Description of action</b>						
Store the captured screen file in the Var2 device and return the result value to Var1.						

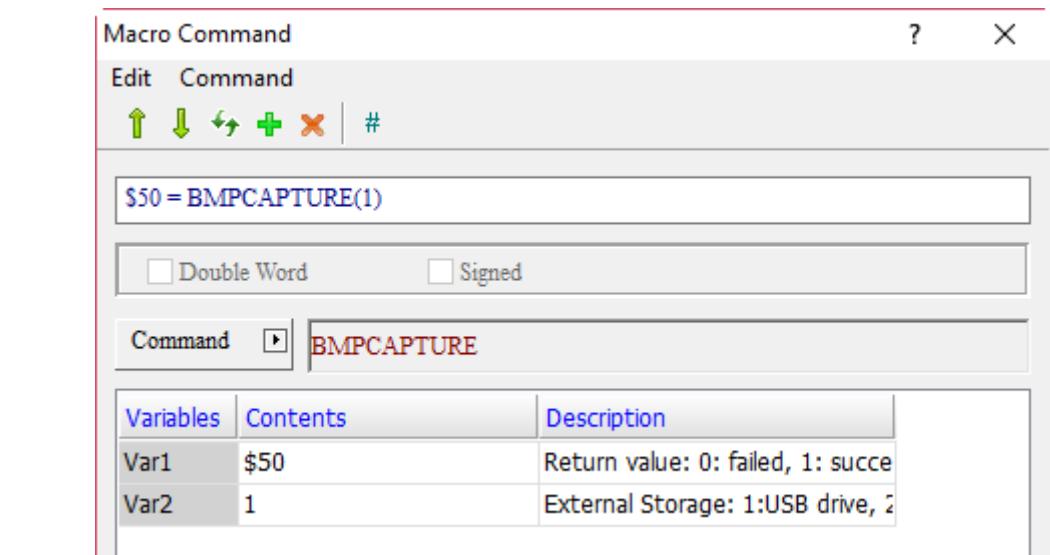
Note:

1. All formats of the exported files are .BMP.
2. The exported path is the folder with the current date in the root directory of the external storage device, and the current screen file is saved in hour, minute and second.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v

**Example**

- Var1 is the internal memory address and Var2 is a constant. Save the captured screen to the USB Disk and put the return value in \$50.



■ PLCDOWNLOAD (PLC file download)

Expression	Meaning of variable				Note					
Var1 = PLCDOWNLOAD(Var2, Var3, Var4, Var5, Var6) (W)	Var1	Return value			W: Word					
		Failed	0							
		Succeeded	1							
	Var2	COM Port	COM1	0	W: Word					
			COM2	1						
			COM3	2						
	Var3	PLC station number								
	Var4	DELTA PLC file name (i.e. delta.dvp, delta.isp)								
	Var5	External storage device	USB Disk	1	W: Word					
			SD Card	2						
Var6	PLC password									
						<b>Description of action</b>				
						Download PLC file to PLC.				

Note:

1. Only support Delta PLC.
2. Support .dvp and .isp file formats.
3. Please use Character Entry elements for Var6 password.

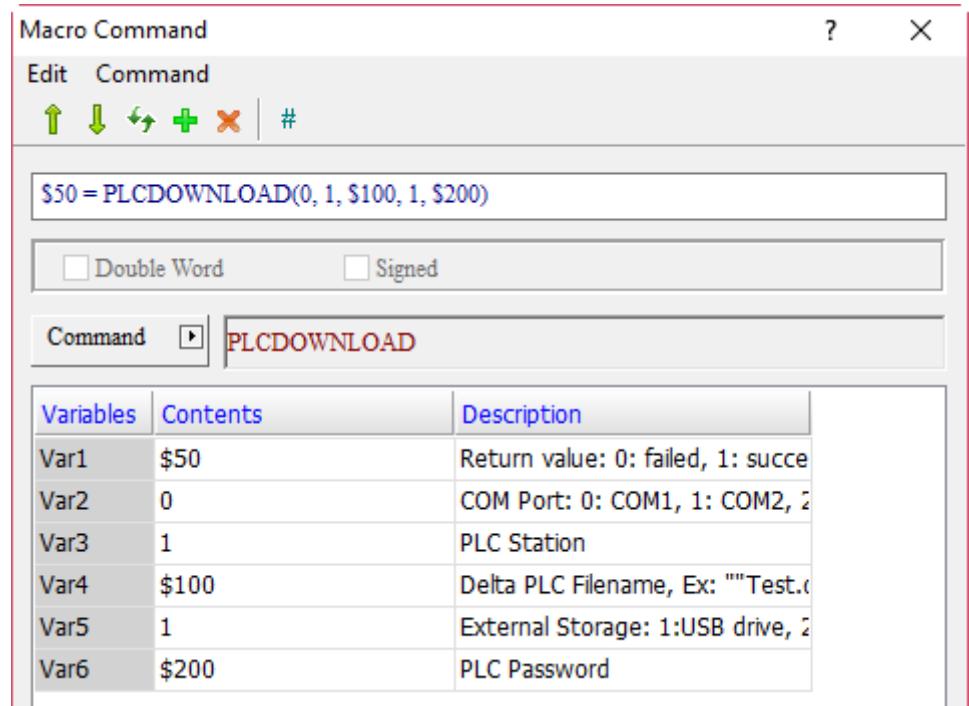
Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	
Var2	v	v	v
Var3	v	v	v
Var4	v	v	
Var5	v	v	v
Var6	v	v	

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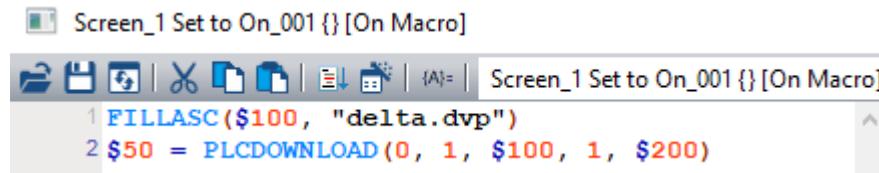
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**Example**

- Store the DVP or ISP file to be downloaded to the USB Disk or SD Card and put the return value in \$50.



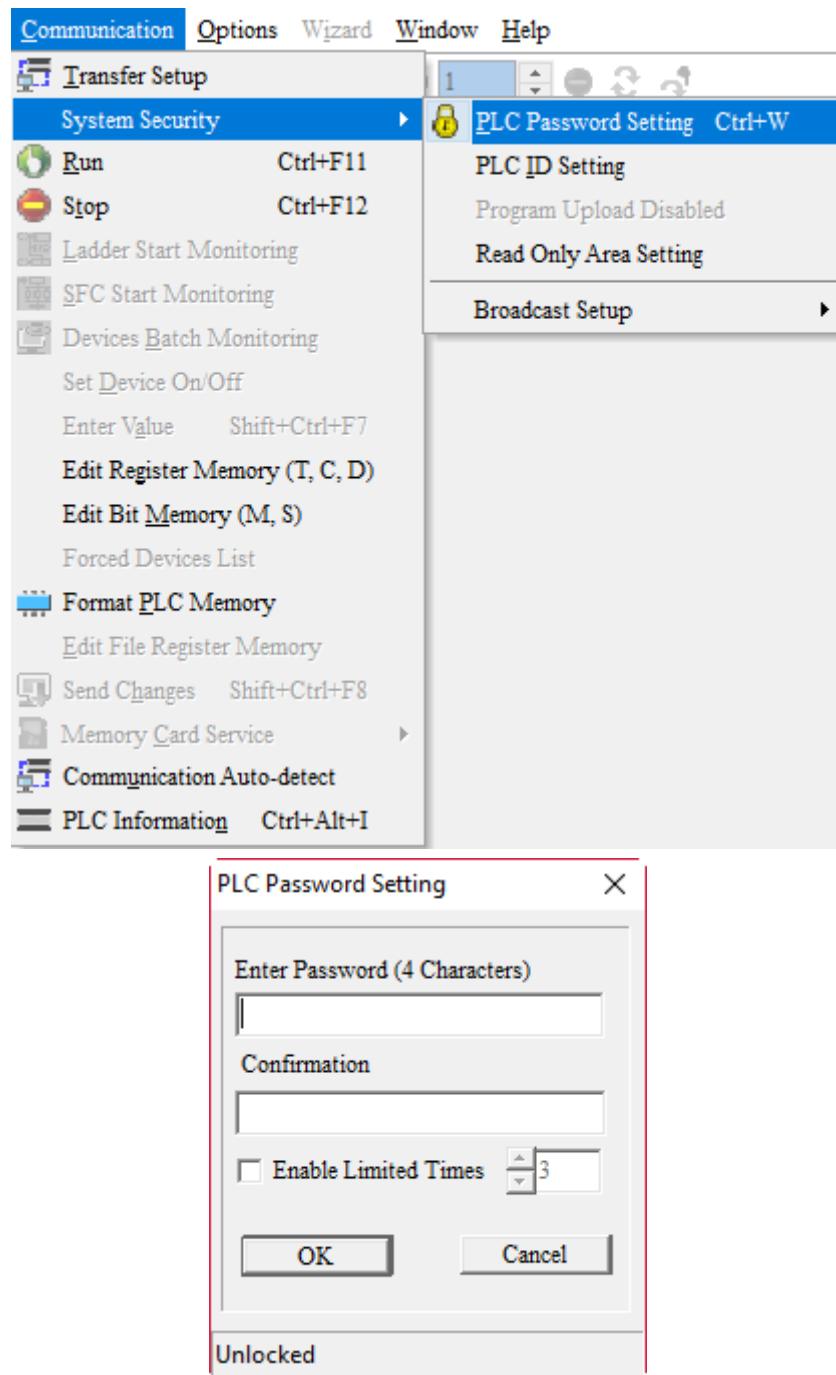
- Var4 is the PLC file name. First, the name string of the file to be downloaded must be put in a register address with the FILLASC command provided by the software. Then fill in the register address \$100 with Var4 of PLCDOWNLOAD.



- The PLC password of Var6 must be set by going to [System Security] > [Password Setting] of the WPL and ISP software. After the setting is finished, enter the password with the Character Entry element of the HMI, then the PLC files can be downloaded to the PLC.

**Example**

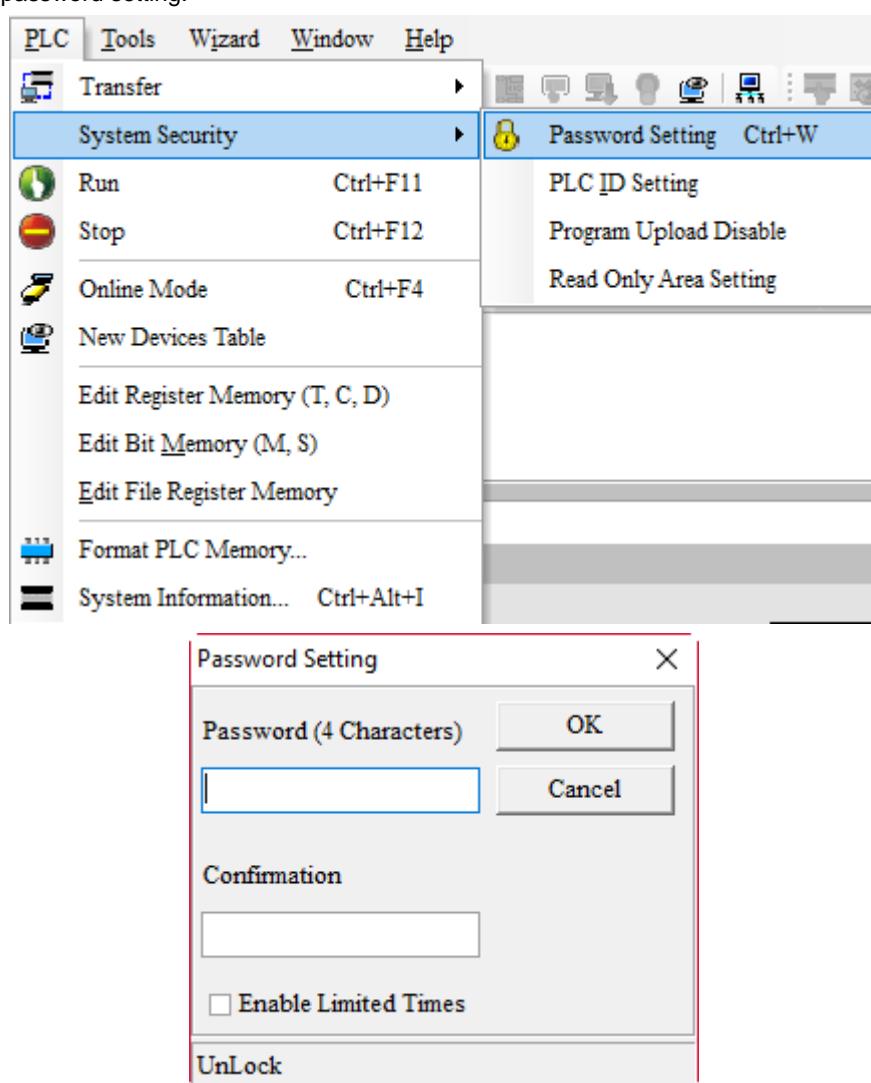
- WPL password setting.



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**Example**

- ISP password setting.



■ OPENSCREEN

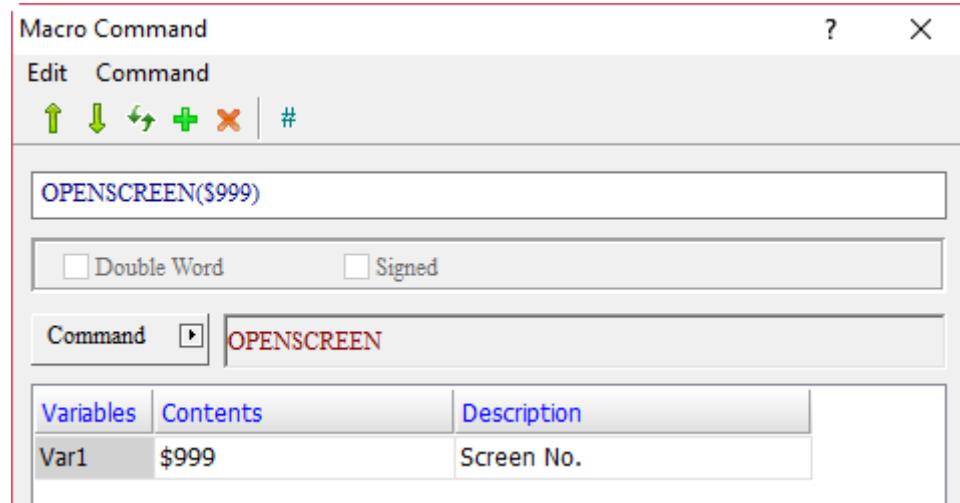
Expression	Meaning of variable		Note	
OPENSCREEN(Var1) (W)	Var1	Screen number	W: Word Open the screen number specified by Var1.	
	Description of action			

Note: this macro does not support Screen Cycle Macro, Screen Open Macro, and Screen Close Macro.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	v

Example

- Var1 is the internal memory address. When \$999 = 2, the macro switches the screen to Screen 2.



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■ CLOSESUBSCREEN

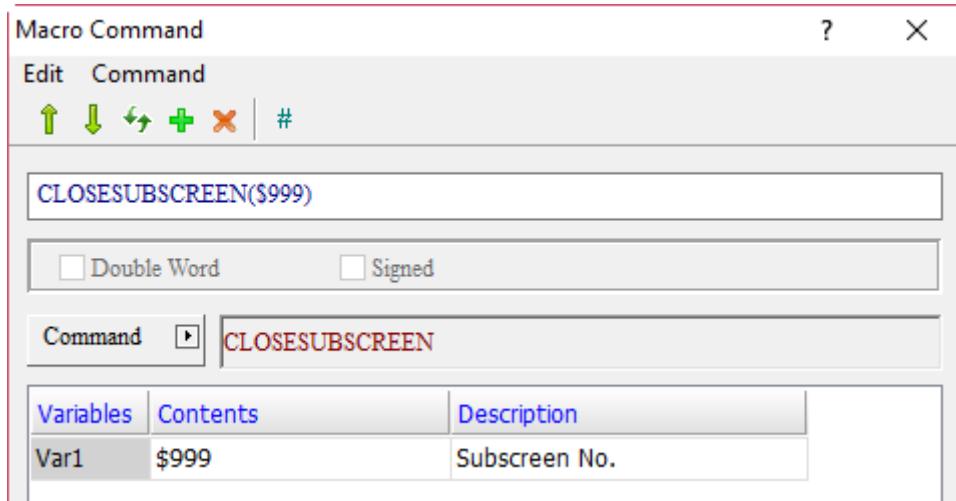
Expression	Meaning of variable		Note	
CLOSESUBSCREEN(Var1) (W)	Var1	Subscreen number	W: Word Close the subscreen number specified by Var1.	
	Description of action			
	Close the subscreen number specified by Var1.			

Note: this macro does not support Screen Cycle Macro, Screen Open Macro, and Screen Close Macro.

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v	v	v

**Example**

- Var1 is the internal memory address. When \$999 = 2, the macro closes Subscreen No. 2.



- GetCircleCenter (calculate coordinates of the center of a circle)

Expression	Meaning of variable			Note				
Var1 = GetCircleCenter (Var2, "Var3")	Var1	Return value		DW: Double Word  24				
		Failed	0					
		Succeeded	1					
	Var2	Input coordinates of the 3 points (Note 1)						
	Var3	Center coordinates after calculation (Note 2)						
<b>Description of action</b>								
Enter the calculated coordinates of 3 points to calculate the center coordinates. (Note 3)								

Note:

1. Input coordinates of the 3 points:

Set the 3 points as P1(x1, y1), P2(x2, y2), and P3(x3, y3), and the length of each point is Signed DW.

If Var2 is \$100:

Save LOW WORD of x1 in \$100, HIGH WORD in \$101

Save LOW WORD of y1 in \$102, HIGH WORD in \$103

Save LOW WORD of x2 in \$104, HIGH WORD in \$105

Save LOW WORD of y2 in \$106, HIGH WORD in \$107

Save LOW WORD of x3 in \$108, HIGH WORD in \$109

Save LOW WORD of y3 in \$110, HIGH WORD in \$111

2. Center coordinates after calculation:

Set the center coordinates as P4(x4, y4), and the length of each point is Signed DW.

If Var 3 is \$200:

Save LOW WORD of x4 in \$200, HIGH WORD in \$201

Save LOW WORD of y4 in \$202, HIGH WORD in \$203

3. Formulas:

$$x = \Delta x / \Delta$$

$$y = \Delta y / \Delta$$

$$\text{where } \Delta = 2(xa - xb) * (yc - yb) - 2(ya - yb) * (xc - xb)$$

$$\Delta x = (yc - yb) * (xa^2 + ya^2 - xb^2 - yb^2) - (ya - yb) * (xc^2 + yc^2 - xb^2 - yb^2)$$

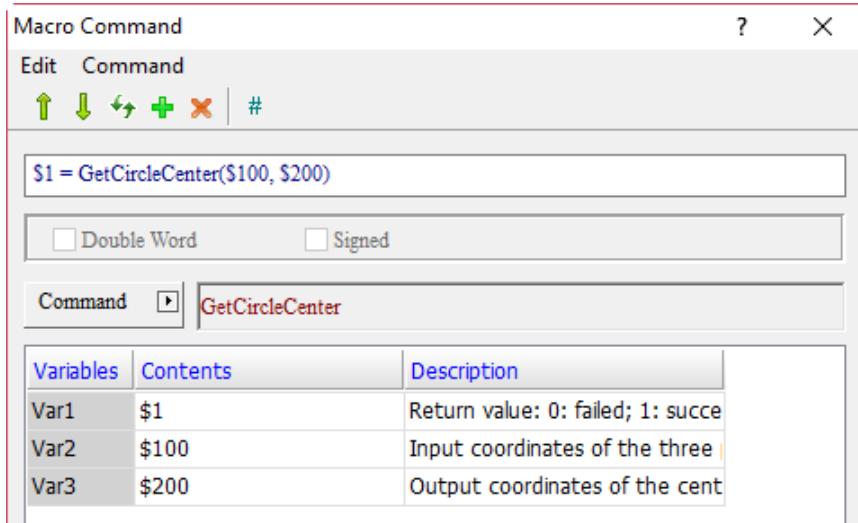
$$\Delta y = (xa - xb) * (xc^2 + yc^2 - xb^2 - yb^2) - (xc - xb) * (xa^2 + ya^2 - xb^2 - yb^2)$$

Variable	Type		
	Internal memory	PLC register	Constant
Var1	v		
Var2	v		
Var3	v		

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**Example****■ Example**

`$1 = GetCircleCenter($100, $200)`



The steps are as follows:

1. Create a Numeric Display element as \$1 and the Data Type is Word.
2. Create Numeric Entry elements of \$100, \$102, \$104, \$106, \$108, and \$110, and the Data Type is Double Word.

Enter the following values:

\$100 = 0

\$102 = 0

\$104 = 100

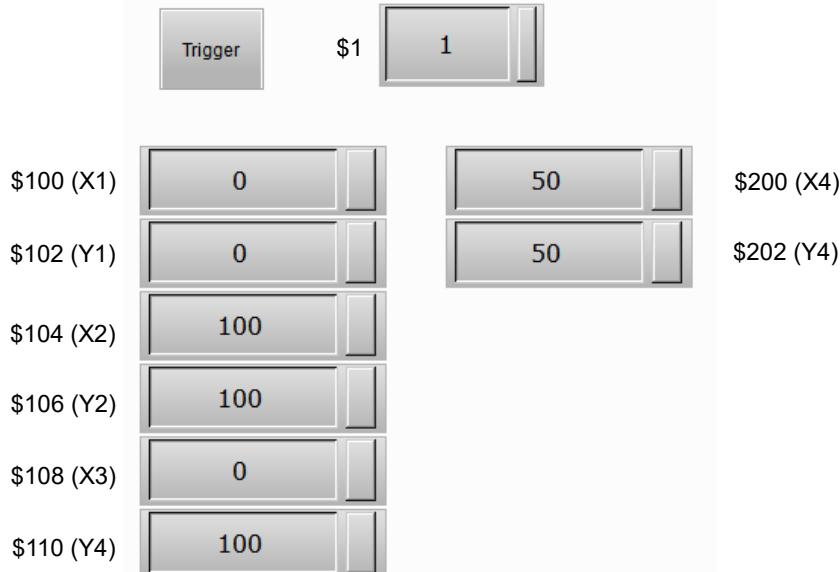
\$106 = 100

\$108 = 0

\$110 = 100

3. Create Numeric Display elements of \$200 and \$202, and the Data Type is Double Word.

After executing the macro, the screen is as follows:



■ VAR

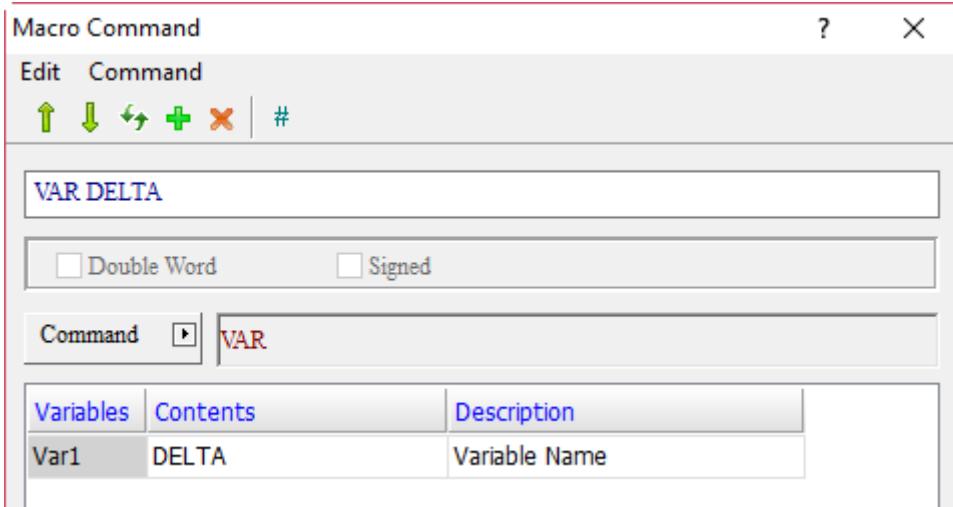
Expression	Meaning of variable		Note	
VAR Var1 (W)	Var1	Variable Name	W: Word Specify a name as a global variable.	
	Description of action			
	Specify a name as a global variable.			

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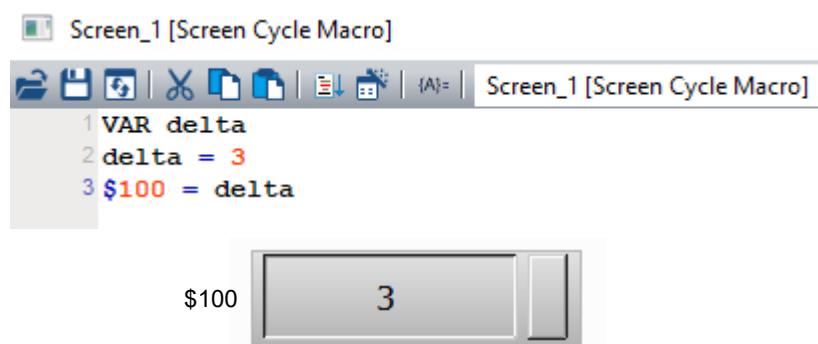
Variable	Type			
	Internal memory	PLC register	String	Constant
Var1			v	

Example

- Var1 is a word string. Declare DELTA as a variable.



- Set the value of the variable "delta" as 3, then move the value to \$100, and execute \$100 = 3.



## 24.4 Macro error codes

Error codes will be listed in the output field for easier troubleshooting while compiling the macros. If you miss out a command, the software will also prompt error messages to notify syntax errors.

### ■ Error message during editing

Code	Code name	Cause of error
-91	Local variable is not allowed	Using local variables is not allowed when parameters of continuous addresses are used in the macro. Example: parameter 1 of FILL.
-92	Elementary arithmetic error	The variable format is incorrect when the codes of elementary arithmetic are edited.
-93	Submacro does not exist	This error message indicates that the submacro you are calling does not exist. For example, when you write a line of CALL 5, which means the submacro 5 is to be called, but you did not edit the submacro 5 (could be an input error or you forgot to edit the corresponding submacro), this message serves as a reminder to prevent unpredictable errors.
-94	Number of labels exceeds the maximum	The number of labels exceeds the maximum of 65536.
-95	Flow control setting error	A non-existing flow control setting is used.
-96	Calling a null address	Memory configuration failure causes the macro to use memory address 0 to process the data.
-97	IF exceeds the maximum	The maximum layer of the nested IF statement is 6.
-98	Lack of ENDIF	When the IF statement is used, you must put the ENDIF at the end, so the macro nested within and outside the IF statement can be identified.
-99	IF ELSE execution error	This warning is sent when the IF ELSE statement is edited with its code not matching the IF ELSE logic.
-100	LABEL cannot be found	This error message indicates that the LABEL requested by GOTO cannot be found.
-101	Recursion occurred	This error message indicates the occurrence of recursion which mostly occurs in submacros. The reason is that if a submacro calls itself, whether directly or indirectly, it is the occurrence of recursion. Technically, submacros cannot be recursively edited, but if this is unavoidable, use GOTO or For (infinite loop) instead.
-102	More than 10 nested FOR are used	This error message indicates that more than 10 nested FOR commands have been used. The purpose is to prevent excessive use of nested FOR and insufficient memories. You can use GOTO or IF when necessary.
-103	Non-existing submacro is called	The submacro called is not within the range of 1 – 512 (i.e. CALL 0 or CALL 513).
-104	The number of NEXT is less than the number of FOR	This error message indicates that the number of NEXT operand does not match the number of FOR operand. Because FOR and NEXT need to be used in pairs, if a NEXT is missing, an error will occur while the program is running.
-105	The number of FOR is less than the number of NEXT	This error message indicates that the number of NEXT operand does not match the number of FOR operand. Because FOR and NEXT need to be used in pairs, if there is one extra NEXT, an error will occur while the program is running.

Code	Code name	Cause of error
-106	Repeated LABEL	This error message indicates that a LABEL is set repeatedly in the same macro. This means GOTO will generate two different results. In order to avoid unpredictable mistakes, this editing error message will pop up to remind you.
-107	There is RET in macro	This error message indicates that the use of RET in a macro. Since RET is designed for the submacro to return to the next command called, which means the program is not finished. END should be used to end a program if it is necessary to mark the end of a macro.
-109	Incorrect address format in macro	This error message indicates that the input address format in the macro is incorrect.
-110	Recipe address input error	This error message indicates that the input recipe address in the macro is incorrect. The recipe address does not exist.
-111	Recipe address input error	This error message indicates that the input recipe address in the macro is incorrect. The recipe address exceeds the range.
-112	Incorrect COM setting in macro	This error message indicates that the COM setting in the macro is incorrect; the COM port does not allow flow control.
-113	Incorrect COM setting in macro	This error message indicates that the COM setting in the macro is incorrect; the COM port is occupied.
-114	Incorrect COM setting in macro	This error message indicates that the COM setting in the macro is incorrect. You must set both COM2 and COM3 to RS485. Otherwise, set COM2 to RS232 and COM3 to RS422.
-115	Macro command error	This error message indicates that the command in the macro is incorrect or the called submacro is incorrect.
-117	Disk formatting error	This error message indicates that the device code in the macro is incorrect. It is possible that the parameter is set to an unsupported device (such as an SD card).
-118	Unsupported device is used in macro	This error message indicates that the macro has used the command not supported by the device.
-119	Repeat variable statement	This error message indicates that the macro includes repeat variable statements.

### ■ Macro error messages in the HMI

The GETLASTERROR macro command can be used to read an error message on the HMI, but if a new correct command is executed before the error message is read, the error message will be changed. The execution of a macro will not change the error messages of other macros.

Code	Code name	Cause of error
-1	Program End	The program has ended.
-2	Encoding error	This macro command does not exist.
-3	Lock error	Unable to lock the specified COM Port.
-10	GOTO error	There is a GOTO error in the macro.
-11	Stack overflow	This error message indicates that you have called too many submacros, so the stacks are not enough for use since many different macros are executing at the same time. This is a protection to avoid memory insufficiency.
-12	Empty submacro	This is a call submacro error. Since the command of CALL can call the submacro ID represented by the value in the internal memory of CALL, if you enter the value of this memory address while there is no corresponding submacro to call, this error message occurs.
-13	Data read error	Data read error may be an error of the internal memory data, but it mostly represents data read error of the controller.
-14	Data write error	Data write error may be an error of the internal memory data, but it mostly represents data write error of the controller.
-15	Divisor is 0	The divisor is 0 during the division or remainder operation.
-16	Data process error with BCD format	An error occurred while executing the BCD macro command.
-17	Data process error while converting ASCII to HEX	An error occurred while executing the TOHEX macro.
-18	NEXT OFFSET processing error	The macro data error results in errors while executing the NEXT macro command.
-19	Character command error	An error occurred while executing FILLASC.
-20	Data process error with BIN format	An error occurred while executing the BIN command.
-21	Submacro data error	The macro data error results in errors while calling submacros.
-22	FOR loop has OFFSET error	The macro data error results in errors while executing the FOR macro command.
-23	INITIAL ERROR	An error occurred while executing the INICOM macro command.
-24	Memory allocation error	The HMI memory is insufficient to execute macros.
-25	COM Port error	An error occurred in COM Port resulting in execution failure of the COM Port related communication macros.
-26	Print Port error	Print Port selection error when printing.
-27	Read value error	An error occurred when macros read parameter data that are out of range.
-28	IF ELSE ENDIF error	An error occurred while executing the IF ELSE ENDIF macro command.
-29	Pen width setting error	An error occurred while setting the pen width for the drawing macro.

<b>Code</b>	<b>Code name</b>	<b>Cause of error</b>
-30	History data error	An error occurred while executing the GETHISTORY macro.
-31	Export option error	An error occurred while executing the EXPORT macro.
-32	Disk reading error	An error occurred in the external or internal disk resulting in execution error in the associated macros (EXPORT, DISKFORMAT...).
-33	Print error	An error occurred while the macro is executing printing.
-34	Stack overflow in IF ELSE ENDIF	An error occurred due to stack overflow when the IF ELSE ENDIF macro command is executing.
-35	Password error	Password confirmation is required when executing the macro, and the password entered is incorrect.
-36	Password lock error	Password confirmation is required when executing the macro, and you have reached the password attempt limit.
-37	ID code identification error	ID password confirmation is required when executing the macro, and the ID password entered is incorrect.
-38	Syntax error	Syntax error occurred after downloading the PLC program.
-39	Connection failure / no response	The connection fails or does not respond when the PLC program is downloaded.
-66	History ID error	History buffer ID error.
-67	Identified string error	Unrecognizable RL program string.
-69	Identified encoding error	An error occurs when analyzing the RL program.
-70	Variable 1 error	The first variable in the macro command is incorrect.
-71	Variable 2 error	The second variable in the macro command is incorrect.
-72	Variable 3 error	The third variable in the macro command is incorrect.
-73	Field language reading error	Unable to read the RL program or G-code.
-74	Field language writing error	Unable to write the RL program or G-code.
-75	Field language execution error	Unable to execute the RL program or G-code.
-76	Subprogram ID error	Incorrect Subprogram ID of the RL program.
-77	Subprogram size error	Incorrect subprogram size of the RL program.
-78	Exceed the maximum number of program lines	Number of lines of the RL program exceeds the maximum allowable number.
-79	G code compilation error	G code compilation error.
-80	Exceeding the range when converting Double to INT	The value in the data type of Double exceeds the range for the value in int type.
-82	Local variable configuration error	For example, Var1 and Var2 of the BMOV command cannot use the local variables.
-83	Restricted macro command	The current execution is not allowed because there is a restricted macro command. For example, executing the OpenScreen macro in the Screen Cycle macro.
-85	Temporary memory space error	The specified file space is too small.

**■ PLC related file error description, including file formats of DVP and ISP**

Code	Code name	Cause of error
-40	This file name is not supported	The file name to be opened by the macro execution is not supported.
-41	This version is not supported	The file version to be opened by the macro execution is not supported.
-42	File open error	There is an action to open file when the macro is executed, and the action failed.
-43	File Handle error	Handle error in the file opened by the macro execution.
-44	File read error	The file opened by the macro execution cannot be read properly.
-45	File Seek error	The content of the file opened by the macro execution cannot be moved properly.
-46	File write error	The file opened by the macro execution cannot be written properly.
-47	File removal error	There is an action to remove file when the macro is executed, and the action failed.
-48	File Rename error	There is an action to rename the file when the macro is executed, and the action failed.
-49	File length error	A file length error is found when the macro is executed.
-50	File data error	A file data error is found when the macro is executed.

### ■ File Slot file error description

Code	Code name	Cause of error
-51	File Slot macro ID error	The ID for the macro execution to open does not exist.
-52	File Slot macro handle error	Handle error in the file opened by the macro execution.
-53	File Slot macro read error	The file opened by the macro execution cannot be read properly.
-54	File Slot macro seek error	The file opened by the macro execution cannot be moved properly.
-55	File Slot macro write error	The file opened by the macro execution cannot be written properly.
-56	File Slot macro removal error	There is an action to remove file when the macro is executed, and the action failed.
-57	File Slot macro length error	A file length error is found when the macro is executed.
-58	File Slot macro export error	The destination device assigned for the file export is incorrect when the macro is executed.
-59	File Slot export error	The macro execution fails to export the file.
-61	File Slot import error	The macro execution fails to import the file.
-62	The file corresponding to the File Slot does not exist	The FileSlot file read or exported by the macro execution does not exist.
-63	Failed to read the file from external disk	The external file to be imported by the macro execution does not exist.
-64	Failed to copy the file	The macro execution fails to copy the file when performing file import or export.
-84	Failed to read the File Slot filename	The macro execution fails to read the FileSlot filename.
-86	Failed to set the File Slot filename	The macro execution fails to set the FileSlot filename.
-87	Failed to search for the File Slot ID	The macro execution fails to search for the selected FileSlot ID.

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# 25

## Multi-language

This chapter illustrates how to use the multi-language function.

25.1 Multi-language setup.....	25-2
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# 25

## 25.1 Multi-language setup

The Multi-language function supports up to 32 languages. The Multi-language setup example is described as follows.

Go to [Options] > [Configuration] > [Multi-language] to set the Multi-language parameters.

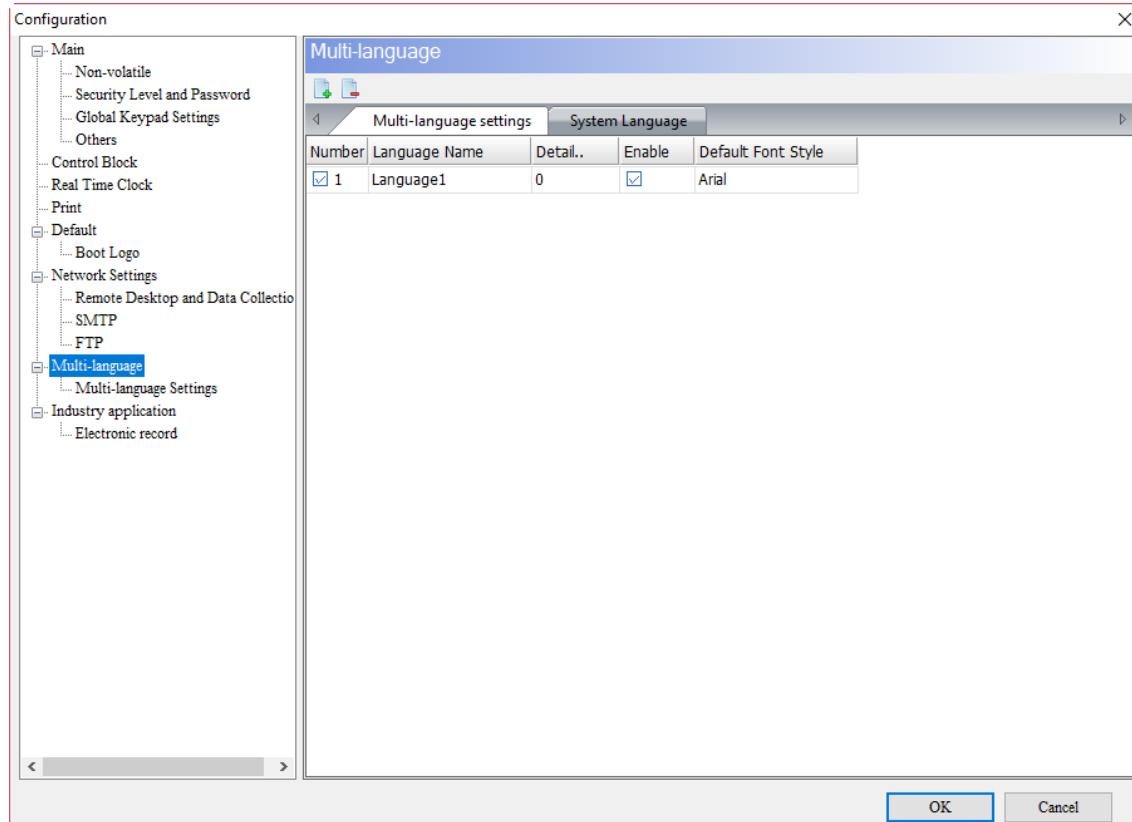
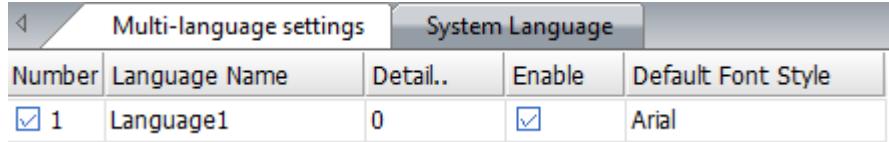
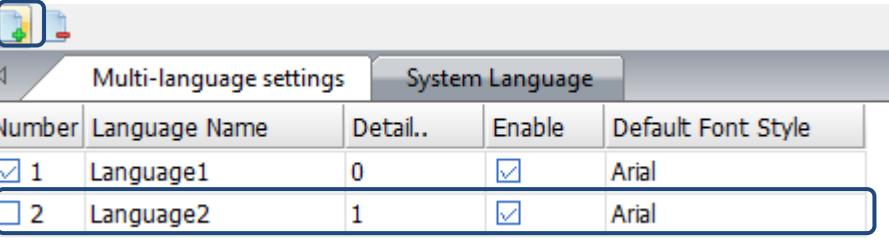
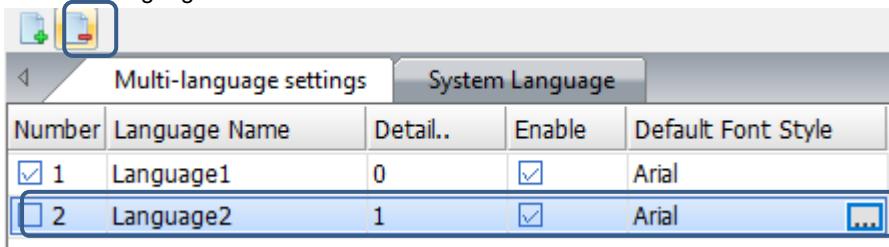
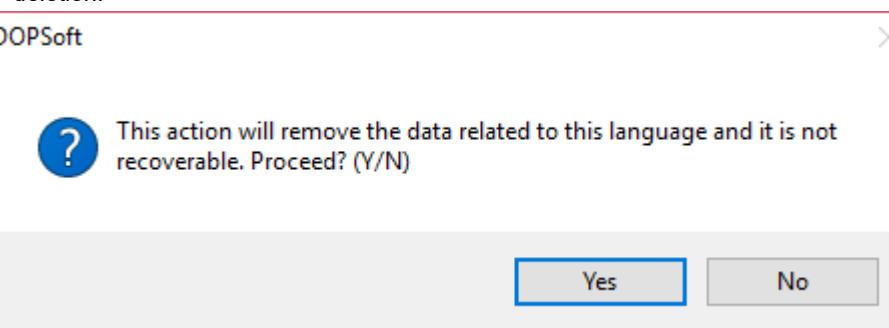


Figure 25.1.1 Multi-language setup interface

Table 25.1.1 Multi-language setup

Multi-language setup					
<b>Add</b>					
<ul style="list-style-type: none"> <li>■ Multi-language settings allow you to add, modify, and delete the language settings. [Language 1] is the default setting, which you can change its Language Name and Detail as desired.</li> </ul> 					
<ul style="list-style-type: none"> <li>■ You can click  to add a new language, as shown in the following figure.</li> </ul> 					
<b>Delete</b>					
<ul style="list-style-type: none"> <li>■ To delete a language, select the language to be deleted and click  to delete the selected language.</li> </ul> 					
<ul style="list-style-type: none"> <li>■ When you execute the delete function, a window appears and asks you to confirm the deletion.</li> </ul> 					

25

Multi-language Setup	
Language Name	You can set the Language Name based on the name of the language or your preference.
Modify	<ul style="list-style-type: none"> <li>The Detail column is used to switch between languages.</li> </ul> <p>The screenshot shows a table titled "Multi-language settings" with columns: Number, Language Name, Detail.., Enable, and Default Font Style. Row 1 has a checked checkbox in the "Number" column, "Language1" in "Language Name", "0" in "Detail..", a checked checkbox in "Enable", and "Arial" in "Default Font Style". Row 2 has an unchecked checkbox in "Number", "Language2" in "Language Name", "1" in "Detail..", a checked checkbox in "Enable", and "Arial" in "Default Font Style".</p> <ul style="list-style-type: none"> <li>The software switches the language to the corresponding setting using the System Control in the Control Block. The [Language Change] in the Button element also switches the language to the corresponding language based on the Detail settings.</li> </ul> <p>Configuration</p> <p>The screenshot shows the "Control Block" configuration window. It includes fields for "Start Address" ({Link2}1@D0), "Screen No.", "General Control", "Curve Control", "Sampling History Buffer", "Clearing History Buffer", "Recipe Control", "Recipe Group Number", and "System Control". Under "System Control", there are three entries: Bit 0-7 (Multi-language set value), Bit 8 (Printer flag), and Bit 9 (Printer form feed flag). The "System Control" checkbox is checked.</p>
Enable	<ul style="list-style-type: none"> <li>You can determine whether to enable the added languages. As shown in the following figure, you can enable the added No. 2 language.</li> </ul> <p>The screenshot shows the same "Multi-language settings" table as before, but now both rows have checked checkboxes in the "Enable" column. Row 1 (Language1) has "Detail.. 0" and "Enable checked". Row 2 (Language2) has "Detail.. 1" and "Enable checked".</p> <ul style="list-style-type: none"> <li>If you attempt to cancel the selection of the check box of <b>Enable</b> for Language 1, a warning message appears to inform you that this language cannot be disabled.</li> </ul> <p>A modal dialog box titled "DOPSoft" contains a red X icon and the text "The language can not be disabled." with an "OK" button at the bottom.</p>

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**Default Font Style**

Font Name: Arial  Apply to all

Font Size: 16  Apply to all

OK Cancel

**Multi-language Setup**

- Default Font Style provides you with the option to apply the font name and size based on the language selected.
- When you choose to apply either the Font Name or Font Size, the font setting only applies to the newly created elements after you make a change to the font setting.
- When you choose to apply both Font Name and Font Size, the font setting applies to both newly- and already-created elements.

Note: the Font Name and Font Size settings are applied to the elements that users can input text by themselves.

25

Table 25.1.2 Multi-language example

Multi-language																												
Step 1	Go to [Options] > [Configuration] > [Multi-language] to add a language named “English”, and change the name of the existing Language 1 to “Chinese”.																											
	<table border="1"> <thead> <tr> <th>Number</th> <th>Language Name</th> <th>Detail..</th> <th>Enable</th> <th>Default Font Style</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> 1</td> <td>Chinese</td> <td>0</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> <tr> <td><input type="checkbox"/> 2</td> <td>English</td> <td>1</td> <td><input checked="" type="checkbox"/></td> <td>Arial</td> </tr> </tbody> </table>					Number	Language Name	Detail..	Enable	Default Font Style	<input checked="" type="checkbox"/> 1	Chinese	0	<input checked="" type="checkbox"/>	Arial	<input type="checkbox"/> 2	English	1	<input checked="" type="checkbox"/>	Arial								
Number	Language Name	Detail..	Enable	Default Font Style																								
<input checked="" type="checkbox"/> 1	Chinese	0	<input checked="" type="checkbox"/>	Arial																								
<input type="checkbox"/> 2	English	1	<input checked="" type="checkbox"/>	Arial																								
Step 2	Go to [Options] > [Configuration] > [Control Block] to select the check box of <b>System Control</b> .																											
	<table border="1"> <thead> <tr> <th colspan="2">Control Block</th> </tr> </thead> <tbody> <tr> <td>Start Address</td> <td>{Link2}1@D0</td> </tr> <tr> <td><input type="checkbox"/> Screen No.</td> <td>...</td> </tr> <tr> <td><input type="checkbox"/> General Control</td> <td>...</td> </tr> <tr> <td><input type="checkbox"/> Curve Control</td> <td>...</td> </tr> <tr> <td><input type="checkbox"/> Sampling History Buffer</td> <td>...</td> </tr> <tr> <td><input type="checkbox"/> Clearing History Buffer</td> <td>...</td> </tr> <tr> <td><input type="checkbox"/> Recipe Control</td> <td>...</td> </tr> <tr> <td><input type="checkbox"/> Recipe Group Number</td> <td>...</td> </tr> <tr> <td><input checked="" type="checkbox"/> System Control</td> <td>D0</td> </tr> <tr> <td><input type="checkbox"/> Enhanced Recipe Control</td> <td>...</td> </tr> <tr> <td><input type="checkbox"/> Enhanced Recipe Group Number</td> <td>...</td> </tr> </tbody> </table>					Control Block		Start Address	{Link2}1@D0	<input type="checkbox"/> Screen No.	...	<input type="checkbox"/> General Control	...	<input type="checkbox"/> Curve Control	...	<input type="checkbox"/> Sampling History Buffer	...	<input type="checkbox"/> Clearing History Buffer	...	<input type="checkbox"/> Recipe Control	...	<input type="checkbox"/> Recipe Group Number	...	<input checked="" type="checkbox"/> System Control	D0	<input type="checkbox"/> Enhanced Recipe Control	...	<input type="checkbox"/> Enhanced Recipe Group Number
Control Block																												
Start Address	{Link2}1@D0																											
<input type="checkbox"/> Screen No.	...																											
<input type="checkbox"/> General Control	...																											
<input type="checkbox"/> Curve Control	...																											
<input type="checkbox"/> Sampling History Buffer	...																											
<input type="checkbox"/> Clearing History Buffer	...																											
<input type="checkbox"/> Recipe Control	...																											
<input type="checkbox"/> Recipe Group Number	...																											
<input checked="" type="checkbox"/> System Control	D0																											
<input type="checkbox"/> Enhanced Recipe Control	...																											
<input type="checkbox"/> Enhanced Recipe Group Number	...																											
Step 3	<ul style="list-style-type: none"> <li>Create an Increment button with the Write Address as \$13, and set the other required parameters.</li> </ul> <table border="1"> <thead> <tr> <th colspan="2">Increment</th> </tr> </thead> <tbody> <tr> <td>Preview</td> <td>Main Main-2 Text Picture Details Macro Coordinates</td> </tr> <tr> <td> </td> <td> <b>Memory</b>            Write Address: <input type="text" value="\$13"/>            Read Address: <input type="text" value="None"/>            Write Offset Address: <input type="text" value="None"/>            Read Offset Address: <input type="text" value="None"/> </td> <td> <b>Detail</b>            Data Type: Word            Data Format: Unsigned Decimal            Increase/Decrease: 1            Limit: 100         </td> </tr> <tr> <td>           State: <input type="text" value="0"/>            Language: Chinese         </td> <td></td> <td></td> </tr> </tbody> </table>					Increment		Preview	Main Main-2 Text Picture Details Macro Coordinates		<b>Memory</b> Write Address: <input type="text" value="\$13"/> Read Address: <input type="text" value="None"/> Write Offset Address: <input type="text" value="None"/> Read Offset Address: <input type="text" value="None"/>	<b>Detail</b> Data Type: Word Data Format: Unsigned Decimal Increase/Decrease: 1 Limit: 100	State: <input type="text" value="0"/> Language: Chinese															
	Increment																											
Preview	Main Main-2 Text Picture Details Macro Coordinates																											
	<b>Memory</b> Write Address: <input type="text" value="\$13"/> Read Address: <input type="text" value="None"/> Write Offset Address: <input type="text" value="None"/> Read Offset Address: <input type="text" value="None"/>	<b>Detail</b> Data Type: Word Data Format: Unsigned Decimal Increase/Decrease: 1 Limit: 100																										
State: <input type="text" value="0"/> Language: Chinese																												

25

**Step 3**

■ Enter the Chinese and English texts to be displayed in the Text page as shown as follows.

State	Chinese	English
0	ROC	English

■ Write the following instructions in the After Execute Macro of the Increment button.

```

Screen_1 Increment_001 {ROC} [After Execute Macro]
[Macro Editor]
1 IF $13 > 1
2 $13 = 0
3 ENDIF
4 {Link2}1@DO = $13

```

Create a Text element. Enter the Chinese and English texts for the element to display in the Text page as shown as follows.

**Step 4**

State	Chinese	English
0	台達電子	DELTA

25



After downloading the screen to the HMI, click the **ROC** button to switch the language to English and the text changes to DELTA.



# 26

## Print Setup

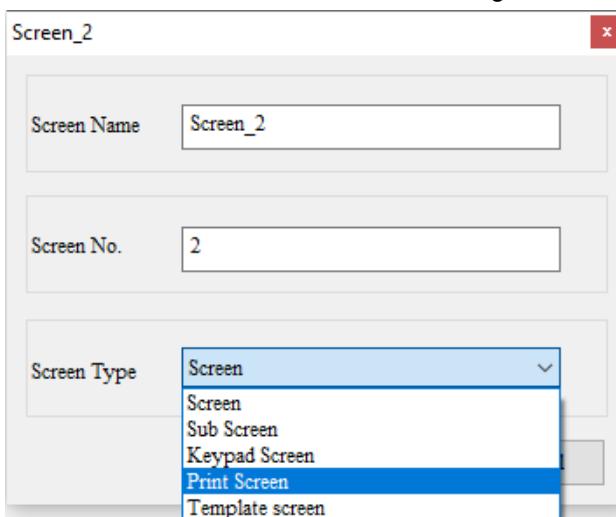
---

This chapter mainly explains the Print function.

26.1	Screen Print Setup .....	26-3
26.2	ePrinter.....	26-10
26.2.1	PrnServer.....	26-11
26.2.2	HMI link settings .....	26-14
26.3	Error code of printer .....	26-18
26.4	Template printing .....	26-19

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To output a screen, you must create a Print Screen before using the Print function.



After creating the Print Screen, go to [Options] > [Configuration] > [Print] and select the printer to be used.

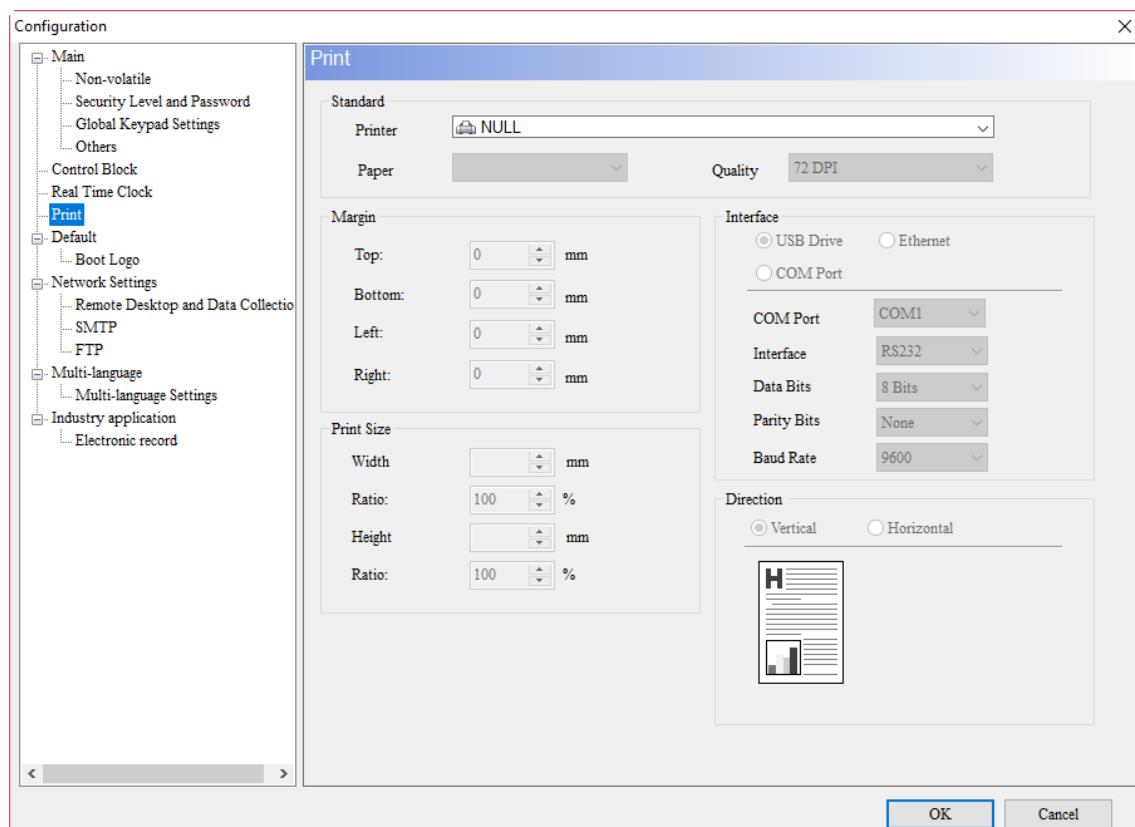


Figure 26.1 Printer setting screen

## 26.1 Screen Print Setup

The Screen Print Setup function enables the user to print multiple pages, set the print layout, and print history data.

Pay attention to the following before executing the Screen Print Setup:

- The screen specified by the Goto Screen cannot be set as the print screen.
- Cannot change to the print screen via Goto Screen.
- The print screen cannot be the default screen.
- The print screen cannot be the base screen.
- The print screen cannot be the subscreen.
- The print screen cannot be the screensaver screen.

In the Screen Print Setup window, two options are available, [Print All] and [Custom Print].

[Print All] means that all the screens that you dragged to the Print Output Screen on the right side for printing will be printed out. History data can also be printed out using the Print Output Screen. You can select the screen to be printed, set the printing sequence, or delete the screen that does not need to be printed.

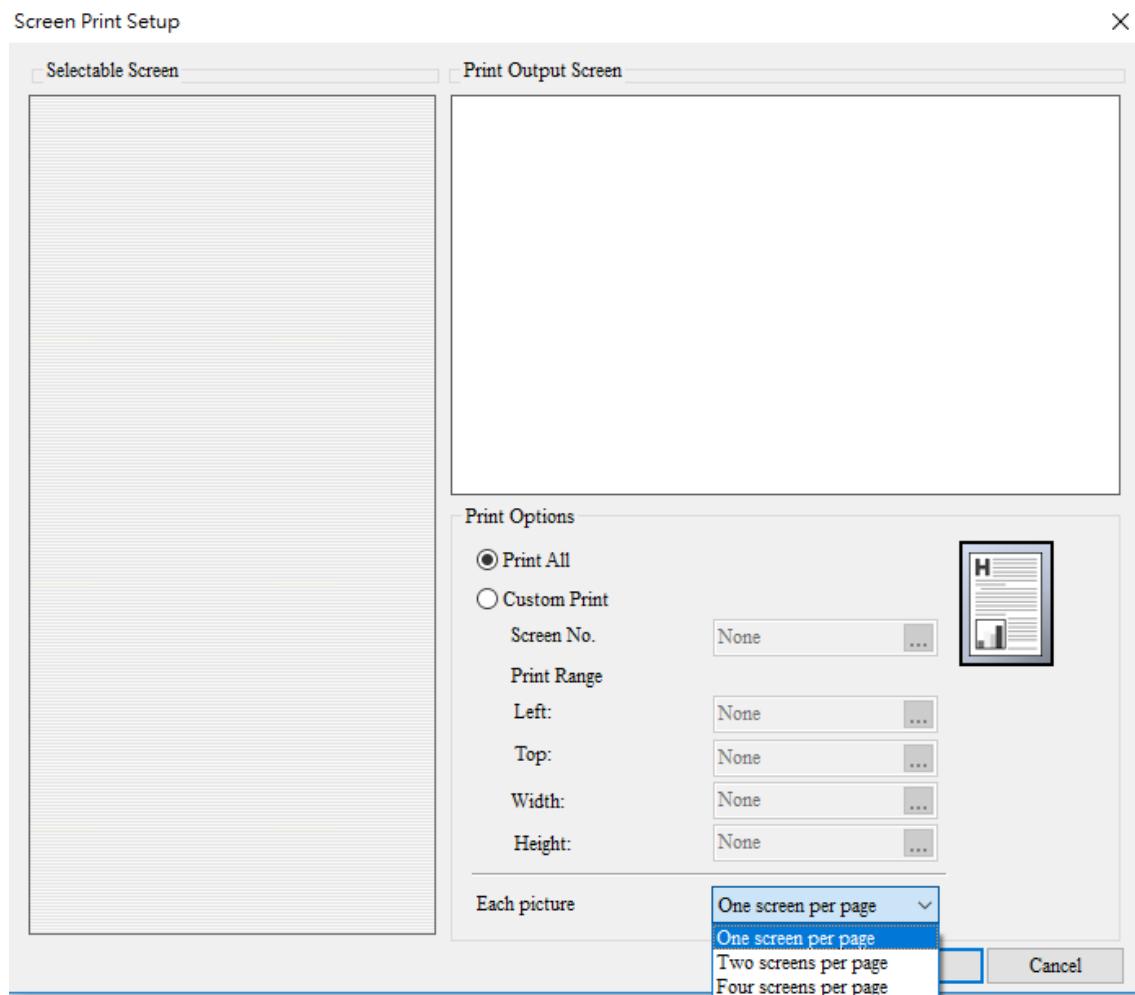


Figure 26.1.1 Screen Print Setup window

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Users can set the screens they want to print out using [Custom Print]. Therefore, users can set the Screen No., the height and width of the print range, and the X coordinate (Left) and Y coordinate (Top) of the starting point of the print range. This function can be used with the Printer flag in the Control Block and the Print Output button.

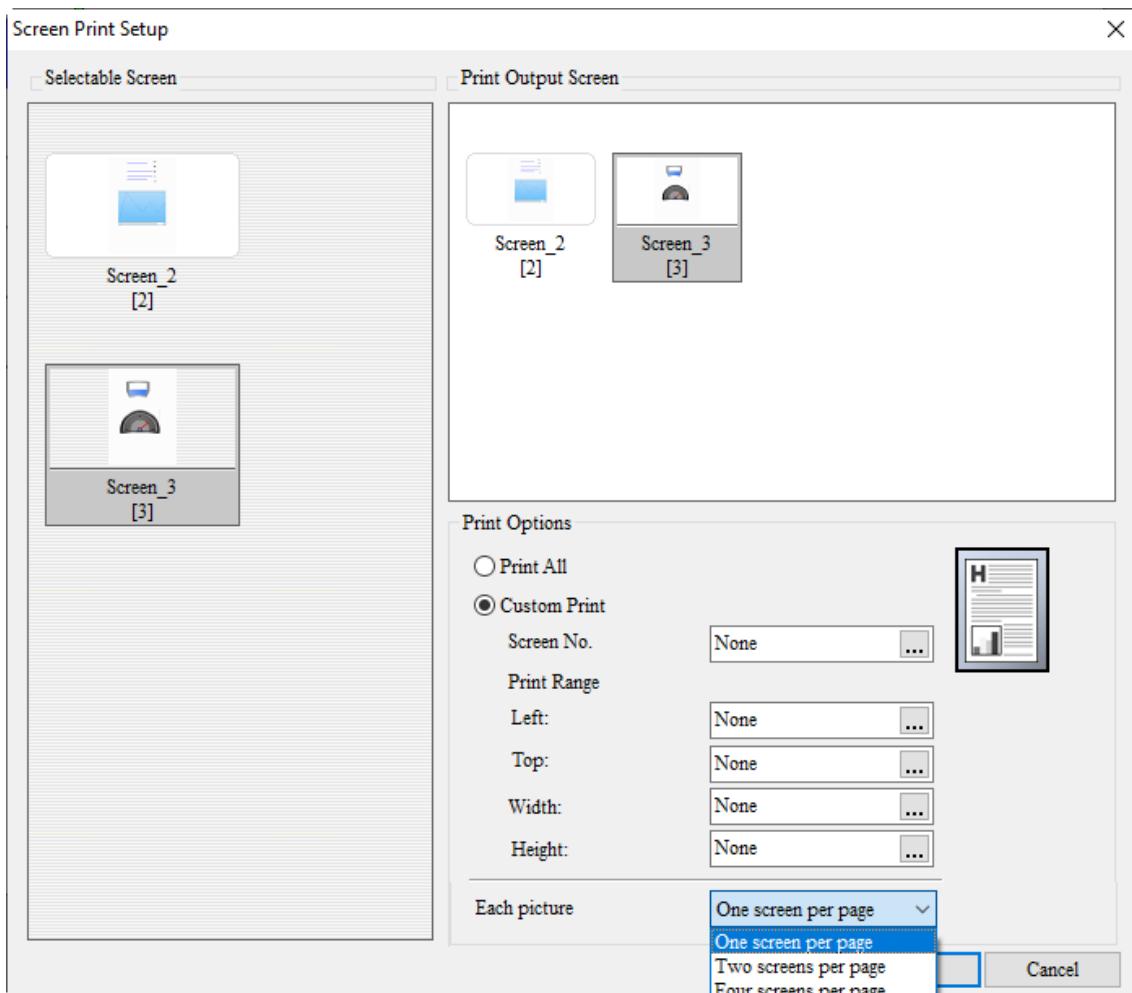
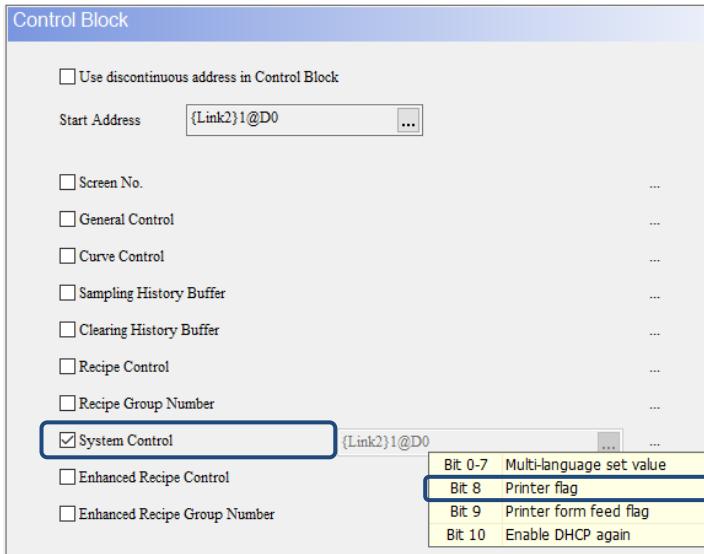


Figure 26.1.2 Custom Print

Table 26.1.1 Set Custom Print

Screen No.	Screen No. refers to the number of the screen to be printed. Users can set the read address of the screen to print respectively; when the entered value is 0, all screens in Screen Print Setup will be printed. This screen number can also be used with the Printer flag in the Control Block.
	 <p>The screenshot shows the 'Control Block' configuration window. It includes fields for 'Start Address' (set to '{Link2}1@D0') and a list of checkboxes under 'System Control' which are checked. A dropdown menu for 'Bit 8' is open, showing options: 'Multi-language set value', 'Printer flag' (which is selected), 'Printer form feed flag', and 'Enable DHCP again'. Other checkboxes in the list include 'General Control', 'Curve Control', 'Sampling History Buffer', 'Clearing History Buffer', 'Recipe Control', and 'Recipe Group Number'.</p>
Left	Set the X coordinate of the starting point of the print range.
Top	Set the Y coordinate of the starting point of the print range.
Width	Set the width of the print range.
Height	Set the height of the print range.

You can set the number of screens to print out on each page with the Each picture function.

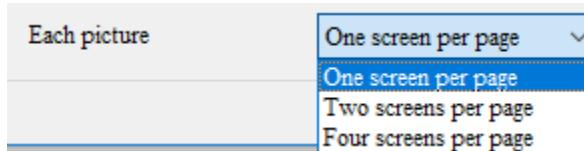


Table 26.1.2 Set the screen(s) to output per page

One screen per page	
Two screens per page	
Four screens per page	

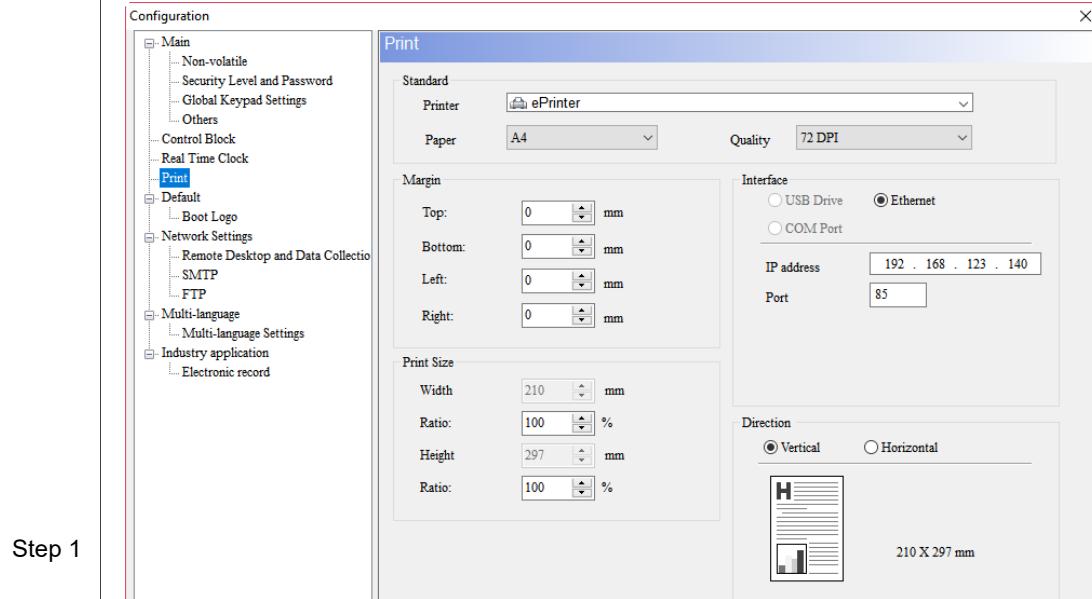
With all functions and properties for Screen Print Setup introduced, the following section provides an example for Screen Print Setup.

26

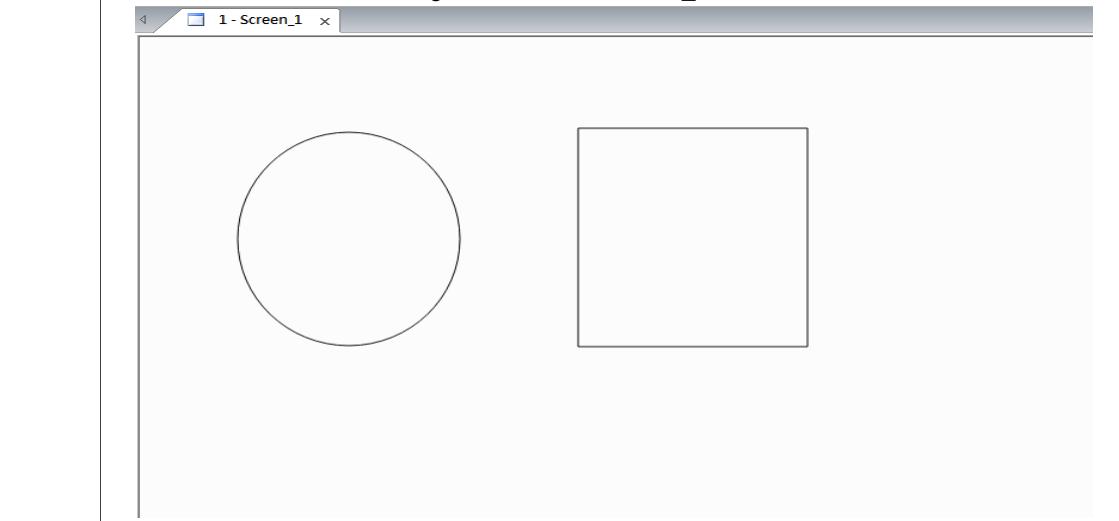
Table 26.1.3 Screen Print Setup Example

**Screen Print Setup**

- Create a new project. Select ePrinter as the Printer, set the IP address to the IP address of the PC and the Port as 85, and add 3 new screens.



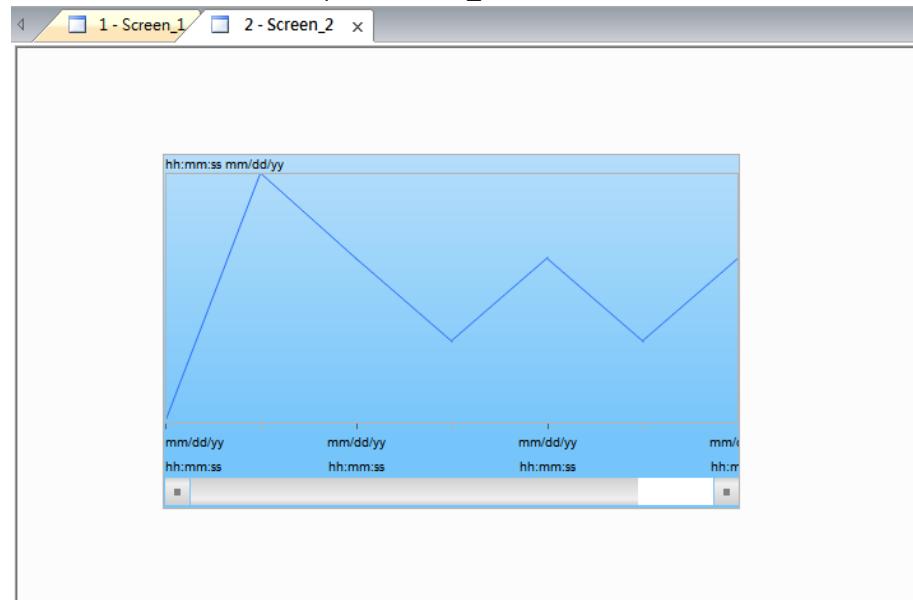
- Create Circle and Rectangle elements on Screen\_1.



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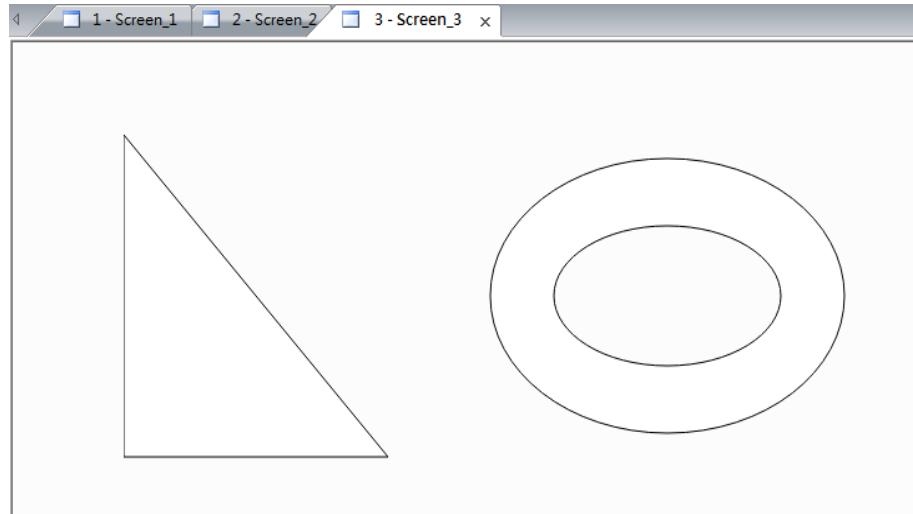
**Screen Print Setup**

- Create a Historical Trend Graph on Screen\_2 as follows.



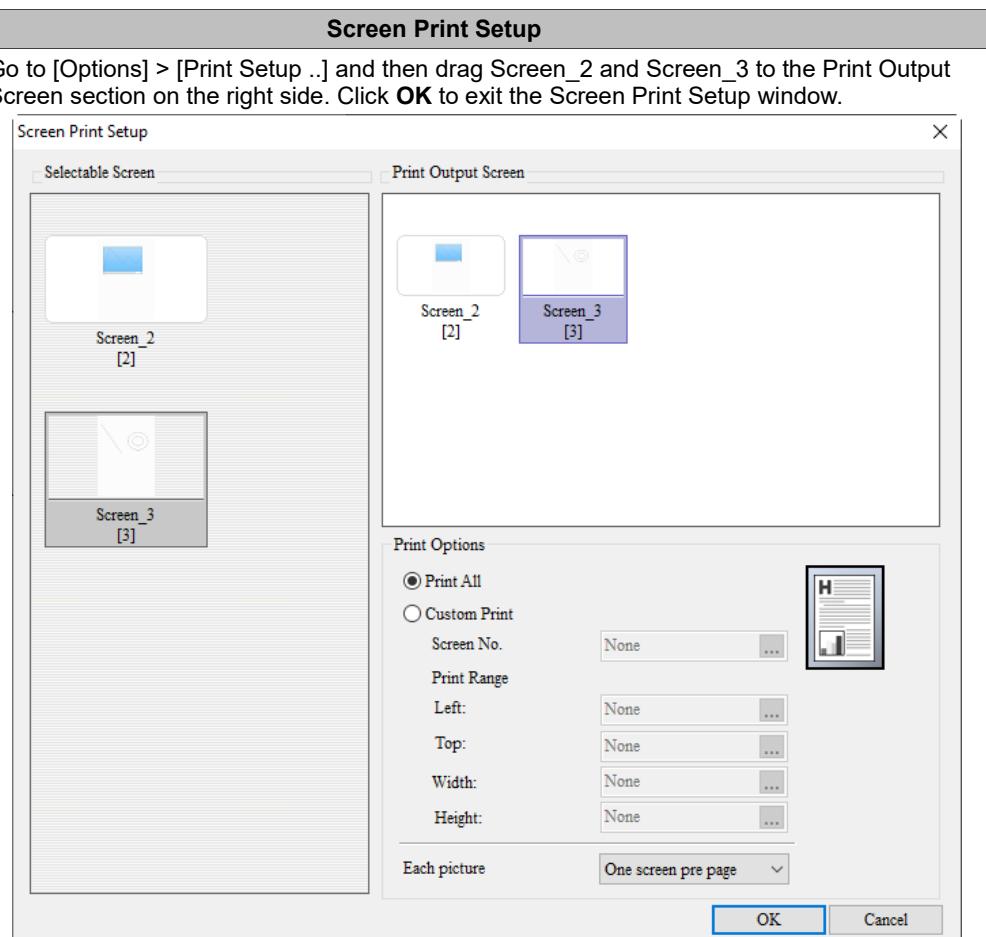
Step 1

- Create Right Triangle and Hollow Circle elements on Screen\_3 as follows.



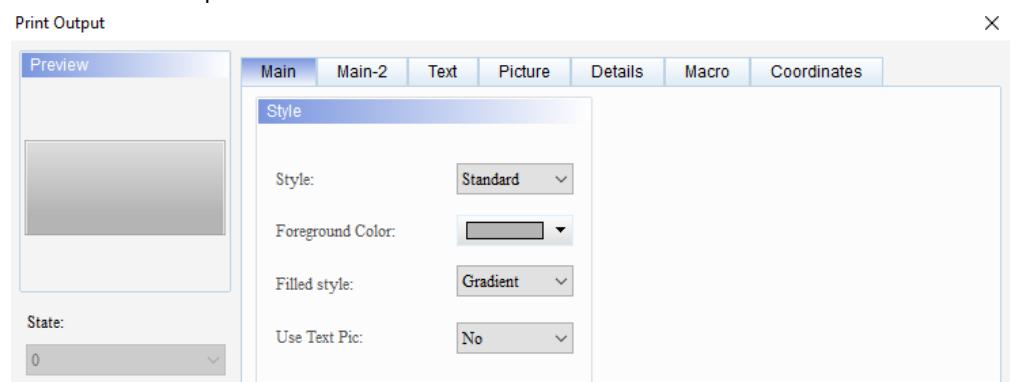
26

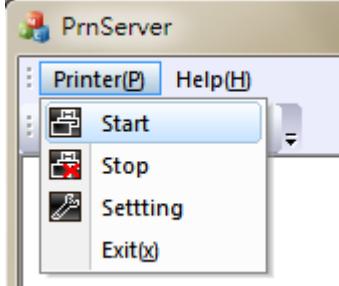
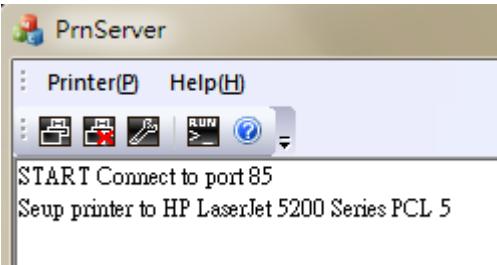
Step 2



Create a Print Output button.

Step 3



Screen Print Setup	
	<ul style="list-style-type: none"><li>■ Configure the IP address of the HMI and the ePrinter to be under the same network segment. Then, compile and download the screen to the HMI.</li><li>■ Start PrnServer and select <b>Start</b>.</li></ul>
Step 4	 
Step 5	Once the PrnServer is connected to port 85, click the <b>Print Output</b> button to print out the screens set in the Screen Print Setup. It takes more time for the HMI to process the print data if there are multiple screens or the history data element to be printed contains a large amount of sampling data.

## 26.2 ePrinter

ePrinter enables users to print directly via network without the need to connect the HMI to a physical printer, which saves space for the hardware equipment and makes the printing convenient. Refer to the following diagram for the structure of the ePrinter network.

Under the ePrinter structure, the PC acts as a medium. You can open PrnServer on the PC and then configure the IP address for the PLC through the HMI. Then, trigger the Print Output button element with the HMI to transfer the print file via the network to any printer connected to the PC.

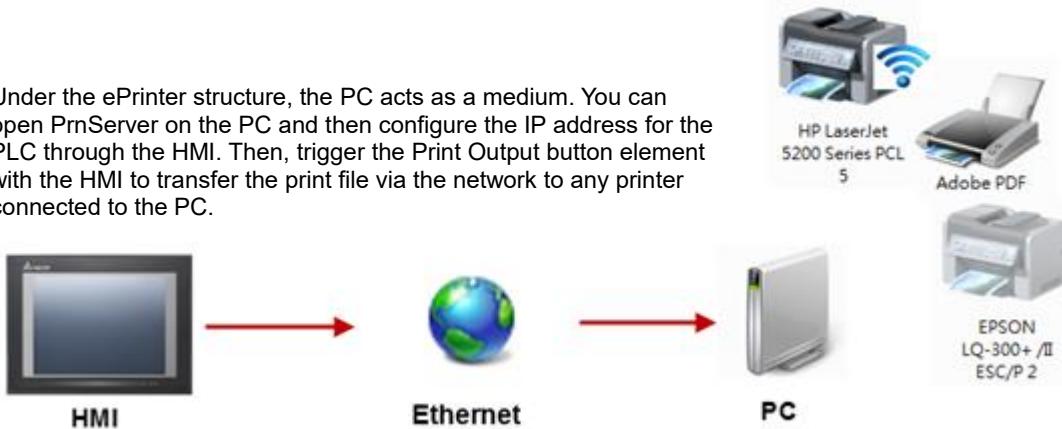


Figure 26.2.1 ePrinter structure

The introduction of the ePrinter functions is divided into two parts: one is introduction to PrnServer, and the other is explanation on how to set up the connection between the HMI and ePrinter to carry out network printing.

### 26.2.1 PrnServer

The PrnServer is an executable file. You can run PrnServer to print out the files via the network.

Path of the PrnServer executable file placed on the PC: C:\Program Files (x86)\Delta Industrial Automation\DOPOsoft 4.00.08\PrnServer.exe.

Upon opening, the screen is as follows:

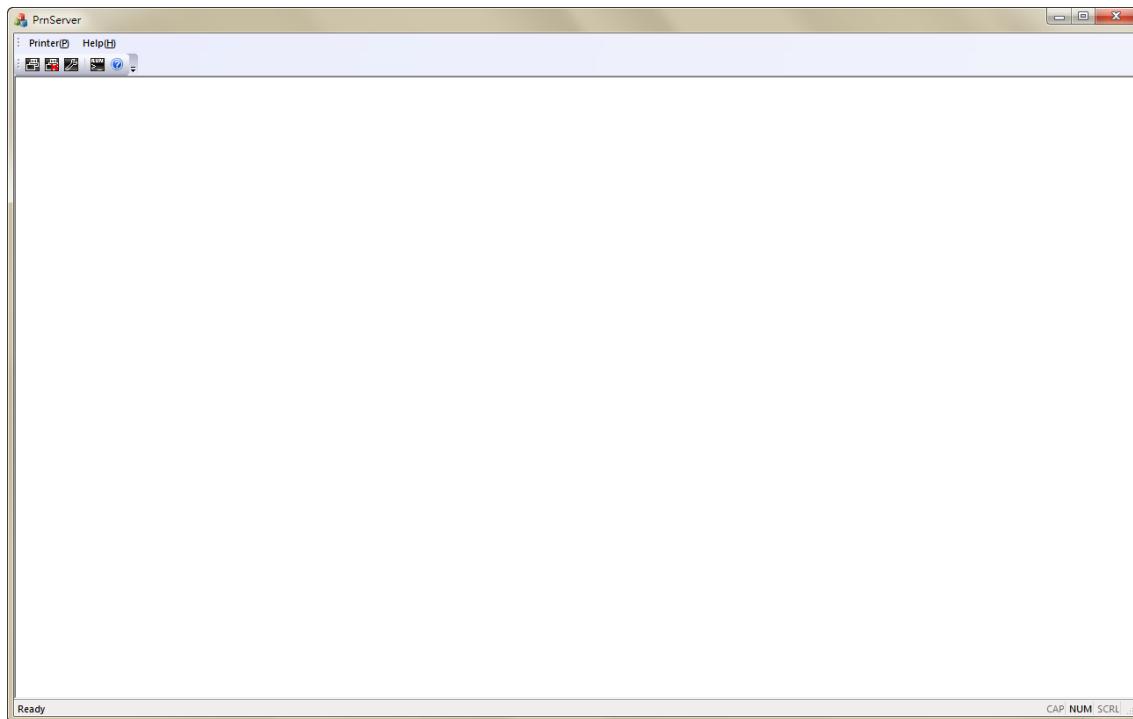
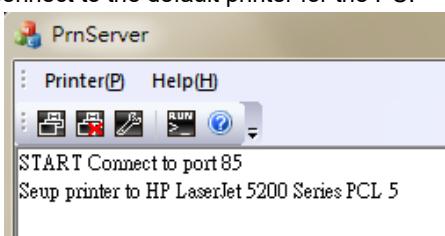
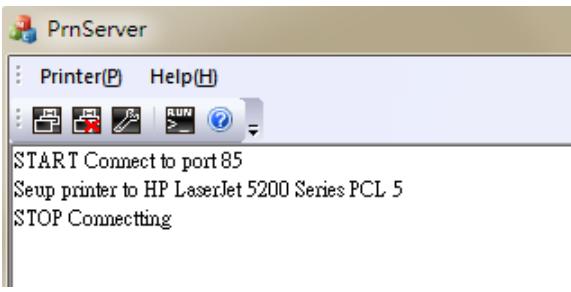
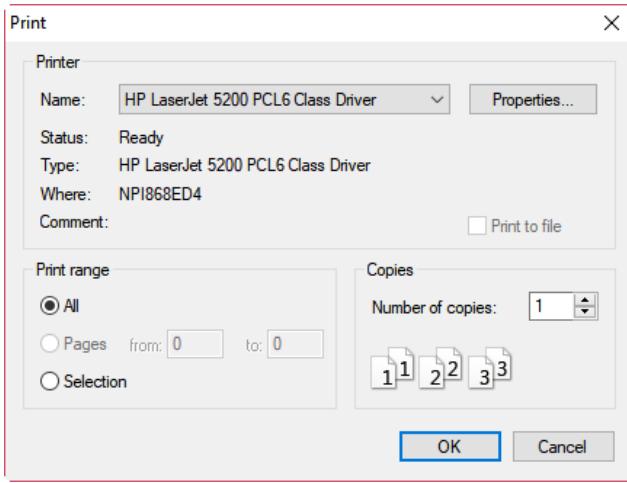
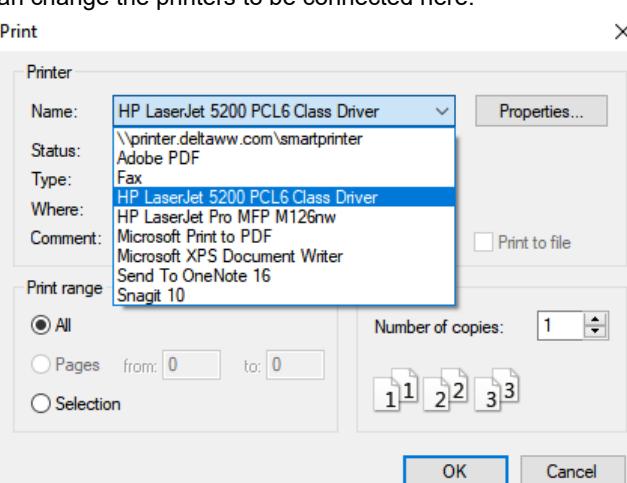
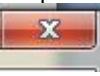
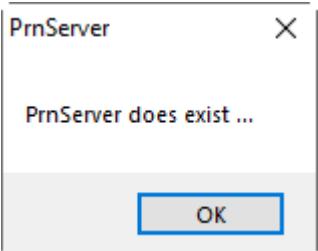
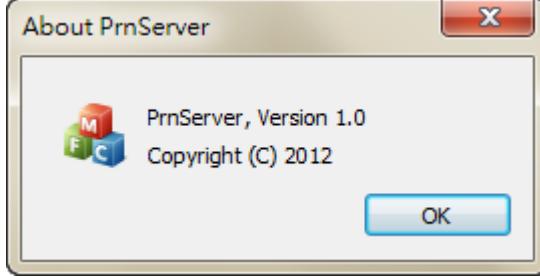


Figure 26.2.1.1 PrnServer screen

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Table 26.2.1.1 PrnServer function description

Printer	<span></span> <b>Connect</b>	<ul style="list-style-type: none"> <li>■ Before using the HMI to carry out the printing, you need to click on  to start connecting the HMI to the printer.</li> <li>■ The default connecting port for the printer connected is 85. It will automatically connect to the default printer for the PC.</li> </ul> 
	<span></span> <b>Disconnect</b>	<p>After clicking  , PrnServer will display the following message.</p> 
	<span></span> <b>Settings</b>	<ul style="list-style-type: none"> <li>■ Displays printer-related settings.</li> </ul>  <ul style="list-style-type: none"> <li>■ You can change the printers to be connected here.</li> </ul> 

Printer	Exit	<ul style="list-style-type: none"><li>■ Go to [Printer] and click <b>Exit</b> to end PrnServer.</li><li>■ Ensure to exit when you do not need to use the network printing function anymore. Closing the PrnServer window by clicking  will not terminate the connection. If you click on  to close the PrnServer window and try to run PrnServer again, the following message will be displayed.</li></ul> 
Description	About 	Displays the current version of PrnServer. 

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# 26

## 26.2.2 HMI link settings

This section describes how to set up the ePrinter function on the HMI screen and trigger the printing with the HMI. Refer to the following steps:

1. Create a new project. Select the 107WV model and set ePrinter as the Printer (as shown in Figure 26.2.2.1). Then click on **Next**.

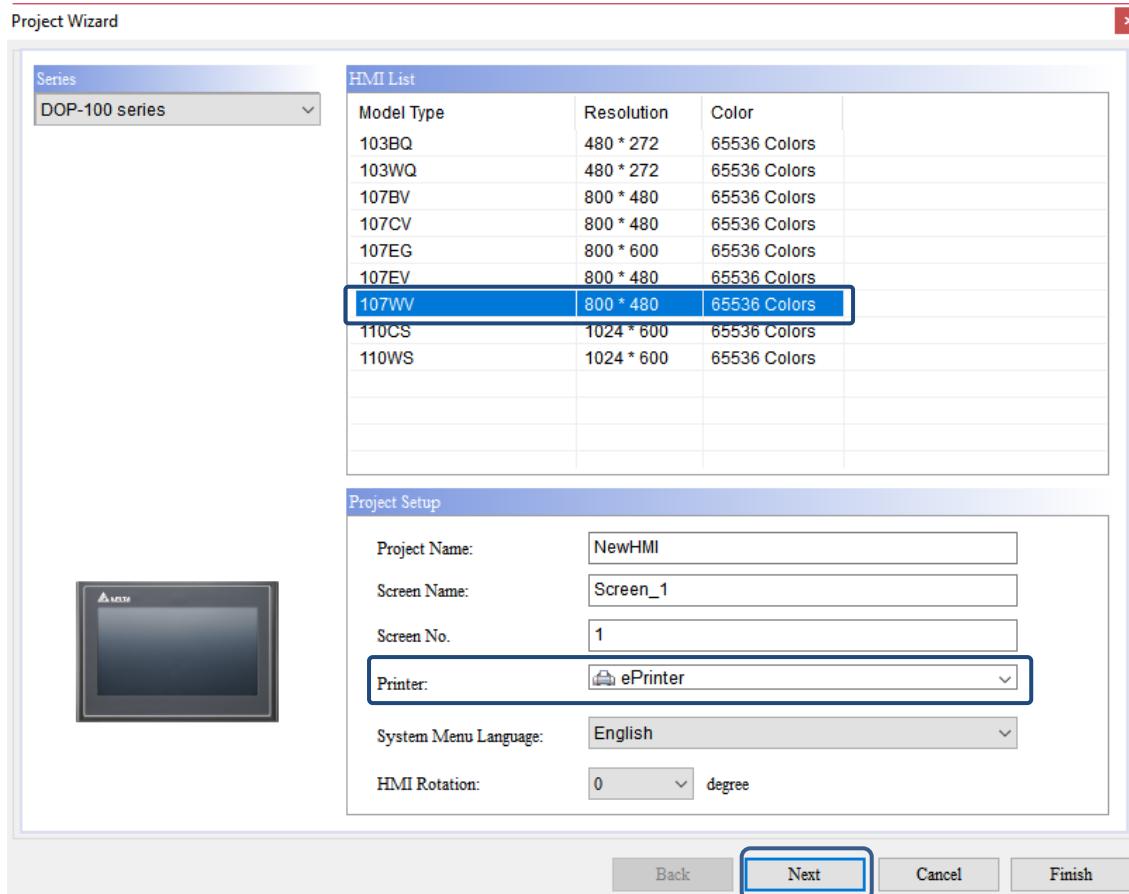


Figure 26.2.2.1 HMI screen setting (1)

2. Complete the communication and network settings.

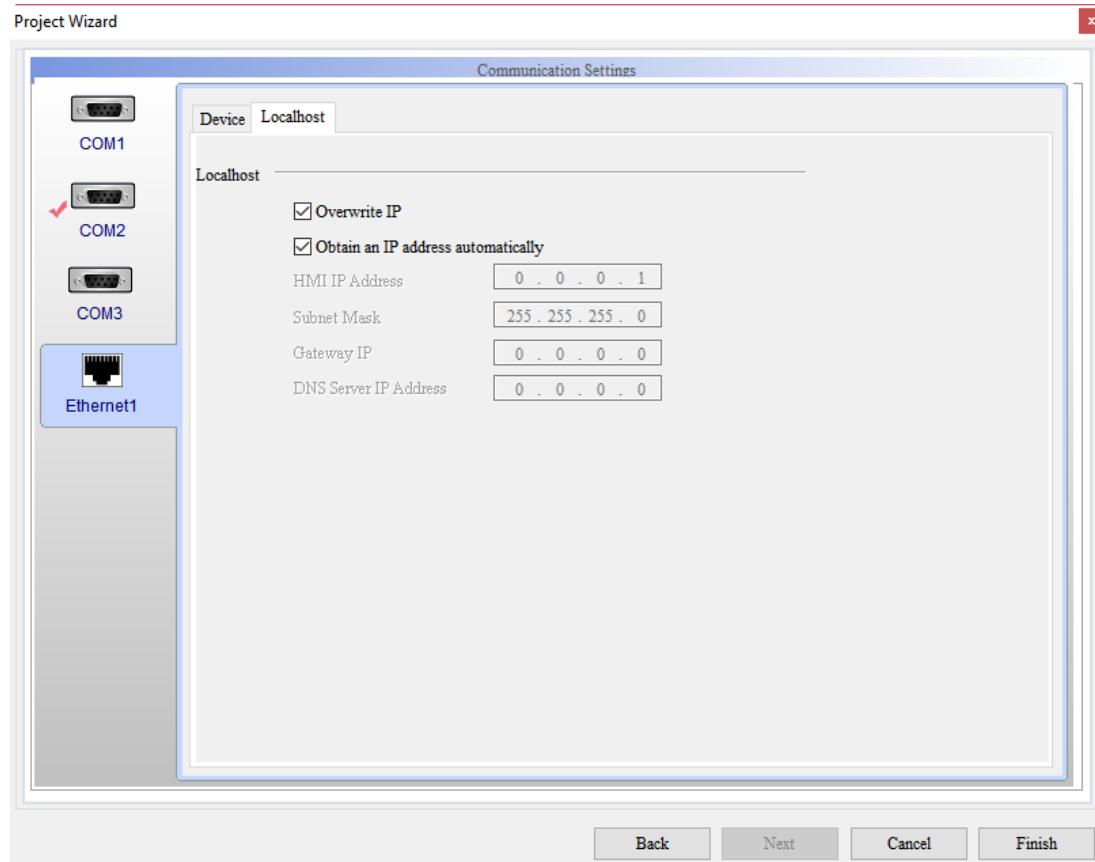
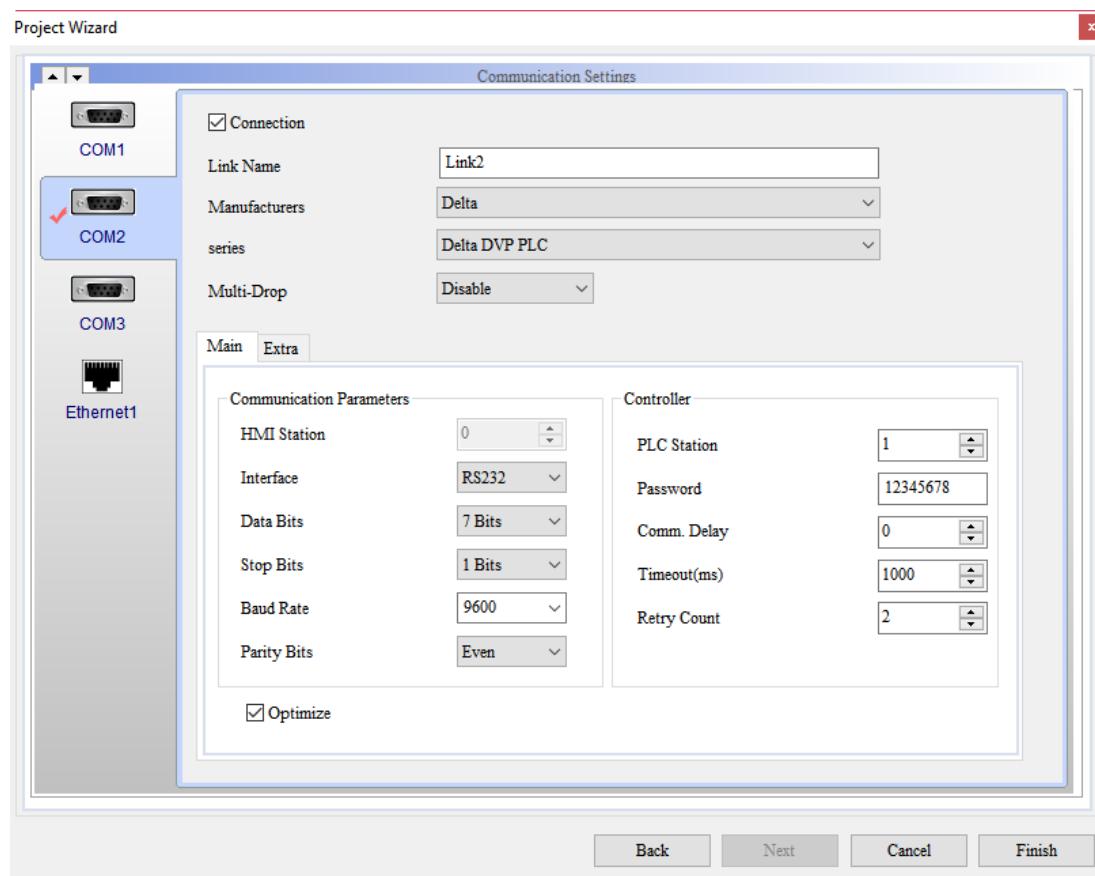


Figure 26.2.2.2 HMI screen setting (2)

26

3. Set up the Print settings. Go to [Options] > [Configuration] > [Print], and select Ethernet as the Interface and fill in the IP address and Port number.

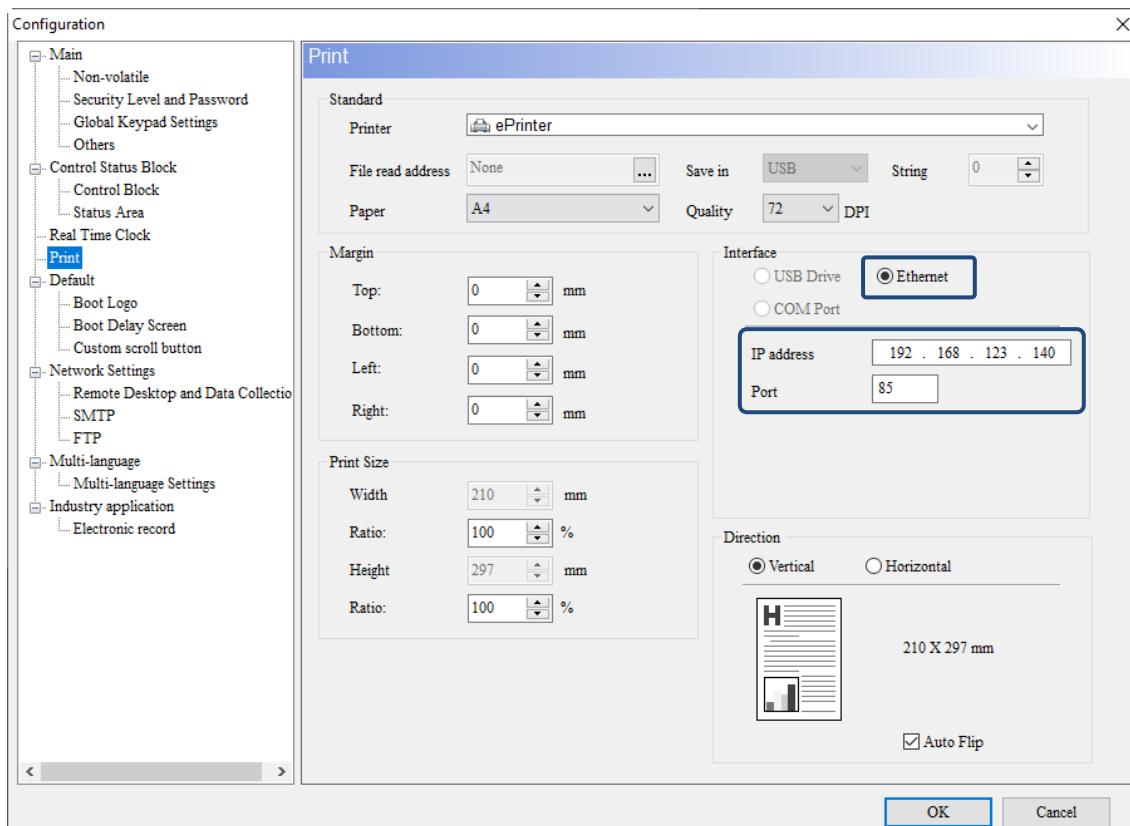


Figure 26.2.2.3 HMI screen setting (3)

4. IP address: the IP address filled in is the IP address of the PC on which you opened the PrnServer. You can issue the ipconfig command in the command mode to look up the IP address of the PC. The IP Address is 192.168.123.140 in this example.

Note: this IP address needs to be under the same network segment as the IP address of the HMI screen.

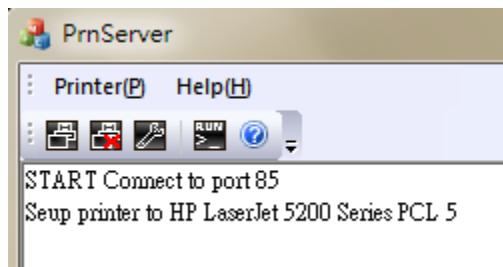
```
Command Prompt
Windows IP Configuration

Wireless LAN adapter Local Area Connection* 2:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . . .

Ethernet adapter Ethernet 7:
  Connection-specific DNS Suffix . . .
  Link-local IPv6 Address . . . . . : fe80::1852:6eab:c0f8:531f%10
  IPv4 Address . . . . . : 192.168.123.140
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . :
```

Figure 26.2.2.4 Look up for the IP address of the PC

5. Port: the default connecting port for the printer is port 85, which is also the printer port to be connected to when you start the PrnServer connection.



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Figure 26.2.2.5 ePrinter connecting port

6. Create Rectangle and Circle elements and a Print Output button in the DOPSoft editing screen.

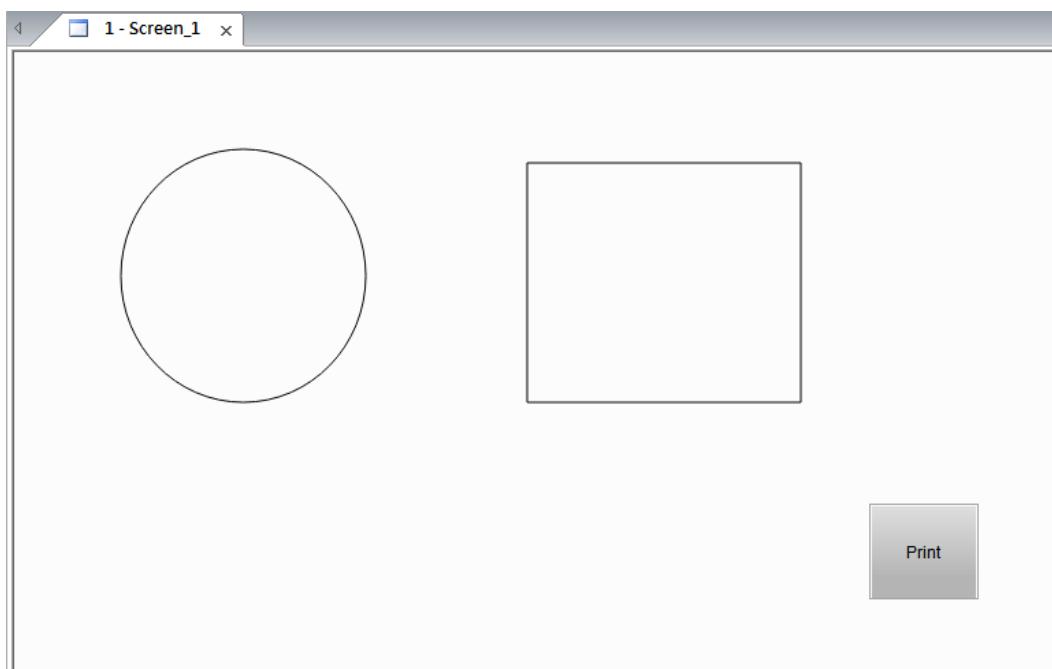


Figure 26.2.2.6 Create Rectangle and Circle elements

7. Compile and download the screen data to the HMI.
8. Before executing the Print Output (Print) element, start and run the PrnServer.

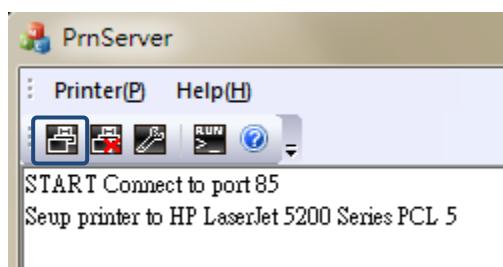


Figure 26.2.2.7 Run PrnServer

9. Then trigger the **Print** button on the HMI to complete printing.

## 26.3 Error code of printer

If an error occurs when the printing function is executed, you can refer to the error code displayed by the printer to figure out and troubleshoot the error.

Code	Code definition	Cause	Troubleshooting
-2	ERROR_PRINT_PORT Printer port error	USB, parallel port, COM selection error.	Check if the set transmission port is correct.
-3	ERROR_MEMORY_NULL Memory allocation error	HMI memory insufficient, unable to process print data.	Delete screens to be printed or replace the HMI with a model with larger memory capacity for the printing.
-4	ERROR_USB Unable to print because of an error with the printer	Unable to print because of printer malfunctioning, resulting in this error message.	The malfunctioning might be caused by the printer out of ink or paper jam. Print again after troubleshooting.
-5	ERROR_USB_NOT_SELECT Printer starting failed, unable to connect	The printer is connected, but the HMI cannot recognize the device.	Printer driver cannot connect with the HMI. Contact our customer service for help.
-6	ERROR_USB_PAPER Printer unable to print because it is out of paper	Printer responded with the error of no printing paper.	This issue can be solved by adding paper to the printer.
-7	ERROR_USB_NOT_CONNECT Failed to connect to the printer	The USB cable is not connected to the printer.	Check if the USB cable is connected to the printer correctly.
-8	ERROR_USB_OPEN Failed to open USB	Failed to open USB when starting to print.	Restart the HMI. If the printer is still unable to print, contact our customer service for help.
-9	ERROR_USB_CLOSE Failed to close USB	Failed to close USB when printing ended.	Restart the HMI. If the printer is still unable to print, contact our customer service for help.
-11	ERROR_NOT_OK Printer initialization not yet completed	Printer will initialize upon starting up. When printing at this moment, the printer will respond with this error message.	The initialization process may take a long time for some printers. Start printing after the initialization is complete.
-14	PRINTER ERROR Printer printing failed	CTS pin status error	Check if the CTS communication pin is correctly connected. If the printer is still unable to print, contact our customer service for help.

## 26.4 Template printing

The HMI provides a template printing function, allowing users to define the header and footer of the output PDF file. The PDF file contains history data, recipes, alarms, and Operation Log Table. The filename of the PDF file printed with the Template screen function is editable, and the PDF format file can prevent data from being tampered with and make it easy to save.

To define the header and footer of the output PDF file according to the needs, you must first add a Template screen.

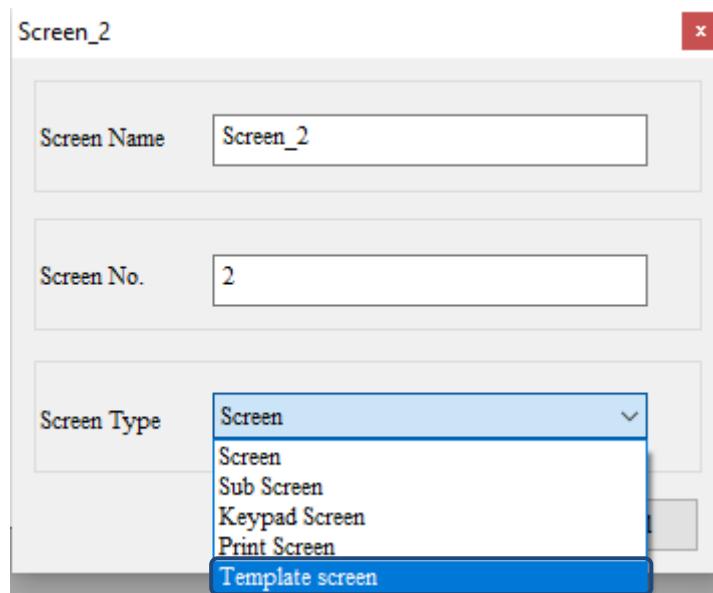


Figure 26.4.1 Template screen

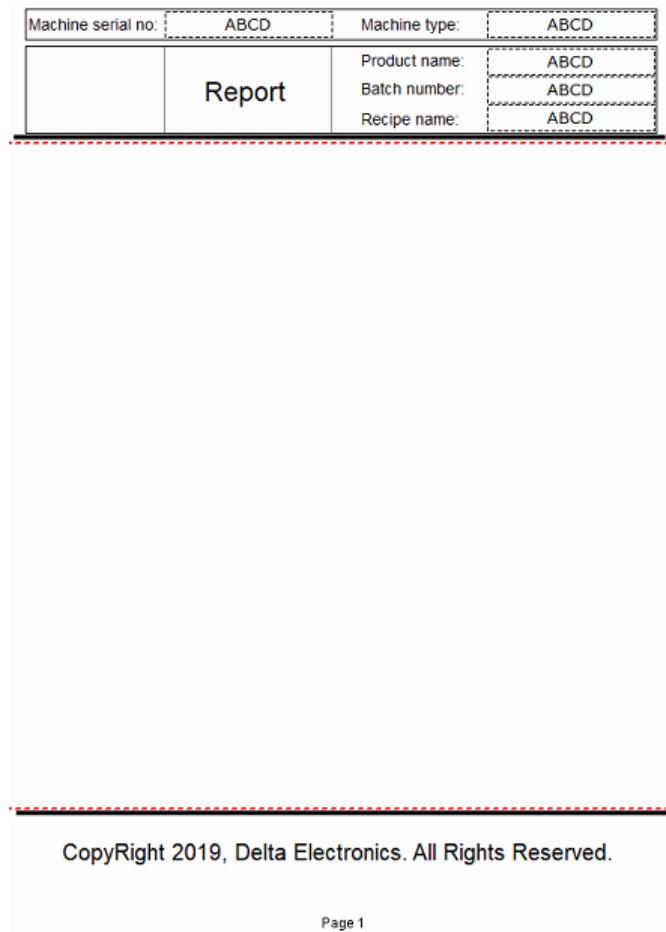


Figure 26.4.2 Edit the style of header and footer

Double-click the Template screen to set the position, text size, and font of the page number.

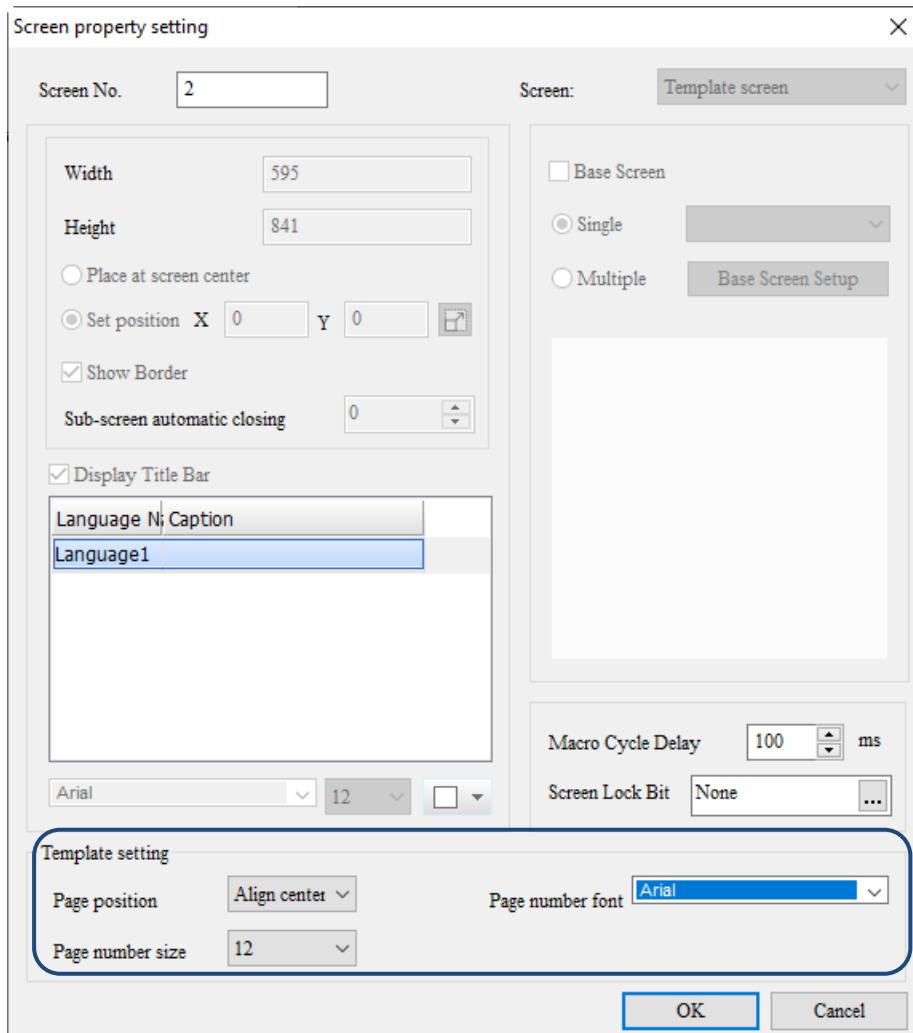


Figure 26.4.3 Screen property setting - page number style

26

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Create a Report List button and click **Template setting** to edit the template.

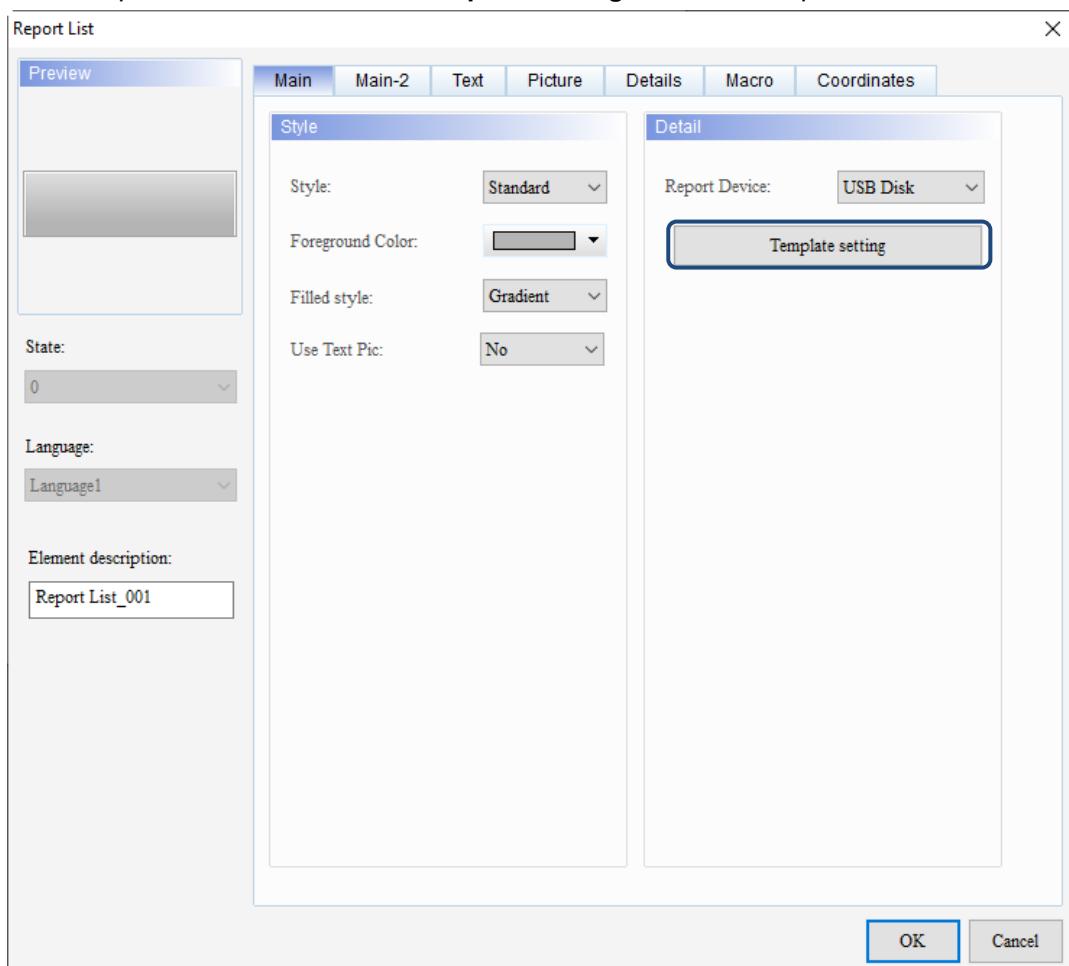


Figure 26.4.4 Report List - Template setting

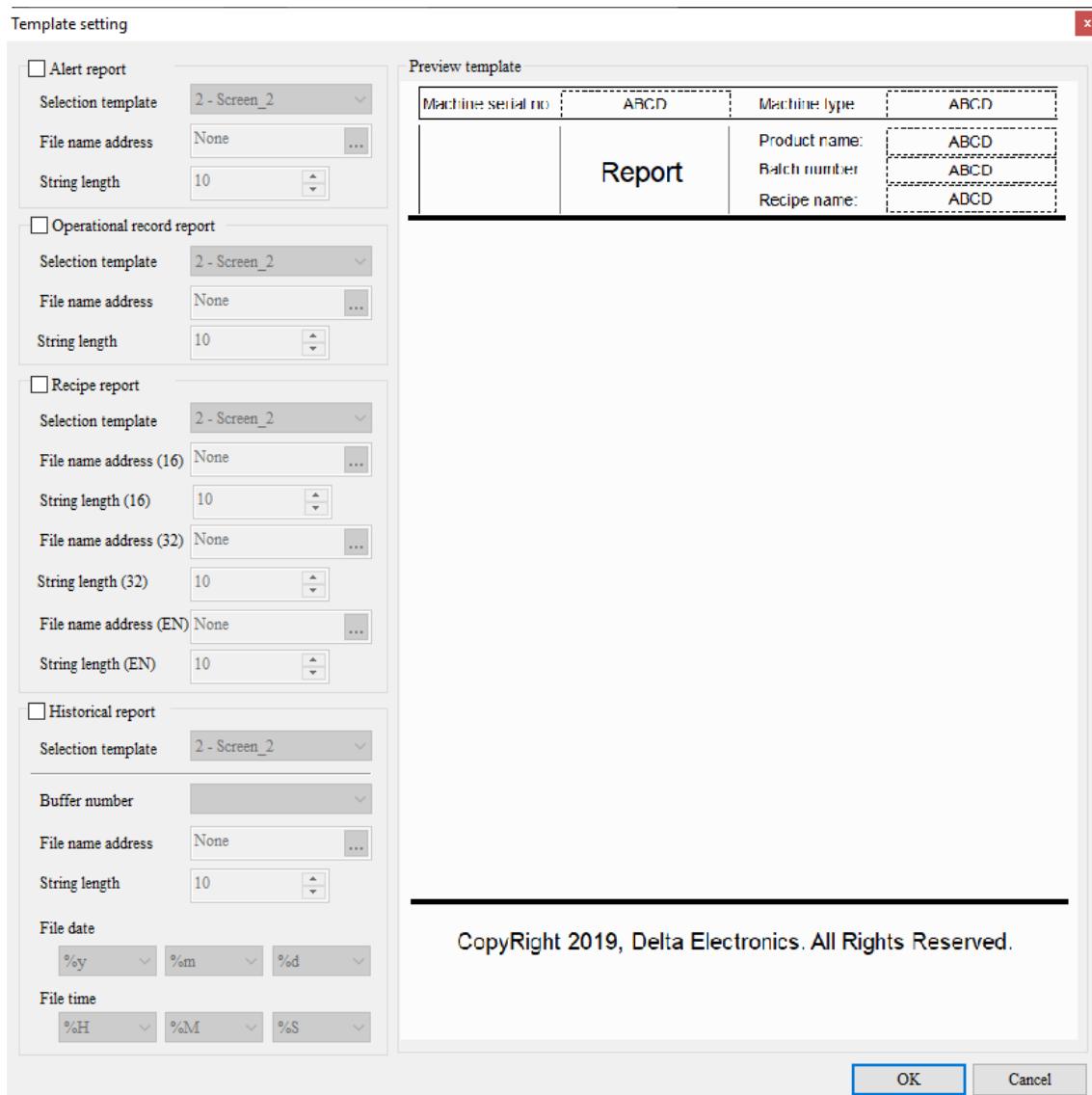
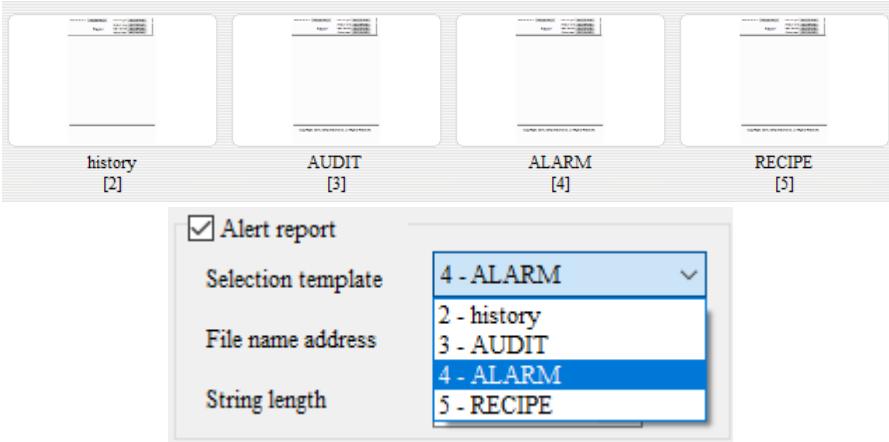
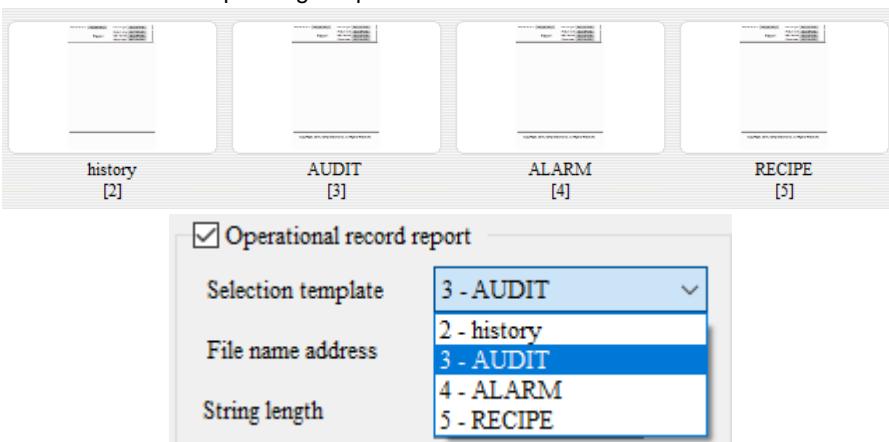
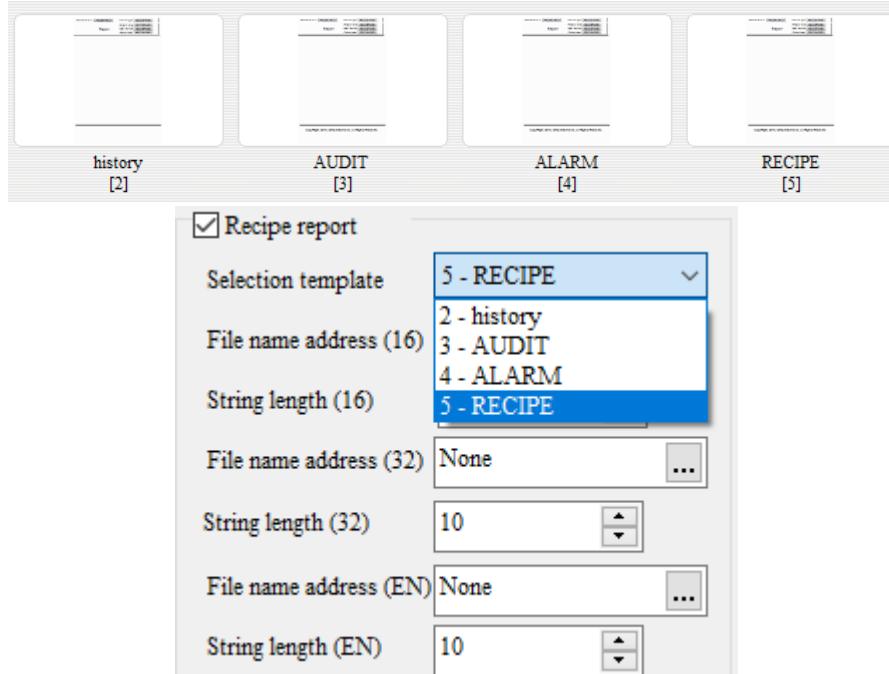


Figure 26.4.5 Template setting

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Table 26.4.1 Template setting

Alert report	Selection template	Create a Template screen in advance. Then, create a Report List element and click [Template setting] to select the Alert report, Operational record report, Recipe report, or Historical report for the template type. After creating the template, you can select the corresponding template.
	history [2]	
	AUDIT [3]	
Operational record report	ALARM [4]	
	RECIPE [5]	
	File name address	Define the name of the alarm file to be generated.
Operational record report	String length	Set the string length of its file name.
	Selection template	Create a Template screen in advance. Then, create a Report List element and click [Template screen] to select the Alert report, Operational record report, Recipe report, or Historical report for the template screen. After creating the template, you can select the corresponding template.
	history [2]	
Operational record report	AUDIT [3]	
	ALARM [4]	
	RECIPE [5]	
Operational record report	File name address	Define the name of the Operation Log Table file to be generated.
	String length	Set the string length of its file name.

		Create a Template screen in advance. Then, create a Report List element and click [Template screen] to select the Alert report, Operational record report, Recipe report, or Historical report for the template type. After creating the template, you can select the corresponding template.
Recipe report	Selection template	
	File name address (16)	Define the name of the 16-bit recipe file to be generated.
	String length (16)	Set the string length of its file name.
	File name address (32)	Define the name of the 32-bit recipe file to be generated.
	String length (32)	Set the string length of its file name.
	File name address (EN)	Define the name of the enhanced recipe file to be generated.
	String length (EN)	Set the string length of its file name.

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	<p>Create a Template screen in advance. Then, create a Report List element and click [Template screen] to select the Alert report, Operational record report, Recipe report, or Historical report for the template type. After creating the template, you can select the corresponding template.</p>
Historical report	<p><b>Selection template</b></p> <p><input checked="" type="checkbox"/> Historical report</p> <p>Selection template: 2 - history</p> <p>Buffer number: 2 - history</p> <p>File name address: 3 - AUDIT 4 - ALARM 5 - RECIPE</p> <p>String length: 10</p> <p>File date: %y %m %d</p> <p>File time: %H %M %S</p>
Buffer number	Select the buffer data to be output. Select 0 to output all buffer data. Select 1 to output the data of the corresponding Buffer ID 1, and so on.
File name address	Define the name of the history data file to be generated.
String length	Set the string length of its file name.
File date	Set the year, month, and day of the file. You can set them to None, which means that the date of the file will not be output.
File time	Set the hour, minute, and second of the file. You can set them to None, which means that the time of the file will not be output.

The PDF file printed with the template printing function is stored in the folder \\HMI\\HMI-000\\@HMI0000.

The following are the output PDF files with user-defined file names.

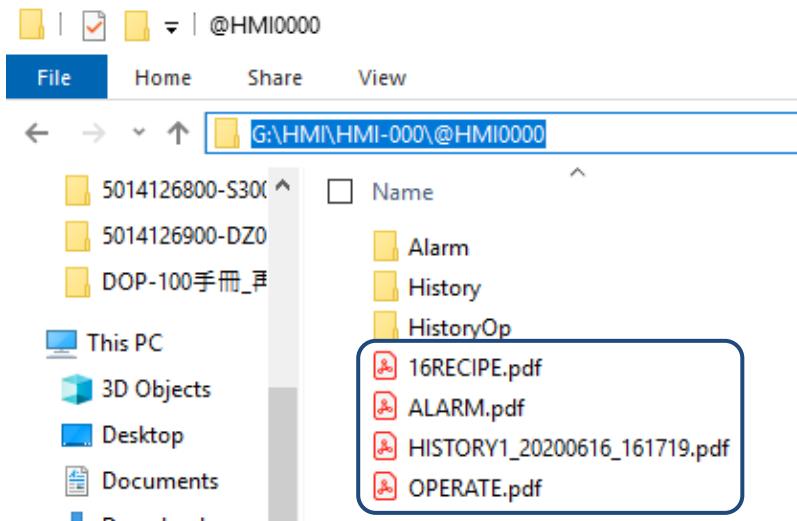


Figure 26.4.6 The output PDF files

# Parameter Settings

# 27

This chapter provides the descriptions of the configuration parameters, communication parameters, model changing, and environment settings.

27.1 Configuration .....	27-2
27.2 Communication Settings.....	27-57
27.3 Change Model.....	27-69
27.4 Environment settings .....	27-70

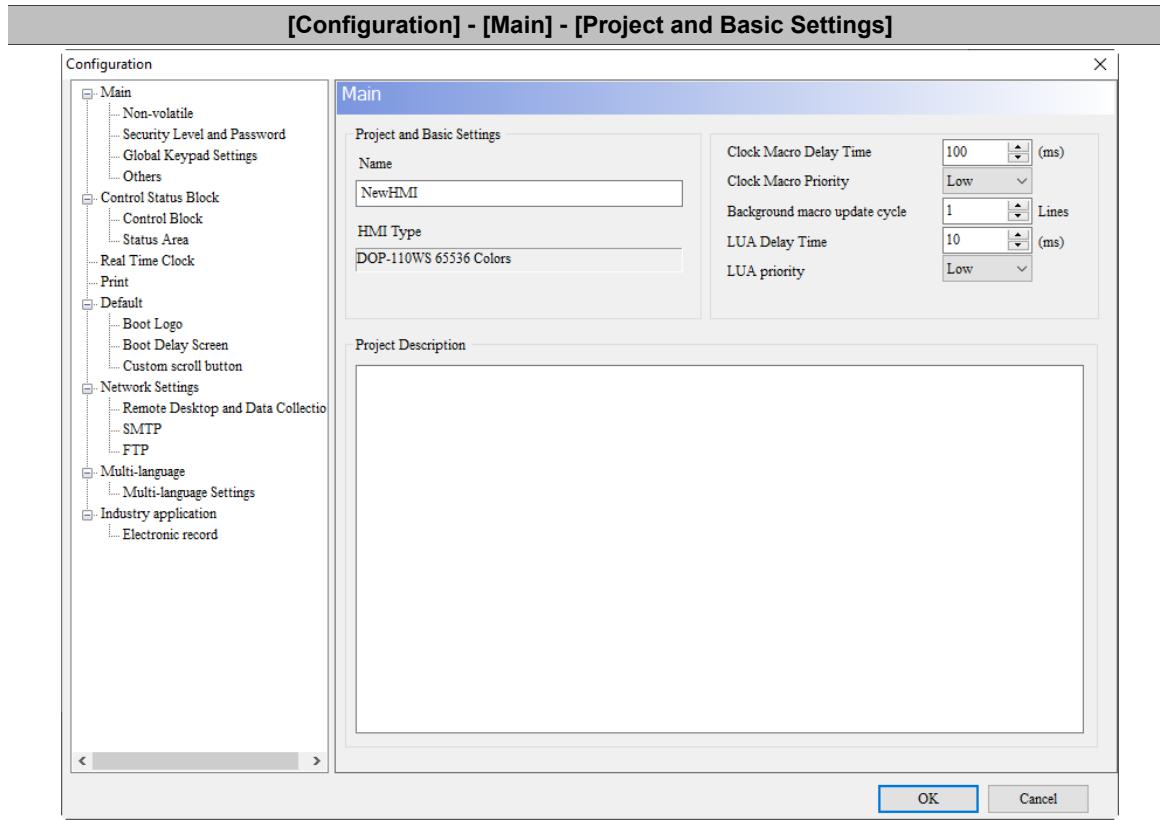
# 27

## 27.1 Configuration

Configuration includes eight parts: Main, Control Status Block, Real Time Clock, Print, Default, Network Settings, Multi-language, and Industry application.

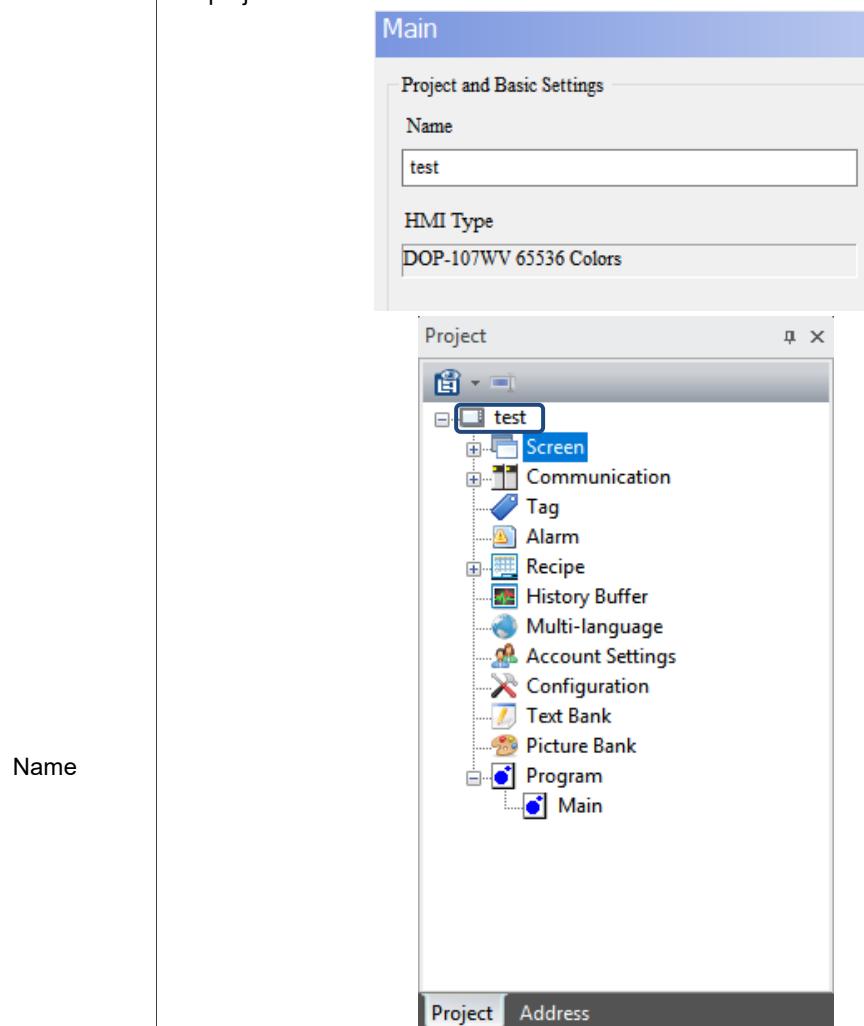
The settings of Main, Real Time Clock, Print, Default, Network Settings, Multi-language, and Industry application are described as follows. For detailed settings of Control Status Block, refer to Chapter 4 Control Block and Status Block. For Multi-language settings, refer to Chapter 25.

Table 27.1.1 Configuration - Project and Basic Settings

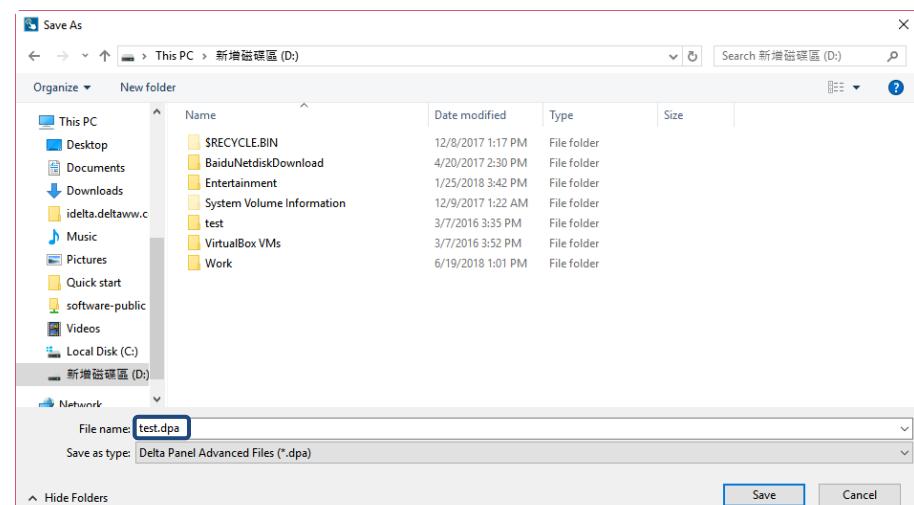


### [Configuration] - [Main] - [Project and Basic Settings]

- You can change the name of the project and the new name will be displayed in the project tree on the left.



- This name will be the default name of the file to be saved.



HMI Type	Displays the HMI model being edited.
Clock Macro Delay Time	Clock Macro Delay Time ranges from 50 to 65535 ms. This is the interval time between an execution of the Clock macro and the next one.
Clock Macro Priority	<ul style="list-style-type: none"> <li>Clock Macro Priority can be divided into Low, Medium, and High.</li> <li>The higher the priority of the execution of the Clock macro, the more accurate the delay time of the Clock macro will be.</li> </ul>

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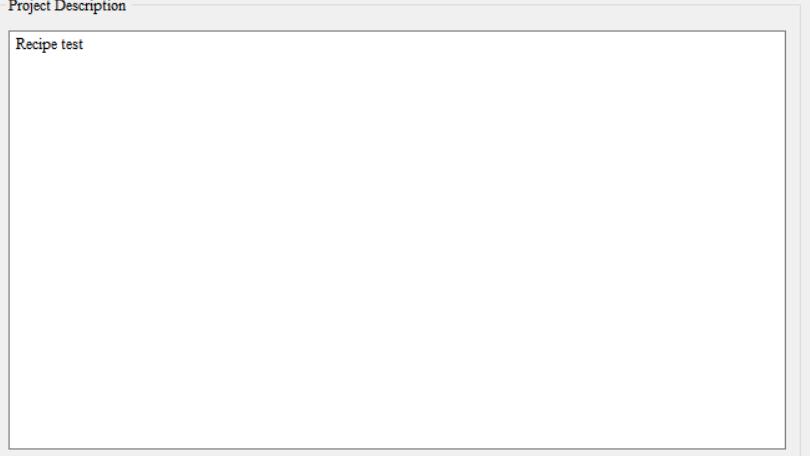
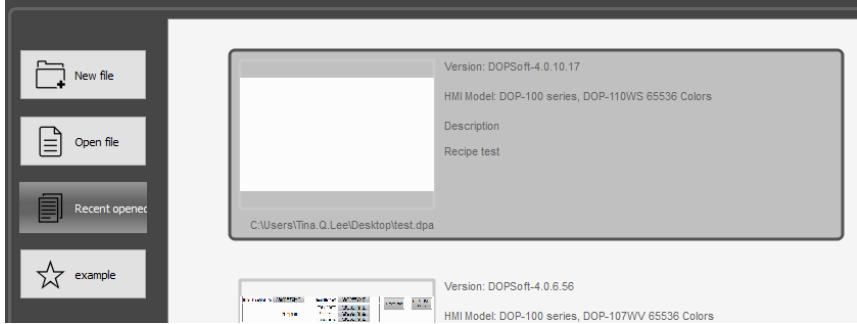
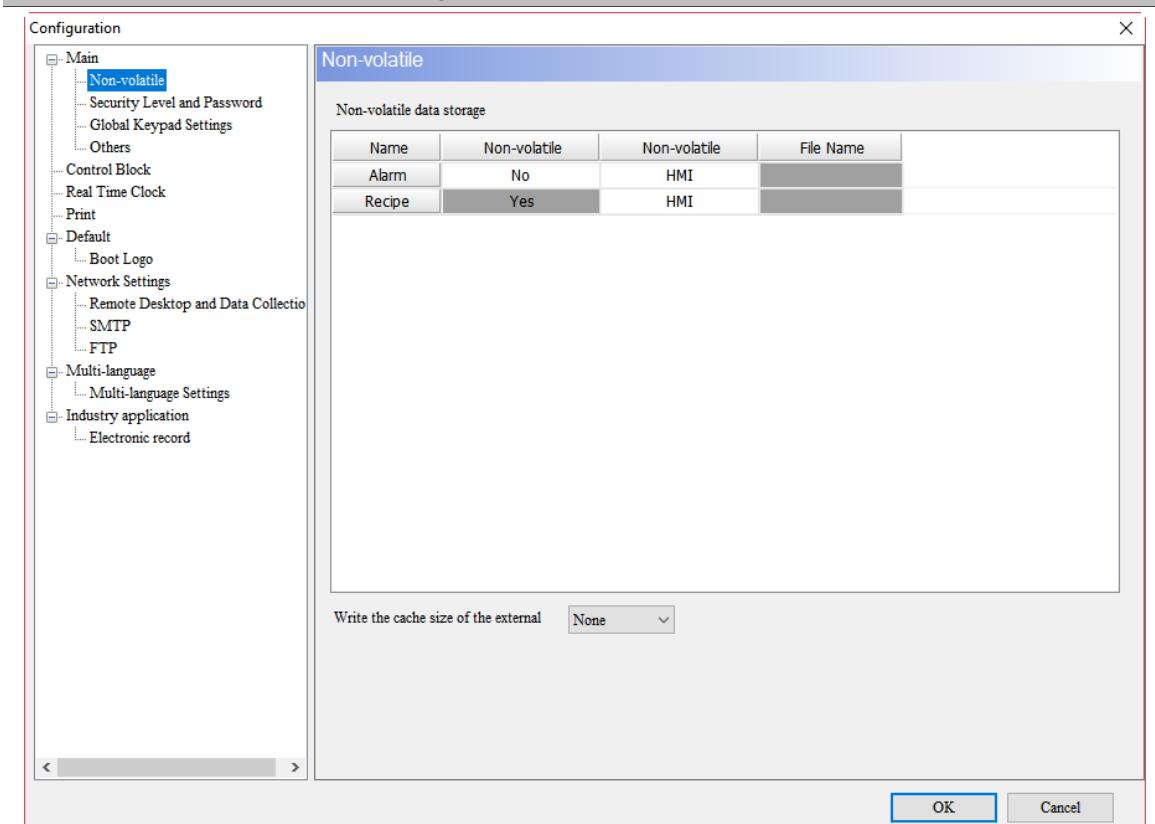
[Configuration] - [Main] - [Project and Basic Settings]	
Background macro update cycle	Sets the number of lines executed per cycle for the Background macro, which ranges from 1 to 512.
Project Description	<ul style="list-style-type: none"><li>■ It can be used to describe the purpose and description of the HMI screen. </li><li>■ After the software is executed, you can view the project description to better understand the purpose of the project when selecting this file. </li></ul>

Table 27.1.2 Configuration - Non-volatile

**[Configuration] - [Main] - [Non-volatile]**

Non-volatile data storage	Non-volatile data storage			
	Name	Non-volatile	Storage Location	File Name
	Alarm	No	HMI	
	Recipe	Yes	HMI	
	History Buffer ID-1	No	HMI	H0001

■ Non-volatile data storage addresses can be categorized as three parts: Alarm, Recipe, and History Buffer.

■ The storage location for the history data depends on whether the client has created a History Buffer.

■ If you need to use data of the three parts, you can choose the data storage location, which includes HMI, USB Disk, and SD Card.

■ You can directly click on the Storage Location to set the location for saving the non-volatile data of Alarm, Recipe, and History buffer.

Write the cache size of the external

**[Configuration] - [Main] - [Non-volatile]**

- External storage devices include USB Disk and SD Card.
- The data written to an external storage device by the HMI is temporarily placed in the cache. The Write the cache size of the external function is to set the cache size. Data is not actually written to the external storage device until the cache size is reached. This can avoid damaging the external storage device due to continuous writing.
- If the size of data to be accessed is less than the buffer capacity or the HMI power is unexpectedly cut off, some of the data may be lost. To avoid data loss, force trigger Bit 5 of the General control register in the Control Block (External storage device cache write flag) periodically to write data to the external storage device, which ensures the data is saved.

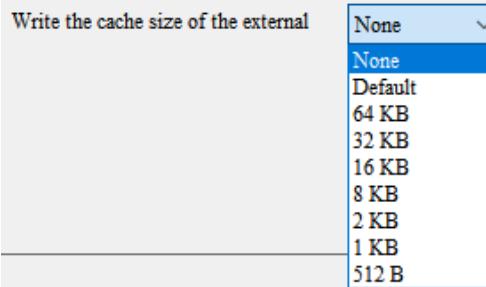
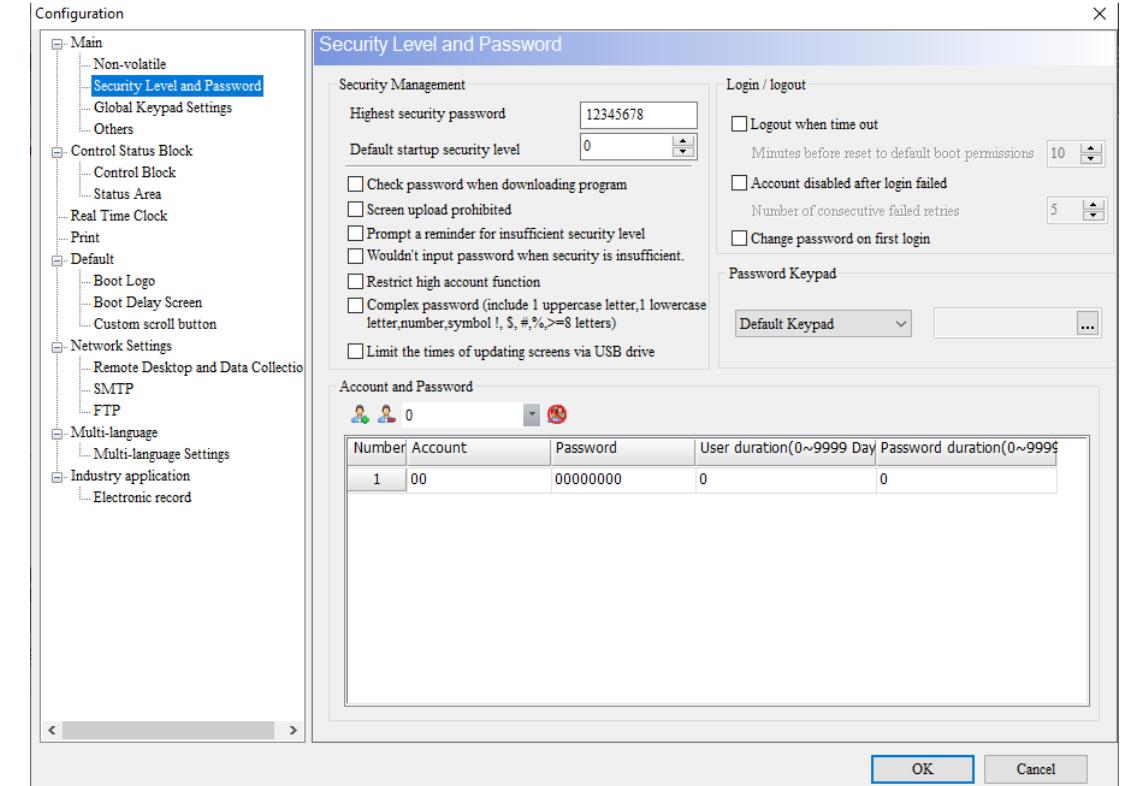


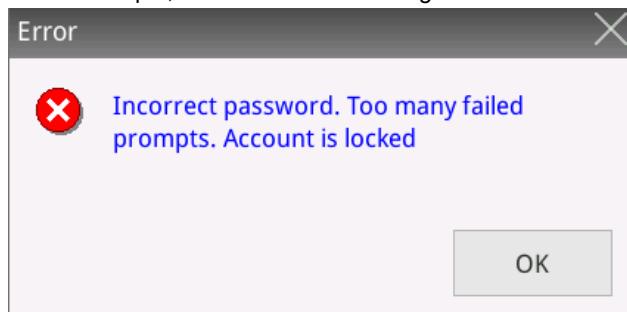
Table 27.1.3 Configuration - Security Level and Password

<b>[Configuration] - [Main] - [Security Level and Password]</b>	
	
Highest security password	Highest security password is the password of highest permission level of the HMI which is level 8. The default value for Highest security password is "12345678". This password is used for screen and recipe data upload / download (select the <b>Check password when downloading program</b> check box first), password protection, system formatting, system file encryption and file copy (select the <b>Limit the times of updating screens via USB drive</b> check box first). The password is composed of the hexadecimal digits 0 - F.
Default startup security level	<ul style="list-style-type: none"> <li>■ If you want to use the default startup security level, set it with the User Security Level property of each element.</li> <li>■ The default startup security level is the permission level at HMI startup, which ranges from 0 - 7.</li> </ul>
Logout when time out	
Minutes before reset to default boot permissions	If you select the <b>Logout when time out</b> check box, when you do not operate the HMI for a period of time after logging in through the user permission, the HMI logs out and resets to the default startup security level.

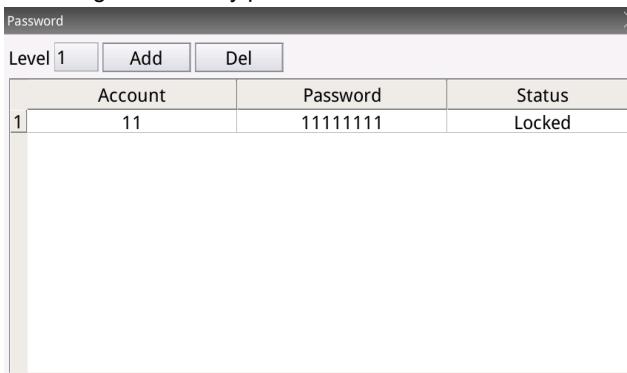
27

Account  
disabled  
after  
login failed

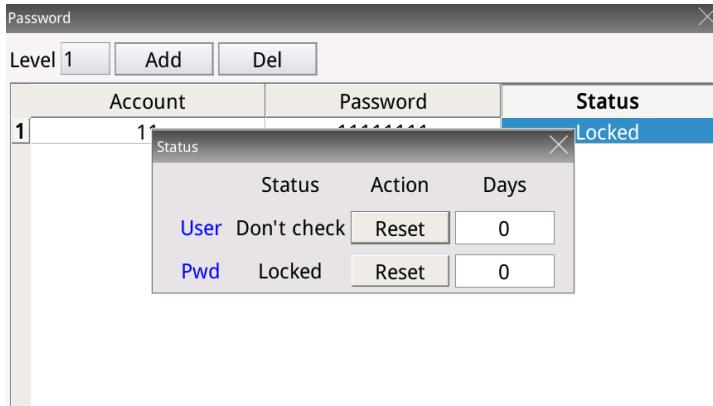
If you select this check box, when a user attempts to log into the HMI and reaches the set number of failed attempts, the HMI will lock the login account and disable it.



You can log into the highest security password level to unlock the disabled account.

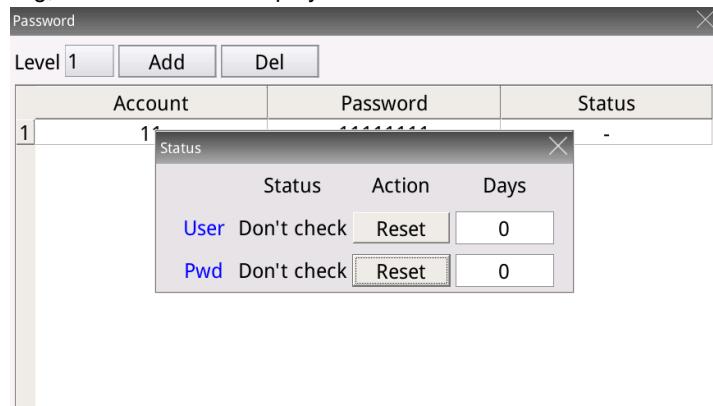


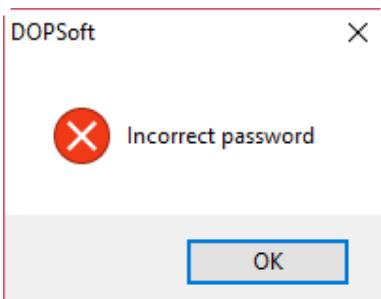
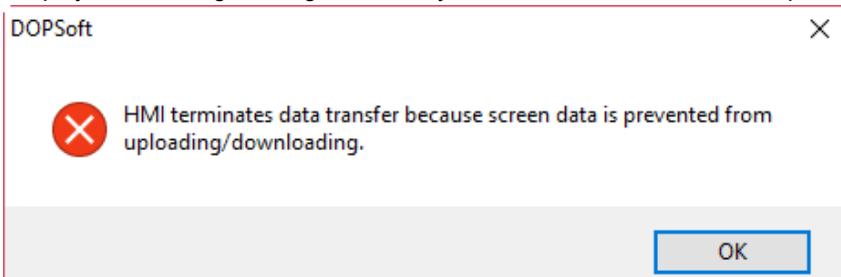
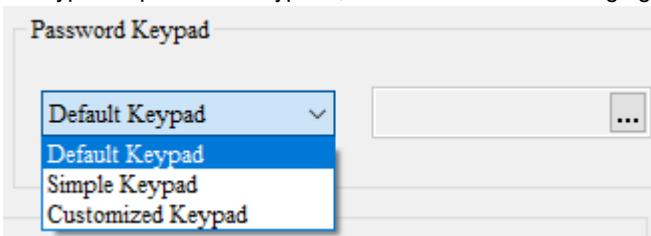
When clicking the "Locked" text, you will see that the password status shows "Locked". Press the **Reset** button to unlock the password.



Number of  
consecutive  
failed retries

After resetting, the status will be displayed as "Don't check".



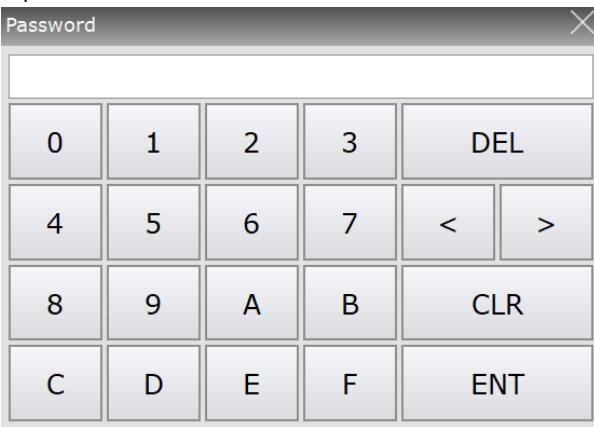
<b>[Configuration] - [Main] - [Security Level and Password]</b>	
Check password when downloading program	<ul style="list-style-type: none"> <li>If you select this check box, you must first download this setting to the HMI. The next time you download the screen data and recipe to the HMI, the software requires you to enter the highest security password.</li> </ul>  <ul style="list-style-type: none"> <li>You can download the screens to the HMI only when the password is correct; if not, a warning window appears to inform you that the password entered is incorrect and you cannot download the screens.</li> </ul> 
Screen upload prohibited	<p>When you try to upload all the data after downloading the screen to the HMI, DOPSoft will display the following message to inform you that screen data cannot be uploaded.</p> 
Prompt a reminder for insufficient security level	Suppose that the user permission set for the element is higher than default security level and the user selects this check box, the element will display the  icon to remind the user for insufficient security level after downloaded to the HMI.
Wouldn't input password when security is insufficient	If this check box is selected, the password input keypad does not appear when the security level is insufficient.
Password Keypad	<p>There are three types of password keypads, as shown in the following figure.</p> 

**[Configuration] - [Main] - [Security Level and Password]**

- The HMI default setting is to use the default keypad shown as follows.



- The simple keypad is used when the size of the HMI is small. If you have set the security password, it can be input through the simple keypad, which makes the interface operation easier.



In comparison, the default keypad covers the screen and the buttons are smaller.



- Custom Keypad

Before using a custom keypad, you must first create a Keypad Screen. For detailed operation instructions, refer to Section 28.8 Cust-Keypad.

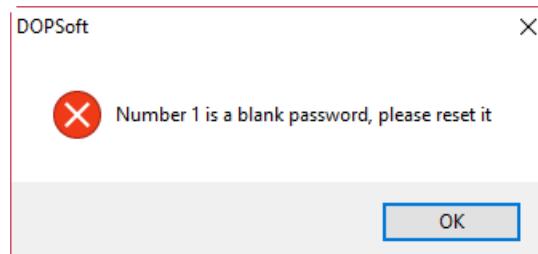
### [Configuration] - [Main] - [Security Level and Password]

The Password Table setting is used to distinguish the HMI permission levels. There are 8 permission levels, from 0 to 7, and each level has a default password. The DOP-100 series models provide multiple accounts and passwords for multiple users to log in at the same time. If you don't want to log in with your account, just click  to switch to the user level permission login mode which only requires you to enter the password. This login mode is the same as that on the DOP-B models.

Account and Password	
Level	Password
0	00000000
1	11111111
2	22222222
3	33333333
4	44444444
5	55555555
6	66666666
7	77777777

Note:

1. The password cannot be blank.

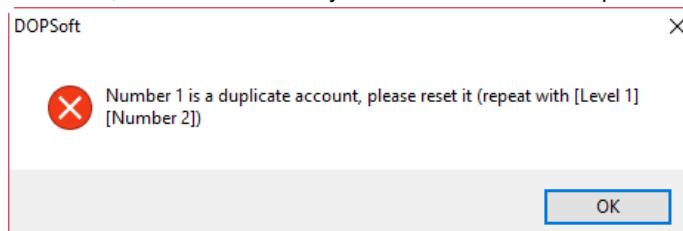


#### Account and Password

2. Passwords can be the same but account names cannot be the same for the same permission level.
3. Account names can be the same for different permission levels. For example, the account name of level 0 is 123, and the account name of level 1 can also be 123.
4. The length of the account and password is limited to 24 characters.
5. The account and password are case-insensitive; they are displayed in uppercase only.

Permission level 0	No protection function; anyone can operate the HMI.
Permission levels 1 - 7	You need to input the corresponding password or password of higher permission level for operation.
Permission level 8	The highest permission password. The permission level 8 is higher than levels 1 - 7, and the highest permission password is also used for protecting the saved project, password verification for download, and formatting system files.

- When you add an account which is the same as another account in the same permission level, the HMI will inform you that the account is duplicate.

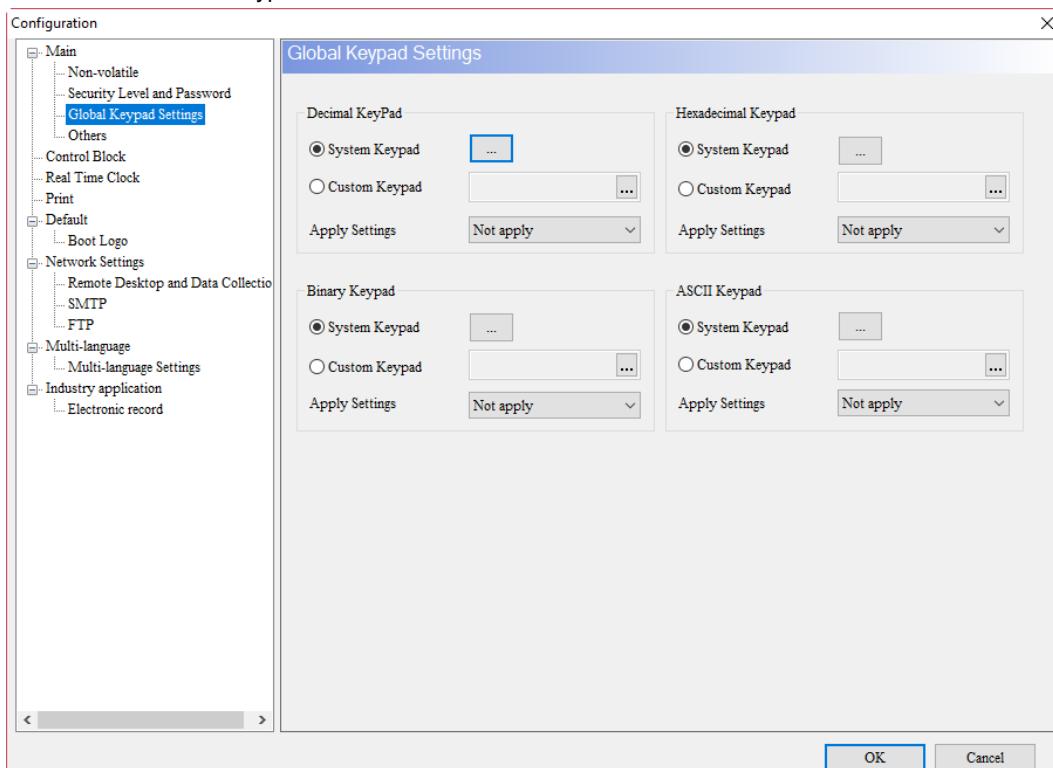


- You can also change the password and account through the button element "Password Table Setup" or by entering the system screen and go to [System Settings] > [Password].
- The account supports Unicode input and you can log in with the Multi-language Input elements for different user permissions.

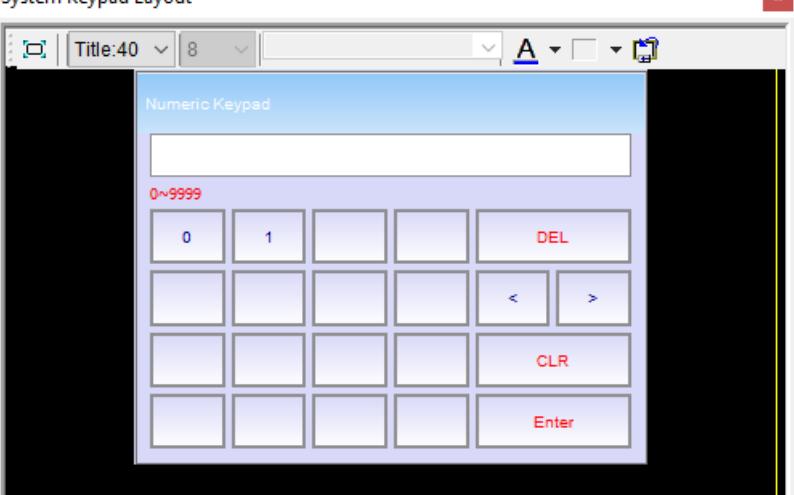
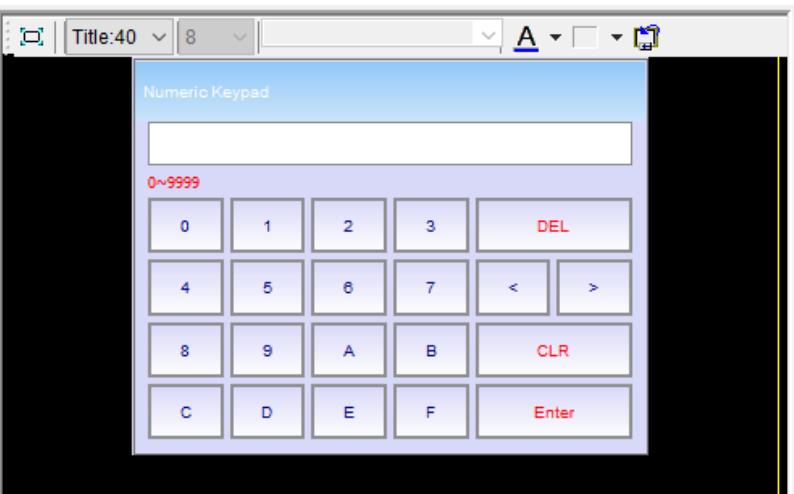
Table 27.1.4 Configuration - Global Keypad Settings

**[Configuration] - [Main] - [Global Keypad Settings]**

The Global Keypad Settings provide decimal, hexadecimal, binary, and ASCII keypads for users to choose. This function is applicable when there are multiple Numeric Entry or Character Entry elements in the editing screen. Set the decimal, hexadecimal, binary, or ASCII keypad through Global Keypad Settings and then apply the settings, and the system keypad can be updated into the user-defined format. Users do not need to worry that the settings cannot apply to the keypads of multiple Numeric Entry or Character Entry elements on the old screen. Global Keypad Settings provide the Apply to All function which can replace all the old keypad styles with the new one. As for a new element, we also provide the Apply to New function which can only apply the settings to the keypad newly created. Therefore, users can easily and quickly update the user-defined keypad format on the new or old ones.



Decimal Keypad	System Keypad	The decimal keypad style can be customized. 
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<b>[Configuration] - [Main] - [Global Keypad Settings]</b>				
Decimal Keypad	Apply Settings	Not Apply	Even if the keypad style is customized, the old or new keypads will maintain the original system keypad style.	
		Apply to All	Replace the old keypad styles altogether with the new style.	
		Apply to New	Only apply the settings to the keypad newly created.	
Binary Keypad	System Keypad	Binary keypad style can be customized.		
				
		Not Apply	Even if the keypad style is customized, the old or new keypads will maintain the original system keypad style.	
Hexadecimal Keypad	System Keypad	Apply to All	Replace the old keypad styles altogether with the new style.	
		Apply to New	Only apply the settings to the keypad newly created.	
		The hexadecimal keypad style can be customized.		
Hexadecimal Keypad	System Keypad			

27

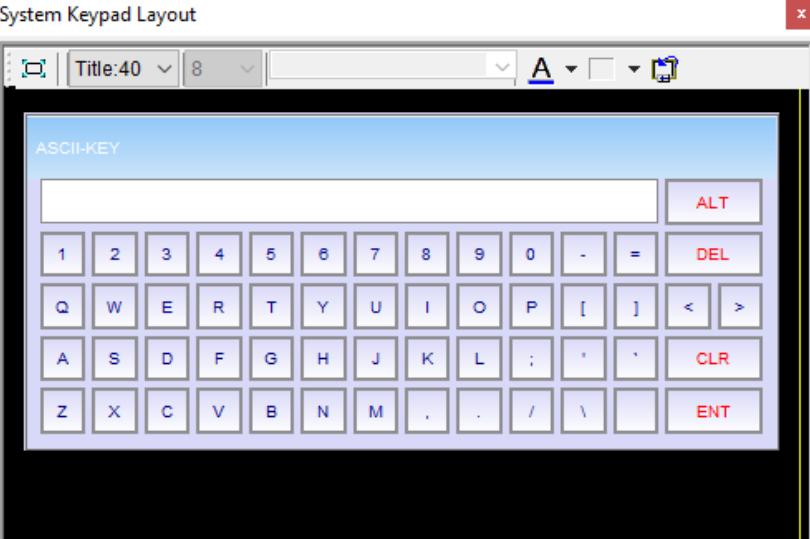
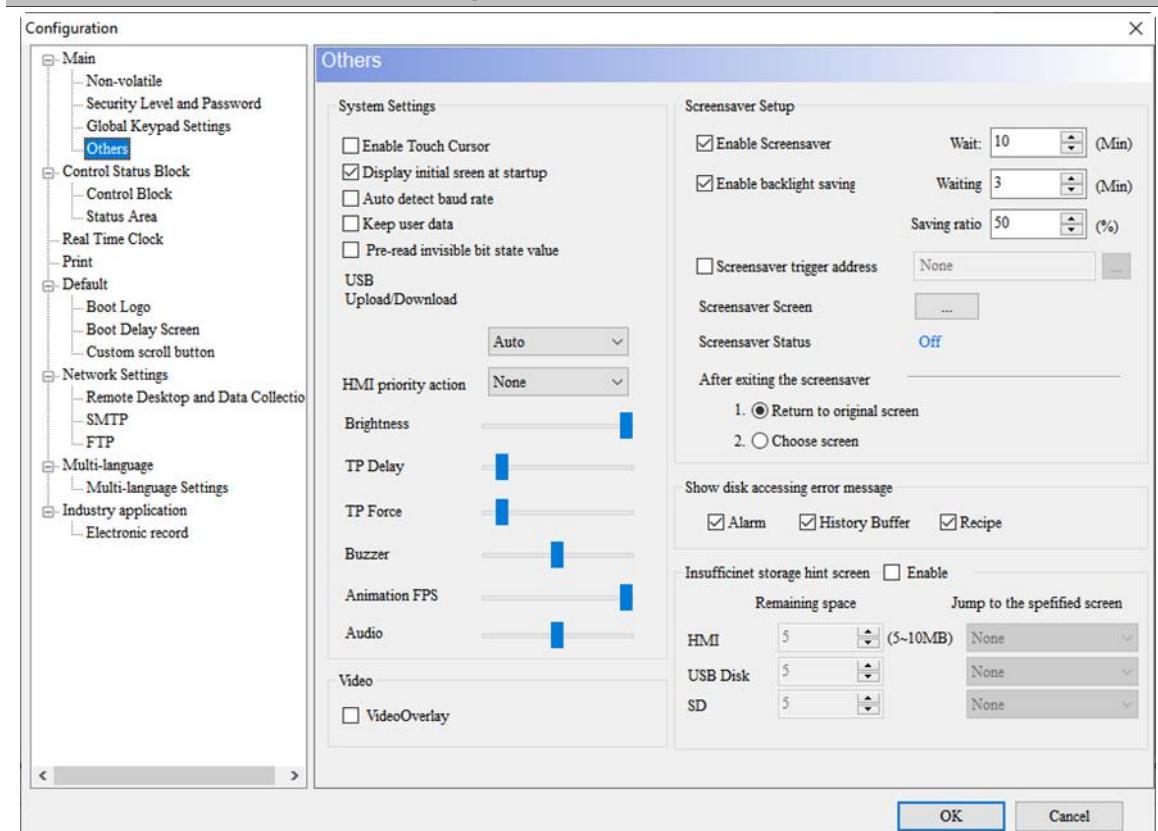
<b>[Configuration] - [Main] - [Global Keypad Settings]</b>				
Hexadecimal Keypad	Apply Settings	Not Apply	Even if the keypad style is customized, the old or new keypads will maintain the original system keypad style.	
		Apply to All	Replace the old keypad styles altogether with the new style.	
		Apply to New	Only apply the settings to the keypad newly created.	
		The ASCII keypad can be customized.		
System Keypad				
ASCII Keypad	Apply Settings	Not Apply	Even if the keypad style is customized, the old or new keypads will maintain the original system keypad style.	
		Apply to All	Replace the old keypad styles altogether with the new style.	
		Apply to New	Only apply the settings to the keypad newly created.	

Table 27.1.5 Configuration - Others

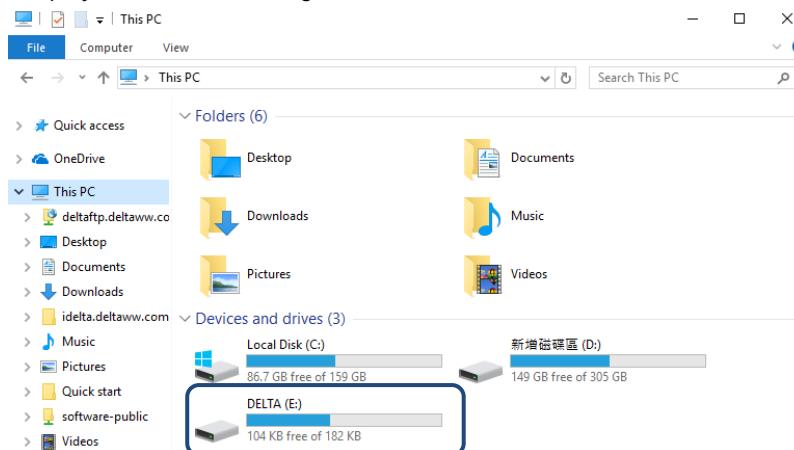
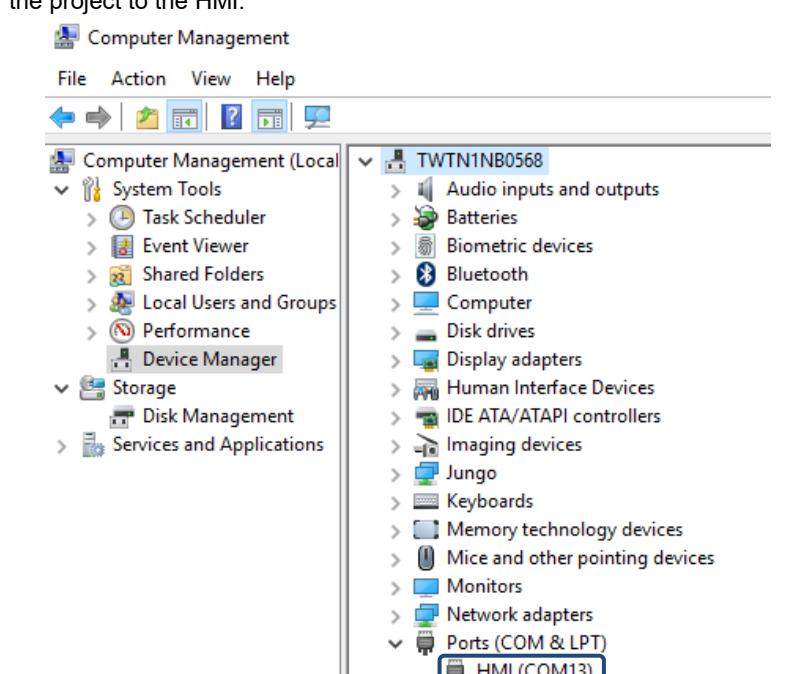
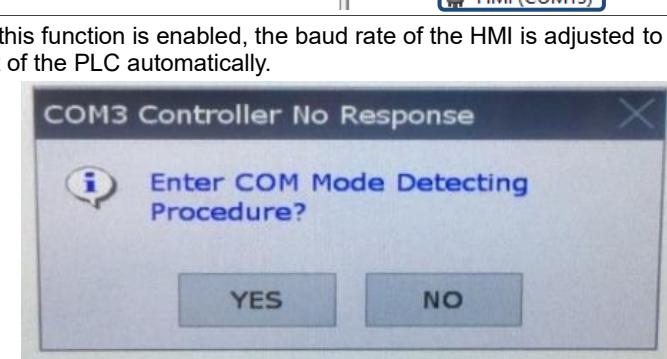
## [Configuration] - [Main] - [Others]

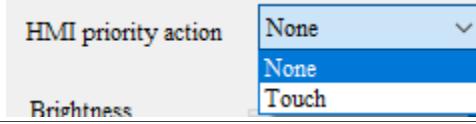


System Settings		
Enable Touch Cursor		<ul style="list-style-type: none"> <li>■ The HMI provides the same mouse cursor as the Windows system. When the HMI screen is touched, the icon of the mouse cursor appears on the screen.</li> <li>■ The HMI supports wireless mouse with a Unifying receiver.</li> </ul>
Display initial screen at startup		When the <b>Display initial screen at startup</b> check box is selected, the initial screen will be displayed at each startup, as shown in the following figure. You can set whether to display the initial screen.  
USB Upload/Download	Auto	<ul style="list-style-type: none"> <li>■ In Auto mode, the USB Upload/Download setting refers to the USB Comm. Mode setting on the HMI.</li> <li>■ If USB Upload/Download is set to Auto, the HMI will maintain the current mode of USB Upload/Download after the project is downloaded. If USB Upload/Download is set to Disk (USBCommMode 1), the HMI will upload and download the data with Disk mode after the project is downloaded; if USB Upload/Download is set to CDC (USBCommMode 2), the HMI will still upload and download the data with CDC mode after the project is downloaded.</li> </ul>

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[Configuration] - [Main] - [Others]		
System Settings		
	Disk	<p>The Disk mode is the same as USBCommMode 1. You can find a removable storage device named "DELTA" in [This PC] after downloading the project to the HMI through the Disk mode.</p> 
USB Upload/Download mode	CDC	<p>The CDC mode is the same as USBCommMode 2. You can go to [This PC] and right-click on the mouse to go to [Contents] &gt; [Device Manager] to check whether there is a device named "HMI" in [Ports] after downloading the project to the HMI.</p> 
Auto detect baud rate		<ul style="list-style-type: none"> <li>■ When this function is enabled, the baud rate of the HMI is adjusted to be the same as that of the PLC automatically.</li> </ul>  <ul style="list-style-type: none"> <li>■ The condition for adjustment is the baud rate of the HMI is different from that of the PLC.</li> </ul>

[Configuration] - [Main] - [Others]		
System Settings		
HMI priority action	<p>HMI priority action allows users to get a quicker response after pressing a button.</p> 	
Brightness	<p>You can adjust the backlight brightness.</p>	
TP Delay	<p>Sets the delay time of HMI processing the touch and movement data. The farther to the right, the shorter the delay time, which means the speed is faster; the farther to the left, the longer the delay time, which means the speed is slower.</p>	
TP Force	<p>Sets the sensitivity to the touch force on the HMI screen. The farther to the left, the more sensitively the HMI detects the force, which means it's easier to tap; the farther to the right, the less sensitively the HMI detects the force, which means you need to tap the screen harder.</p>	
Buzzer	<p>Adjusts the volume of the buzzer: the farther to the left, the lower the volume; the farther to the right, the louder the volume. Buzzer sound of the HMI includes the sounds when the button is triggered, the message appears, and an error occurs. Therefore, once the buzzer is adjusted to the far left, the HMI does not make any sound.</p>	
Animation FPS	<p>The default speed is set at the far right, which means the animated graphic update speed is the fastest. The farther to the left, the slower the update speed will be.</p>	
Audio	<p>Adjusts the volume of multimedia audio. The farther to the left, the lower the volume; the farther to the right, the louder the volume.</p>	
Screensaver Setup		
Enable Screensaver	<ul style="list-style-type: none"> <li>■ The Screensaver Setup settings are enabled only when you select the <b>Enable Screensaver</b> check box.</li> <li>■ After the screensaver is enabled, you can exit the screensaver mode simply by touching the screen again.</li> <li>■ If this check box is selected, but there is no screensaver set in [Screen] &gt; [Screensaver], the screensaver appears black.</li> <li>■ If this check box is not selected, but you have edited the screensaver screen in [Screen] &gt; [Screensaver], the screensaver will remain disabled.</li> </ul>	
Wait time	<p>If the <b>Enable Screensaver</b> check box is selected, you can set the wait time for the HMI to enter the screensaver mode. The time range is 1 - 100 min., and the default value is 10 min.</p>	
Enable backlight saving	<p>Once this function is enabled, the HMI screen adjusts the backlight brightness according to the set minutes and saving ratio.</p>	
Screensaver trigger address	<p>After setting the trigger address, as long as the value of this address is not 0, you can directly activate and enter the screensaver mode without waiting for the set wait time.</p>	

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[Configuration] - [Main] - [Others]					
Screensaver Setup	<ul style="list-style-type: none"> <li>■ After clicking the box shown as follows, you can directly link to the setting interface of the screensaver screen.</li> </ul> <p>If the <b>Enable Screensaver</b> check box is selected, you can set the Screen switching delay time. It is the time interval when the screens are switched. The time range is 1 - 255 s and the default time is 1 second.</p>				
Screensaver Status	<ul style="list-style-type: none"> <li>■ If there is a screen set for the screensaver, the status will display "Enable screensaver".</li> <li>■ If there is no screen set for the screensaver, the status will display "Off".</li> </ul> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Screensaver Status</td> <td>Enable screensaver</td> </tr> <tr> <td>Screensaver Status</td> <td>Off</td> </tr> </table>	Screensaver Status	Enable screensaver	Screensaver Status	Off
Screensaver Status	Enable screensaver				
Screensaver Status	Off				

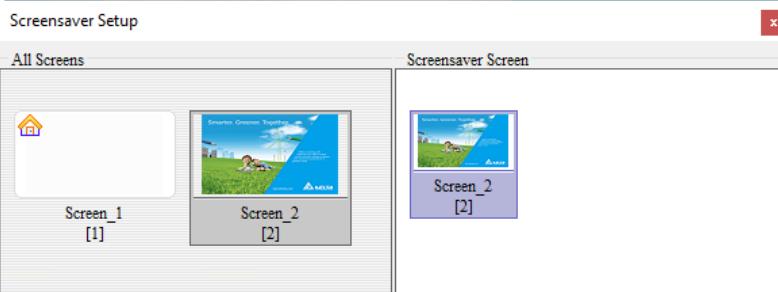
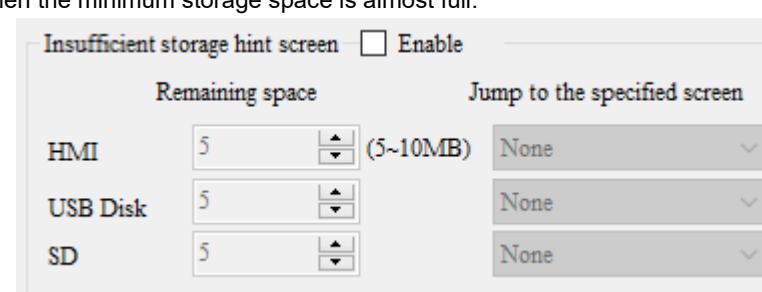
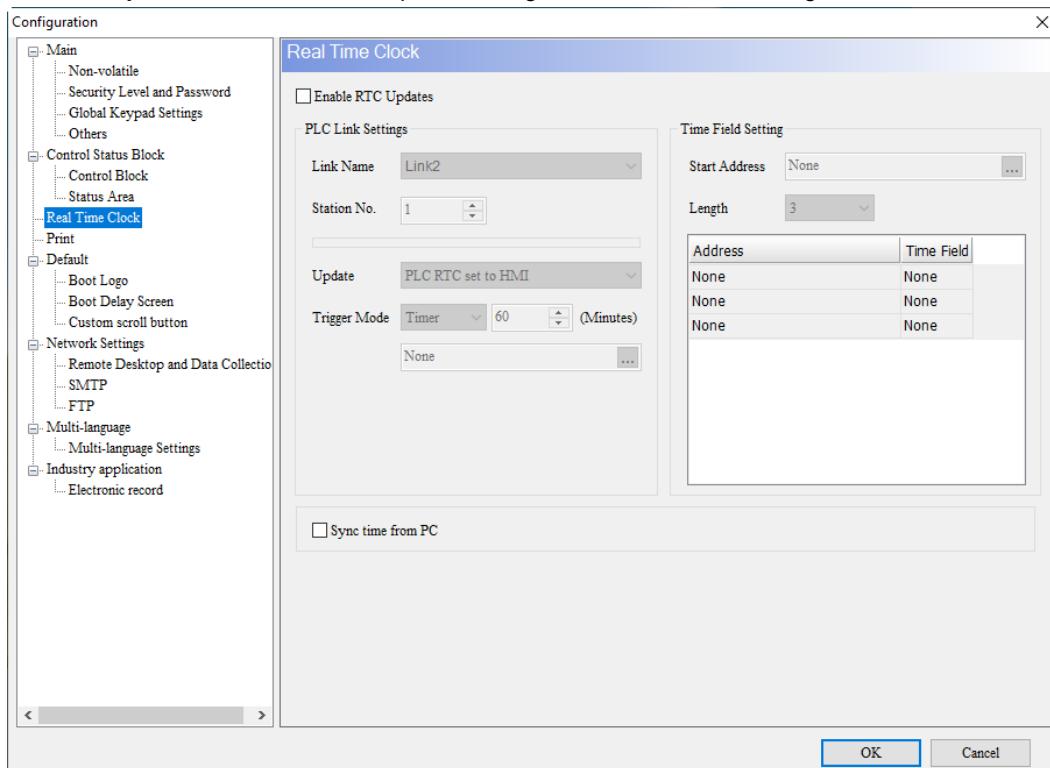
[Configuration] - [Main] - [Others]		
Screensaver Setup		
After exiting the screensaver	Return to original screen	If the <b>Enable Screensaver</b> check box is selected, you can select the next screen to go to after exiting the screensaver. Return to original screen means that the HMI goes to the original screen after exiting the screensaver.
	Choose screen	<ul style="list-style-type: none"> <li>If the <b>Enable Screensaver</b> check box is selected, you can also select the screen to go to by specifying its number, so the HMI switches to the designated screen after it exits the screensaver.</li> </ul> <p>Note: if you select Choose screen, you must set a screen for the screensaver.</p>  <p>The flowchart of the screensaver is shown as follows:</p> <pre> graph TD     S1([Screen 1]) --&gt; DS{Enable Screensaver?}     DS -- No --&gt; SD([Screensaver disabled])     DS -- Yes --&gt; RS[Return to original screen]     RS --&gt; S1     DS -- Yes --&gt; CS[Choose screen]     CS --&gt; S10([Screen 10])   </pre>
Show disk accessing error message		<ul style="list-style-type: none"> <li>When the data of Alarm, History Buffer, and Recipe are set to be stored as non-volatile data in the USB Disk or SD Card, you can use this option to determine whether to display the warning message if DOPSoft fails to access the external storage.</li> <li>The disk access failure occurs when the History Buffer is set to be stored in the USB Disk as non-volatile data, but the HMI cannot detect the USB Disk and write the data to the USB Disk. Therefore, if this check box is not selected, when the HMI cannot detect the USB Disk and write the data, no error messages appear to inform the user.</li> </ul>
Insufficient storage hint screen		<ul style="list-style-type: none"> <li>When the space of the HMI, USB Disk, and SD card is insufficient, a warning screen will be displayed.</li> <li>You can set to jump to a specified screen which reminds you to back up your data when the minimum storage space is almost full.</li> </ul> 

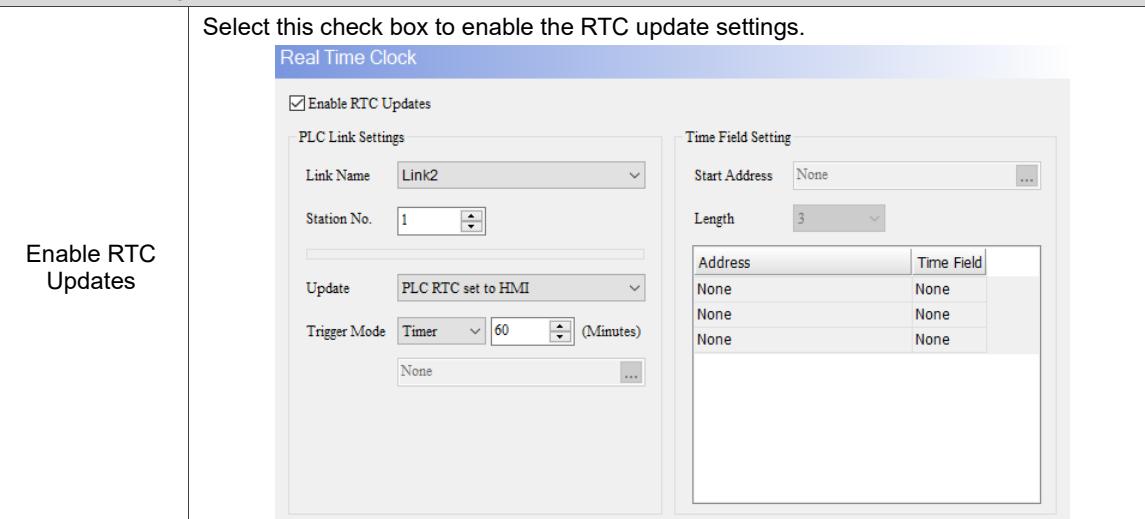
Table 27.1.6 Configuration - Real Time Clock

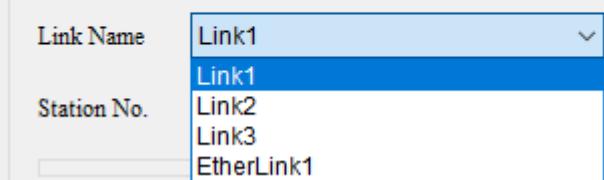
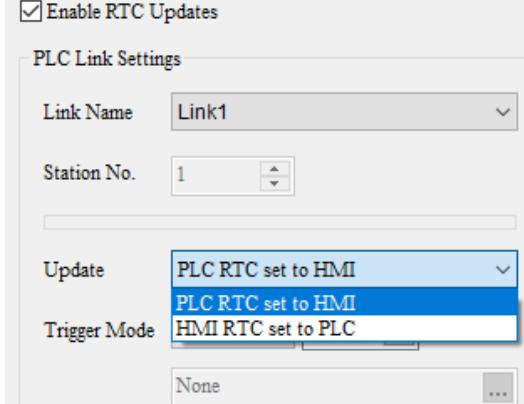
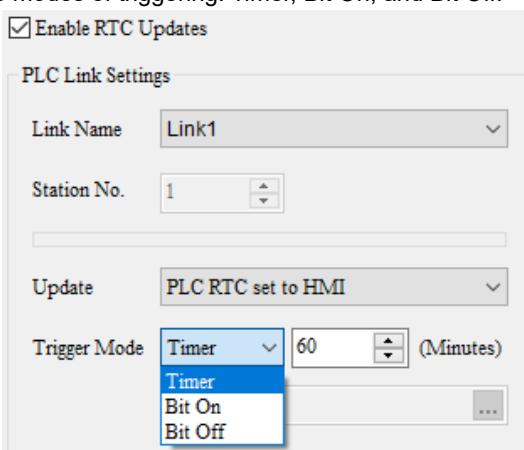
**[Configuration] - [Real Time Clock]**

Some PLC controllers do not have a built-in real-time clock (RTC), so you cannot use them for operations related to time settings, such as the timer switch to turn on/off the machine on a daily basis and access control. If a PLC controller has a built-in RTC, the HMI provides the synchronization function to synchronize the HMI RTC time to the PLC or vice versa. To use the RTC update settings, you must first select the **Enable RTC Updates** check box. RTC update settings include PLC Link Settings and Time Field Setting.

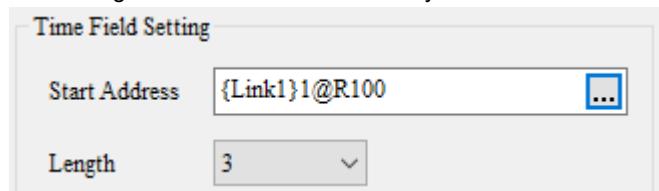
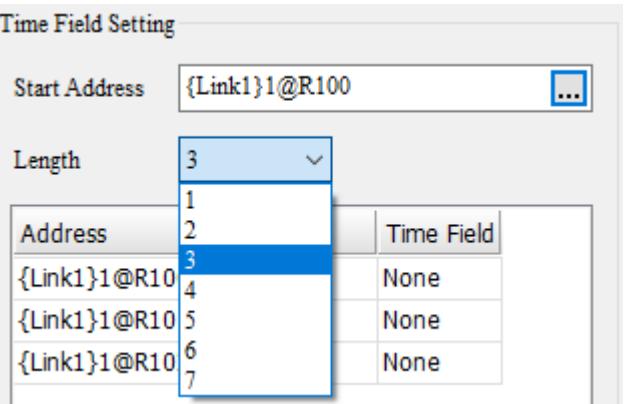
**Note:**

1. If you are using a Delta PLC, you do not need to set the Time Field Setting. The DOPSoft will gray out the setting fields and set them with the PLC's special RTC registers D1319 - D1313 automatically.
2. Some old Delta PLC models (ES/SS/EC) do not support the RTC update settings.

**PLC Link Settings**

[Configuration] - [Real Time Clock]	
PLC Link Settings	
Link Name	<p>You can select any of the link names, whether the controller connects to COM1/COM2/COM3 or Ethernet.</p> <p><input checked="" type="checkbox"/> Enable RTC Updates</p> <p>PLC Link Settings</p> 
Station No.	<ul style="list-style-type: none"> <li>■ You can set the PLC station number for the time update.</li> <li>■ If the selected controller does not support setting the station number, this setting is unavailable.</li> </ul>
Update	<p>There are two modes for users to choose: HMI RTC set to PLC and PLC RTC set to HMI.</p> <p><input checked="" type="checkbox"/> Enable RTC Updates</p> <p>PLC Link Settings</p> 
Trigger Mode	<ul style="list-style-type: none"> <li>■ There are three modes of triggering: Timer, Bit On, and Bit Off.</li> </ul> <p><input checked="" type="checkbox"/> Enable RTC Updates</p> <p>PLC Link Settings</p>  <ul style="list-style-type: none"> <li>■ If you choose the Timer mode, you can set how often the auto update is executed. The minimum time is 1 minute, the longest is 1440 minutes (1 day), and the system default is 60 minutes.</li> <li>■ If you select Bit On, the update setting is activated when the bit is on.</li> <li>■ If you select Bit Off, the update setting is activated when the bit is off.</li> <li>■ If you select Bit On or Bit Off, you need to set the trigger address additionally, which can be an internal memory address or a controller register address.</li> </ul>

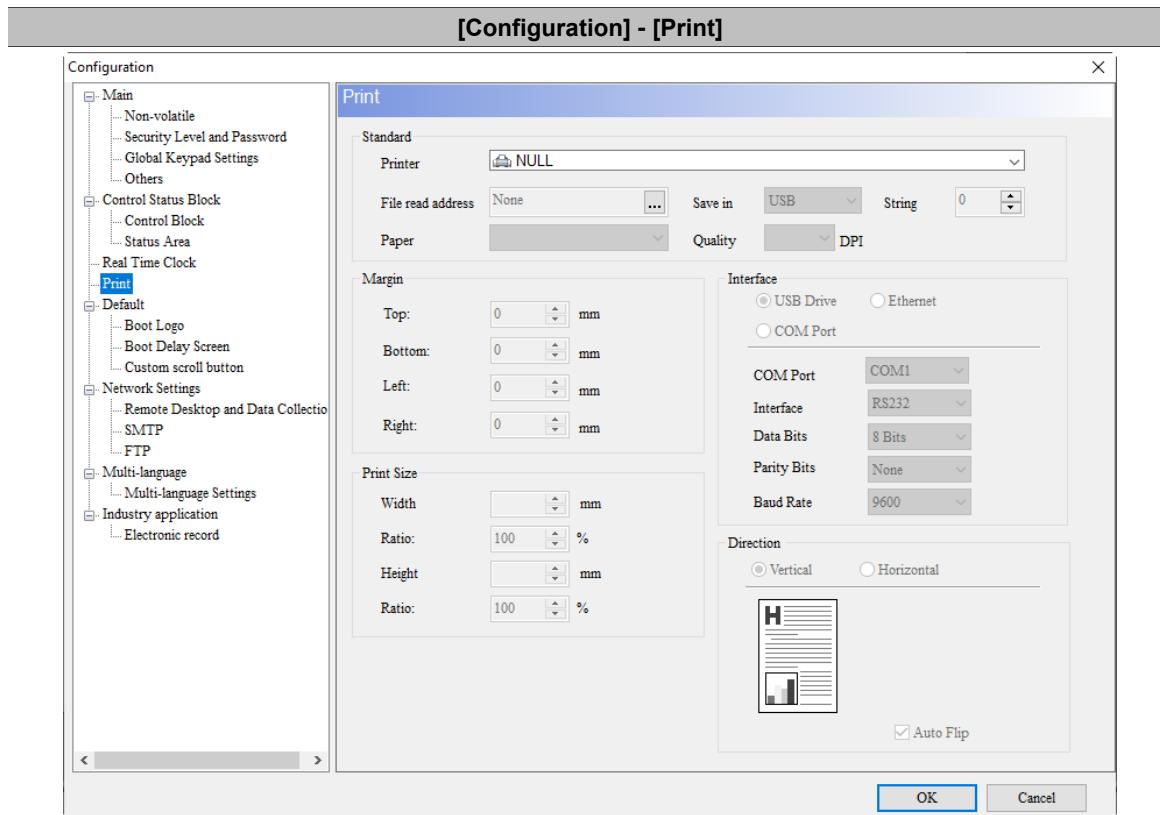
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[Configuration] - [Real Time Clock]	
Time Field Setting	
Start Address	<ul style="list-style-type: none"> <li>Set the controller register address for RTC time synchronization.</li> </ul>  <ul style="list-style-type: none"> <li>If you are using Delta PLCs, setting the start address is not required.</li> </ul>
Length	<ul style="list-style-type: none"> <li>You can choose the length based on the number of time fields you want to synchronize.</li> <li>The minimum length is 1 and the maximum is 7.</li> </ul>  <ul style="list-style-type: none"> <li>If you are using Delta PLCs, setting the length is not required.</li> </ul>
Sync time from PC	Select this check box to synchronize the time of the PC to the HMI.
Example	<p>Step 1: go to [Options] &gt; [Configuration] &gt; [Real Time Clock].</p> <p>Step 2: set the properties associated with RTC update.</p> <ol style="list-style-type: none"> <li>Select the <b>Enable RTC Updates</b> check box.</li> <li>Select [Link3] for the Link Name (Mitsubishi-FX3U and FX3G CPU Port).</li> <li>Select [PLC RTC set to HMI] for the Update.</li> <li>Select [Bit On] for the Trigger Mode.</li> <li>Set the trigger address to \$11.0.</li> <li>Set the Start Address to {Link3}1@D8013.</li> <li>Set the Length to 6.</li> <li>Select Second for the Time Field corresponding to {Link3}1@D8013.</li> <li>Select Minute for the Time Field corresponding to {Link3}1@D8014.</li> <li>Select Hour for the Time Field corresponding to {Link3}1@D8015.</li> <li>Select Day for the Time Field corresponding to {Link3}1@D8016.</li> <li>Select Month for the Time Field corresponding to {Link3}1@D8017.</li> <li>Select Year for the Time Field corresponding to {Link3}1@D8018.</li> </ol> <p>Step 3: after the settings are complete, click <b>OK</b> to exit the RTC update setting screen. Refer to the following figure.</p>

<b>[Configuration] - [Real Time Clock]</b>																															
Example	<ul style="list-style-type: none"> <li>Since the Mitsubishi-FX3U controller does not require setting the station number, there is no need to set the station number for the RTC update settings.</li> </ul> <p><b>Real Time Clock</b></p> <p><input checked="" type="checkbox"/> Enable RTC Updates</p> <p><b>PLC Link Settings</b></p> <table border="1"> <tr> <td>Link Name</td><td>Link3</td></tr> <tr> <td>Station No.</td><td>1</td></tr> <tr> <td>Update</td><td>PLC RTC set to HMI</td></tr> <tr> <td>Trigger Mode</td><td>Bit On</td></tr> <tr> <td> </td><td>60 (Minutes)</td></tr> <tr> <td> </td><td>\$11.0</td></tr> </table> <p><b>Time Field Setting</b></p> <table border="1"> <tr> <td>Start Address</td><td>{Link3}0@D8013</td></tr> <tr> <td>Length</td><td>6</td></tr> <tr> <td>Address</td><td>Time Field</td></tr> <tr> <td>{Link3}0@D8013</td><td>Second</td></tr> <tr> <td>{Link3}0@D8014</td><td>Minute</td></tr> <tr> <td>{Link3}0@D8015</td><td>Hour</td></tr> <tr> <td>{Link3}0@D8016</td><td>Day</td></tr> <tr> <td>{Link3}0@D8017</td><td>Month</td></tr> <tr> <td>{Link3}0@D8018</td><td>Year</td></tr> </table>	Link Name	Link3	Station No.	1	Update	PLC RTC set to HMI	Trigger Mode	Bit On		60 (Minutes)		\$11.0	Start Address	{Link3}0@D8013	Length	6	Address	Time Field	{Link3}0@D8013	Second	{Link3}0@D8014	Minute	{Link3}0@D8015	Hour	{Link3}0@D8016	Day	{Link3}0@D8017	Month	{Link3}0@D8018	Year
Link Name	Link3																														
Station No.	1																														
Update	PLC RTC set to HMI																														
Trigger Mode	Bit On																														
	60 (Minutes)																														
	\$11.0																														
Start Address	{Link3}0@D8013																														
Length	6																														
Address	Time Field																														
{Link3}0@D8013	Second																														
{Link3}0@D8014	Minute																														
{Link3}0@D8015	Hour																														
{Link3}0@D8016	Day																														
{Link3}0@D8017	Month																														
{Link3}0@D8018	Year																														
RTC update steps	<p>Step 1: create a Maintained button and set its Write Address to \$11.0.</p> <p>Step 2: set the State 0 text of the Maintained button to "RTC BIT OFF", and set the State 1 text to "RTC BIT ON" with the foreground color as red, representing the state of being triggered On.</p>																														
Create Maintained button																															
Create Numeric Entry elements	<p>Step 1: create 6 Numeric Entry elements, and set the addresses to {Link3}1@D8013 to {Link3}1@D8018 in sequence.</p> <p>Step 2: create another 6 Numeric Entry elements and set the internal system parameters as TIME_YEAR, TIME_MONTH, TIME_DAY, TIME_HOUR, TIME_MINUTE, and TIME_SECOND in sequence.</p> <p><b>PLC addresses</b></p> <table border="1"> <tr> <td>W:{Link3}0@D8018</td><td>W:{Link3}0@D8017</td><td>W:{Link3}0@D8016</td><td>W:{Link3}0@D8015</td><td>W:{Link3}0@D8014</td><td>W:{Link3}0@D8013</td></tr> <tr> <td>#####</td><td>#####</td><td>#####</td><td>#####</td><td>#####</td><td>#####</td></tr> </table> <p><b>Internal parameters</b></p> <table border="1"> <tr> <td>W:TIME_YEAR</td><td>W:TIME_MONTH</td><td>W:TIME_DAY</td><td>W:TIME_HOUR</td><td>W:TIME_MINUTE</td><td>W:TIME_SECOND</td></tr> <tr> <td>#####</td><td>#####</td><td>#####</td><td>#####</td><td>#####</td><td>#####</td></tr> </table>	W:{Link3}0@D8018	W:{Link3}0@D8017	W:{Link3}0@D8016	W:{Link3}0@D8015	W:{Link3}0@D8014	W:{Link3}0@D8013	#####	#####	#####	#####	#####	#####	W:TIME_YEAR	W:TIME_MONTH	W:TIME_DAY	W:TIME_HOUR	W:TIME_MINUTE	W:TIME_SECOND	#####	#####	#####	#####	#####	#####						
W:{Link3}0@D8018	W:{Link3}0@D8017	W:{Link3}0@D8016	W:{Link3}0@D8015	W:{Link3}0@D8014	W:{Link3}0@D8013																										
#####	#####	#####	#####	#####	#####																										
W:TIME_YEAR	W:TIME_MONTH	W:TIME_DAY	W:TIME_HOUR	W:TIME_MINUTE	W:TIME_SECOND																										
#####	#####	#####	#####	#####	#####																										

<b>[Configuration] - [Real Time Clock]</b>						
Example						
Execution Results	BIT OFF	<p>After creating the elements, compile and download the elements to the HMI. When the RTC Maintained button (BIT ON) is triggered, the system will set the HMI time as the PLC's RTC time, so the HMI internal system parameters TIME_YEAR, TIME_MONTH, TIME_DAY, TIME_HOUR, TIME_MINUTE, and TIME_SECOND will synchronize with the PLC's RTC.</p> <p>The HMI screen displays a button labeled "RTC BIT OFF". Below it are six digital input fields (D8013-D8018) showing the values 2013, 10, 30, 15, 4, and 20 respectively. Below these are six corresponding HMI system parameter labels: HMI_Year, HMI_Month, HMI_Day, HMI_Hour, HMI_Minute, and HMI_Second. Their respective values are 2017, 6, 16, 16, 55, and 33.</p>				
	BIT ON	<p>The HMI screen displays a button labeled "RTC BITON". Below it are six digital input fields (D8013-D8018) showing the values 2013, 10, 30, 15, 4, and 20 respectively. Below these are six corresponding HMI system parameter labels: HMI_Year, HMI_Month, HMI_Day, HMI_Hour, HMI_Minute, and HMI_Second. Their respective values are 2013, 10, 30, 15, 4, and 20.</p>				

Table 27.1.7 Configuration - Print

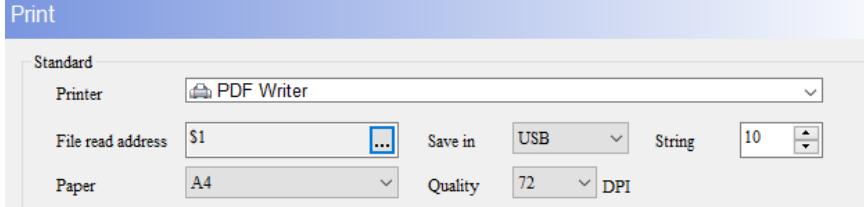


The Print settings currently support the Screen Print Setup function. Refer to Chapter 26 for details of the printing functions.

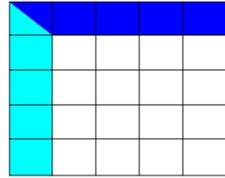
Printer	<p>The supported printers are as follows.</p>
---------	---

**[Configuration] - [Print]**

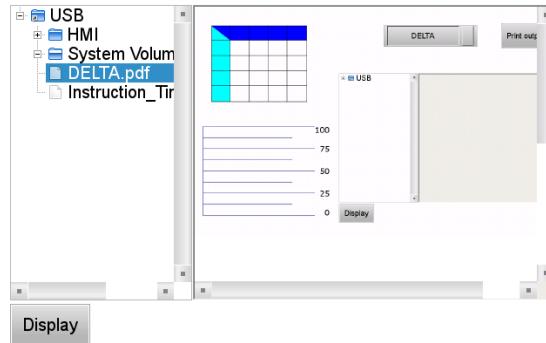
- This setting only supports PDF Writer. When a printer other than PDF Writer is selected, this option is not available.
- The file name can be user-defined and exported as a PDF file to the storage device. The exported PDF file can be viewed through the PDF Viewer.



File read address



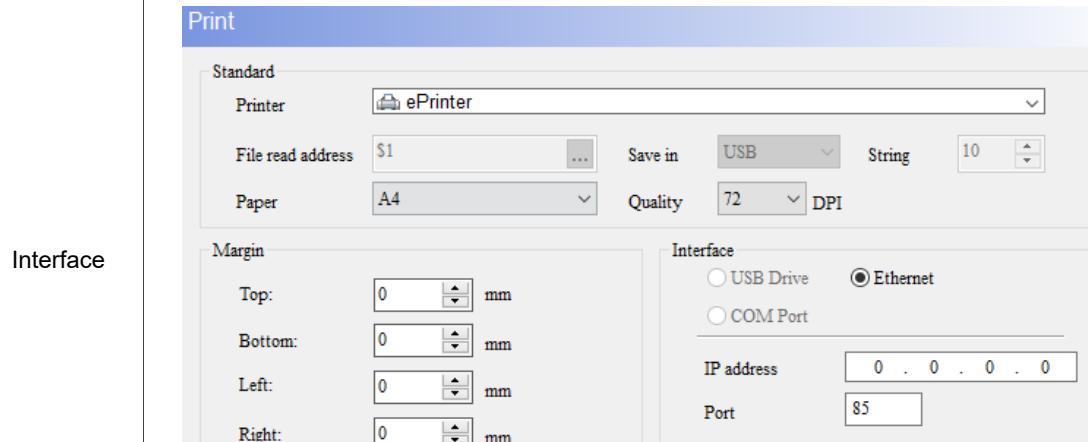
Print output



Save in	<ul style="list-style-type: none"> <li>■ This setting only supports PDF Writer. When a printer other than PDF Writer is selected, this option is not available.</li> <li>■ Specify the storage location of the PDF file, which includes HMI, USB, and SD.</li> </ul>
String	<ul style="list-style-type: none"> <li>■ This setting only supports PDF Writer. When a printer other than PDF Writer is selected, this option is not available.</li> <li>■ Set the string length required for the file name.</li> </ul>
Paper	The paper size varies depending on the printer you choose. It generally includes A4, Letter, Report, Custom, and other settings.
Quality	<ul style="list-style-type: none"> <li>■ Quality refers to the printing resolution.</li> <li>■ Currently the options of 72 and 203 DPI are available.</li> </ul>
Margin	<ul style="list-style-type: none"> <li>■ You can set the top, bottom, left, and right margins of the paper which is reserved for blank.</li> <li>■ The unit of the margin is mm, and the range is 0 - 550 mm.</li> </ul>
Print Size	Print size can also be set as scaling of the width and height. The maximum scaling ratio is 400%, and the minimum is 10%. The default is 100%.

**[Configuration] - [Print]**

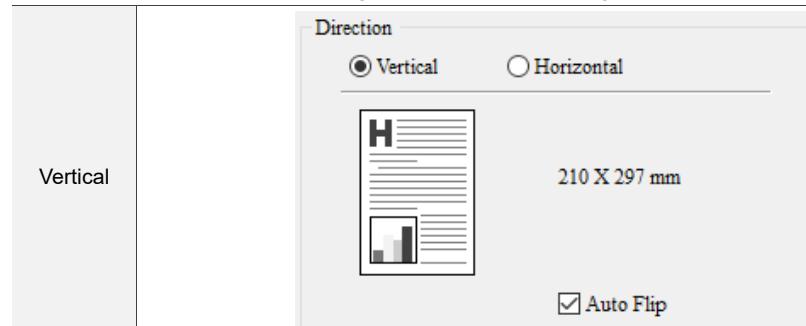
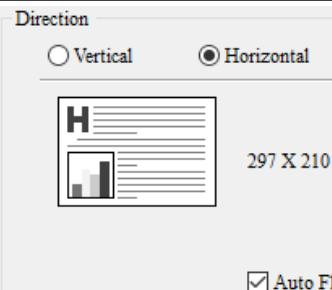
- Supports ePrinter printing. The transmission interface of this printer only includes Ethernet.

**Interface**

- When you select ePrinter, you need to input the PC's IP address and the printer port of 85.
- USB printing is supported, but the USB interface settings are usually determined by the printer model, and no further settings are required.

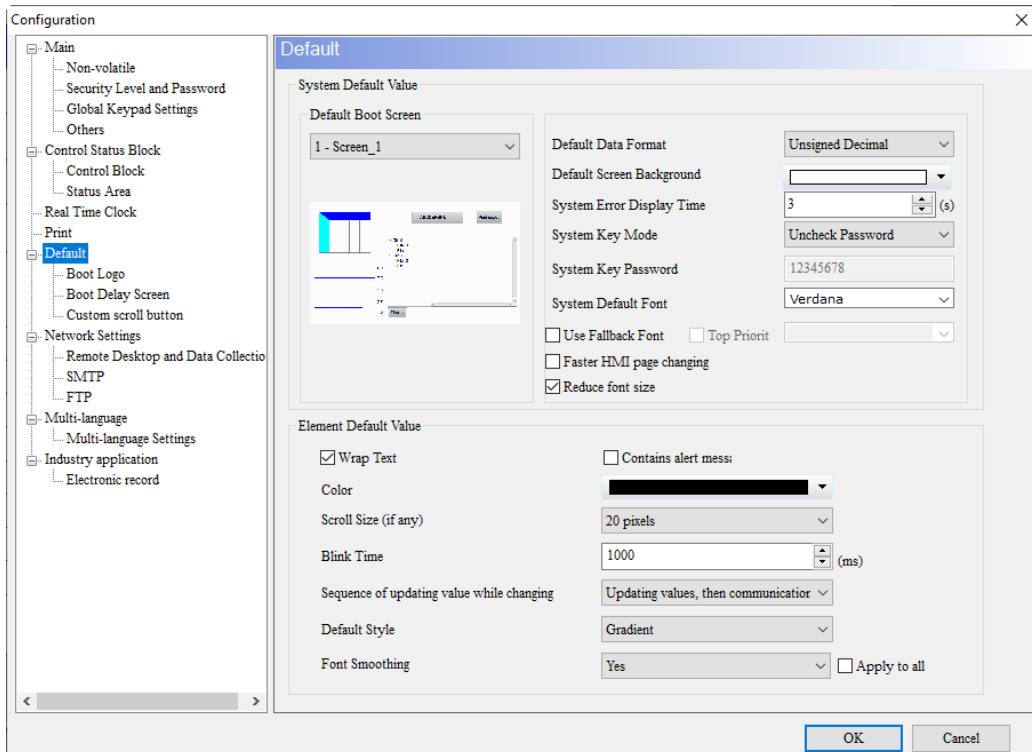
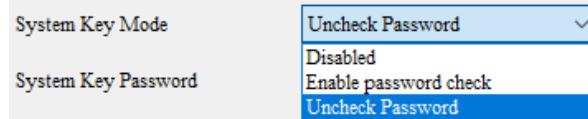
**Direction**

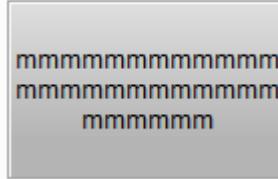
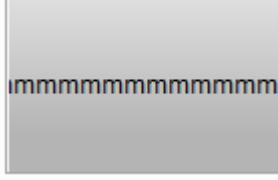
Direction includes vertical printing and horizontal printing.

**Horizontal****Auto Flip**

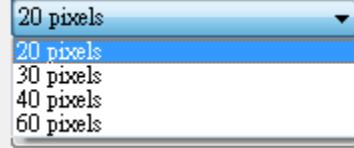
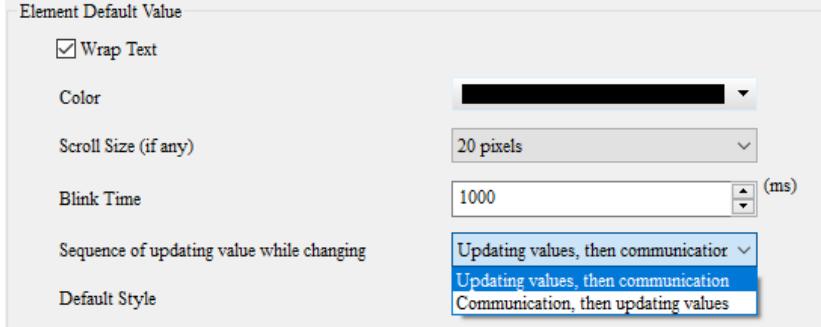
Auto Flip means that the printer can automatically return the paper and print the next page. If this check box is selected, when a page is printed, the printer will automatically change to the next page to continue printing; if not selected, after a page is printed, the printer returns the paper and you must manually change to the next page.

Table 27.1.8 Configuration - Default

<b>[Configuration] - [Default]</b>							
							
<b>System Default Value</b>							
Default Boot Screen	The initial screen at HMI startup. Users can choose from other set screens as the initial screen, and the default one is Screen_1.						
Default Data Format	The default data format when an element is created. The default data format is Unsigned Decimal.						
Default Screen Background	The background color when a screen is edited. The default background color is white.						
System Error Display Time	<p>The error message displaying time when an error occurs. The default is 3 seconds and the setting range is 0 - 5 seconds.</p> <p>Note: when the setting is 0 second, if any error occurs in the system, no message will be displayed.</p>						
System Key Mode	<p>System Key Mode sets the response of the HMI when you press the system key. The software provides three options: Disabled, Enable password check, and Uncheck Password.</p>  <table border="1"> <tr> <td>Disabled</td><td>When this function is set to Disabled, you cannot enter the HMI system screen when pressing the system key.</td></tr> <tr> <td>Enable password check</td><td>When this function is set to Enable password check, you will be asked to enter the System Key Password after pressing the system key.</td></tr> <tr> <td>Uncheck Password</td><td>When this function is set to Uncheck Password, you can enter the HMI system screen after pressing the system key without entering the System Key Password.</td></tr> </table>	Disabled	When this function is set to Disabled, you cannot enter the HMI system screen when pressing the system key.	Enable password check	When this function is set to Enable password check, you will be asked to enter the System Key Password after pressing the system key.	Uncheck Password	When this function is set to Uncheck Password, you can enter the HMI system screen after pressing the system key without entering the System Key Password.
Disabled	When this function is set to Disabled, you cannot enter the HMI system screen when pressing the system key.						
Enable password check	When this function is set to Enable password check, you will be asked to enter the System Key Password after pressing the system key.						
Uncheck Password	When this function is set to Uncheck Password, you can enter the HMI system screen after pressing the system key without entering the System Key Password.						
System Key Password	<p>System Key Password is the password required when the System Key Mode is set as Enable password check.</p> <p>You can change the System Key Password. The default System Key Password is 12345678.</p>						
System Default Font	<p>The system default font is Verdana. You can change the font.</p> 						

[Configuration] - [Default]							
System Default Value							
Use Fallback Font	<ul style="list-style-type: none"> <li>Unlike the DOP-B series models using pictures to present the texts, the DOP-100 series models directly download the texts. Because of this, when the operating system does not support the font set on the elements, the HMI will not be able to display the text normally after the elements are downloaded. Therefore, the firmware will load a set of default font. If the default font still cannot solve the problem of missing characters on the HMI, the HMI will refer to the setting of this option. If the <b>Use Fallback Font</b> check box is selected, when the firmware's default font is unavailable, the backup font of the software will be enabled.</li> <li>If the <b>Top Priority</b> check box is selected, it means that the backup font of the software will have higher priority over the default font of the firmware.</li> </ul>						
Faster HMI page changing	<ul style="list-style-type: none"> <li>Enabling this function will speed up the switching between pages, but it also occupies the memory space of the project screen.</li> <li>This function is mainly used to speed up the switching between pages when the screen has a large number of graphics and static texts.</li> </ul>						
Element Default Value							
Wrap Text	<ul style="list-style-type: none"> <li>If you select the <b>Wrap Text</b> check box and enter the text in an element, the text automatically wraps itself so it appears on multiple lines in an element, as shown in the following figure.</li> </ul> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>If this check box is not selected, the text extends beyond the element edge instead of wrapping itself automatically, as shown in the following figure.</li> </ul> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>In addition, if you need to convert the .dop file (B series program) for the DOP-100 models to edit, the software also provides the Wrap Text option for you.</li> </ul> <div style="border: 1px solid #ccc; padding: 10px; width: fit-content; margin-left: auto; margin-right: auto;"> <p style="margin: 0;">HMI Selection</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">HMI</td> <td style="width: 90%;"> <input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="DOP-107WV 65536 Colors"/> </td> </tr> <tr> <td colspan="2" style="padding-top: 10px;"> <input style="margin-right: 10px;" type="checkbox" value="Wrap Text"/> Wrap Text         </td> </tr> <tr> <td colspan="2" style="text-align: right; padding-top: 10px;"> <input style="border: 1px solid #0070C0; background-color: #0070C0; color: white; padding: 2px 10px;" type="button" value="OK"/> </td> </tr> </table> </div>	HMI	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="DOP-107WV 65536 Colors"/>	<input style="margin-right: 10px;" type="checkbox" value="Wrap Text"/> Wrap Text		<input style="border: 1px solid #0070C0; background-color: #0070C0; color: white; padding: 2px 10px;" type="button" value="OK"/>	
HMI	<input style="border: 1px solid #ccc; padding: 2px; width: 100%; height: 25px;" type="button" value="DOP-107WV 65536 Colors"/>						
<input style="margin-right: 10px;" type="checkbox" value="Wrap Text"/> Wrap Text							
<input style="border: 1px solid #0070C0; background-color: #0070C0; color: white; padding: 2px 10px;" type="button" value="OK"/>							
Element Font/Size/Color	The default font, size, and color of the text when an element is created. The default font, size and color of the elements are Arial, 12, and black respectively.						

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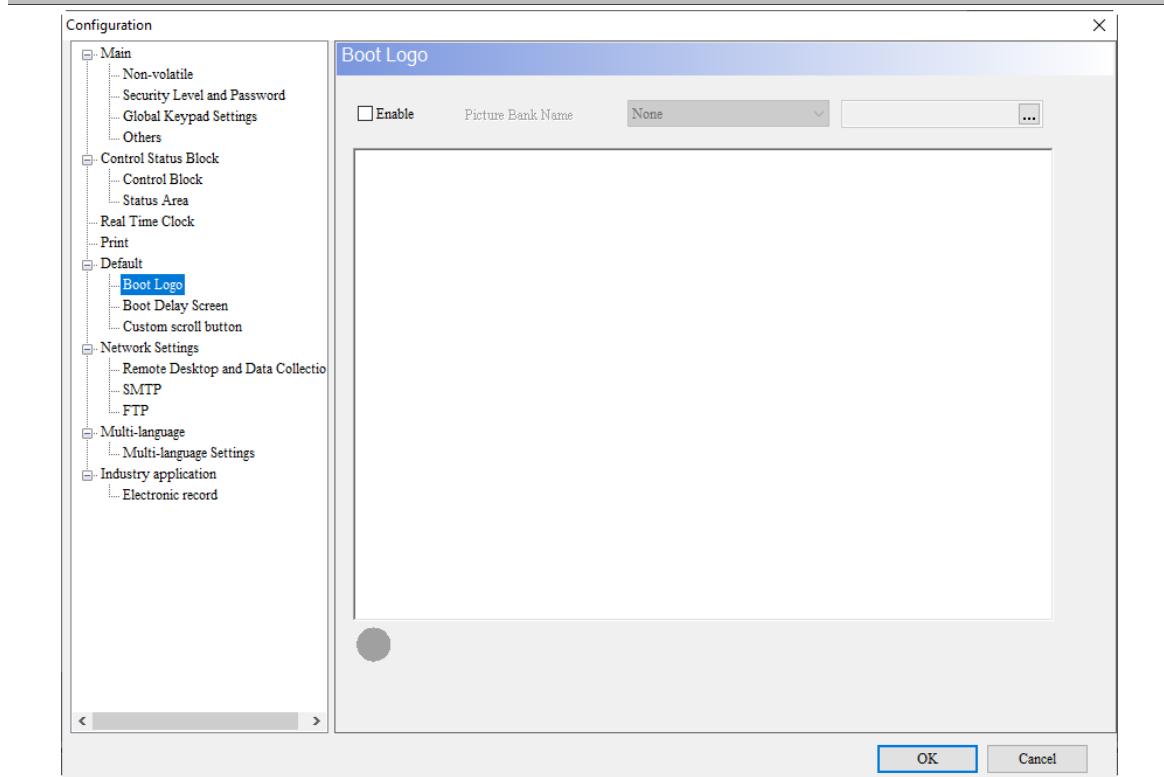
[Configuration] - [Default]																			
Element Default Value																			
Scroll Size	<p>This is for elements with scrolls, such as the history data and alarms tables. The default scroll size is 20 pixels, and the range is 20 - 60 pixels.</p> 																		
Blink Time	<ul style="list-style-type: none"> <li>This function is available only when an element has the property Blink.</li> </ul> <table border="1"> <thead> <tr> <th colspan="2">Others</th> </tr> </thead> <tbody> <tr> <td>Foreground Color</td><td>RGB(180, 180, 180)</td></tr> <tr> <td>Filled style</td><td>Gradient</td></tr> <tr> <td>Style</td><td>Standard</td></tr> <tr> <td>Function</td><td>Set to On</td></tr> <tr> <td>Blink</td><td>Yes</td></tr> <tr> <td>Min. Press Time (s)</td><td>0</td></tr> <tr> <td>User Security Level</td><td>0</td></tr> <tr> <td>Set Low Security</td><td>No</td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>The Blink Time setting is valid only when the Blink is set to Yes. The default value is 1000 ms and the range is 500 - 5000 ms.</li> </ul>	Others		Foreground Color	RGB(180, 180, 180)	Filled style	Gradient	Style	Standard	Function	Set to On	Blink	Yes	Min. Press Time (s)	0	User Security Level	0	Set Low Security	No
Others																			
Foreground Color	RGB(180, 180, 180)																		
Filled style	Gradient																		
Style	Standard																		
Function	Set to On																		
Blink	Yes																		
Min. Press Time (s)	0																		
User Security Level	0																		
Set Low Security	No																		
Sequence of updating value while changing	<p>Sometimes the HMI displays the value after the communication completes due to multi-task execution. To avoid confusion, DOPSoft provides the options of when to display the value. The options are [Updating values, then communication] and [Communication, then updating values].</p> 																		

[Configuration] - [Default]																			
Element Default Value																			
	<p>■ The elements supporting this function are as follows:</p> <table border="1"> <tr> <td style="width: 15%;">Entry element</td><td>Numeric Entry Character Entry Barcode Input</td></tr> <tr> <td></td><td>Set to On button Set to Off button Momentary button Maintained button Multistate button</td></tr> <tr> <td>Indicator element</td><td>Multistate indicator Range indicator Simple indicator</td></tr> <tr> <td>Meter element</td><td>Meter(1) / Meter(2) / Meter(3) / Meter(4)</td></tr> <tr> <td>Data Display element</td><td>Numeric Display Character Display General Message Display Moving Sign Display</td></tr> <tr> <td>Graph Display element</td><td>State Graphic Animated Graphic</td></tr> <tr> <td>Curve element</td><td>Curve Input</td></tr> <tr> <td>Pipe element</td><td>Pipe(1) / Pipe(2)</td></tr> <tr> <td>Analog element</td><td>Slider</td></tr> </table>	Entry element	Numeric Entry Character Entry Barcode Input		Set to On button Set to Off button Momentary button Maintained button Multistate button	Indicator element	Multistate indicator Range indicator Simple indicator	Meter element	Meter(1) / Meter(2) / Meter(3) / Meter(4)	Data Display element	Numeric Display Character Display General Message Display Moving Sign Display	Graph Display element	State Graphic Animated Graphic	Curve element	Curve Input	Pipe element	Pipe(1) / Pipe(2)	Analog element	Slider
Entry element	Numeric Entry Character Entry Barcode Input																		
	Set to On button Set to Off button Momentary button Maintained button Multistate button																		
Indicator element	Multistate indicator Range indicator Simple indicator																		
Meter element	Meter(1) / Meter(2) / Meter(3) / Meter(4)																		
Data Display element	Numeric Display Character Display General Message Display Moving Sign Display																		
Graph Display element	State Graphic Animated Graphic																		
Curve element	Curve Input																		
Pipe element	Pipe(1) / Pipe(2)																		
Analog element	Slider																		
Sequence of updating value while changing	<p>■ Here's the difference.</p> <table border="1"> <tr> <td style="width: 15%;">Updating values, then communication</td><td>If this option is selected, after the screen switches, the reading of values is normal without being affected by the communication.   <pre> graph TD     S1["Screen 1 D0 = 1"] --&gt; S2["Switch to Screen 2 and set D0 to 123"]     S2 --&gt; S3["Screen 2 Numeric Entry element D0 displays \"123\""]     S3 --&gt; S4["Obtain the updated value and then complete the communication"]     S4 --&gt; S5["The value of the Numeric Entry element D0 is \"123\""]   </pre> </td></tr> </table>	Updating values, then communication	If this option is selected, after the screen switches, the reading of values is normal without being affected by the communication.  <pre> graph TD     S1["Screen 1 D0 = 1"] --&gt; S2["Switch to Screen 2 and set D0 to 123"]     S2 --&gt; S3["Screen 2 Numeric Entry element D0 displays \"123\""]     S3 --&gt; S4["Obtain the updated value and then complete the communication"]     S4 --&gt; S5["The value of the Numeric Entry element D0 is \"123\""]   </pre>																
Updating values, then communication	If this option is selected, after the screen switches, the reading of values is normal without being affected by the communication.  <pre> graph TD     S1["Screen 1 D0 = 1"] --&gt; S2["Switch to Screen 2 and set D0 to 123"]     S2 --&gt; S3["Screen 2 Numeric Entry element D0 displays \"123\""]     S3 --&gt; S4["Obtain the updated value and then complete the communication"]     S4 --&gt; S5["The value of the Numeric Entry element D0 is \"123\""]   </pre>																		

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[Configuration] - [Default]		
Element Default Value		
Sequence of updating value while changing	Communication, then updating values	<p>The display of the Numeric Entry element lags due to screen switching.</p> <pre> graph TD     A[Screen 1 D0 = 1] --&gt; B[Switch to Screen 2 and set D0 to 123]     B --&gt; C[Screen 2 Numeric Entry element shortly blinks]     C --&gt; D[After the communication is complete, the obtained value is displayed.]     D --&gt; E[Numeric Entry element D0 displays "123"]   </pre>
Default Style		<ul style="list-style-type: none"> <li>■ Set the default fill style of the HMI, and the default is Gradient.</li> <li>■ The settings of this interface are global. When the Default Style is set, the Filled style setting of all created elements refers to the property settings here.</li> </ul>
Font Smoothing		<ul style="list-style-type: none"> <li>■ Set whether the text font of the HMI is smooth, and the default is Yes.</li> <li>■ When this effect is enabled, the text is rendered as anti-aliased.</li> <li>■ If the <b>Apply to all</b> check box is not selected, the setting will only apply to Text elements; if this check box is selected, the setting will be applied to all elements. The following message will be displayed to inform the user.</li> </ul>

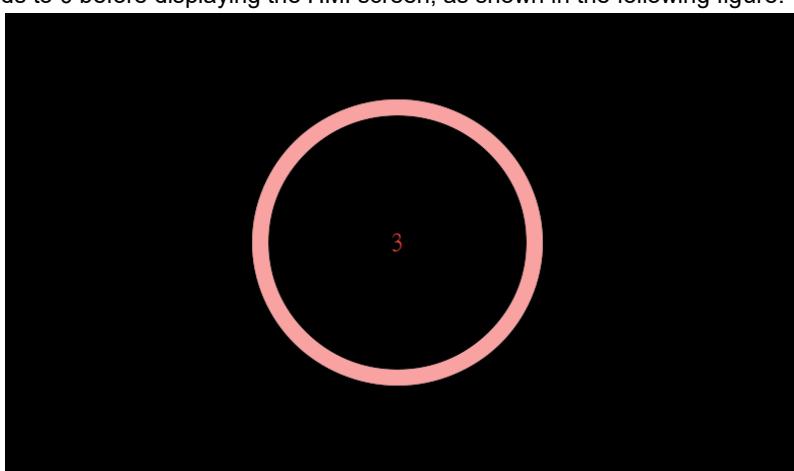
Table 27.1.9 Configuration - Boot Logo

**[Configuration] - [Default] - [Boot Logo]**

Enable	<ul style="list-style-type: none"> <li>■ After selecting the <b>Enable</b> check box, you may select the boot screen from the picture bank.</li> <li>■ To use files not in the picture bank, you can import the image files into the picture bank.</li> <li>■ If you select a GIF image file, the gray circle at the bottom appears as  , indicating that the GIF preview is available on the software.</li> <li>■ When this function is enabled, you can replace the HMI boot screen from [Tools] &gt; [Download Boot Screen]. Or you can execute Download All Data to download the boot screen.</li> </ul> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. After downloading the boot screen, cycle power on the HMI.</li> <li>2. Supported image file formats include BMP, JPG, GIF, ICO, and PNG.</li> <li>3. The file size of the boot screen imported to the software should be less than 3 Mbyte after conversion.</li> </ol>
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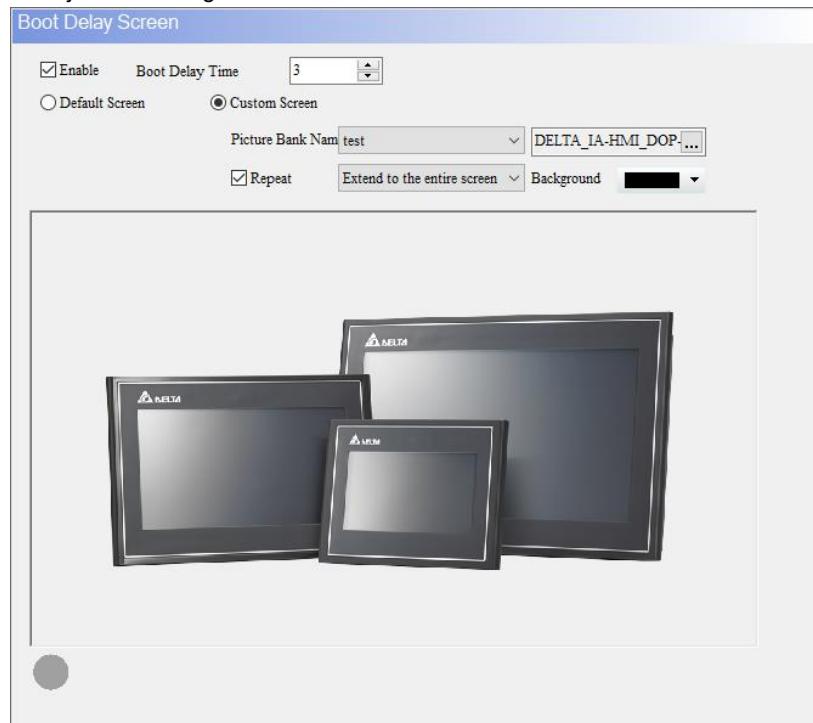
Table 27.1.10 Configuration - Boot Delay Screen

**[Configuration] - [Default] - [Boot Delay Screen]**

Enable	After selecting this check box, you can set the Boot Delay time.
Boot Delay Time	Set the delay time before the controller starts within a range of 0 - 255 seconds.
Default Screen	If the Boot Delay Time is set to be 3 seconds, and the Boot Delay Screen of the system default is being used, after the screen is downloaded to the HMI, the HMI counts down from 3 seconds to 0 before displaying the HMI screen, as shown in the following figure. 

**[Configuration] - [Default] - [Boot Delay Screen]**

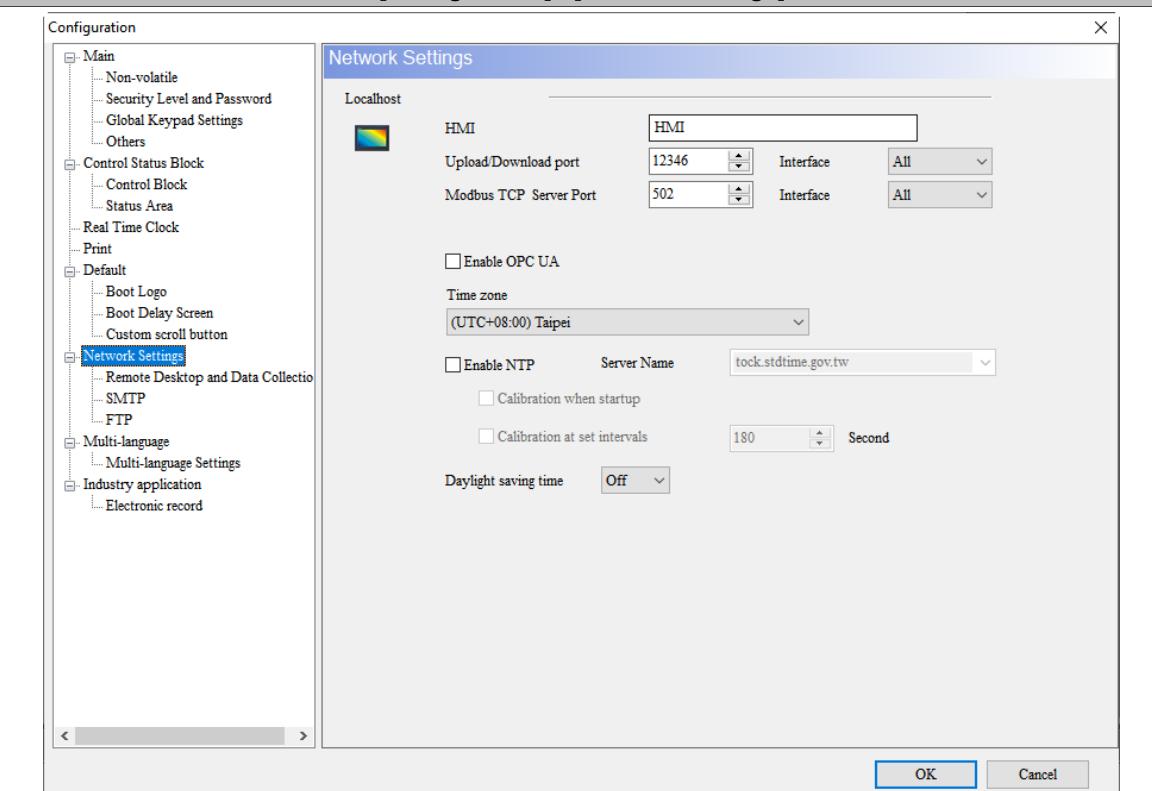
You can set the Boot Delay Screen with user-defined screens, and set whether to repeat the screen, whether the graphics should display in its actual size or fill the full element display area, and adjust the background color.



Custom  
Screen

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Table 27.1.11 Configuration - Network Settings

**[Configuration] - [Network Settings]**

HMI	You can set the HMI name for identification. If you use remote network monitoring or data sampling, you can easily identify which HMI is being monitored or accessed by the name.						
Upload/Download port	<ul style="list-style-type: none"> <li>The communication port is a specified connection address that allows programs on different computers to communicate. There are 65,536 ports, and some specific ports are reserved for specific programs.</li> <li>The default Upload/Download port of the HMI is 12346.</li> </ul>						
Modbus TCP Server Port	<ul style="list-style-type: none"> <li>The default communication port of Modbus TCP Server is 502.</li> <li>This port must be consistent with that of the Modbus TCP/IP controller.</li> </ul> <p><b>Localhost</b></p> <table border="1"> <tbody> <tr> <td>HMI</td> <td>12346</td> </tr> <tr> <td>Upload/Download port</td> <td>502</td> </tr> <tr> <td>Modbus TCP Server Port</td> <td></td> </tr> </tbody> </table>	HMI	12346	Upload/Download port	502	Modbus TCP Server Port	
HMI	12346						
Upload/Download port	502						
Modbus TCP Server Port							
Enable OPCUA	<ul style="list-style-type: none"> <li>You can also set the port numbers, but the settings for the Modbus TCP Server Port and the Modbus TCP/IP controller port must be the same.</li> <li>If the HMI is communicating with the Modbus software on the PC, change the port here instead of changing the port of the controller by going to [Options] &gt; [Communication Settings] &gt; [Ethernet1] &gt; [Device].</li> </ul>						
Time zone	You can choose the time zone according to where the HMI is located.						

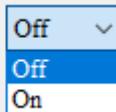
<b>[Configuration] - [Network Settings]</b>		
NTP	Enable NTP	<ul style="list-style-type: none"> <li>■ When you select this check box, the HMI can correct its time according to the network time.</li> <li>■ If you enable NTP, make sure the HMI network is smooth.</li> </ul>
	Server Name	You can select the server provided by the software or enter a local NTP server name.
	Calibration when startup	When you select this check box, the HMI corrects its time at startup.
	Calibration at set intervals	<ul style="list-style-type: none"> <li>■ After selecting this check box, you need to set the seconds. When the HMI enters the start screen, the time calibration starts after the time you set.</li> <li>■ The default is 180 seconds (the minimum is 10 seconds and the maximum is 99999 seconds).</li> </ul>
Daylight saving time	<ul style="list-style-type: none"> <li>■ By default, the Daylight saving time is Off.</li> <li>■ If your country has implemented daylight saving time, you can enable this option.</li> </ul>	<span style="font-size: small;">Daylight saving time</span> 

Table 27.1.12 Configuration - Remote Desktop and Data Collection

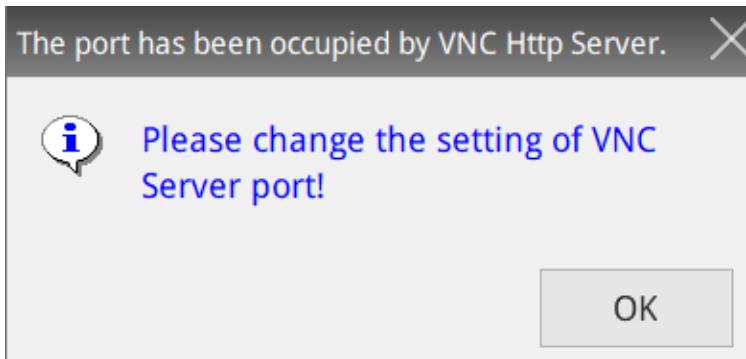
**[Configuration] - [Network Settings] - [Remote Desktop and Data Collection]**

**Remote Desktop**

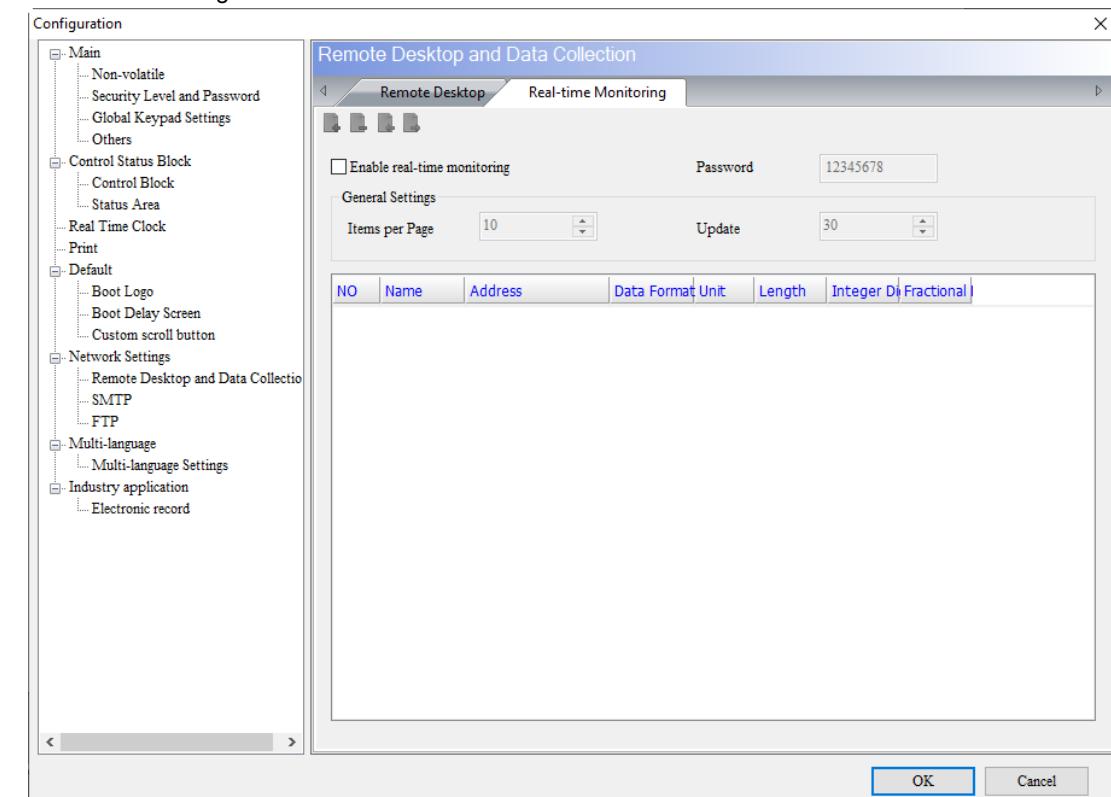
**eServer**

- You can change the password as required. The default password is 12345678.
- After eServer and eRemote are executed, you need to enter the password to monitor or access the HMI project data.

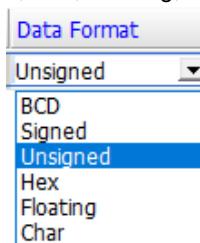
Password	
Sampling time	This is the frequency the eServer and eRemote execute sampling. The range is 100 - 5000 ms, and the default is 100 ms.

[Configuration] - [Network Settings] - [Remote Desktop and Data Collection]	
eServer	
Port	The connection port of eServer and eRemote is set to 12348. This port is different from the HMI Upload/Download Port; the communication ports are different for different programs.
Show warning when disconnected	<ul style="list-style-type: none"> <li>■ Select this check box to enable this function.</li> <li>■ When the HMI and eServer or eRemote are disconnected, the HMI will display the warning message of disconnection.</li> </ul>
Close warning window when the connection is restored	<ul style="list-style-type: none"> <li>■ Select the <b>Close warning window when the connection is restored</b> check box to enable this function.</li> <li>■ If this check box is selected, the warning window continues to appear until the connection of HMI and eServer or eRemote is restored.</li> <li>■ If this check box is not selected, the warning window for disconnection will only appear once.</li> </ul>
VNC	
	<ul style="list-style-type: none"> <li>■ VNC (Virtual Network Computing) is a software that can remotely monitor and operate the HMI. This software sends the keyboard and mouse actions and real-time screens through the network.</li> <li>■ To operate VNC through the web browser, the browser must support Java installation, otherwise the web page cannot be opened.</li> <li>■ JAVA versions of 1.7.0_45 and below are recommended.</li> </ul>
Enable	Select this check box to remotely monitor and operate the HMI by VNC.
Password	You can change the password as required. The default password is 12345678.
Port	<ul style="list-style-type: none"> <li>■ The default port is 5900. If you set the software connection port to 5902, you need to change the Port to 5902 as well when connecting with the VNC Viewer.</li> <li>■ Do not set the software connection port to 5800. If the port is set to 5800, the following message will appear to remind you to change the connection port after you download the screen to the HMI.</li> </ul> 
	<ul style="list-style-type: none"> <li>■ With the VNC Viewer web operation, all you need to do is enter the HMI IP address in the browser, set the port to 5800, and then you can enable the connection. If the default 5900 is not available for the software connection, enter 5800 for the connection port when operating with the browser. For example, <a href="http://192.168.123.148:5800">http://192.168.123.148:5800</a>.</li> </ul>

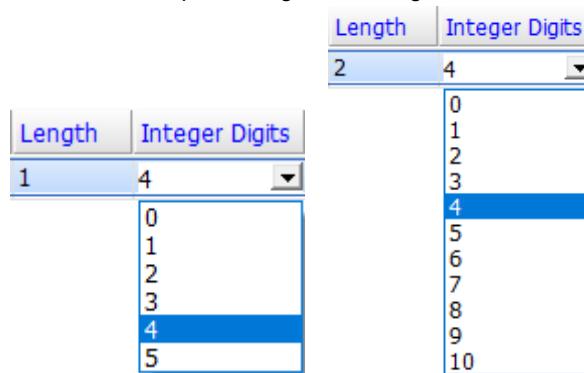
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**[Configuration] - [Network Settings] - [Remote Desktop and Data Collection]**
**Real-time Monitoring**


- Network Real-time Monitoring allows you to write values from the web page to the HMI; or when you write values to the HMI, you can monitor the values from the web page.
- The Real-time Monitoring interface provides multiple data formats. Supported data formats include BCD, Signed Decimal, Unsigned Decimal, Hex, Floating, and Char.



- You can set the Length of each data format to determine whether to read Word or Double Word. When the Length is 1, the integer can be set to up to 5 digits, meaning the data format is Word; when the Length is 2, the integer can be set to up to 10 digits, meaning the data format is Double Word.



- The input address can be in Word or Bit, which supports the internal memory address and the external PLC address.

**[Configuration] - [Network Settings] - [Remote Desktop and Data Collection]**

- To use Real-time Monitoring, select the **Enable real-time monitoring** check box and set the address in the software. Enter [http://\[HMI IP\]/RemoteMon/](http://[HMI IP]/RemoteMon/) on the browser. For example, <http://192.168.123.50/RemoteMon/>.

Then, you can see the following login screen. Enter the Network App password to log in. The letters R and M in the address should be capitalized, otherwise you cannot connect to the HMI through the web.

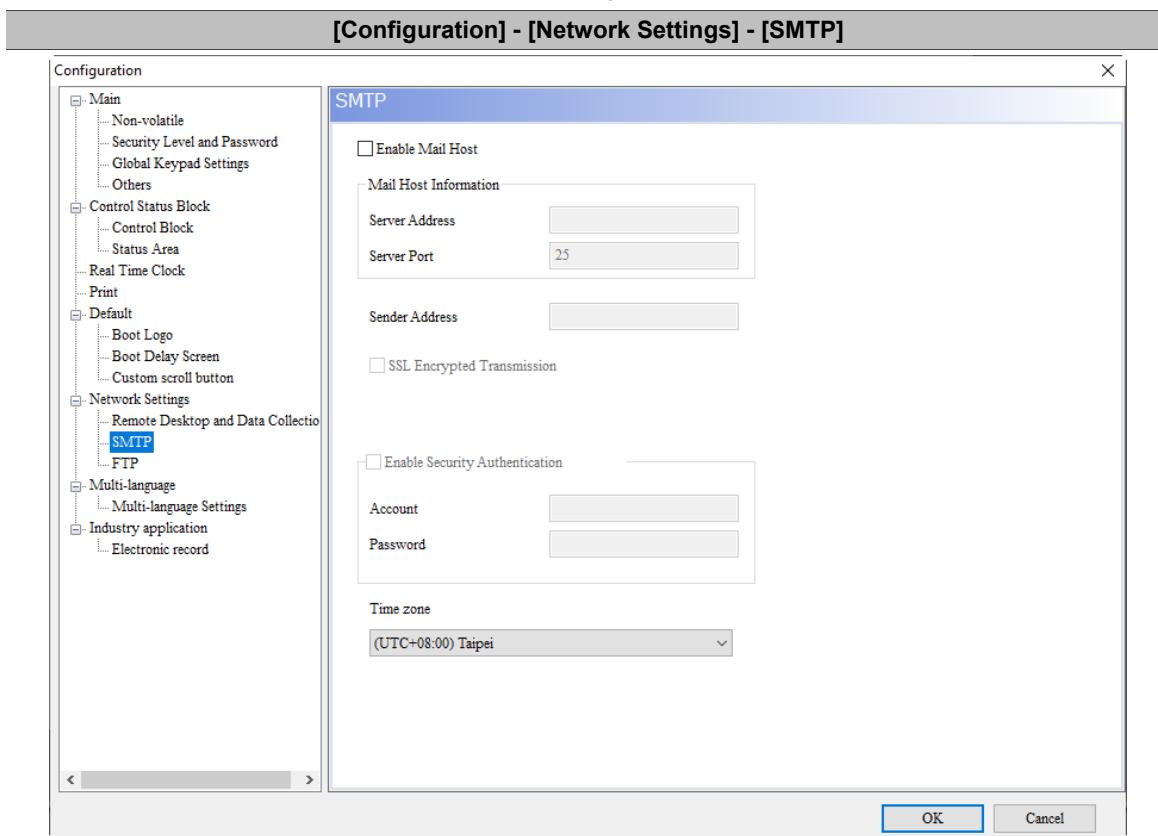
**Delta HMI Remote Monitoring**

Password:	<input type="text"/>
<b>Submit</b>	

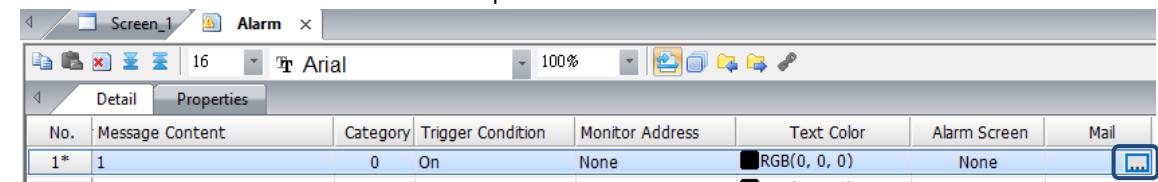
<b>Enable real-time monitoring</b> 	Select this check box and then you can add and delete monitoring addresses.																																								
<b>Add monitoring address</b>	<ul style="list-style-type: none"> <li>Click  to add a new monitoring address.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO</th> <th>Name</th> <th>Address</th> <th>Data Format</th> <th>Unit</th> <th>Length</th> <th>Integer Digits</th> <th>Fractional</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>None</td> <td>Unsigned</td> <td>Word</td> <td>2</td> <td>4</td> <td>0</td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Users can name the address. The name length can be up to 30 characters.</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO</th> <th>Name</th> <th>Address</th> <th>Data Format</th> <th>Unit</th> <th>Length</th> <th>Integer Digits</th> <th>Fractional</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Delta</td> <td>\$100</td> <td>Unsigned</td> <td>Word</td> <td>2</td> <td>10</td> <td>0</td> </tr> <tr> <td>2</td> <td>HMI</td> <td>{Link2}1@D100</td> <td>Unsigned</td> <td>Word</td> <td>1</td> <td>5</td> <td>0</td> </tr> </tbody> </table>	NO	Name	Address	Data Format	Unit	Length	Integer Digits	Fractional	1	None	Unsigned	Word	2	4	0		NO	Name	Address	Data Format	Unit	Length	Integer Digits	Fractional	1	Delta	\$100	Unsigned	Word	2	10	0	2	HMI	{Link2}1@D100	Unsigned	Word	1	5	0
NO	Name	Address	Data Format	Unit	Length	Integer Digits	Fractional																																		
1	None	Unsigned	Word	2	4	0																																			
NO	Name	Address	Data Format	Unit	Length	Integer Digits	Fractional																																		
1	Delta	\$100	Unsigned	Word	2	10	0																																		
2	HMI	{Link2}1@D100	Unsigned	Word	1	5	0																																		
<b>Delete monitoring address</b>	Select the number of the monitoring address to be deleted, and then click  to delete it.																																								
<b>Import CSV content</b>	After making changes to the exported CSV file content, click  to import the monitoring address parameters.																																								
<b>Export CSV content</b>	Export the monitoring address content as a CSV file. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> <th>G</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Define Nar.Address</td> <td>Memory FcType</td> <td>Read Coun</td> <td>Integer</td> <td>Fraction</td> <td></td> </tr> <tr> <td>2</td> <td>台達</td> <td>\$100 Unsigned</td> <td>Word</td> <td>1</td> <td>5</td> <td>0</td> </tr> <tr> <td>3</td> <td>Delta</td> <td>{Link2}1@Unsigned</td> <td>Word</td> <td>1</td> <td>5</td> <td>0</td> </tr> </tbody> </table>	A	B	C	D	E	F	G	1	Define Nar.Address	Memory FcType	Read Coun	Integer	Fraction		2	台達	\$100 Unsigned	Word	1	5	0	3	Delta	{Link2}1@Unsigned	Word	1	5	0												
A	B	C	D	E	F	G																																			
1	Define Nar.Address	Memory FcType	Read Coun	Integer	Fraction																																				
2	台達	\$100 Unsigned	Word	1	5	0																																			
3	Delta	{Link2}1@Unsigned	Word	1	5	0																																			
<b>Password</b>	<ul style="list-style-type: none"> <li>The default password is 12345678.</li> <li>When you enter the connection address on the web page, it requires you to enter this password.</li> </ul>																																								
<b>Items per Page</b>	<ul style="list-style-type: none"> <li>You can set the number of monitoring addresses to display per page.</li> <li>The default is 10 addresses (the minimum is 1 address and the maximum is 20 addresses).</li> </ul>																																								
<b>Update (s)</b>	The update frequency of the screen after the values are changed. The default is 30 seconds (the minimum is 1 second and the maximum is 30 seconds).																																								

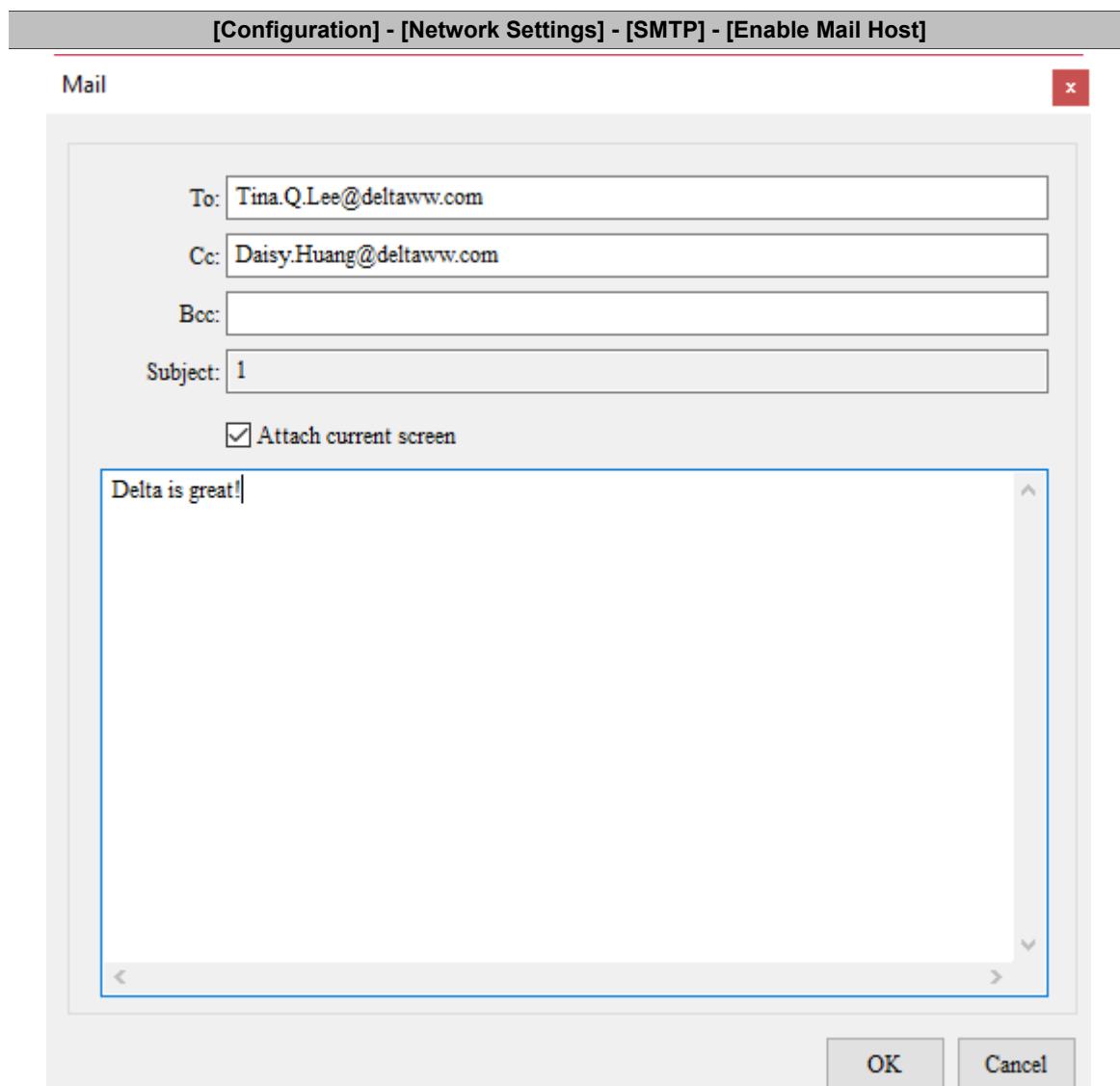
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Table 27.1.13 Configuration - SMTP



- SMTP is short for Simple Mail Transfer Protocol. This server is for sending messages. SMTP is a set of rules for sending mails from a source address to a destination address, and it controls how the message is transferred.
- DOPSoft provides the SMTP function to notify you with an e-mail when an alarm occurs.
- After setting the SMTP parameters, you must also go to [Options] > [Alarm Settings] and click the  button in the Mail column to fill in the recipient email and other alarm information.





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To enable SMTP, select the **Enable Mail Host** check box first, and then you can set the server address, server port, and security authentication of the account and password.

	<p>This address is the Mail Server IP created by the user. Set up the Mail Server environment or search for free mail server on the Internet before using SMTP.</p> <p><input type="checkbox"/> Enable Mail Host</p> <p>Mail Host Information</p> <table border="1"> <tr> <td>Server Address</td><td><input type="text"/></td></tr> <tr> <td>Server Port</td><td><input type="text" value="25"/></td></tr> </table>	Server Address	<input type="text"/>	Server Port	<input type="text" value="25"/>
Server Address	<input type="text"/>				
Server Port	<input type="text" value="25"/>				
Server Port	The default server port is 25 which is the general SMTP communication port.				
Sender Address	Enter the sender's email address.				

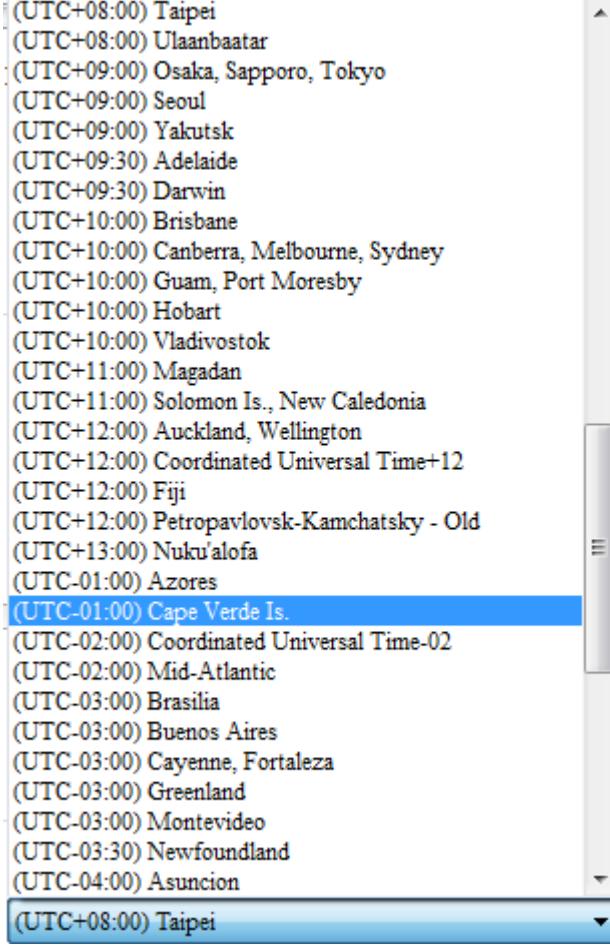
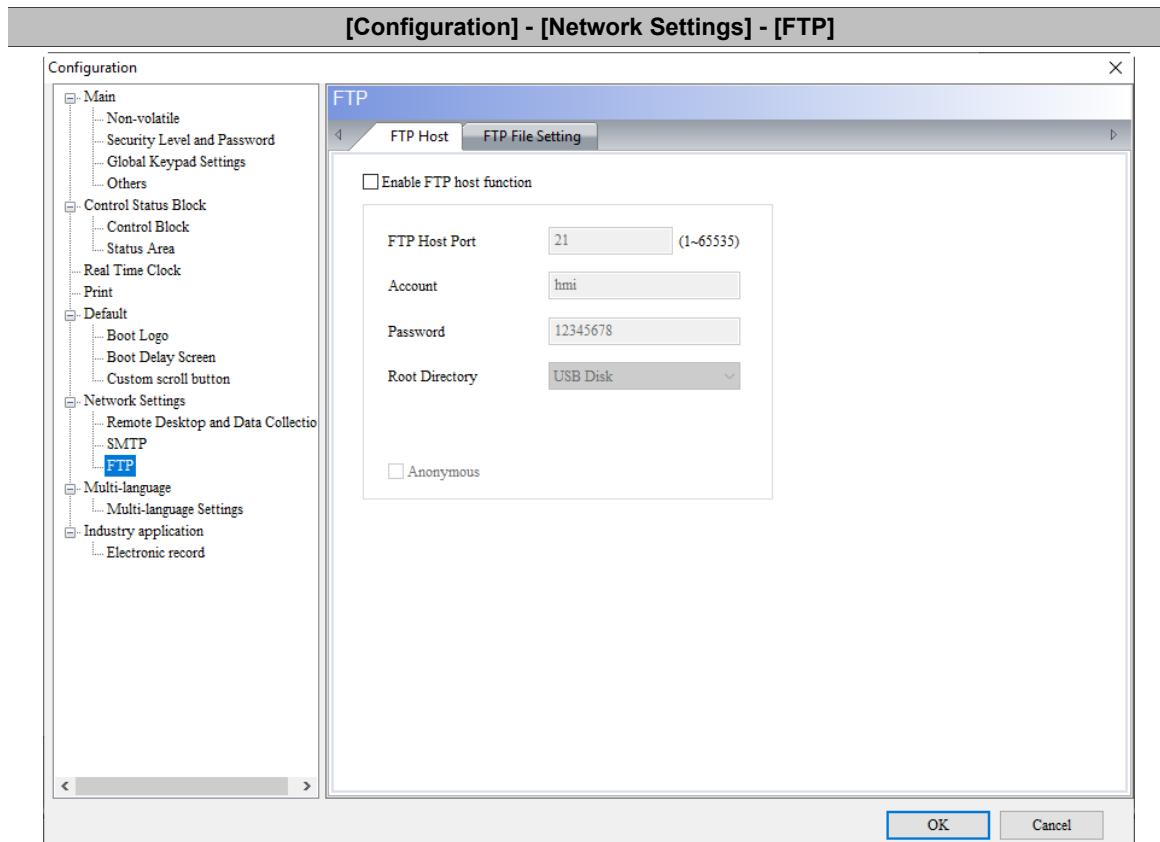
<b>[Configuration] - [Network Settings] - [SMTP] - [Enable Mail Host]</b>	
SSL Encrypted Transmission	<ul style="list-style-type: none"> <li>■ SSL is short for Secure Sockets Layer which provides secure transmission over the Internet. SSL was first proposed by Netscape with the goal of ensuring the confidentiality and integrity of the communication between two applications, as well as verifying the identity of the server.</li> <li>■ To use SSL encryption, the e-mail program you use must also support this feature.</li> <li>■ Gmail itself also requires SSL encryption. To send a message using Gmail, you need to make the following settings.           <ol style="list-style-type: none"> <li>1. Sign in to your Gmail account, and then click <b>Google account</b>.</li> <li>2. Select [Sign-in &amp; security].</li> <li>3. Go to the bottom of the page and enable [Allow less secure apps].</li> </ol> </li> <li>■ After finishing the preceding settings, you can use Gmail to receive alarm messages.</li> </ul>
Enable Security Authentication	<ul style="list-style-type: none"> <li>■ Before enabling the security authentication function, you must select the <b>Enable Mail Host</b> check box first to set the account and password.</li> <li>■ If you have set the authentication of the account and password when setting up the SMTP server, you need to select this check box.</li> </ul>
Account	<ul style="list-style-type: none"> <li>■ The account and password are based on the account and password required by the SMTP server. When you set up the SMTP Mail Server, you must first enter a set of account and password if you selected the <b>Enable Security Authentication</b> check box. This set of account and password is used to check whether the recipient is a legitimate backend email user. This avoids unattended emails taking up spaces in the system and creating potential security issues.</li> </ul>
Password	<ul style="list-style-type: none"> <li>■ Note that the format of the account will be different because of the different formats required by each SMTP Mail Server. Contact your MIS to inquire about the guidelines.</li> </ul>
Time zone	<p>The HMI provides a time zone feature that allows you to select the local time zone so that the HMI does not have time differences between places and the time it sends the alarm message is also more precise.</p>  <p>The list contains the following entries:</p> <ul style="list-style-type: none"> <li>(UTC+08:00) Taipei</li> <li>(UTC+08:00) Ulaanbaatar</li> <li>(UTC+09:00) Osaka, Sapporo, Tokyo</li> <li>(UTC+09:00) Seoul</li> <li>(UTC+09:00) Yakutsk</li> <li>(UTC+09:30) Adelaide</li> <li>(UTC+09:30) Darwin</li> <li>(UTC+10:00) Brisbane</li> <li>(UTC+10:00) Canberra, Melbourne, Sydney</li> <li>(UTC+10:00) Guam, Port Moresby</li> <li>(UTC+10:00) Hobart</li> <li>(UTC+10:00) Vladivostok</li> <li>(UTC+11:00) Magadan</li> <li>(UTC+11:00) Solomon Is., New Caledonia</li> <li>(UTC+12:00) Auckland, Wellington</li> <li>(UTC+12:00) Coordinated Universal Time+12</li> <li>(UTC+12:00) Fiji</li> <li>(UTC+12:00) Petropavlovsk-Kamchatsky - Old</li> <li>(UTC+13:00) Nuku'alofa</li> <li>(UTC-01:00) Azores</li> <li><b>(UTC-01:00) Cape Verde Is.</b></li> <li>(UTC-02:00) Coordinated Universal Time-02</li> <li>(UTC-02:00) Mid-Atlantic</li> <li>(UTC-03:00) Brasilia</li> <li>(UTC-03:00) Buenos Aires</li> <li>(UTC-03:00) Cayenne, Fortaleza</li> <li>(UTC-03:00) Greenland</li> <li>(UTC-03:00) Montevideo</li> <li>(UTC-03:30) Newfoundland</li> <li>(UTC-04:00) Asuncion</li> <li>(UTC+08:00) Taipei</li> </ul>

Table 27.1.14 Configuration - FTP



- The FTP Server function allows you to download the alarms, history data, recipes, and operation logs saved in the USB Disk or SD Card through the Internet to read on the PC; you can also upload the files in the PC to the USB Disk or SD Card.

FTP rules		Description	
Supported connections	Supported HMI	Net-based HMI	
	File transfer software		
	Windows Explorer		
	DOS Command Line		
Connection limit	Allows 3 FTP clients to connect at the same time		
	Automatically disconnects when the idle time is over 90 seconds		
Login method	Anonymous login	Unable to add directories	
		Unable to upload files	
		Unable to download files	
		Unable to delete files	
		Can change file names	
	Account login	Can add directories	
		Can upload files	
		Can download files	
		Can delete files	
		Can change file names	

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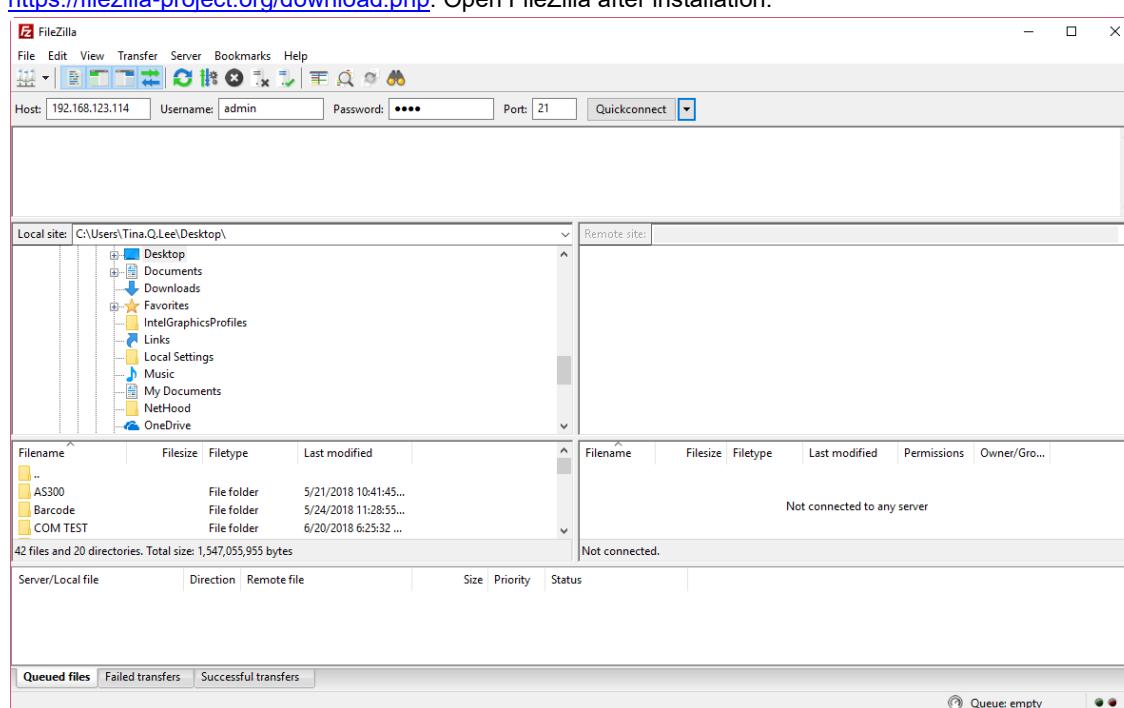
### [Configuration] - [Network Settings] - [FTP]

FTP rules	Description
File transfer rules	Unlimited traffic
	Supports resume download
	Unlimited transfer file size
	Maximum file name length is 260 bytes
	Can change file names
	Supports Chinese file names
	Encryption is not supported
	Supports active mode / passive mode connection
	When the FTP is transferring files, you can access the system directory

- The FTP supports three connection methods. Refer to the following for more information.

#### 1. File transfer software

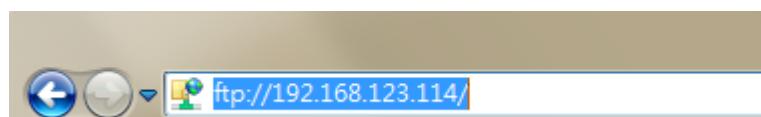
You need to use an FTP client software to upload or download files from the FTP Server provided by the HMI, or use the Windows Explorer or DOS Command line to connect to the FTP Server. The file transfer software in this example is FileZilla. This is a free software which you can download from: <https://filezilla-project.org/download.php>. Open FileZilla after installation.



Name	Action description
Host	Enter the HMI IP address. The IP address is 192.168.123.114 in this example.
Username	Enter the same username as the software setting, which is "admin".
Password	Enter the same password as the software setting, which is "1234".
Port	Enter the same port as the software setting, which is "21".
Quickconnect	Before executing this button, make sure the preceding settings are done.

#### 2. Windows Explorer

Open Windows Explorer, enter <ftp://192.168.123.114/>, and then enter the account and password to log in to the FTP.



**[Configuration] - [Network Settings] - [FTP]**

Once you are logged in, you can see all the files in the USB Disk.

**3. DOS Command Line**

Enter [ftp 192.168.123.114](ftp://192.168.123.114) in the command prompt, and then enter the account (admin) and password (1234) to connect to the FTP.

**Command Prompt - ftp 192.168.123.114**

```
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Tina.Q.Lee>ftp 192.168.123.114
Connected to 192.168.123.114.
220 Welcome to Delta HMI FTP service.
200 Always in UTF8 mode.
User (192.168.123.114:(none)): admin
331 Please specify the password.
Password:
230 Login successful.
ftp>
```

In the ftp command, you can enter "help" to see the supported commands.

**Command Prompt - ftp 192.168.123.114**

```
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Tina.Q.Lee>ftp 192.168.123.114
Connected to 192.168.123.114.
220 Welcome to Delta HMI FTP service.
200 Always in UTF8 mode.
User (192.168.123.114:(none)): admin
331 Please specify the password.
Password:
230 Login successful.
ftp> help
Commands may be abbreviated. Commands are:

!          delete      literal      prompt      send
?          debug       ls           put         status
append    dir        mdelete     pwd         trace
ascii     disconnect  mdir        quit        type
bell      get        mget        quote       user
binary   glob       mkdir       recv        verbose
bye      hash       mls         remotehelp
cd       help       mput       rename
close    lcd        open        rmdir
```

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**[Configuration] - [Network Settings] - [FTP]**

Enter "dir" command to see the list of all the files currently in the USB Disk.

```

Command Prompt - ftp 192.168.123.114
ftp> help
Commands may be abbreviated. Commands are:
!
?      delete      literal      prompt      send
append  debug       ls          put         status
ascii   disconnect  mdelete    pwd          trace
bell    get         mdirc      quit        type
binary  glob        mget       quote      user
bye     hash        mkdirc     recv        verbose
cd      help        mput      rename
close   lcd         open       rmdir
ftp> dir
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rwxrwxrwx  1 0      0      481517 Jan  09  2018 5014031204-EN.abc
-rwxrwxrwx  1 0      0      511544 May 28  2018 5014078200 -EN.pdf
-rwxrwxrwx  1 0      0      550702 Mar 15  2018 5014079200 -EN.pdf
-rwxrwxrwx  1 0      0      317449 Apr 09  2018 5014093200 -EN.pdf
-rwxrwxrwx  1 0      0      1728 Jun 14  2018 Alarm_2018_6_14_11_18_33_Group-1.csv
-rwxrwxrwx  1 0      0      1728 Jun 14  2018 Alarm_2018_6_14_11_18_46_Group-2.csv
-rwxrwxrwx  1 0      0      1728 Jun 14  2018 Alarm_2018_6_14_11_18_55_Group-3.csv
drwxrwxrwx  3 0      0      4096 May 23  2018 HMI
drwxrwxrwx  2 0      0      4096 May 23  2018 System Volume Information
-rwxrwxrwx  1 0      0      80922 May 31  2018 back.wmf
-rwxrwxrwx  1 0      0      29074 May 31  2018 bottom.wmf
-rwxrwxrwx  1 0      0      123314 May 31  2018 dop-115xx-quick-start.wmf
226 Directory send OK.
ftp: 947 bytes received in 0.03Seconds 33.82Kbytes/sec.
ftp>

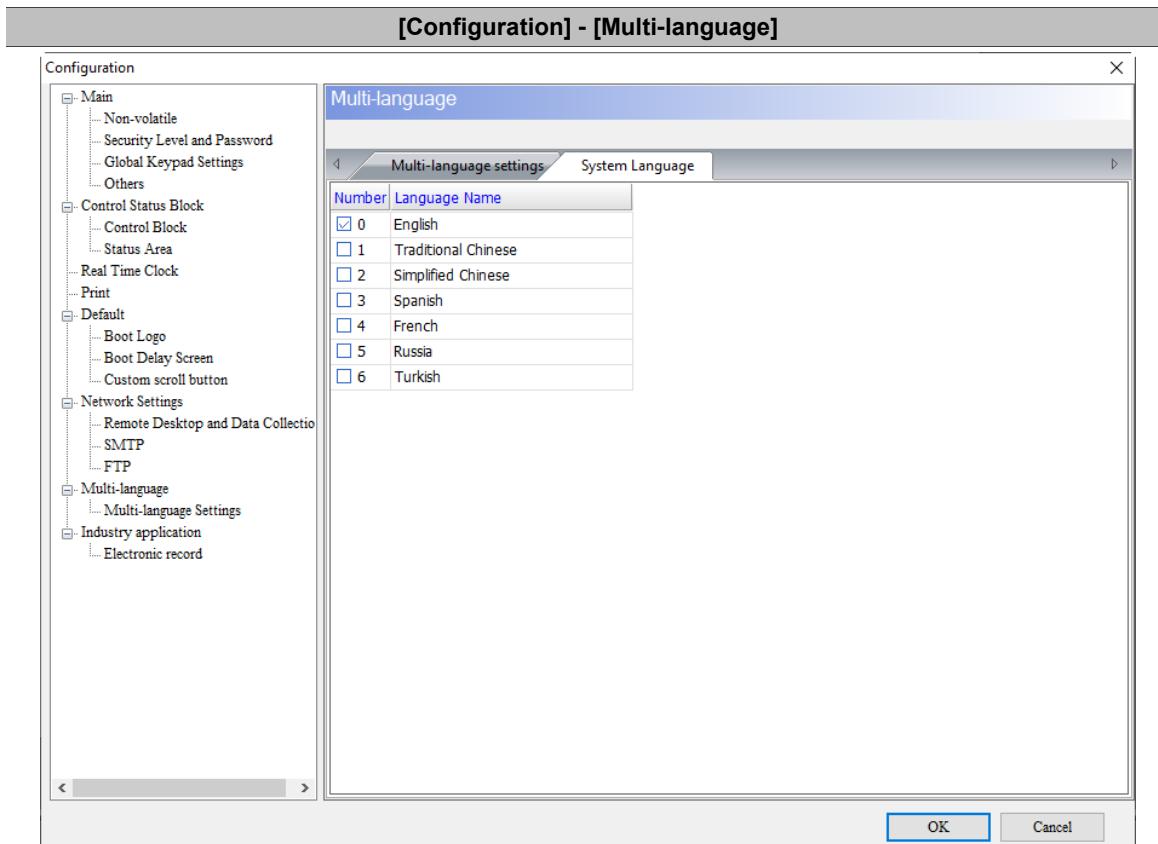
```

If you want to download files from the USB Disk or SD Card, enter "get" command. If you want to upload files to the USB Disk or SD Card from the PC, enter "put" command.

The following introduces the property settings for the software interface.

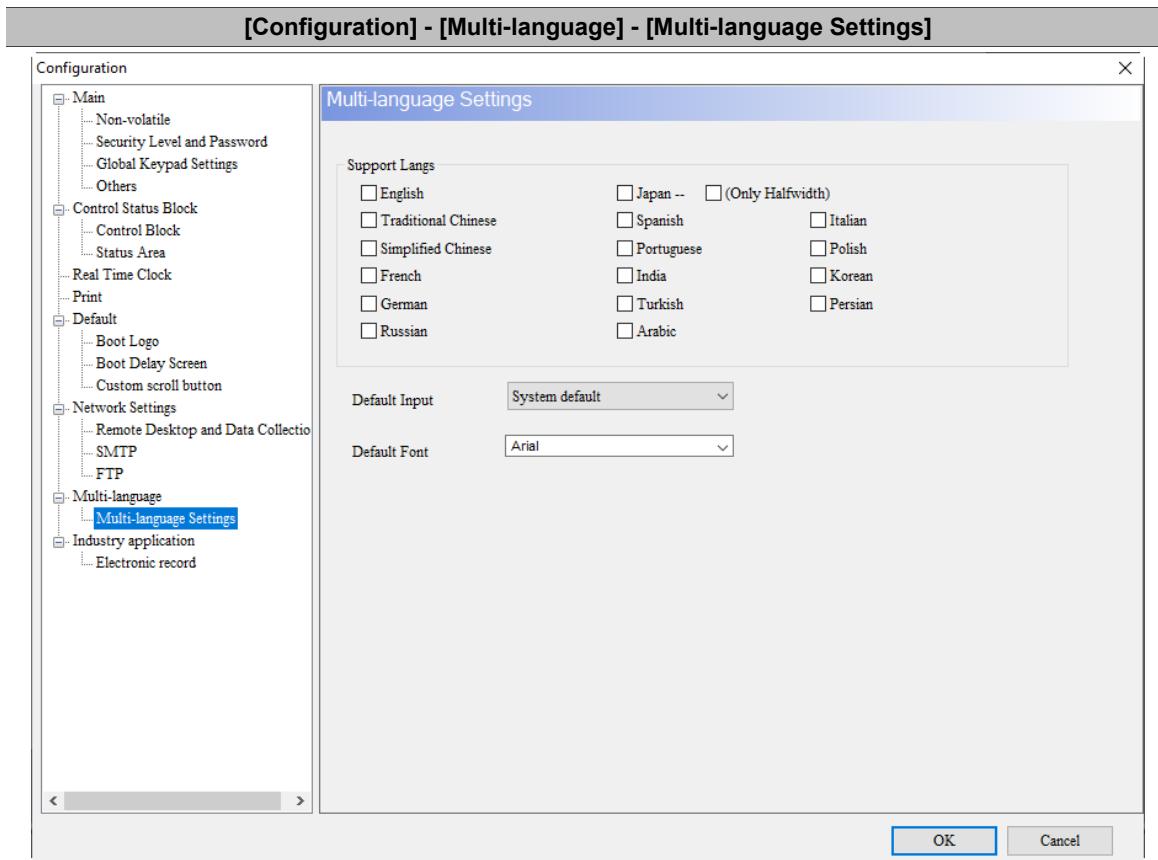
Enable FTP host function	Select this check box to enable the FTP function.
FTP Host Port	The FTP Host Port default is 21.
Account	You can enter the account name you want to use.
Password	You can enter the password you want to use.
Root Directory	The root directory is the location where the HMI files are stored. The default is USB Disk. You can also select SD Card as the storage location.
Anonymous	<ul style="list-style-type: none"> <li>■ If this check box is selected, you can access the FTP without logging in with an account.</li> <li>■ If you access the FTP anonymously, you cannot upload / download files, delete files, or add directories.</li> </ul>

Table 27.1.15 Configuration - Multi-language



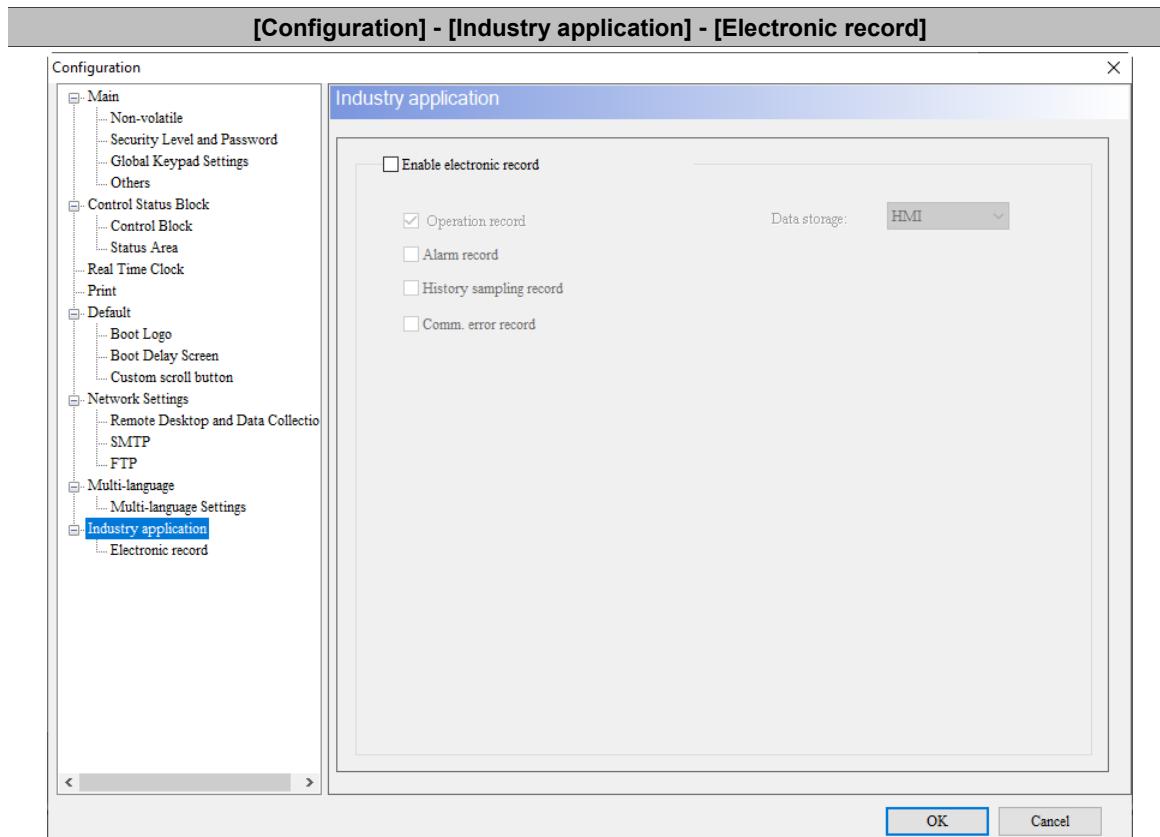
- The system language refers to the language of the system directory screen, the error message, and the warning message displayed on the HMI.
- You can set the system language to English, French, Russian, Simplified Chinese, Spanish, Traditional Chinese, and Turkish.

Table 27.1.16 Configuration - Multi-language Settings

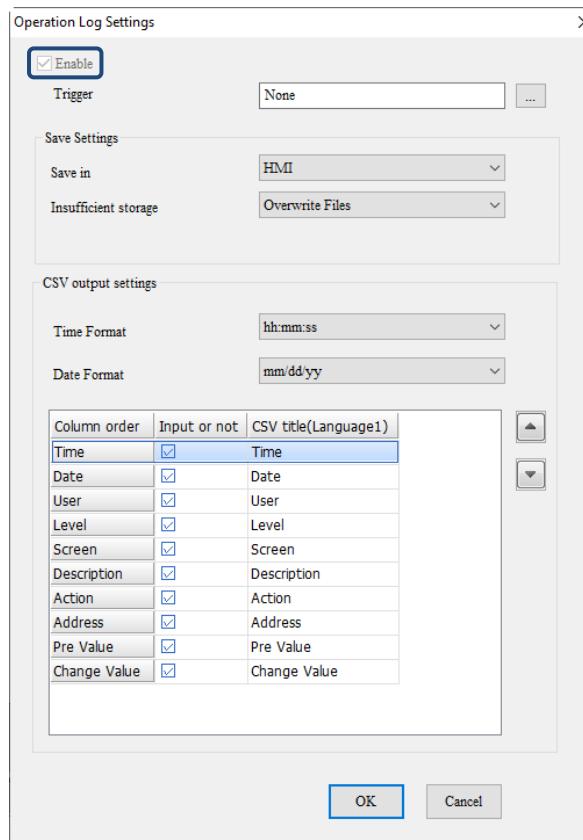


- The Multi-language Input function supports up to 16 languages and you can select the languages to edit the display texts.
- Go to [Options] > [Configuration] > [Multi-language Settings] to select the preferred languages. Then, you can use the Multi-language Input element to enter contents in multiple languages.
- Multi-language Input function does not support online and offline simulations.
- Refer to Chapter 13 for instructions on the Multi-language Input elements.

Table 27.1.17 Configuration - Industry application



- When the **Enable electronic record** check box is selected, the Operation Log function will be forcibly enabled.



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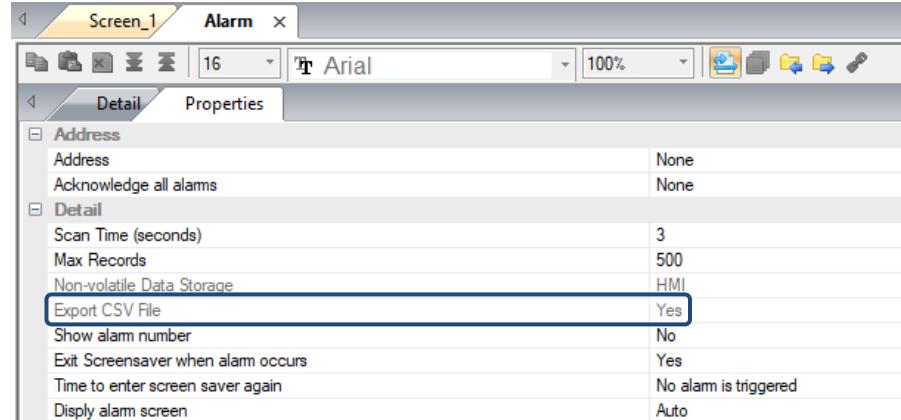
## Operation record

**[Configuration] - [Industry application] - [Electronic record]**

- It records all operations of the HMI, including value changes and user levels.
- Add Checksum and the header data to the Operation Log data.

No	Time	Date	User	Level	Screen	Description	Action	Address	Pre Value	Change Val	Checksum
1	13:09:09	07/12/2017	3 ihk2xA	3 Screen_2	交替型_0C Set Val	\$60.00			0	1 Mx7XkA	
2	13:09:13	07/12/2017		3 Screen_2	換畫面_01Goto Scrn				2	1 PE8P1g	
3	13:09:14	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.00			1	0 Yvf/eg	
4	13:09:14	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.10			1	0 TryGVg	
5	13:09:14	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.20			1	0 Ga9n/w	
6	13:09:15	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.30			1	0 4ECIWQ	
7	13:09:15	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.40			1	0 2nL6w	
8	13:09:16	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.40			0	1 Pax4A	
9	13:09:16	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.30			0	1 SagoiA	
10	13:09:16	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.20			0	1 LUwZg	
11	13:09:17	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.10			0	1 CLVtg	
12	13:09:17	07/12/2017		3 Screen_1	交替型_0C Set Val	\$100.00			0	1 B88iBA	
13	13:09:19	07/12/2017		3 Screen_1	換畫面_01Goto Scrn				1	2 pq3lg	
14	13:09:24	07/12/2017		3 Screen_2	交替型_0C Set Val	\$60.00			0	1 vTTKMA	
15	13:09:25	07/12/2017		3 Screen_2	換畫面_01Goto Scrn				2	1 un5NqQ	
16	13:09:27	07/12/2017		3 Screen_1	交替型_01 Set Val	\$2,000.00			0	1 cKKzaQ	
17	13:10:10	07/12/2017		3 Screen_1	設定密碼_Set Passwd				2	Bwi8IA	
18	13:11:10	07/12/2017		8	Auto Logout				8	3 Y5DRbQ	
19	13:25:02	07/12/2017		3 Screen_1	數值輸入_Set Val	\$1,000	560			580 KqB34g	
20	13:25:05	07/12/2017		3 Screen_1	數值輸入_Set Val	\$1,001	200			300 6lBeUQ	
21	13:25:08	07/12/2017		3 Screen_1	數值輸入_Set Val	\$1,002	106			900 sgwOA	
22	13:25:09	07/12/2017		3 Screen_1	交替型_01 Set Val	\$2,000.00	0			1 UKdhlg	
23	13:25:10	07/12/2017		3 Screen_1	換畫面_01Goto Scrn		1			2 Likq8A	
24	13:25:14	07/12/2017		3 Screen_2	換畫面_01Goto Scrn		2			1 Tf+a2Q	
25	13:25:21	07/12/2017		3 Screen_1	移除儲存 Rm ExtDisk					USB Disk eTXELg	

- If you select the **Alarm record** check box, the Export CSV File function will be forcibly set to "Yes".



## Alarm record

- In response to Electronic Signature, the name of the alarm file will be created according to the year, month, day, hour, minute, and second when the file is exported.

**Alarm\_Date-2017-07-12\_Time-10-59-05.csv**

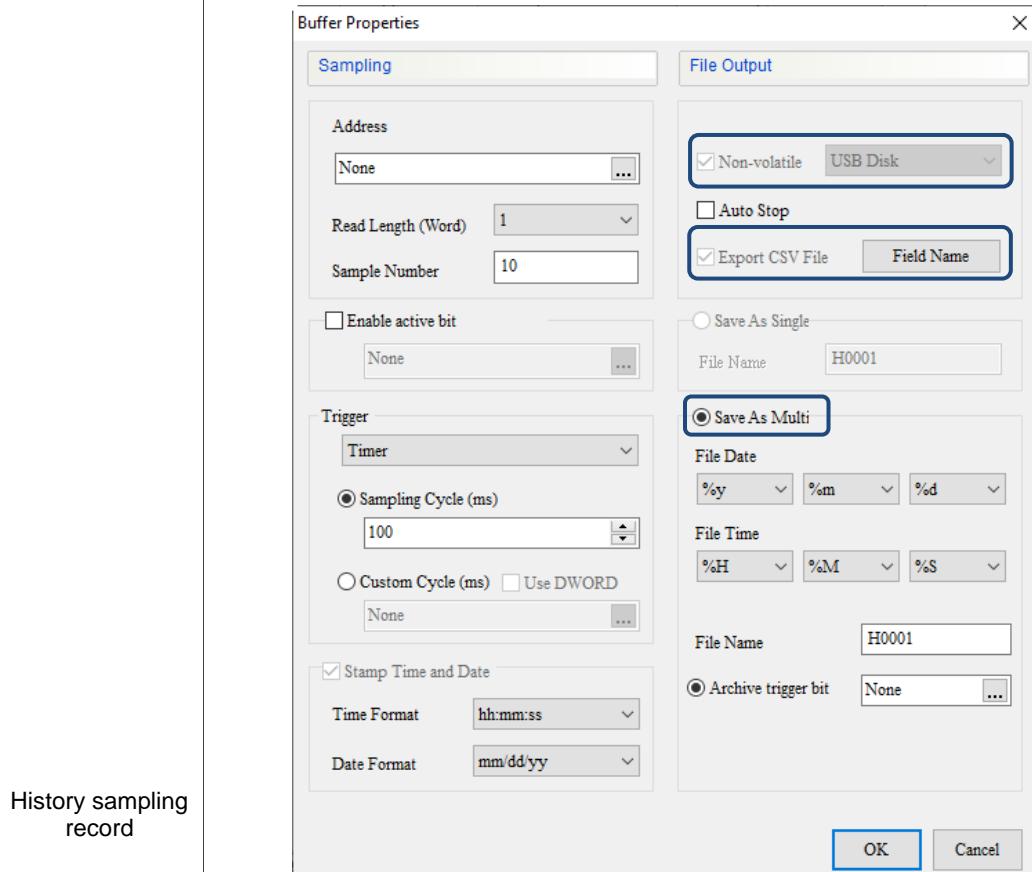
- Each alarm data is added to Checksum.

A	B	C	D	E	F	G	H	I
1	Group No.	Trigger Time		ACK Time		Recovery Time		Message
2	0	2017/7/12 10:59:05						alarm 1
3	0	2017/7/12 10:59:06						alarm 2
4	0	2017/7/12 10:59:06						alarm 3
5	0	2017/7/12 10:59:07						alarm 4
6	0	2017/7/12 10:59:07						alarm 5

- The timing of generating this file will be based on the maximum number of records that can be stored according to the Alarm Settings.

**[Configuration] - [Industry application] - [Electronic record]**

- If you select the **History sampling record** check box, the non-volatile memory of history data will be forcibly set to USB Disk or SD Card, and the Export CSV File function will be forcibly set to Yes. The file storage method will also be forcibly set to Save As Multi.



History sampling record

- The file name of the history data saved with the Save As Multi function is created according to the year, month, day, hour, minute, and second when the data is saved. Checksum and the header data will be added.

H0001\_Date-2017-07-12\_Time-10-59-22.csv

	A	B	C	D	E	F
1	HISTORY	6 mIhFvg				
2						
3						
4						
5	Time	Date	Data 0	Data 1	Data 2	Checksum
6	10:58:53	07/12/2017	0	0		0slM7WQ
7	10:58:53	07/12/2017	0	0		0q0gKGA
8	10:58:53	07/12/2017	0	0		0LNAw1w
9	10:58:53	07/12/2017	0	0		0Ncsnlg
10	10:58:53	07/12/2017	0	0		0GHqrlw
11	10:58:53	07/12/2017	0	0		0AWGabg
12	10:58:53	07/12/2017	0	0		0KkzlrQ
13	10:58:54	07/12/2017	0	0		0Fbq98A
14	10:58:54	07/12/2017	0	0		0WvsrNw
15	10:58:54	07/12/2017	0	0		0Q+Aadg
16	10:58:54	07/12/2017	0	0		0aM1JtQ
17	10:58:54	07/12/2017	0	0		0cdZ49A
18	10:58:54	07/12/2017	0	0		09k5kOw
19	10:58:54	07/12/2017	0	0		071VVeg
20	10:58:54	07/12/2017	0	0		0LCJB3Q
21	10:58:54	07/12/2017	0	0		0NTlwA
22	10:58:54	07/12/2017	0	0		0HhQjXw
23	10:58:55	07/12/2017	0	0		0Tua/AQ
24	10:58:55	07/12/2017	0	0		0Aacpxg
25	10:58:55	07/12/2017	0	0		0GLwYhw
26	10:58:55	07/12/2017	0	0		0M5FLRA
27	10:58:55	07/12/2017	0	0		0Kop6BQ
28	10:58:55	07/12/2017	0	0		0rRlmyg
29	10:58:55	07/12/2017	0	0		0tAlXiw
30	10:58:55	07/12/2017	0	0		03Xelpw
31	10:58:55	07/12/2017	0	0		0xGy65g
32	10:58:56	07/12/2017	0	0		0NxseBA
33	10:58:56	07/12/2017	0	0		0LGAvRQ
34	10:58:56	07/12/2017	0	0		0YyG5gg

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**[Configuration] - [Industry application] - [Electronic record]**

- If you select the **Comm. error record** check box, the HMI will automatically store the communication error data in the HMI, USB, or SD. The storage location is HMI\HMI-000\CommEventLog.

Comm. error  
record

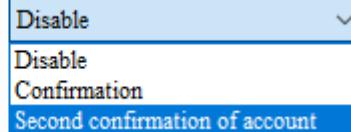
A	B	C	D	E	F	G	H	I
1	Communi	1	13	3 AttyYqg				
2	Date	Time	Protocol (P)	Link	Error Type	Station	Address	Error Code
3	2016/5/11	08:41:15	0	1 TCP		1		22 661aHQ
4	2016/5/11	08:41:18	2	COM Read		1 D1		3 u1Qnig
5	2016/5/11	08:41:18	0	1 TCP		1		22 YHfAtw
6	2016/5/11	08:41:23	2	COM Read		1 D1		3 /XBkSg
7	2016/5/11	08:41:24	0	1 TCP		1		22 V1IL6w
8	2016/5/11	08:41:29	2	COM Read		1 D1		3 vZP8UQ
9	2016/5/11	08:41:30	0	1 TCP		1		22 fALDEA
10	2016/5/11	08:41:35	2	COM Read		1 D1		3 ZDRaDA
11	2016/5/11	08:41:36	0	1 TCP		1		22 UA/KxQ
12	2016/5/11	08:41:41	2	COM Read		1 D1		3 wkDWlw
13	2016/5/11	08:41:42	0	1 TCP		1		22 w7SmWw
14	2016/5/11	08:41:48	2	COM Read		1 D1		3 o306mA
15	2016/5/11	08:41:48	0	1 TCP		1		22 4u8Gzg
16	2016/5/11	08:06:43	2	COM Read		1 D1		3 mT5wDw
17	2016/5/11	08:06:46	0	1 TCP		1		22 DudfNw
18	2016/5/11	08:06:49	2	COM Read		1 D1		3 sIC6vQ
19	2016/5/11	08:06:52	0	1 TCP		1		22 ZIAdtQ
20	2016/5/11	08:06:55	2	COM Read		1 D1		3 O6TLkA
21	2016/5/11	08:06:58	0	1 TCP		1		22 y0/QA
22	2016/5/11	08:07:01	2	COM Read		1 D1		3 j39ivg
23	2016/5/11	08:07:04	0	1 TCP		1		22 Qvez5Q
24	2016/5/11	08:07:07	2	COM Read		1 D1		3 AuGaEw
25	2016/5/11	08:07:10	0	1 TCP		1		22 4Fl7bw
26	2016/5/11	08:07:13	2	COM Read		1 D1		3 KTF8QA
27	2016/5/11	08:07:15	0	1 TCP		1		22 BFcZRA
28	2016/5/11	08:07:20	2	COM Read		1 D1		3 cTriHw
29	2016/5/11	08:07:21	0	1 TCP		1		22 69h5CQ
30	2016/5/11	08:07:26	2	COM Read		1 D1		3 2pt6WQ
31	2016/5/11	08:07:27	0	1 TCP		1		22 AG2Uqg
32	2016/5/11	08:07:32	2	COM Read		1 D1		3 8UucCg

Data storage

Select the storage location of all stored data in the Electronic record, and the options include HMI, USB Disk, and SD.

- The difference between the logs mentioned earlier and normal logs is that the Electronic record function ensures the consistency of the data and guarantees that the data can be correctly output, saved, and viewed at any time. For this reason, all generated log data uses the checksum mechanism and is exported as a CSV file.
- Enabling the Electronic record function will also enable the Second confirmation of account function of the Confirm Window feature.

Confirm Window:



- If selecting the Second confirmation of account function, the user is required to enter the password twice.

Electronic Signature X

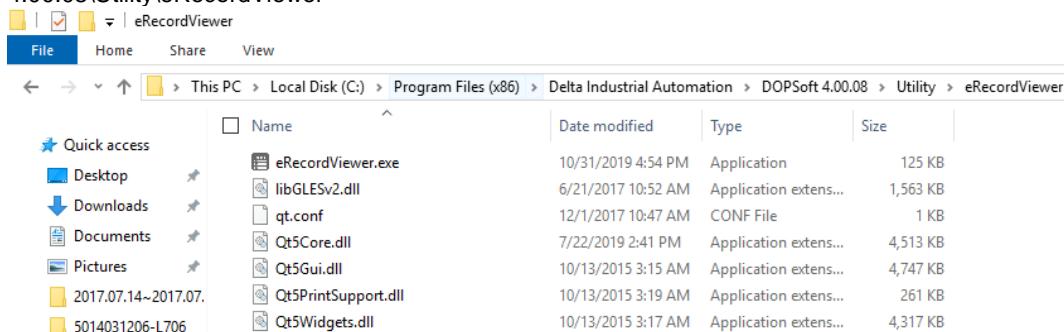
Current user:  
Element description: Set to On\_001  
Please login

Account	<input type="text"/>	<input type="checkbox"/> Security Login
Password	<input type="password"/>	<input type="button" value="OK"/> <input type="button" value="Cancel"/>

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- The files generated by the Electronic Signature can be opened with Excel or with the eRecord Viewer, which is located at: C:\Program Files (x86)\Delta Industrial Automation\DOPOSoft 4.00.08\Utility\eRecordViewer



- If the loaded data has not been tampered with, the eRecord Viewer will display "Verified OK".

H0001_Date-2017-07-12_Time-10-59-22.csv						
Verified OK.						
1	2	3	4	5	6	
1	HISTORY V1.0	0006	mIhFvg			
2						
3						
4						
5	Time	Date	Data 0	Data 1	Data 2	Checksum
6	10:58:53	07/12/2017	00000	00000	00000	sIM7WQ
7	10:58:53	07/12/2017	00000	00000	00000	q0gKGA
8	10:58:53	07/12/2017	00000	00000	00000	LNAW1w
9	10:58:53	07/12/2017	00000	00000	00000	Ncsnlg
10	10:58:53	07/12/2017	00000	00000	00000	GHqrLw
11	10:58:53	07/12/2017	00000	00000	00000	AWGabg
12	10:58:53	07/12/2017	00000	00000	00000	KkzJrQ
13	10:58:54	07/12/2017	00000	00000	00000	Fbq98A
14	10:58:54	07/12/2017	00000	00000	00000	WvsrNw
15	10:58:54	07/12/2017	00000	00000	00000	Q+Aadg
16	10:58:54	07/12/2017	00000	00000	00000	aM1JtQ
17	10:58:54	07/12/2017	00000	00000	00000	cdZ49A
18	10:58:54	07/12/2017	00000	00000	00000	9k5kOw
19	10:58:54	07/12/2017	00000	00000	00000	71VVeg
20	10:58:54	07/12/2017	00000	00000	00000	LCJB3Q
21	10:58:54	07/12/2017	00000	00000	00000	NTlwnA
22	10:58:54	07/12/2017	00000	00000	00000	HhQiXw
23	10:58:55	07/12/2017	00000	00000	00000	Tua/AQ

- When the data has been tampered with, for example, if the eRecord Viewer discovered that the Checksum of the data in the 8<sup>th</sup> row of the file does not match, it will display "Verified fail records: {1}." The number in brackets is the total number of data errors.

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**[Configuration] - [Industry application] - [Electronic record]**

1	2	3	4	5	6
1 HISTORY V1.0	6	mIhFvg			
2					
3					
4					
5 Time	Date	Data 0	Data 1	Data 2	Checksum
6 10:58:53	07/12/2017	0	0	0	sIM7WQ
7 10:58:53	07/12/2017	0	0	0	q0gKGA
8 10:58:53	07/12/2017	5	0	0	LNAW1w
9 10:58:53	07/12/2017	0	0	0	Ncsnlg
10 10:58:53	07/12/2017	0	0	0	GHqrLw
11 10:58:53	07/12/2017	0	0	0	AVGabg
12 10:58:53	07/12/2017	0	0	0	KkzJrQ
13 10:58:54	07/12/2017	0	0	0	Fbq98A
14 10:58:54	07/12/2017	0	0	0	VvsvrNw
15 10:58:54	07/12/2017	0	0	0	Q+Aadg
16 10:58:54	07/12/2017	0	0	0	aM1JtQ
17 10:58:54	07/12/2017	0	0	0	cdZ49A
18 10:58:54	07/12/2017	0	0	0	9k5kOw
19 10:58:54	07/12/2017	0	0	0	71VVeg
20 10:58:54	07/12/2017	0	0	0	LCJB3Q
21 10:58:54	07/12/2017	0	0	0	NTIwnA
22 10:58:54	07/12/2017	0	0	0	HHQjXw
23 10:58:55	07/12/2017	0	0	0	Tua/AQ

- This tool can also save the data of Electronic record into PDF files and print the data.

1	2	3	4	5	6	7	8	9
1 Communication Events	1	13	3	AtyYqg				
2 Date	Time	Protocol (Port)	Link	Error Type	Station	Address	Error Code	Checksum
3 2016/05/11	08:41:15	0	1	TCP	1		22	661aHQ
4 2016/05/11	08:41:18	2		COM Read	1	D1	3	u1Qnig
5 2016/05/11	08:41:18	0	1	TCP	1		22	YHfAtw
6 2016/05/11	08:41:23	2		COM Read	1	D1	3	/XBksg
7 2016/05/11	08:41:24	0	1	TCP	1		22	V1l6w
8 2016/05/11	08:41:29	2		COM Read	1	D1	3	vZP8UQ
9 2016/05/11	08:41:30	0	1	TCP	1		22	fALDEA
10 2016/05/11	08:41:35	2		COM Read	1	D1	3	ZDRaDA
11 2016/05/11	08:41:36	0	1	TCP	1		22	UA/KxQ
12 2016/05/11	08:41:41	2		COM Read	1	D1	3	wkDWlw
13 2016/05/11	08:41:42	0	1	TCP	1		22	w7SmWw
14 2016/05/11	08:41:48	2		COM Read	1	D1	3	o306mA
15 2016/05/11	08:41:48	0	1	TCP	1		22	4u8Gzg
16 2016/05/11	08:06:43	2		COM Read	1	D1	3	mT5wDw
17 2016/05/11	08:06:46	0	1	TCP	1		22	DudfHw
18 2016/05/11	08:06:49	2		COM Read	1	D1	3	sICevQ
19 2016/05/11	08:06:52	0	1	TCP	1		22	ZlAdtQ
20 2016/05/11	08:06:55	2		COM Read	1	D1	3	O6TLKA
21 2016/05/11	08:06:58	0	1	TCP	1		22	yf0/QA
22 2016/05/11	08:07:01	2		COM Read	1	D1	3	j39ivg
23 2016/05/11	08:07:04	0	1	TCP	1		22	Qvez5Q
24 2016/05/11	08:07:07	2		COM Read	1	D1	3	AuGaEw
25 2016/05/11	08:07:10	0	1	TCP	1		22	4Fl7bw
26 2016/05/11	08:07:13	2		COM Read	1	D1	3	KTF8Qa
27 2016/05/11	08:07:15	0	1	TCP	1		22	BFcZRA
28 2016/05/11	08:07:20	2		COM Read	1	D1	3	cTrHw
29 2016/05/11	08:07:21	0	1	TCP	1		22	69hSCQ
30 2016/05/11	08:07:26	2		COM Read	1	D1	3	ZptbVvQ

## 27.2 Communication Settings

Users can set the related communication parameters of COM1, COM2, COM3, and Ethernet through [Options] > [Communication Settings].

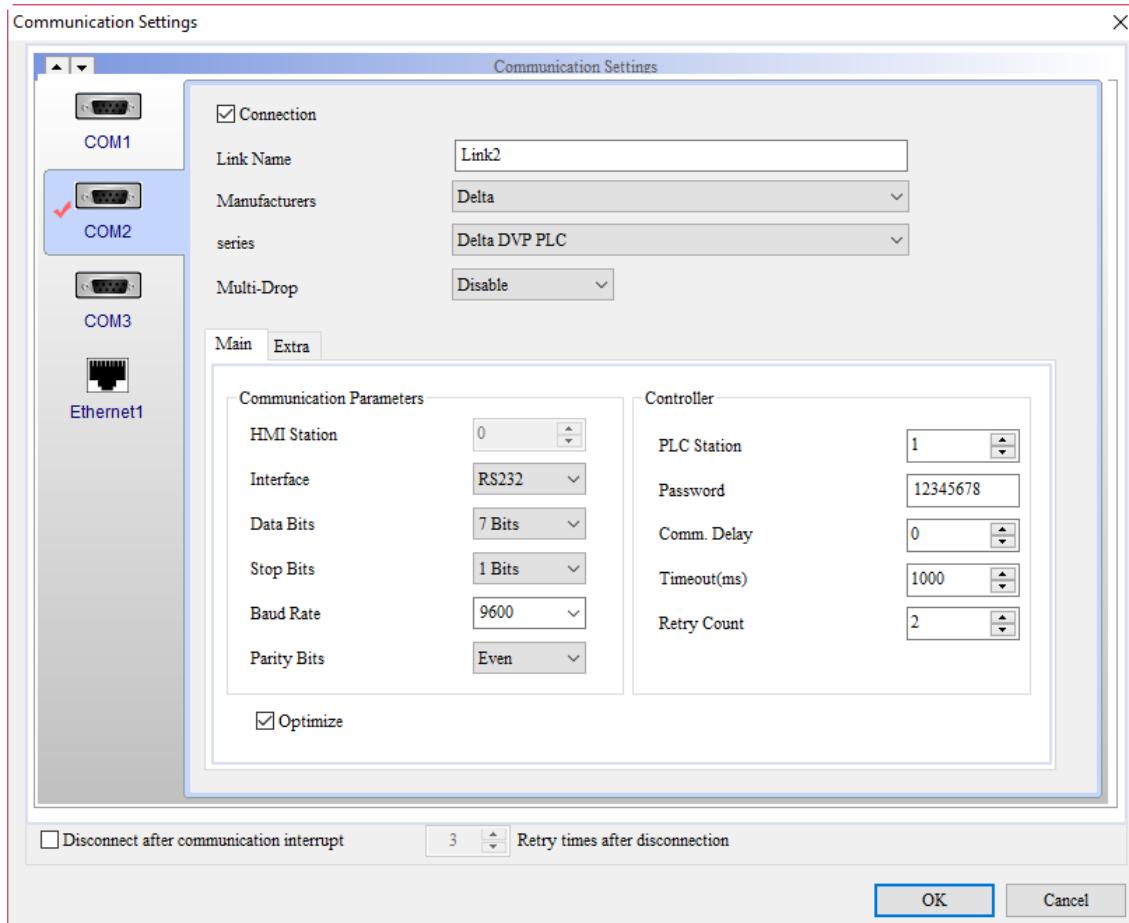
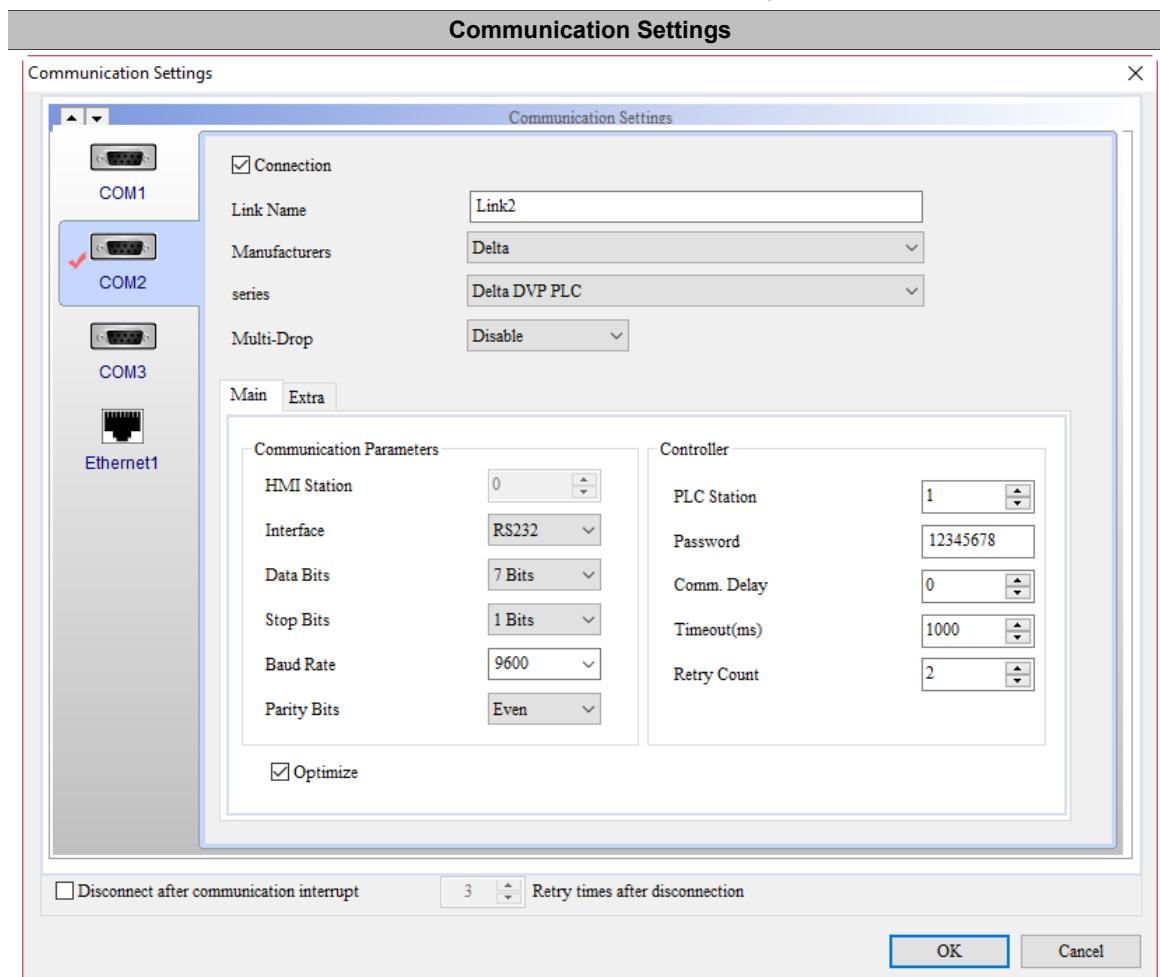


Figure 27.2.1 Communication Settings

The following describes the communication parameters of each COM port, controller settings, and Ethernet parameter settings.

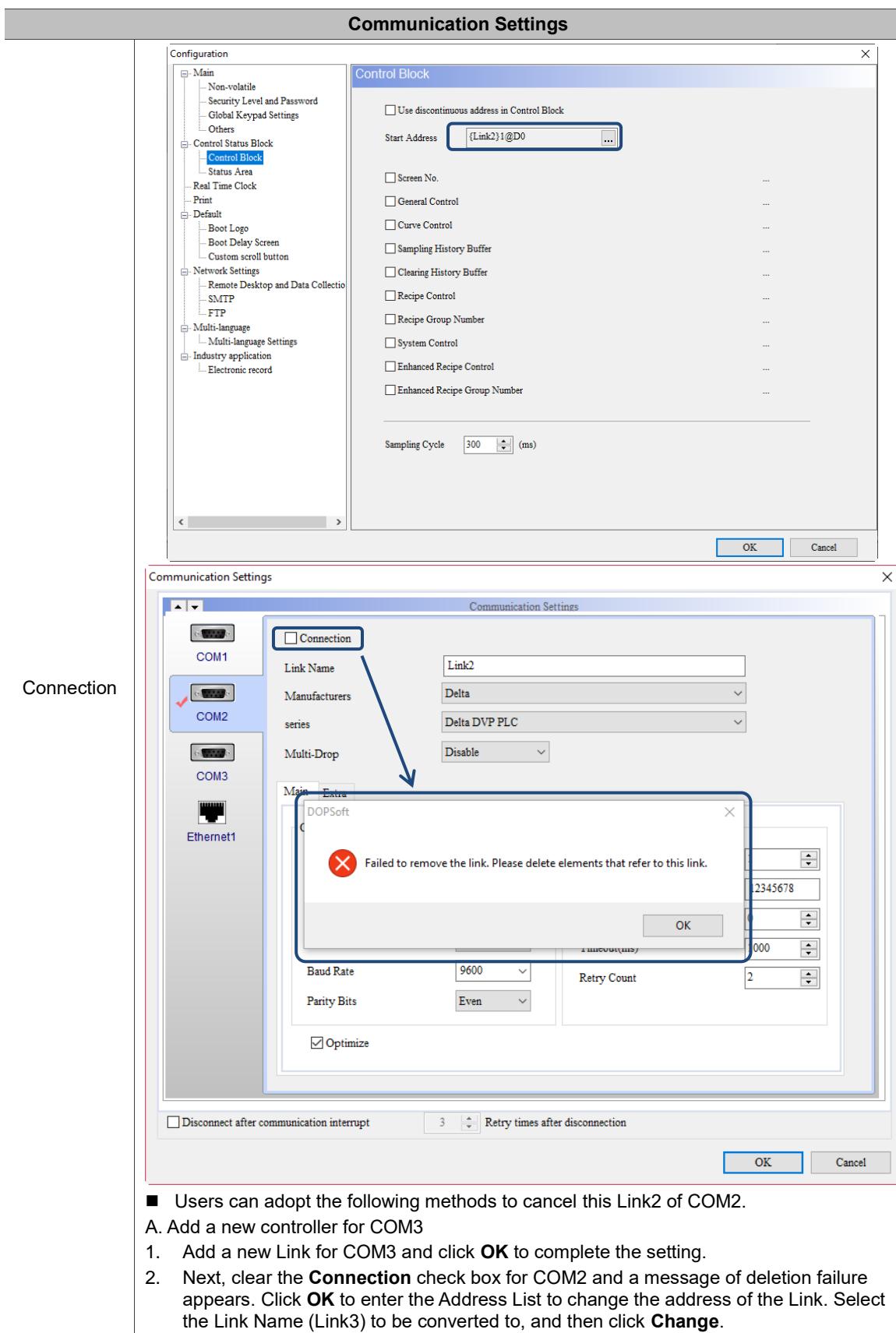
27

Table 27.2.1 Communication Settings



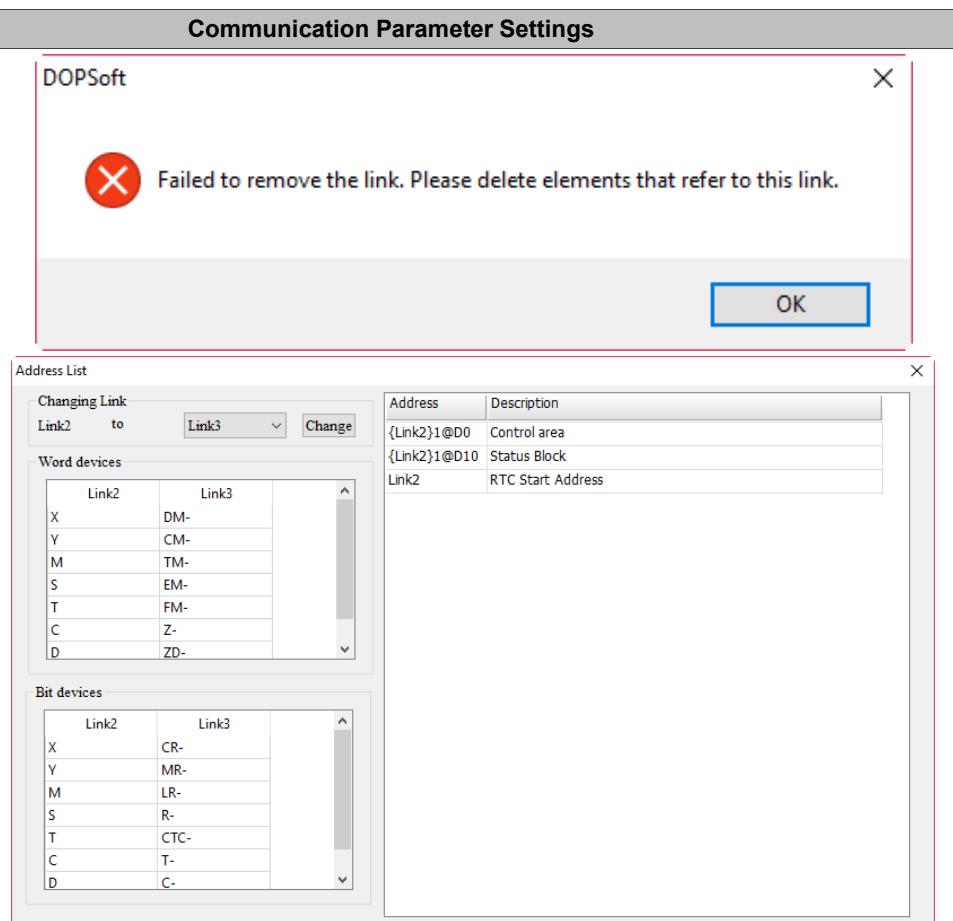
Communication parameters of COM1, COM2, and COM3 and controller settings are detailed as follows.

Connection	<ul style="list-style-type: none"> <li>■ Select the <b>Connection</b> check box to enable the selected COM port. You can select the COM port as required, such as COM1, COM2, and COM3.</li> <li>■ After selecting the <b>Connection</b> check box, you can set the [Link Name] and select the [Controller] (namely PLC) to be used. Refer to the connection manual for the selection and use of the controller.</li> <li>■ If you clear the <b>Connection</b> check box, the software will detect that the current Link2 has been used by the Control Block and Status Area, so it displays a warning message to remind users that the link cannot be removed because there are elements referring to Link2.</li> </ul>
------------	--



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## Connection



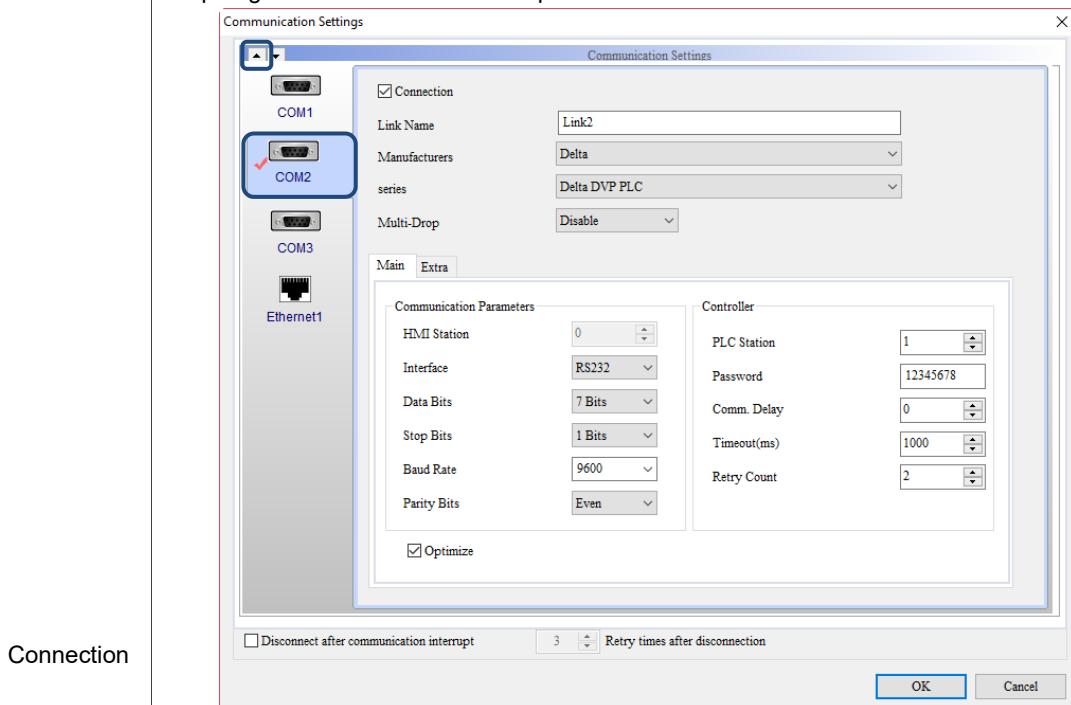
According to the Word devices table, Link2 on the left is the controller register address to be canceled, and Link3 on the right is the controller register address to be changed to. You can change the address in accordance with the default order or specify the address to change.

### Communication Settings

B. Move Link2 to COM1 by using the up and down arrows at the upper left corner. Next, go to COM2 to check if the Link Name has been changed to Link1. The arrows allow you to directly move the Link to other communication ports.

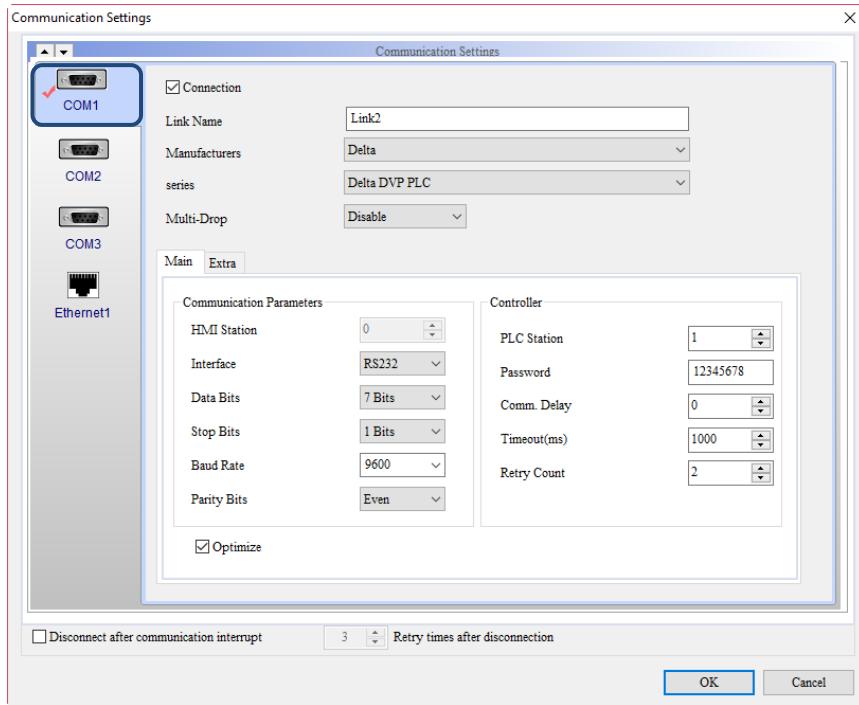
Refer to the following steps.

Step 1: go to COM2 and click the up arrow.



Connection

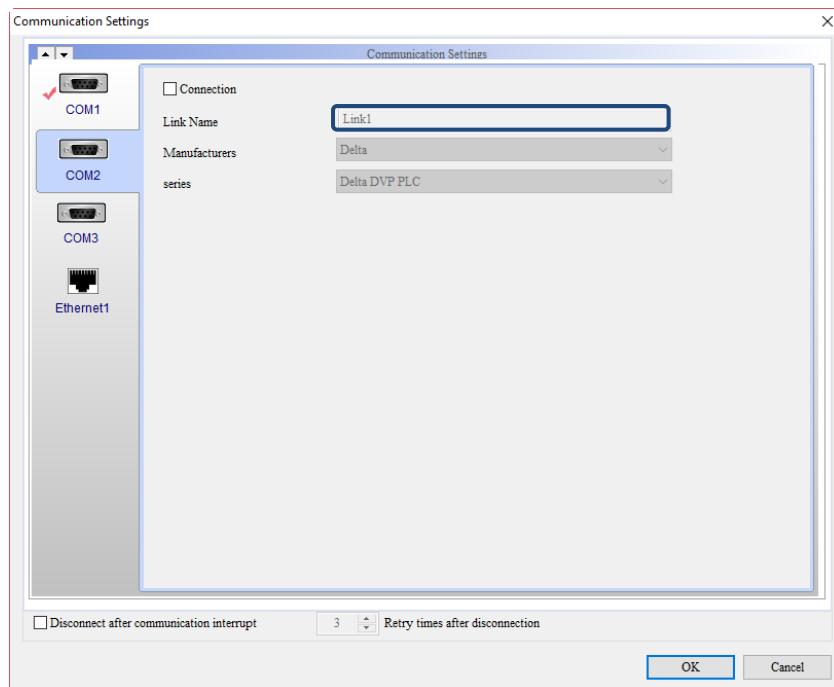
Step 2: you can see Link2 has been moved to COM1.



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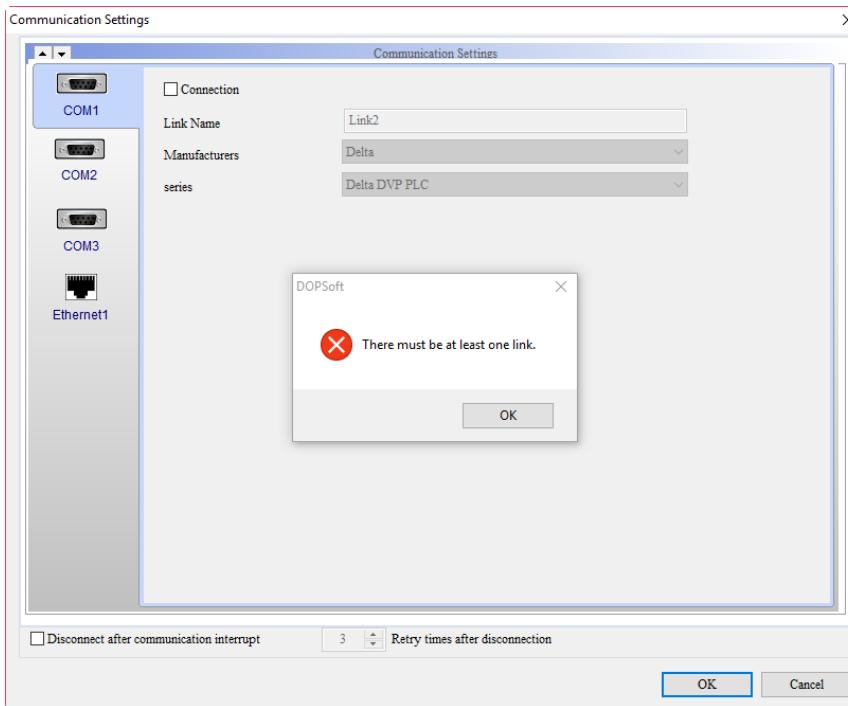
## Connection

Step 3: go to COM2 to check the setting. The Link Name of COM2 has been changed to Link1.

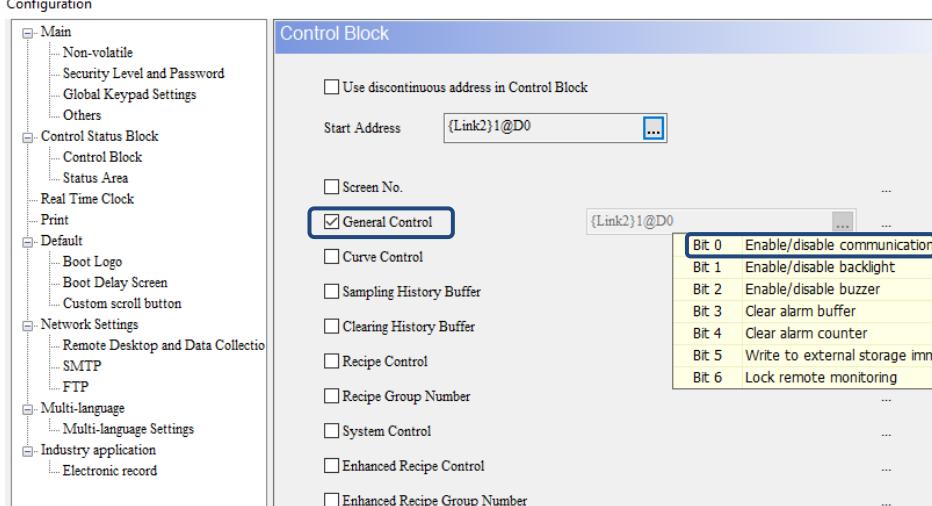


## Note:

1. The default setting of COM1 is Link1, COM2 is Link2, and COM3 is Link3.
  2. When you use the arrow to move Link2 to COM1, and COM2 becomes Link1; similarly, when Link2 is moved to COM3, COM2 becomes Link3.
  3. Moving the link to another communication port does not change the Link Name, so the warning message does not appear. The up and down arrows work the same way as the up and down functions in the previous Screen Editor.
- When you cancel all the links, the software displays a warning message to ask you to set at least one link.

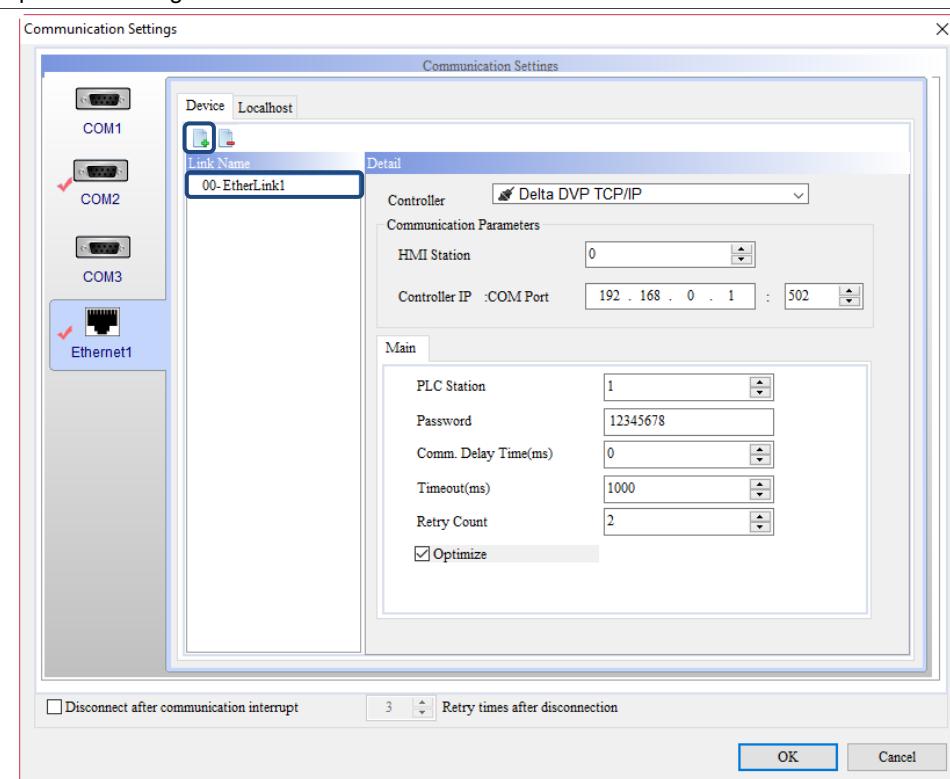


Communication Settings																			
Communication Parameters	HMI Station	Set the HMI station number. The range is 1 - 255 and the default station number is 0.																	
	Interface	<ul style="list-style-type: none"> <li>■ Communication interface is the transmission mode, which includes RS232, RS422, and RS485.</li> <li>■ When you select COM1, only RS232 is selectable for the communication interface; when you select COM2 and COM3, the selectable options are RS232, RS422, and RS485.</li> </ul> <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th></th><th>COM1</th><th>COM2</th><th>COM3</th></tr> </thead> <tbody> <tr> <td>RS232</td><td>V</td><td>V</td><td>V</td></tr> <tr> <td>RS422</td><td></td><td>V</td><td>V</td></tr> <tr> <td>RS485</td><td></td><td>V</td><td>V</td></tr> </tbody> </table>				COM1	COM2	COM3	RS232	V	V	V	RS422		V	V	RS485		V
	COM1	COM2	COM3																
RS232	V	V	V																
RS422		V	V																
RS485		V	V																
Data Bits	<p>The available options for Data Bits are 7 Bits and 8 Bits. This is also the data type and the received packet length.</p> <table style="margin-top: 10px;"> <tr> <td style="text-align: center;">Data Bits</td> <td style="border: 1px solid #ccc; padding: 2px; width: 100px;"> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">7 Bits</span> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">7 Bits</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">8 Bits</span> </td> </tr> </table>			Data Bits	<span style="border-bottom: 1px solid #ccc; padding: 0 5px;">7 Bits</span> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">7 Bits</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">8 Bits</span>														
Data Bits	<span style="border-bottom: 1px solid #ccc; padding: 0 5px;">7 Bits</span> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">7 Bits</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">8 Bits</span>																		
Stop Bits	<p>The available options for Stop Bits are 1 Bit and 2 Bits. This is for notifying that the data receiving is complete.</p> <table style="margin-top: 10px;"> <tr> <td style="text-align: center;">Stop Bits</td> <td style="border: 1px solid #ccc; padding: 2px; width: 100px;"> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">1 Bits</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">2 Bits</span> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">1 Bits</span> </td> </tr> </table>			Stop Bits	<span style="border-bottom: 1px solid #ccc; padding: 0 5px;">1 Bits</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">2 Bits</span> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">1 Bits</span>														
Stop Bits	<span style="border-bottom: 1px solid #ccc; padding: 0 5px;">1 Bits</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">2 Bits</span> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">1 Bits</span>																		
Baud Rate	<p>The available options for Baud Rate are 4800, 9600, 19200, 38400, 57600, and 115200. Baud Rate refers to the data transmission speed in bps.</p> <table style="margin-top: 10px;"> <tr> <td style="text-align: center;">Baud Rate</td> <td style="border: 1px solid #ccc; padding: 2px; width: 100px;"> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">9600</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">4800</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">9600</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">19200</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">38400</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">57600</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">115200</span> </td> </tr> </table>			Baud Rate	<span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">9600</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">4800</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">9600</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">19200</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">38400</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">57600</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">115200</span>														
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Parity Bits	<p>Parity Bits are for checking the errors when data is transmitted, which include None, Odd, Even, Mark, and Space.</p> <table style="margin-top: 10px;"> <tr> <td style="text-align: center;">Parity Bits</td> <td style="border: 1px solid #ccc; padding: 2px; width: 100px;"> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Even</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">None</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Odd</span> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">Even</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Mark</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Space</span> </td> </tr> </table>			Parity Bits	<span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Even</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">None</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Odd</span> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">Even</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Mark</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Space</span>														
Parity Bits	<span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Even</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">None</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Odd</span> <span style="border-bottom: 3px double #0070C0; border-bottom: 1px solid #ccc; background-color: #e0f2fd; padding: 0 5px;">Even</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Mark</span> <span style="border-bottom: 1px solid #ccc; padding: 0 5px;">Space</span>																		
Controller	PLC Station	<ul style="list-style-type: none"> <li>■ The default PLC station number is the number automatically generated by the software after you select the controller to be used.</li> <li>■ You can also adjust the station number within the range of 0 - 255.</li> </ul>																	
	Password	<p>If the set PLC needs password verification, you must set the corresponding password in the software for communication. The default is 12345678.</p>																	
	Comm. Delay (ms)	<ul style="list-style-type: none"> <li>■ It refers to the time interval after each communication. The range is 0 - 255 ms and the default is 0 ms.</li> <li>■ If the selected controller is Delta Controller ASCII or Delta Controller RTU, the default Comm. Delay will be changed to 5 ms. The reason for changing the time interval from 0 ms to 5 ms is that the DOP-100 series models transmit packets faster than the DOP-B series. If some controllers are slower, the update frequency of the HMI screen will become more lagging.</li> </ul>																	

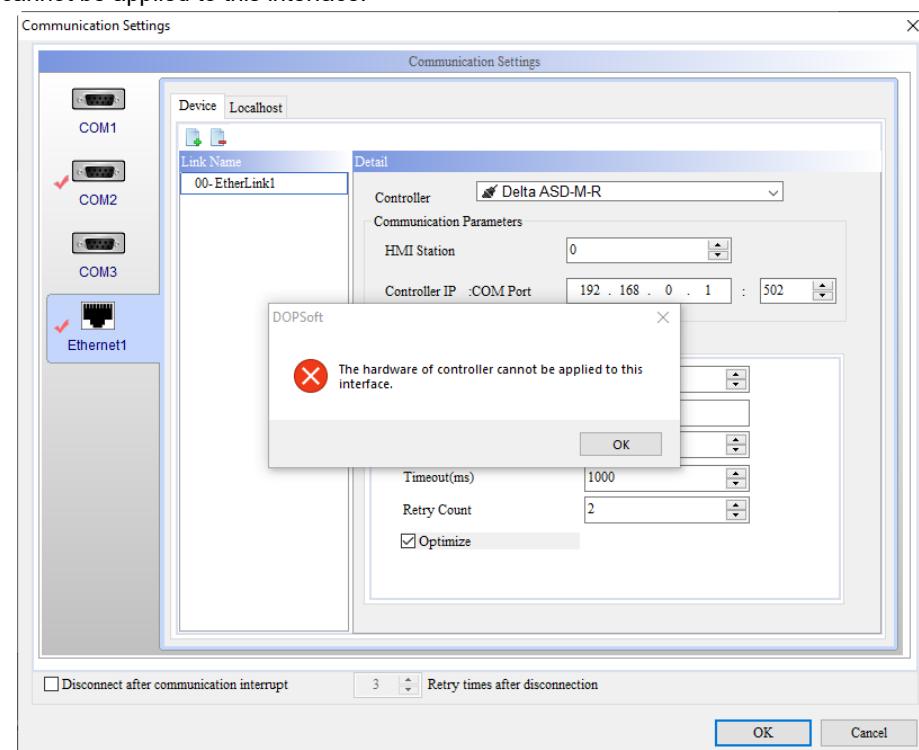
Communication Settings															
Controller	Timeout (ms)	After the communication starts, the communication is timed out without the PLC's response after the set time. The range is 10 - 2000 ms and the default is 1000 ms.													
	Retry Count	If the PLC does not respond after the communication starts, the HMI sends the communication command again. If the number of attempts reaches the set Retry Counts, the HMI displays a warning message of abnormal communication. The range is 0 - 15 times and the default is 2 times.													
Optimize	<ul style="list-style-type: none"> <li>■ Select the <b>Optimize</b> check box to optimize the process of reading the elements and thus speed up the communication. If this check box is cleared, this function is disabled and the speed for reading the elements becomes slower.</li> <li>■ This check box is selected by default, so all element read addresses referring to this link will be optimized.</li> </ul>														
	<p><input type="checkbox"/> Disconnect after communication interrupt <input style="margin: 0 10px;" type="button" value="3"/> Retry times after disconnection</p> <ul style="list-style-type: none"> <li>■ You must first select the <b>Disconnect after communication interrupt</b> check box to set the retry attempts. If this check box is selected, when the communication is interrupted and the set retry attempts are reached, the HMI stops trying to connect to the controller. The range is 0 - 255 times and the default is 3 times.</li> <li>■ When the communication between the HMI and the controller stops because the set retry attempts are reached, you can use Bit 0 in the Control Block to enable / disable the communication.</li> </ul>  <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Bit 0</td> <td>Enable/disable communication</td> </tr> <tr> <td>Bit 1</td> <td>Enable/disable backlight</td> </tr> <tr> <td>Bit 2</td> <td>Enable/disable buzzer</td> </tr> <tr> <td>Bit 3</td> <td>Clear alarm buffer</td> </tr> <tr> <td>Bit 4</td> <td>Clear alarm counter</td> </tr> <tr> <td>Bit 5</td> <td>Write to external storage imm</td> </tr> <tr> <td>Bit 6</td> <td>Lock remote monitoring</td> </tr> </table>		Bit 0	Enable/disable communication	Bit 1	Enable/disable backlight	Bit 2	Enable/disable buzzer	Bit 3	Clear alarm buffer	Bit 4	Clear alarm counter	Bit 5	Write to external storage imm	Bit 6
Bit 0	Enable/disable communication														
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Bit 3	Clear alarm buffer														
Bit 4	Clear alarm counter														
Bit 5	Write to external storage imm														
Bit 6	Lock remote monitoring														

### Communication Settings

The detailed operation settings for Ethernet are described as follows.

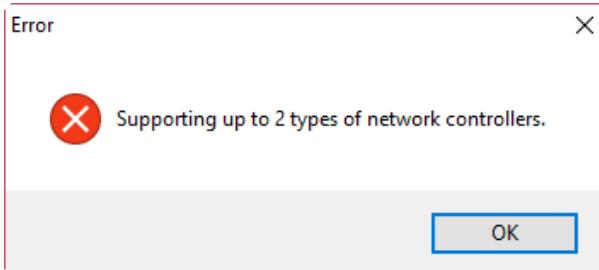


- Device**
- Click the icon on the [Device] page to add an [EtherLink1] link device. You can change the Link Name of EtherLink1 on demand.
  - Select the controller to be used after adding the link device. If you select a PLC that is not a network device, a warning message appears to inform you that the hardware of the controller cannot be applied to this interface.

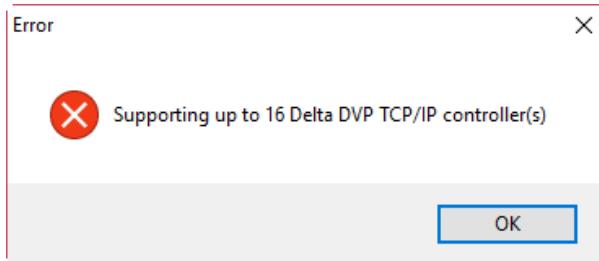


### Communication Settings

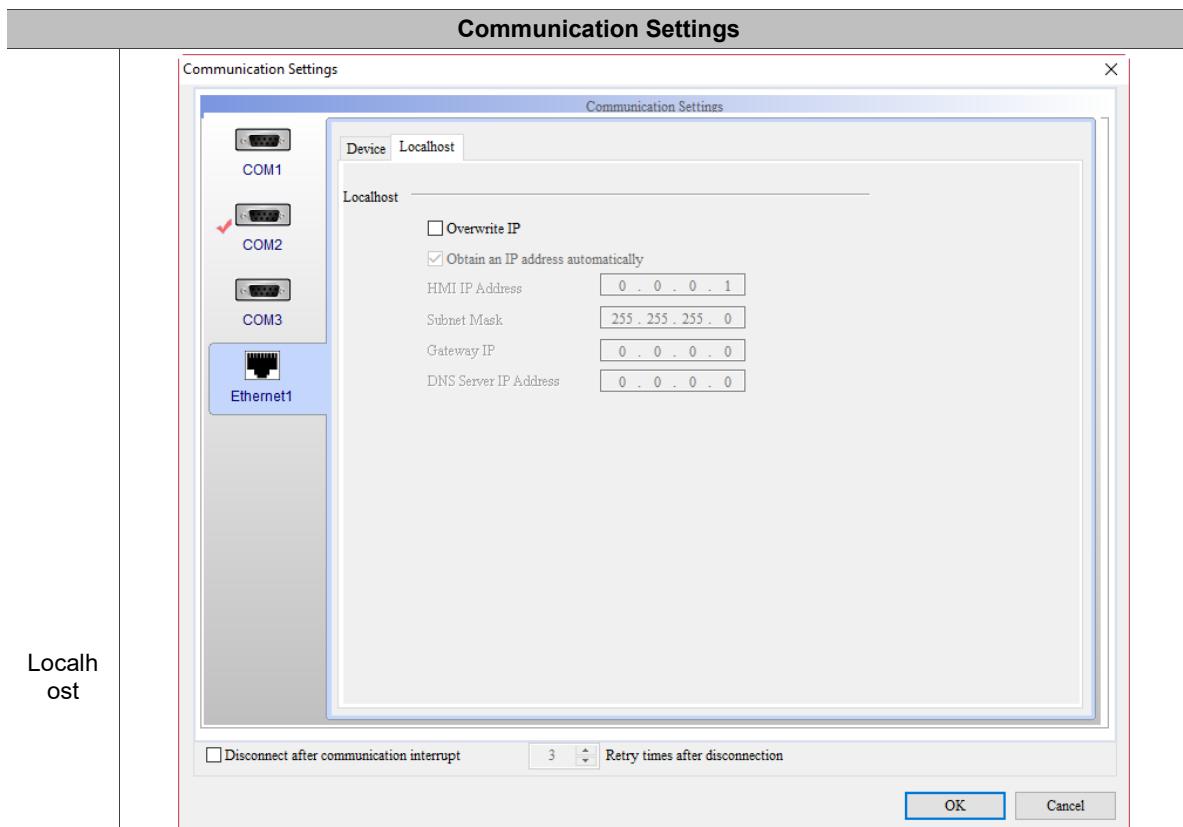
- After adding the new Internet link device, you can set two protocols only. For example, Delta DVP TCP/IP and S7 300 (ISO TCP). If you add the third Protocol, the following message is displayed.



- Each protocol can only have 16 links. If you add more than 16 links for a protocol, a warning message appears to remind you that the number of controllers exceeds the range.



Device	Communication Parameters	HMI Station	Set the HMI station number. The range is 1 - 255 and the default station number is 0.
		Controller IP	You can set the IP address of the PLC here. Set the address to be in the same network segment as the HMI IP to enable the communication between the PLC and HMI.
		COM Port	The COM Port varies depending on the controller you select. You can also set the COM Port corresponding to the PLC's port.
	Controller settings	PLC Station	<ul style="list-style-type: none"> <li>■ The default PLC station number is the number automatically generated by the software after you select the controller to be used.</li> <li>■ You can also set the station number within the range of 0 - 255.</li> </ul>
		Password	If the set PLC needs password verification, you must set the corresponding password in the software for communication. The default is 12345678.
		Comm. Delay Time (ms)	It refers to the time interval after each communication. The range is 0 - 255 ms and the default is 0 ms.
		Timeout (ms)	After the communication starts, the communication is timed out without the PLC's response after the set time. The range is 10 - 2000 ms and the default is 1000 ms.
		Retry Count	If the PLC does not respond after the communication starts, the HMI sends the communication command again. If the number of attempts reaches the set Retry Counts, a warning message of abnormal communication appears. The range is 0 - 15 times and the default is 2 times.
	Optimize	<ul style="list-style-type: none"> <li>■ Select the <b>Optimize</b> check box to optimize the process of reading the elements and speed up the communication. If this check box is cleared, the function is disabled and the speed for reading the elements becomes slower.</li> <li>■ This check box is selected by default, so all element read addresses referring to this link will be optimized.</li> </ul>	



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## Localhost

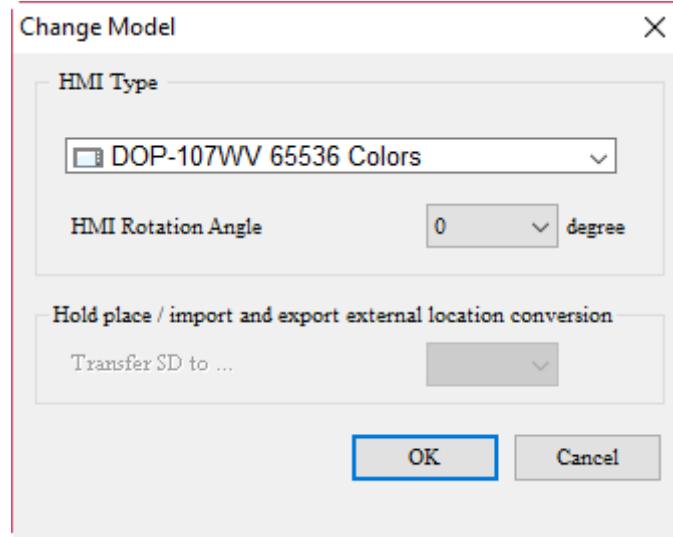
Local host	Overwrite IP	<ul style="list-style-type: none"> <li>■ Localhost represents the localhost's IP address of the HMI. You can set the IP address or obtain an IP address automatically.</li> <li>■ If this check box is not selected, the default IP address 0.0.0.0 is used. If you choose not to use the Overwrite IP option in the software, go to [System Setting] &gt; [Network] to change the IP address.</li> <li>■ Select this check box to change the IP address in the software. Therefore, users can set parameters such as the IP address and HMI name to be written.</li> </ul>
	Obtain an IP address automatically	<ul style="list-style-type: none"> <li>■ To enable this function, you must select the <b>Overwrite IP</b> check box first.</li> <li>■ When both of the options are selected, it means that HMI obtains the IP address through DHCP mode. Users can go to [System Setting] &gt; [Network] of the system screen to check the current IP address.</li> </ul>
	HMI IP Address	The HMI IP address must be set in the same network segment as the controller IP address.

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Communication Settings													
Localhost	Localhost	Subnet Mask	<ul style="list-style-type: none"> <li>■ The Subnet Mask is used to "segment the network" and "identify the destination address." Its format is the same as the IP address, which is also represented by four bytes separated by decimal points.</li> </ul>										
			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>IP class</th><th>Network address</th><th>Subnet mask</th></tr> </thead> <tbody> <tr> <td>Class A</td><td>1.x.x.x to 126.x.x.x</td><td>255.0.0.0</td></tr> <tr> <td>Class B</td><td>128.0.x.x to 191.255.x.x</td><td>255.255.0.0</td></tr> <tr> <td>Class C</td><td>192.0.0.x to 223.255.255.x</td><td>255.255.255.0</td></tr> </tbody> </table>	IP class	Network address	Subnet mask	Class A	1.x.x.x to 126.x.x.x	255.0.0.0	Class B	128.0.x.x to 191.255.x.x	255.255.0.0	Class C
IP class	Network address	Subnet mask											
Class A	1.x.x.x to 126.x.x.x	255.0.0.0											
Class B	128.0.x.x to 191.255.x.x	255.255.0.0											
Class C	192.0.0.x to 223.255.255.x	255.255.255.0											
<ul style="list-style-type: none"> <li>■ The Subnet Mask must be set when an IP address is set on each computer. For example, the first three bytes of the IP address are the Network ID for Class C in the preceding table. Therefore, the first 3 bytes of the Subnet Mask are all 255, while the last byte is the Host ID and the Subnet Mask is 0.</li> </ul>													
<ul style="list-style-type: none"> <li>■ The Gateway is mostly used to connect local area networks and large computer host systems. Generally, a gateway is required as long as there are two systems with different levels to be connected.</li> <li>■ The gateway is the exit of the local area network. All packets to be sent to the Internet are first sent to the gateway and are then transmitted to other hosts on the Internet and finally to the host at the destination.</li> <li>■ If you need to connect to an external network, you can set the gateway address according to the network rules. The default is 0.0.0.0.</li> </ul>													

## 27.3 Change Model

You can use the Change Model function to switch to the screen of the selected model.



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Figure 27.3.1 Change Model

If the model originally used (such as DOP-110WS) supports SD card devices and the element data is stored in the SD cards, when you choose to switch to another model, the option for the Hold place / import and export external location conversion will be displayed as USB Disk.

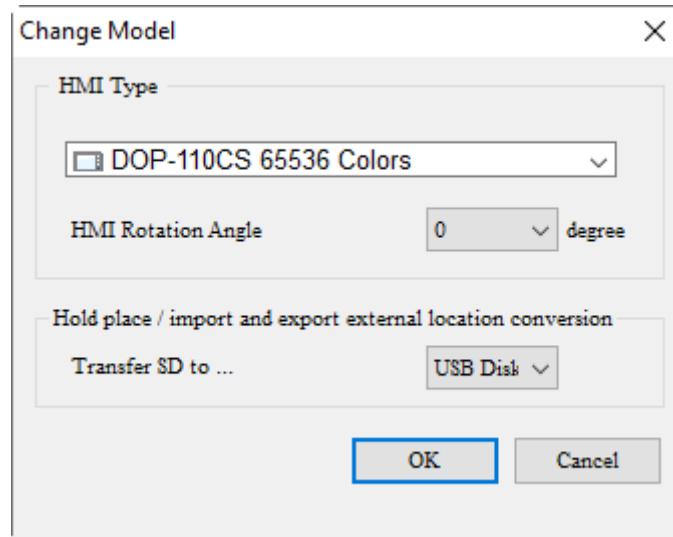


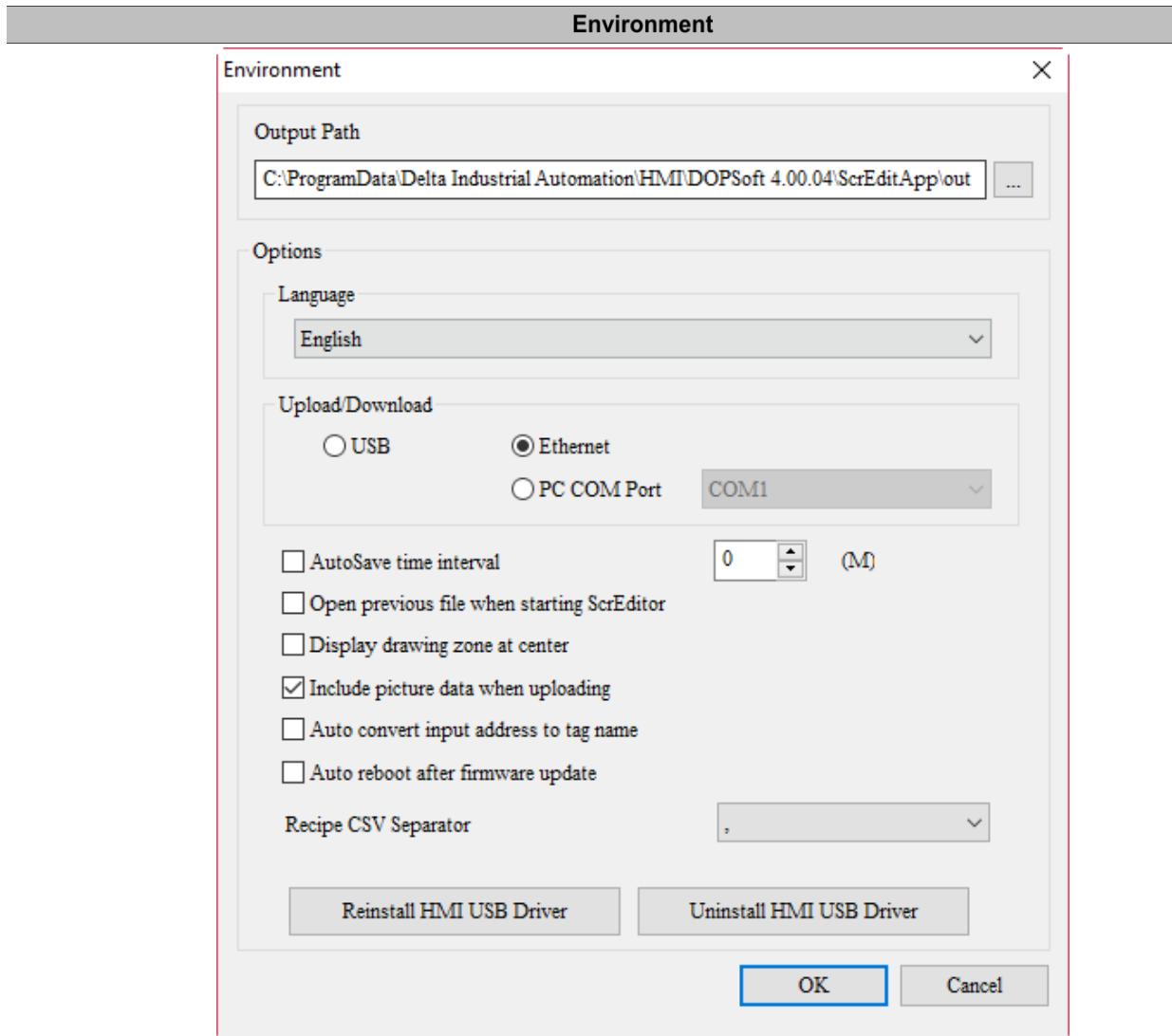
Figure 27.3.2 Non-volatile external storage device setting

The software enables you to open the HMI screens of the DOP-B, DOP-W, and DOP-H models and convert the screens into the compatible formats for the DOP-100 models to edit.

## 27.4 Environment settings

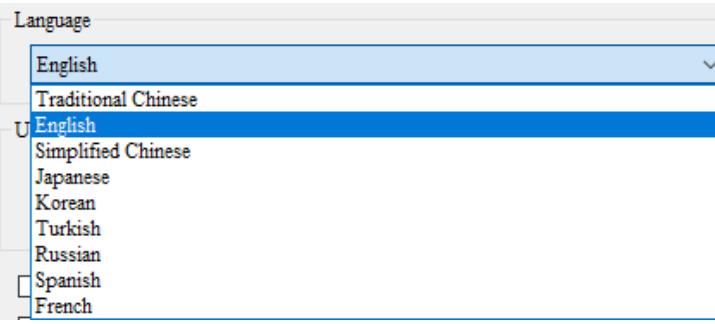
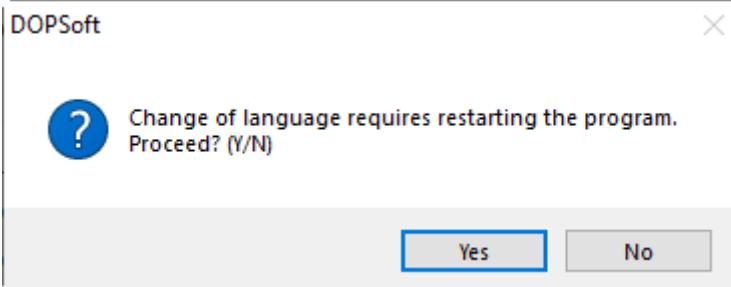
You can set the environment parameters related to the HMI system with the Environment settings, including the language of user interface and data transmission methods. The parameters in the Environment settings are described as follows.

Table 27.4.1 Description of environment properties

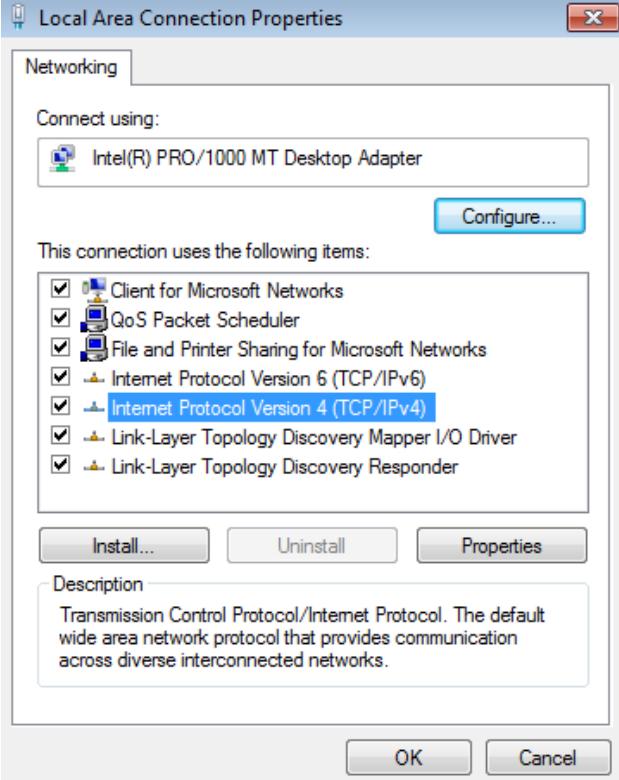
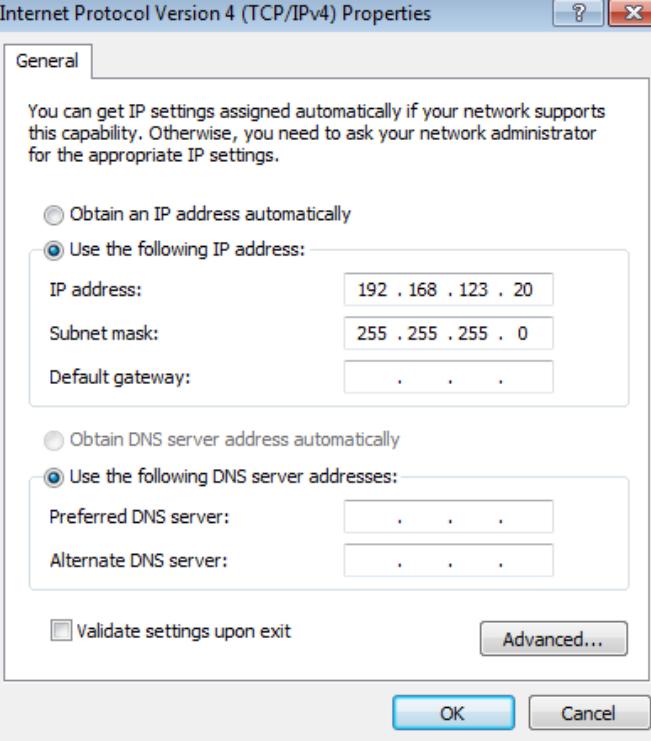


In the Environment setting screen, you can view the output path, and set the system environment parameters for the Upload/Download settings and USB driver installation.

Output Path	It refers to the output path of a CIN file generated after screen compilation. Software functions such as the online / offline simulation and file upload / download will refer to the data in this path. So, do not change this path unless necessary, otherwise the program execution may fail or the software may not be able to find a file.
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Environment		
Language		<ul style="list-style-type: none"> <li>You can select the language for the user interface of the software. 9 languages are available, including Traditional Chinese, English, Simplified Chinese, Japanese, Korean, Turkish, Russian, Spanish, and French.</li> </ul> 
Upload/Download	USB	<ul style="list-style-type: none"> <li>Select one of the languages, click <b>OK</b>, and the software displays a message to confirm if you want to restart the program for the settings to be effective. If you click <b>Yes</b>, the software will restart automatically. Then, you can find the language is changed.</li> </ul>  <ul style="list-style-type: none"> <li>The default transmission interface for data upload / download between the software and HMI is USB.</li> <li>There are four types of USB transmission mode. The first one is the general upload / download type (Normal = USBCommMode 0), which requires you to install the driver manually. The second one is USB Disk type (Disk = USBCommMode 1), which allows you to upload / download HMI programs without installing the driver. The third one is USB CDC type (CDC = USBCommMode 2), and you need to install a driver additionally. The fourth one is AUTO type, which means that the software will perform upload / download tasks based on the current USB Up/Download mode setting in the HMI System Menu.</li> <li>USBCommMode 0 only supports Windows XP operating system.</li> <li>USBCommMode 1 and USBCommMode 2 support Windows 7 / Windows 10 operating systems.</li> </ul>

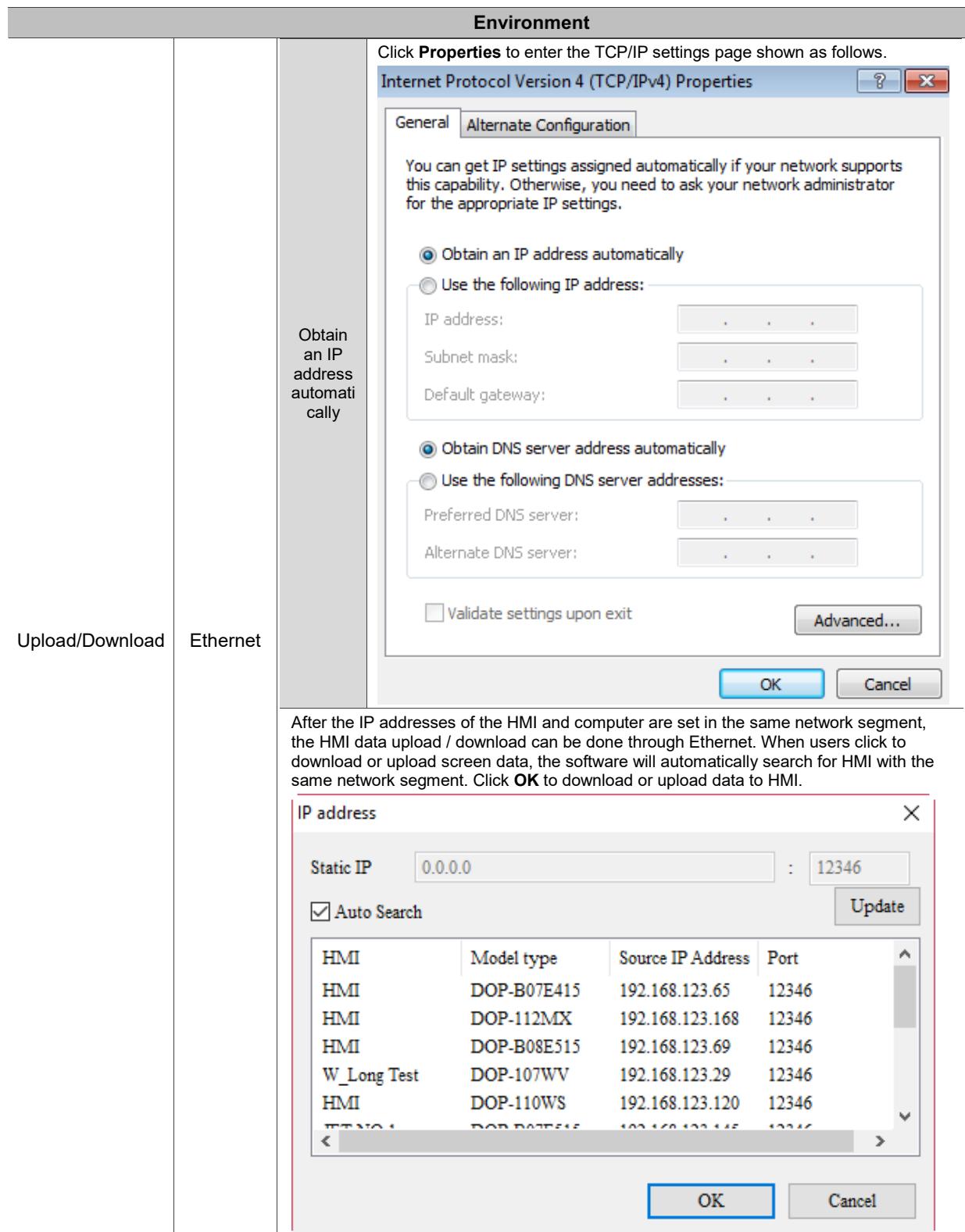
Environment		
Upload/Download	Ethernet	<ul style="list-style-type: none"> <li>■ The Ethernet option allows you to perform HMI data upload / download tasks over the network.</li> <li>■ If you use Ethernet to upload / download the data, you must set the IP addresses of both the HMI and the computer on the same network segment. You can set the HMI IP by selecting the <b>Overwrite IP</b> or <b>Obtain an IP Address automatically</b> check box.</li> </ul>
	Overwrite IP	<p>■ HMI</p> <p>To set the IP address, you can go to [Options] &gt; [Communication Settings] &gt; [Ethernet1] &gt; [Localhost], or enter the System screen and go to [System Setting] &gt; [Network].</p> <p>The following figure shows the setting interface of the software:</p> <p>The following figure shows the setting interface of the system:</p>

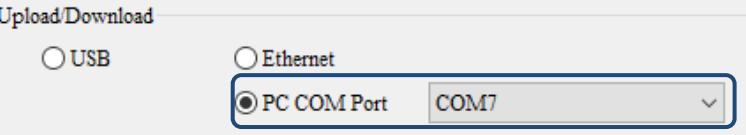
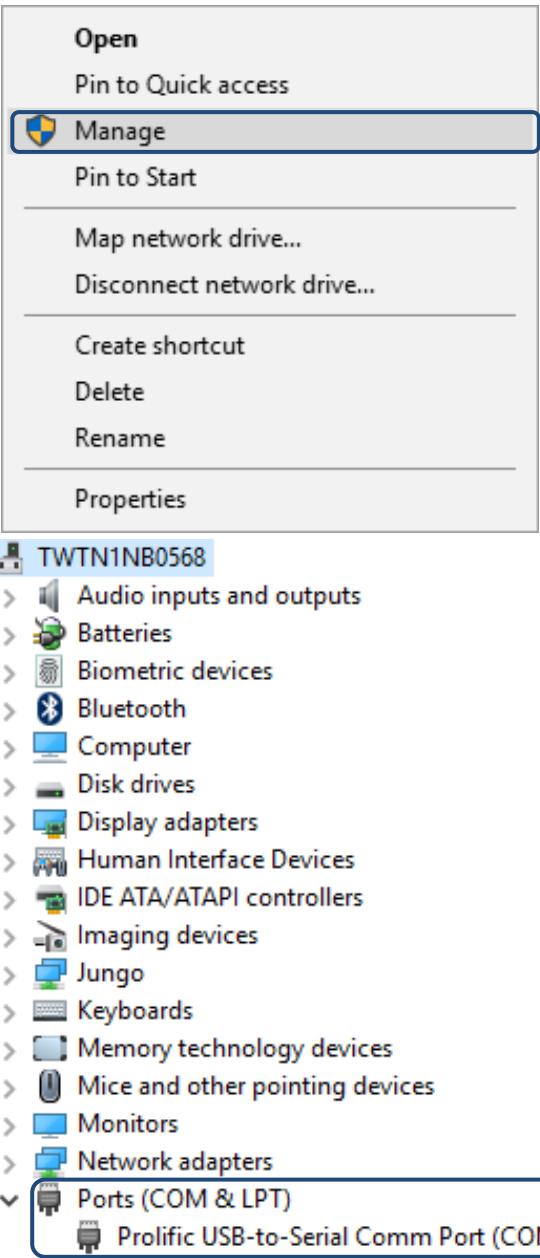
Environment		
Upload/Download	Ethernet	Overwrite IP
		<p>■ Computer In the Windows Start Menu, go to [Control Panel] &gt; [Network and Sharing Center] ( Local Area Connection Properties) &gt; [Local Area Connection] ( Local Area Connection) &gt; [Internet Protocol (TCP/IP)].</p>  <p>Click <b>Properties</b> to enter the TCP/IP settings page shown as follows.</p> 

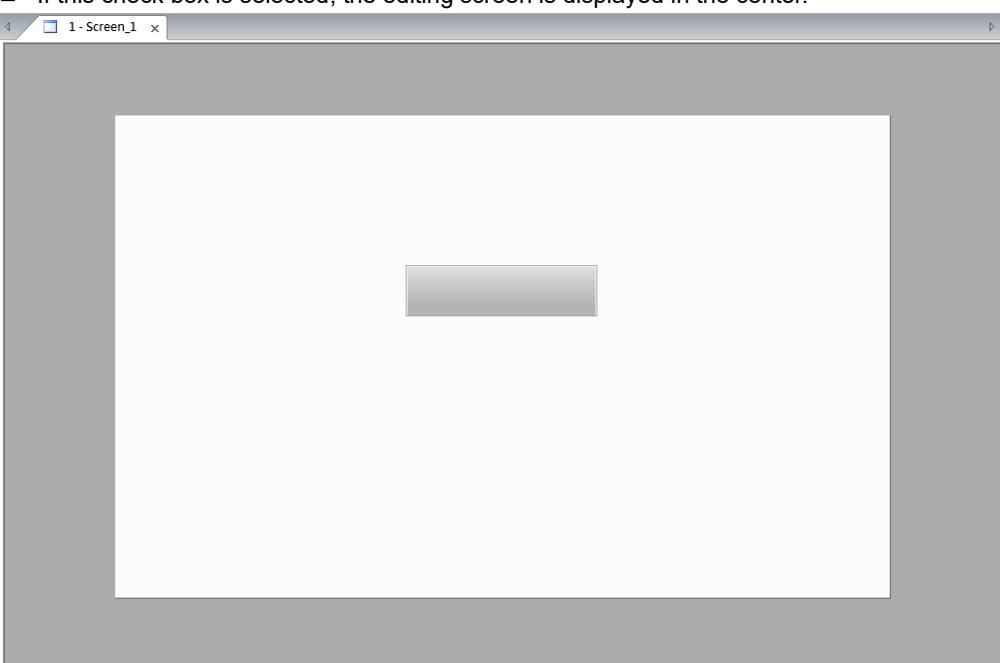
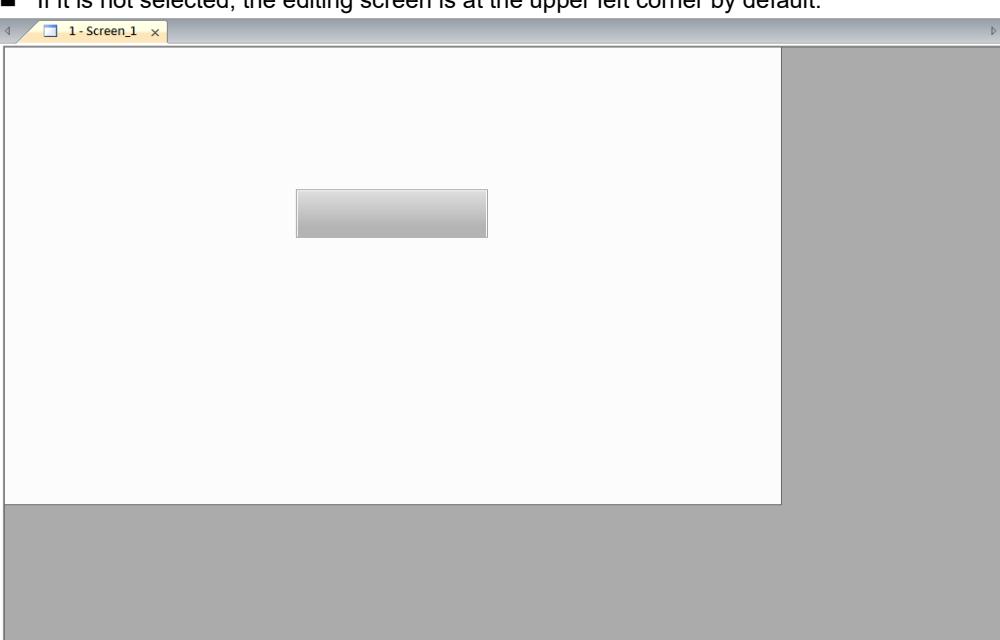
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		<p>■ HMI:</p> <p>When you select the <b>Obtain an IP address automatically</b> check box, you do not need to set the IP address; DHCP dynamically assigns the IP address to the HMI instead. You can also go to the System screen &gt; [System Setting] &gt; [Network] and set the Mode to DHCP.</p> <p>The following figure shows the setting interface of the software:</p>
Upload/Download	Ethernet	<p>■ Computer:</p> <p>In the Windows Start Menu, go to [Control Panel] &gt; [Network and Sharing Center] (  ) &gt; [Local Area Connection] (  ) &gt; [Internet Protocol (TCP/IP)].</p>

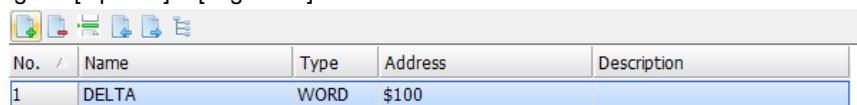
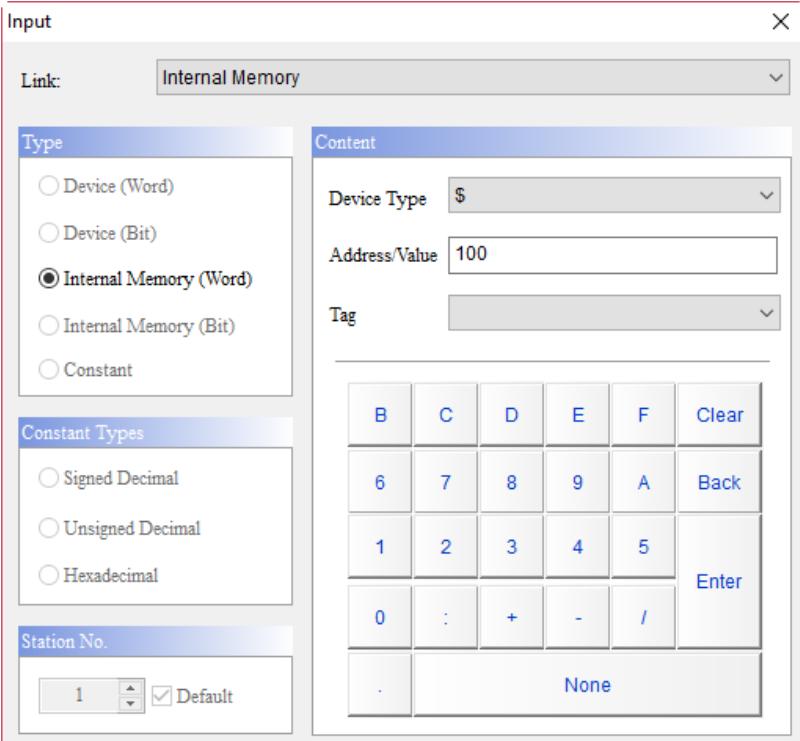
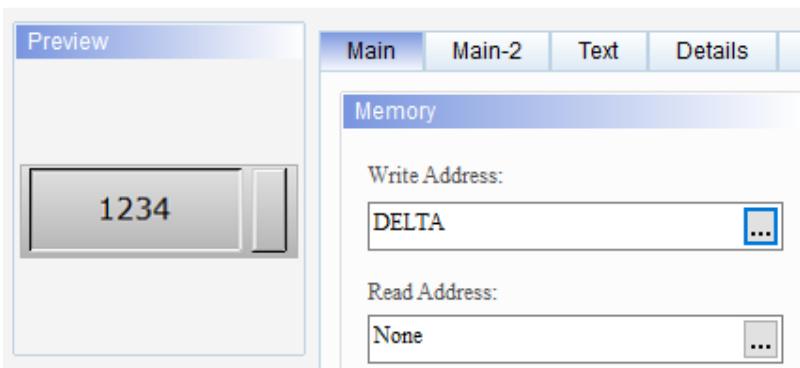


Environment	
Upload/Download	<ul style="list-style-type: none"> <li>■ PC COM Port is for data upload / download between the PC and HMI. If you select PC COM Port to upload / download, you must first enter the HMI system screen and go to [Up/Download] &gt; [Standard Mode] and choose COM1 or COM2.</li> <li>■ Next, set the port number for the PC COM Port in the software.</li> </ul>  <ul style="list-style-type: none"> <li>■ Right-click on [This PC] &gt; [Manage] &gt; [Ports (COM &amp; LPT)] to see the COM Port number of the computer.</li> </ul> 
AutoSave time interval	You can set the time interval for the software to save the project automatically. If you set it to 0 min, it means this option is not selected (function disabled). If you select the check box, the default minimum is 3 min, and the maximum is 120 min. <div style="display: flex; align-items: center; margin-top: 10px;"> <input checked="checked" type="checkbox"/> AutoSave time interval         <span style="margin-left: 20px;"> <input style="width: 20px; height: 20px; border: 1px solid #ccc; border-radius: 5px; text-align: center; font-size: 10px; margin-right: 5px;" type="text" value="0"/> <span style="font-size: 10px;">(M)</span> </span> </div>
Open previous file when starting ScrEditor	If this check box is selected, the project being editing will be displayed on the screen the next time DOPSoft is executed.

<b>Environment</b>	
	<p>■ If this check box is selected, the editing screen is displayed in the center.</p> 
Display drawing zone at center	<p>■ If it is not selected, the editing screen is at the upper left corner by default.</p> 
Include picture data when uploading	If the edited project contains graphic data, but this check box is not selected, the graphic content will be empty after the screen data is uploaded to the HMI.

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Environment	
<ul style="list-style-type: none"> <li>■ This function automatically converts the element memory address into a tag name according to the Tag Table.</li> <li>■ The setting steps for the Auto convert input address to tag name function are as follows:</li> </ul> <p>Step 1: go to [Options] &gt; [Tag Table] to edit the data.</p>  <p>Step 2: go to [Options] &gt; [Environment], and select the <b>Auto convert input address to tag name</b> check box. Then, create a Numeric Entry element and set the Write Address to \$100.</p>  <p>Step 3: after you set the address, the memory address is automatically converted to the tag "DELTA."</p> <p>Numeric Entry</p> 	<p>Auto convert input address to tag name</p> <ul style="list-style-type: none"> <li>■ After [Reinstall HMI USB Driver] is executed, the system reinstalls the USB driver for the HMI.</li> <li>■ After [Uninstall HMI USB Driver] is executed, the system uninstalls the USB driver for the HMI.</li> <li>■ These two options are used when you are unable to upload / download data through USB transmission. In this case, you can uninstall and then reinstall the HMI USB driver to ensure normal transmission between the HMI and the software.</li> <li>■ This method is applicable in Normal and CDC USB transmission modes.</li> </ul>
<p>Auto reboot after firmware update</p>	When this check box is selected, the HMI automatically restarts once the firmware is updated without displaying the message "Update Firmware Succeed!!!!"
<p>Reinstall HMI USB Driver</p>	
<p>Uninstall HMI USB Driver</p>	

### Environment

- Four separators are provided. You can set the displaying separator in the CSV files to be exported.

Recipe CSV Separator	Comma	Semicolon	TAB	Space
	, ,	, ;	, TAB	, SPACE
	RCP16-1.0 4,4 11,12,13,14, 15,16,17,18, 19,20,21,22, 0,0,0,0,	RCP16-1.0 4;4 11;12;13;14; 15;16;17;18; 19;20;21;22; 0;0;0;0;	RCP16-1.0 4 4 11 12 13 14 15 16 17 18 19 20 21 22 0 0 0 0	RCP16-1.0 4 4 11 12 13 14 15 16 17 18 19 20 21 22 0 0 0 0

- You can use WordPad to open the exported CSV file and check whether the separators in the file are correct.

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# Advanced Settings

# 28

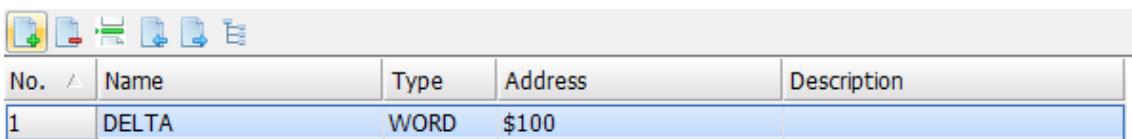
This chapter provides the descriptions of the advanced settings.

28.1	Tag Table .....	28-2
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28.4	Device Data table .....	28-21
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# 28

## 28.1 Tag Table

The Tag Table is used to help users set tags for the memory addresses. For example, if you set DELTA for address \$100, when the next time you want to enter \$100, DELTA can be used to replace \$100, as shown in the following figure.



No.	Name	Type	Address	Description
1	DELTA	WORD	\$100	

Figure 28.1.1 Tag Table

You can select the tags with two ways. One is selecting the corresponding tag in the **Tag** list, as shown in the following figure.

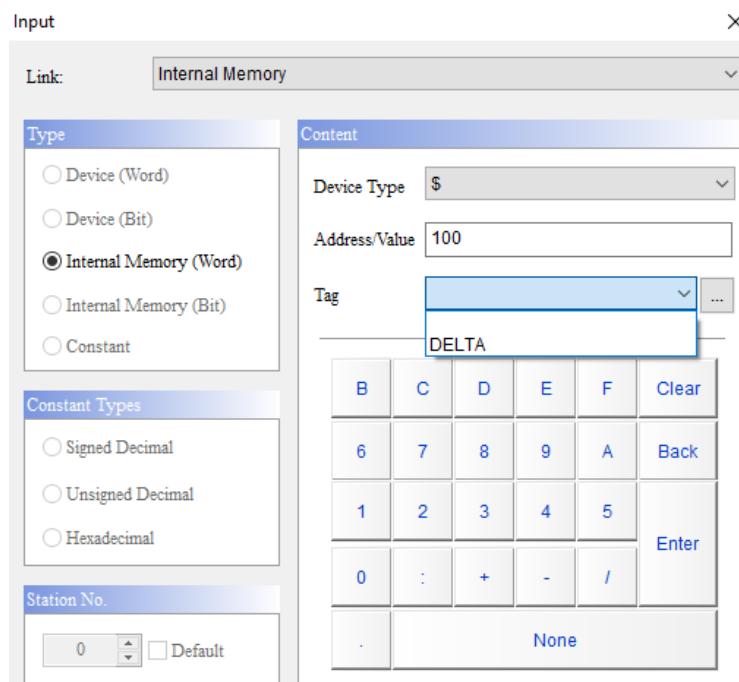


Figure 28.1.2 Set tags

The other way is clicking the  icon beside the drop-down list to select the corresponding tag.

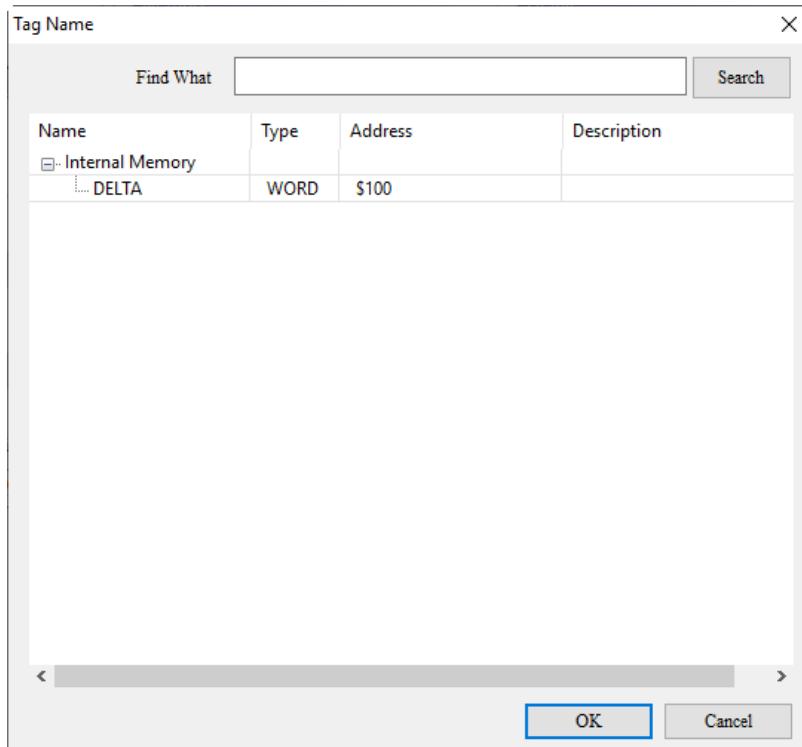


Figure 28.1.3 Set tags

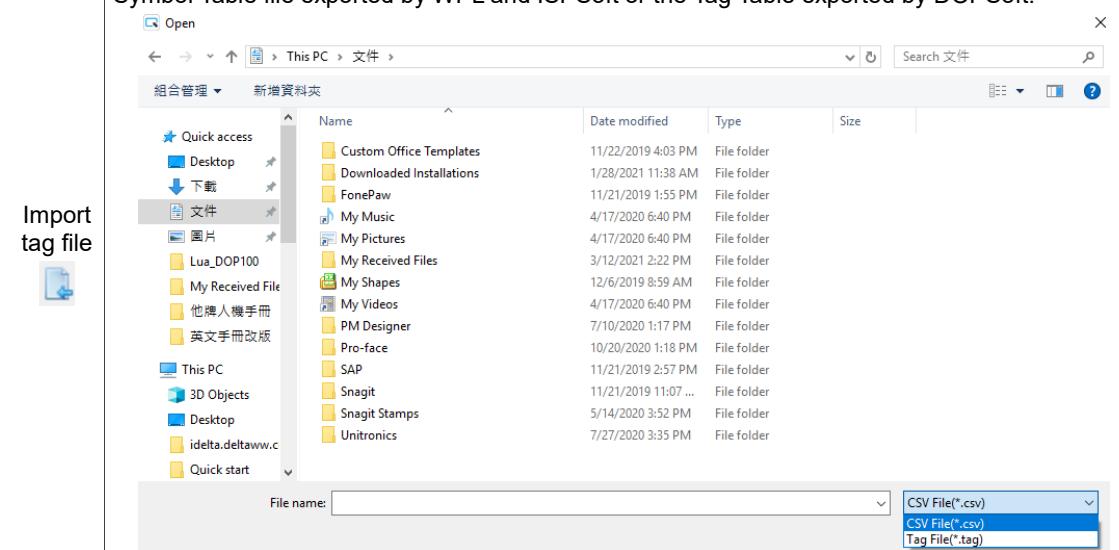
The Tag Table allows you to import and make use of the Symbol Table edited by WPL and ISPSoft, which makes the programming easier. The following section introduces each item on the Tag Table.

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Table 28.1.1 Tag Table

Tag Table			
No.	Name	Type	Description

You can open an already created tag or CSV file in the Tag Table. The CSV file includes the Symbol Table file exported by WPL and ISPSSoft or the Tag Table exported by DOPSoft.

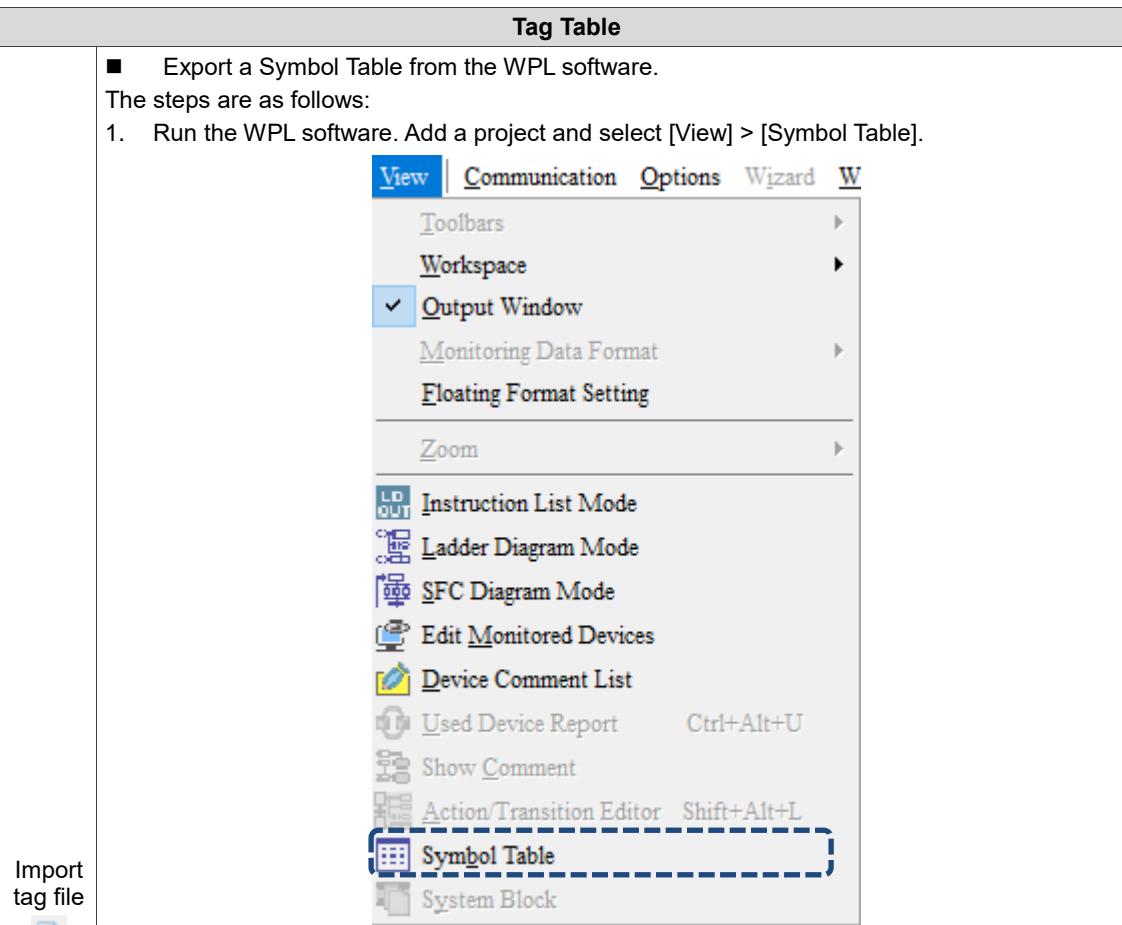


### Tag Table

- Export a Symbol Table from the WPL software.

The steps are as follows:

1. Run the WPL software. Add a project and select [View] > [Symbol Table].



Import tag file



2. After entering the table, double-click the left mouse button in the blank area.

Symbol Table			
State	Identifiers	Device	Comment

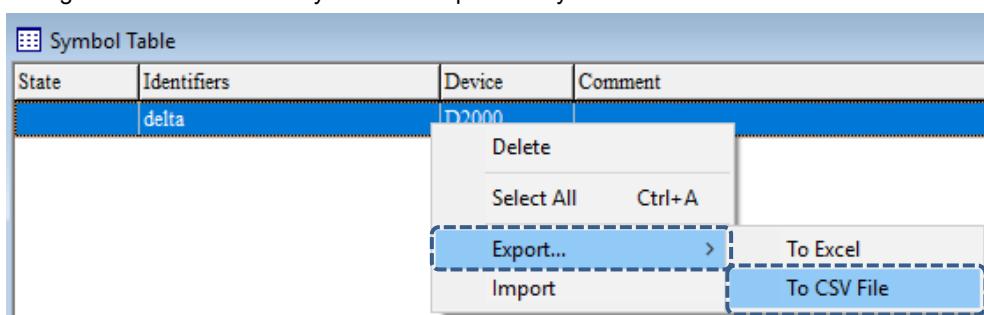
3. Enter "D2000" for the Device Name and "delta" for the Identifier. Click **OK** to exit the Edit Symbol window.

**Edit Symbol**

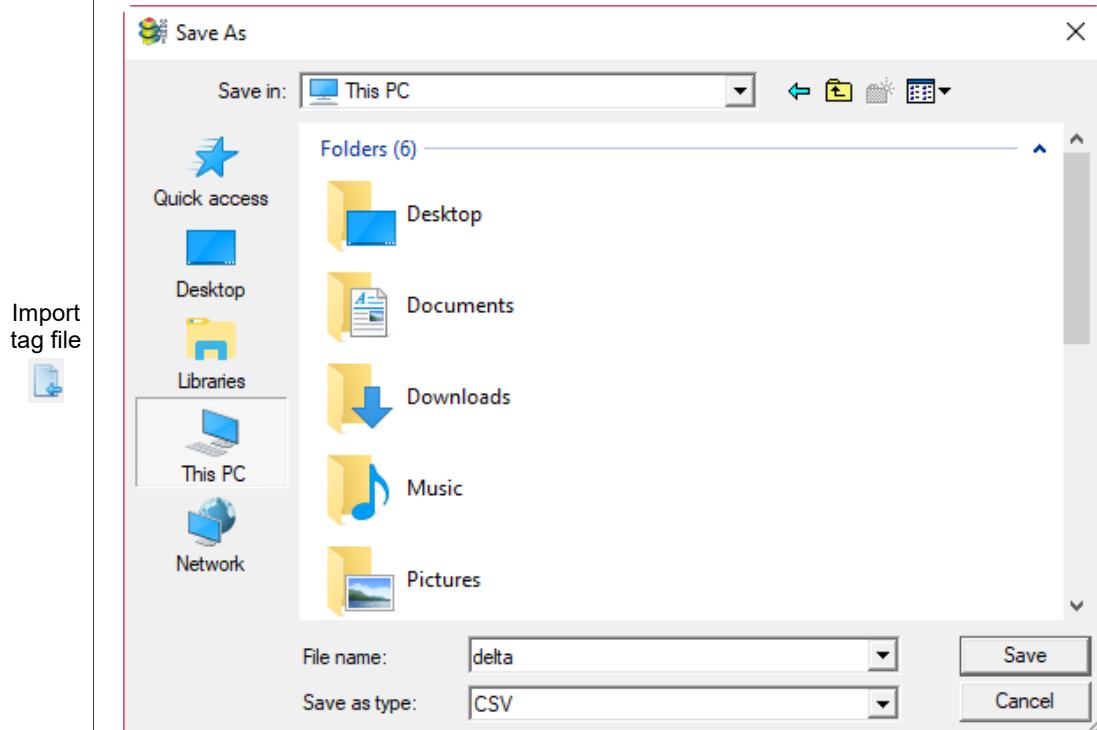
Device Name	<input type="text" value="D2000"/>	<b>OK</b>
Identifier	<input type="text" value="delta"/>	<b>Cancel</b>
Comment		

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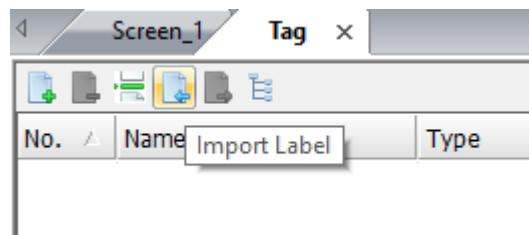
4. Right-click on the added symbol and export the symbol as a CSV file.

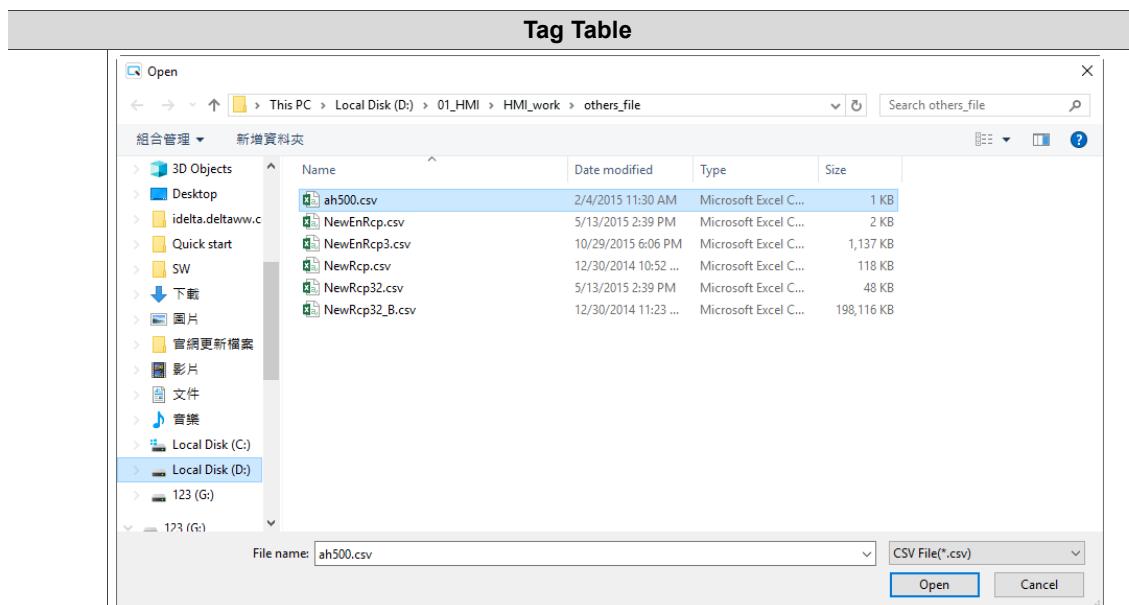


5. Name the exported CSV file as "delta.csv".

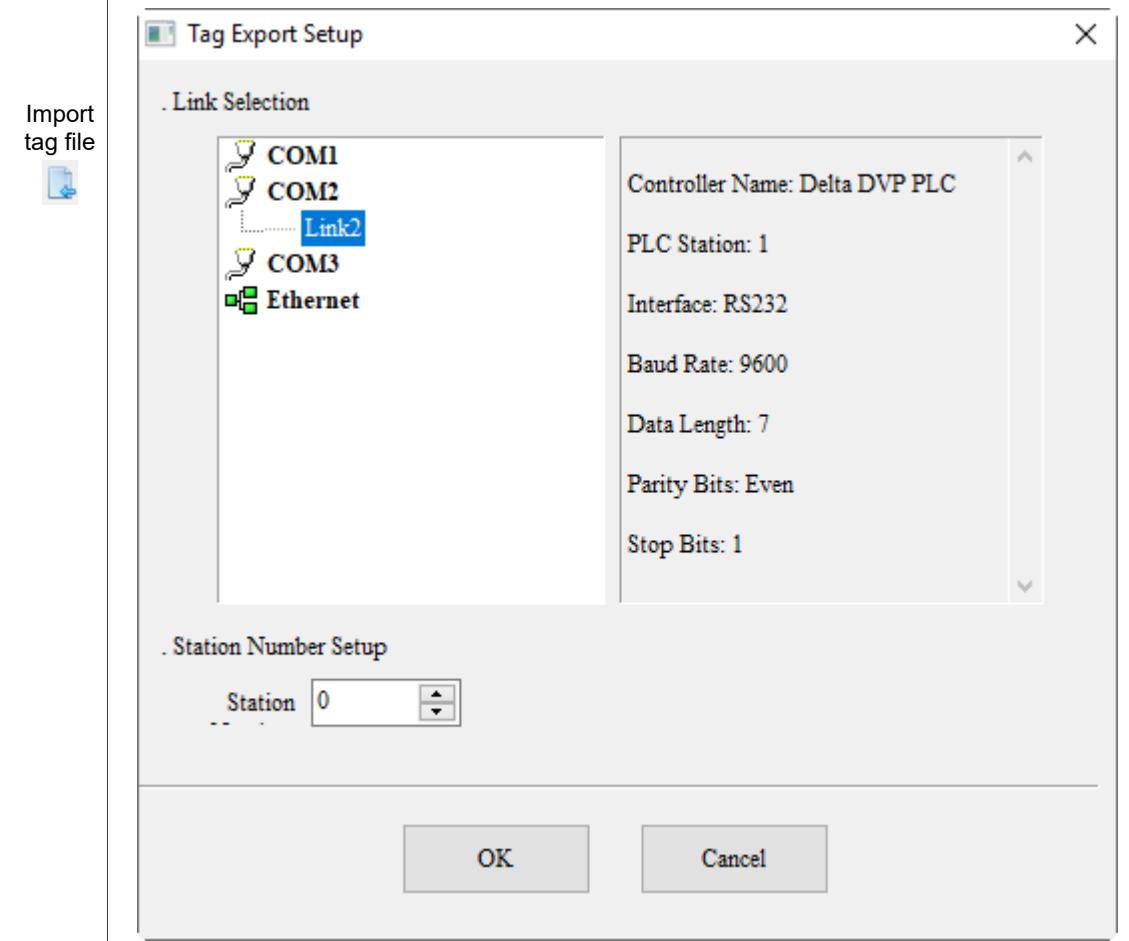


6. Run the DOPSoft software. Select [Options] > [Tag Table]. Click  and select the "delta.csv" file for importing.



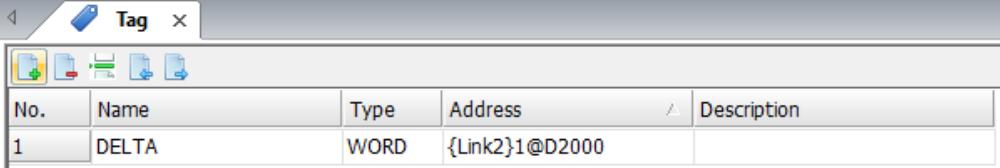


7. Select the COM Port to import to and set the Station number. Click **OK** once finishing the setup. The default station number is 0, but you can set the number as required.



**Tag Table**

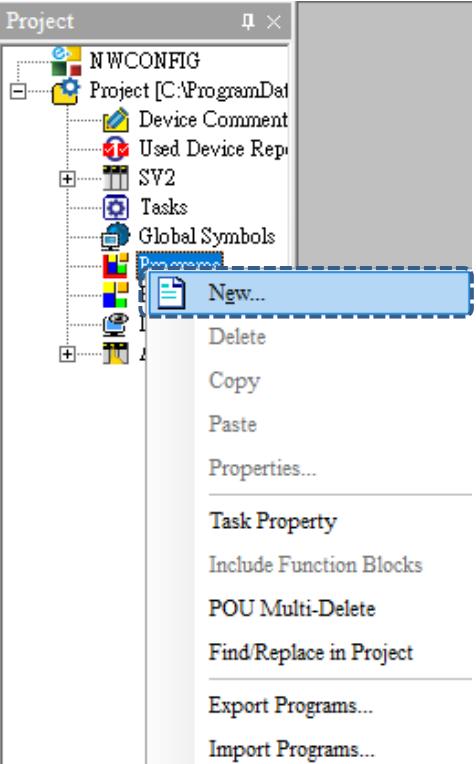
8. After you click **OK**, the Symbol Table of WPL is imported to DOPSoft.



Note: the imported symbols are all recognized by DOPSoft as upper case letters. Thus, for the preceding example, the lower case symbols of "delta" edited in WPL are recognized as upper case symbols of "DELTA".

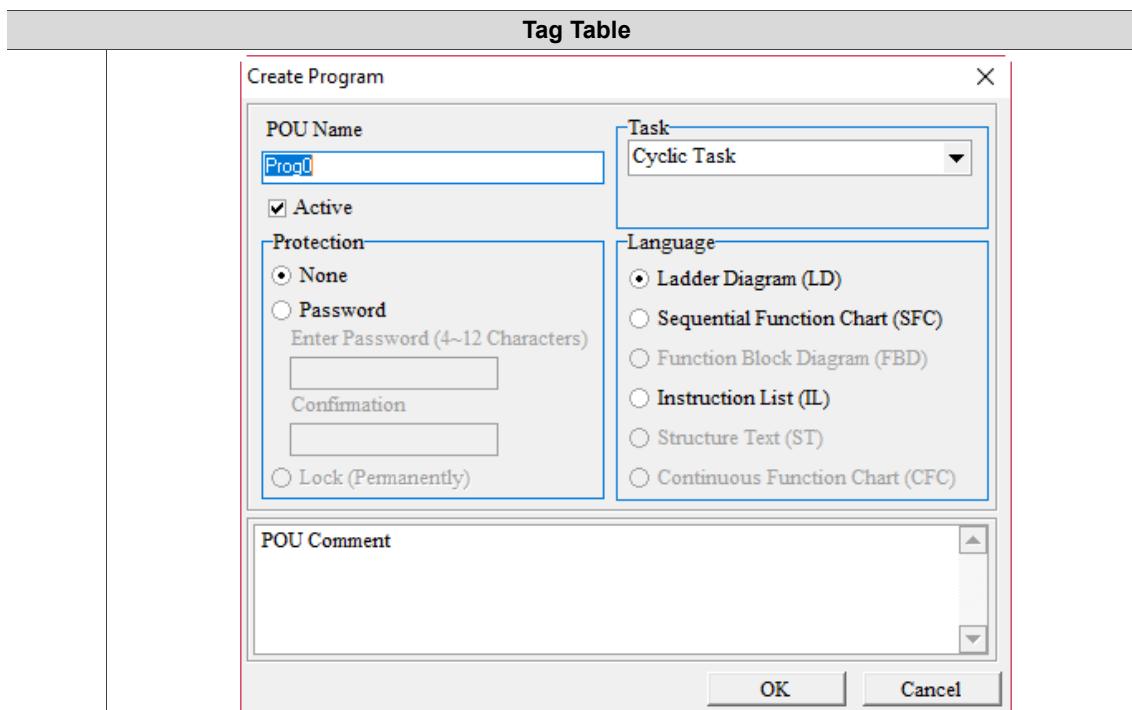
■ Export a Symbol Table using ISPSoft  
The steps are as follows:

1. Run the ISPSoft software. Create a project. Right-click in the program to add a POU. Click **OK** to finish.

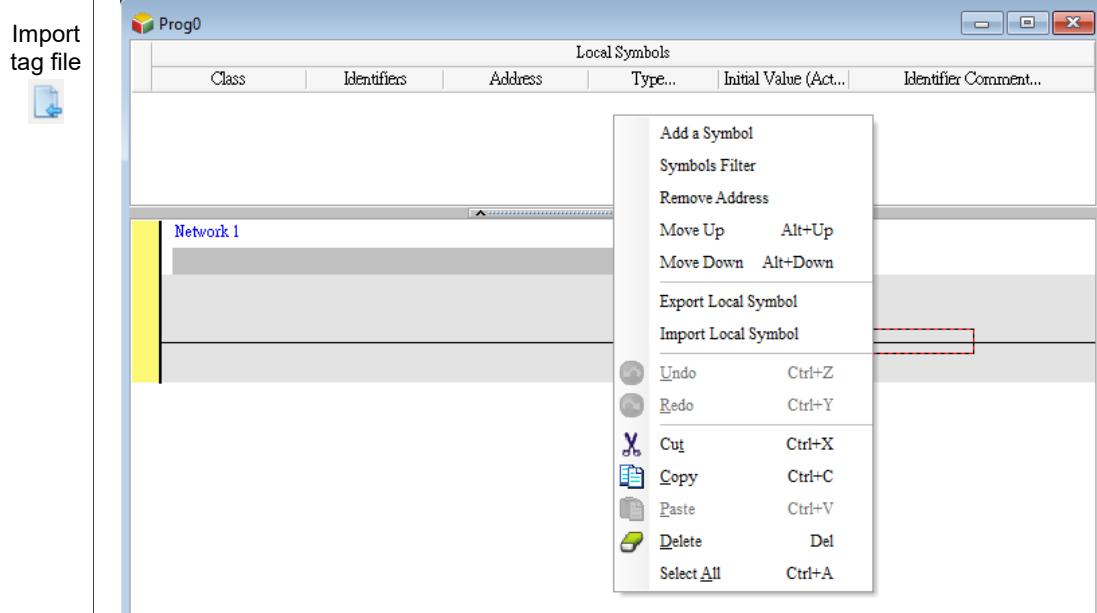


Import tag file

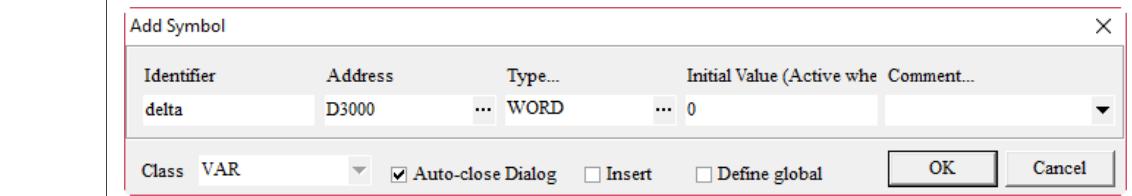




- After adding a POU, right-click on the blank area in the Local Symbols window, and select **Add a Symbol**.



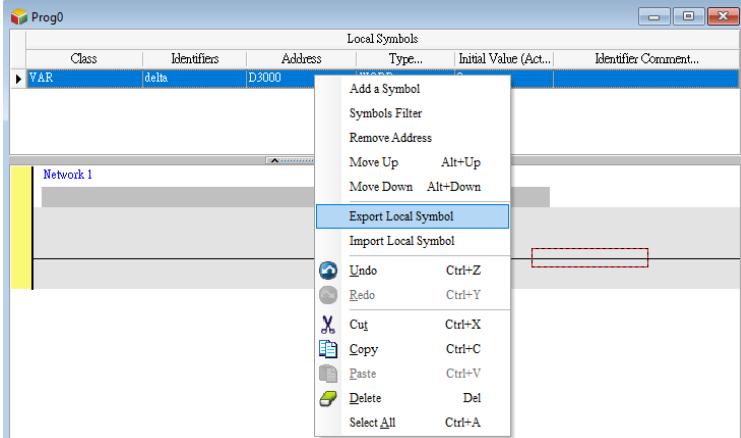
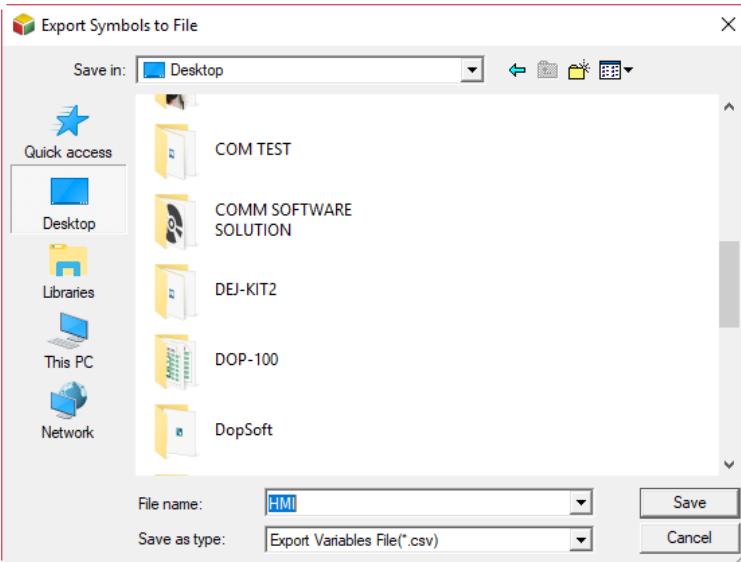
- Enter "delta" for the Identifier and "D3000" for the Address. Once done, click **OK** to exit the window.



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**Tag Table**

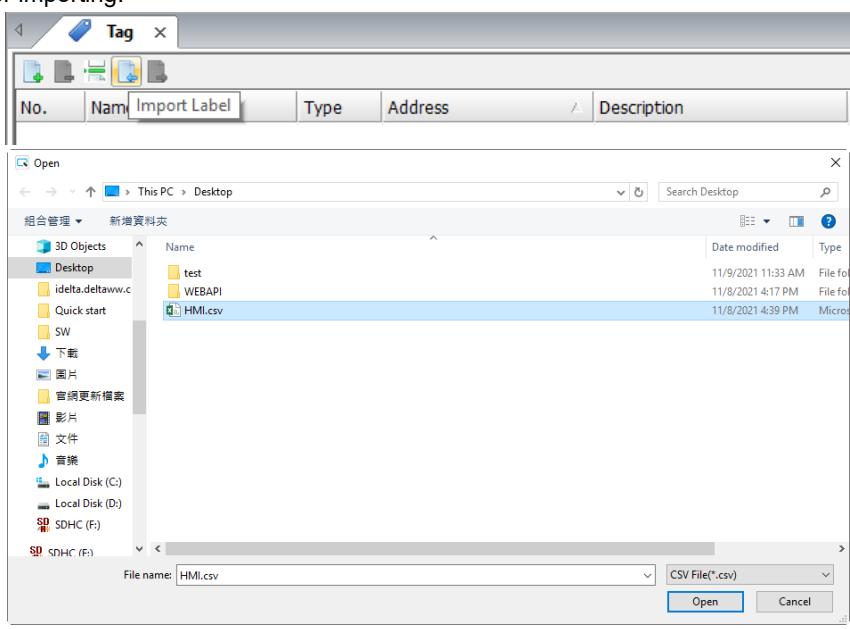
- Once you finish adding the symbol, go to the Local Symbols window. Right-click on the "delta" identifier to select **Export Local Symbol** and save it as an HMI.csv file.

Import tag file

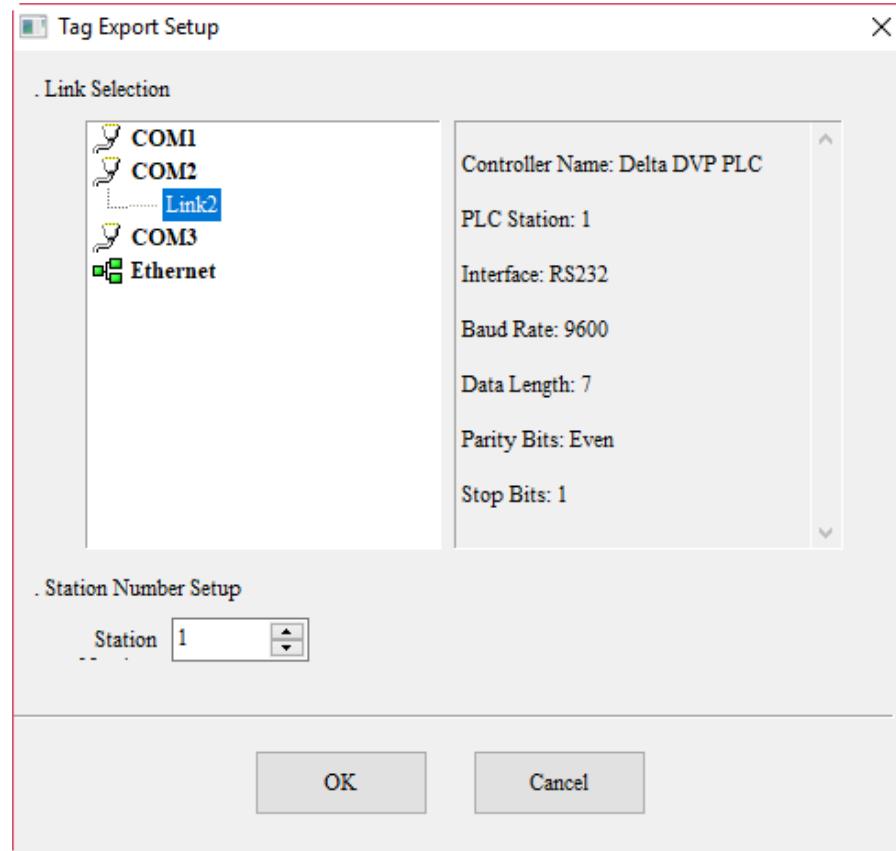


- Run DOPSoft and go to [Options] > [Tag Table]. Click  and select the "HMI.csv" file for importing.



**Tag Table**

6. Select the COM Port to import to and set the Station number. Click **OK** once finishing the setup. The default station number is 0, but you can set the number as required.

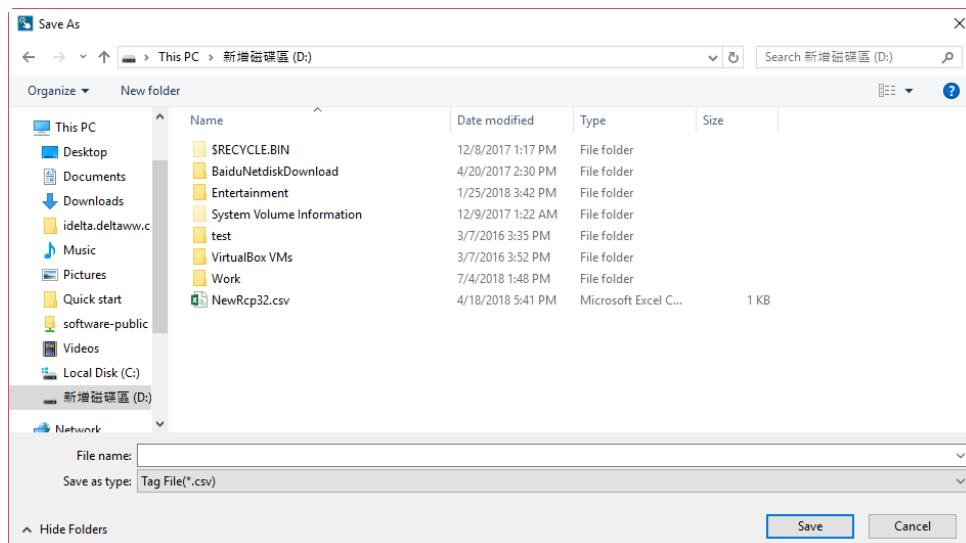


7. After you click **OK**, the Symbol Table of ISPSoft is imported to DOPSoft.

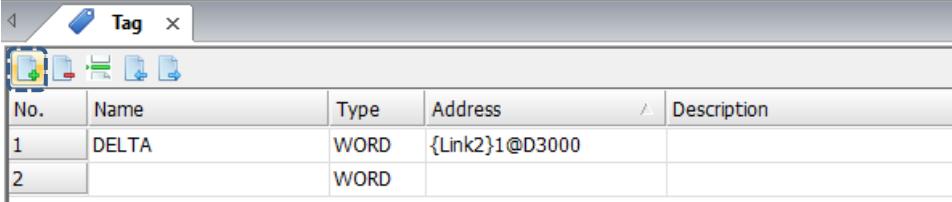
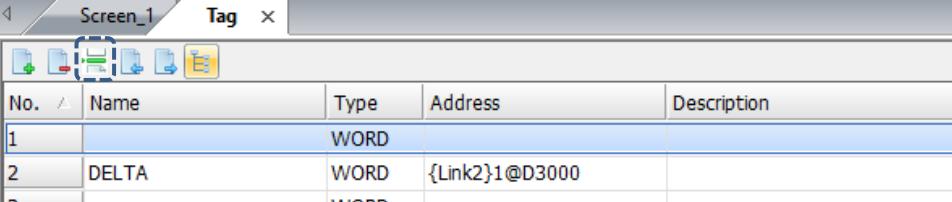
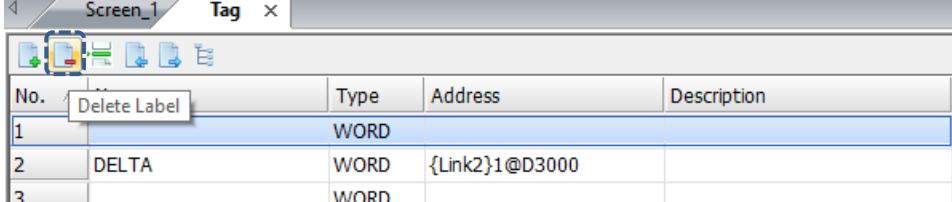
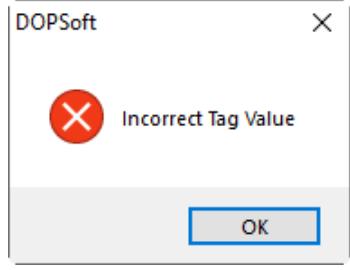
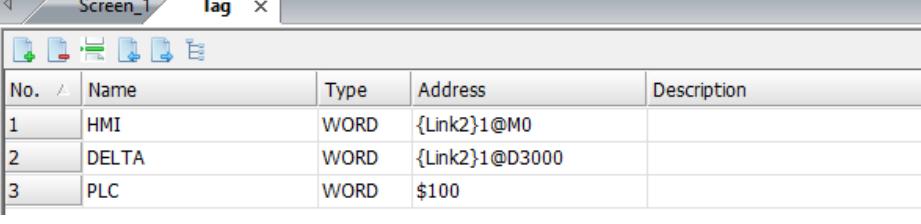
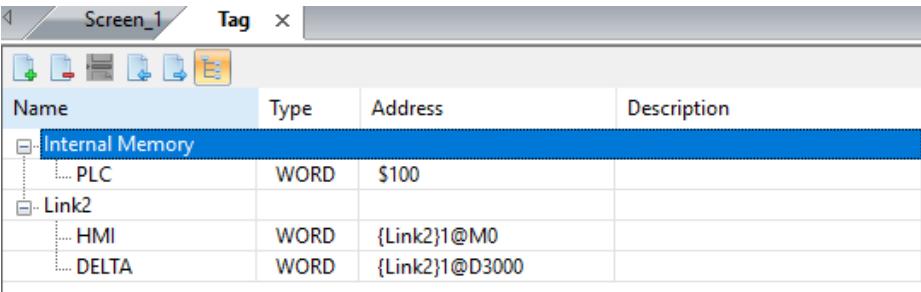
No.	Name	Type	Address	Description
1	DELTA	WORD	{Link2}1@D3000	

Note: the imported symbols are all recognized by DOPSoft as upper case letters. Thus, for the preceding example, the lower case symbols of "delta" edited in ISPSoft are recognized as upper case symbols of "DELTA".

You can save the edited tag as a CSV file.

**Export tag file**

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<b>Tag Table</b>	
Add tag 	You can add a new tag data entry by clicking the Add tag icon. 
Insert tag file 	The new data entry is inserted before the row of the data entry you selected. 
Delete tag 	When you select a row of data entry and click the Delete tag icon, this selected data is deleted. 
Exit the screen	If you add or insert a row of data entry without filling any data, and you exit this editing screen, the following warning message appears to warn you that the tag value is incorrect. 
Sort by link name 	<ul style="list-style-type: none"> <li>■ Sorts and displays the created links by link names.</li> <li>■ If there are three sets of tags created, the display without sorting is as follows. </li> <li>■ If you sort the tags by the link name, they are displayed with a tree view. </li> </ul>

## 28.2 HMI Identifier

This section explains the HMI Identifier Settings provided in DOPSoft. When the HMI is set with an HMI Identifier and you open a screen not set with an identical HMI Identifier, an error message appears. This function ensures that the specific screens can only be downloaded to the specific HMIs. When this function is enabled and during HMI startup, the HMI checks whether the identifiers of both the screen file and HMI are matched. The HMI becomes operable only when the identifiers are matched. Thus, you can separately set the HMI Identifiers for the HMI and the screen file.

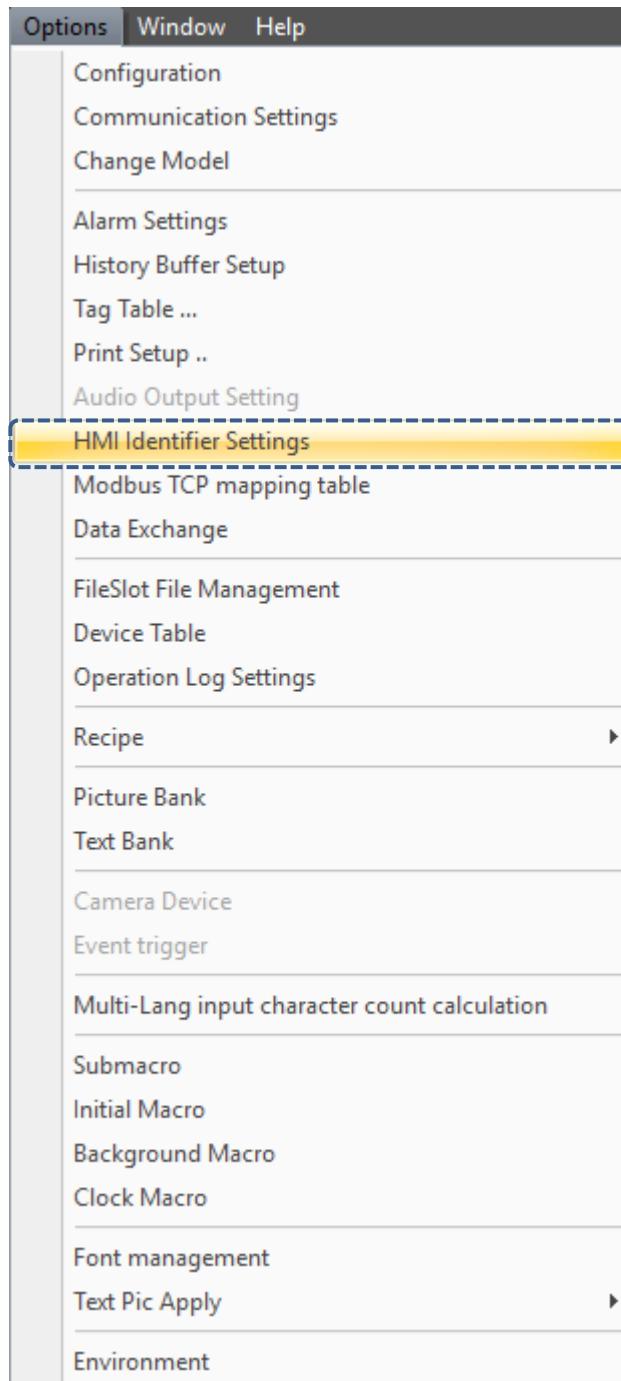
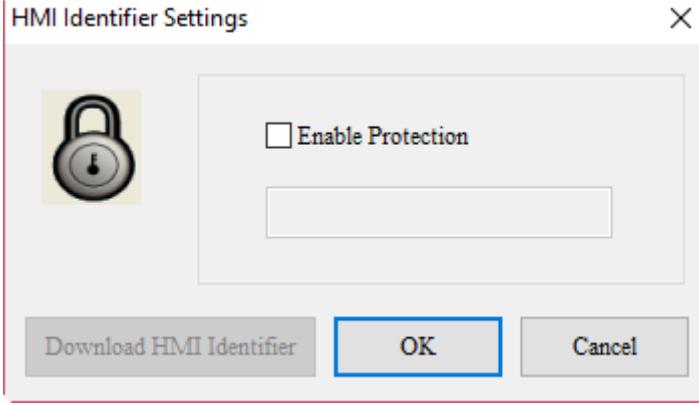


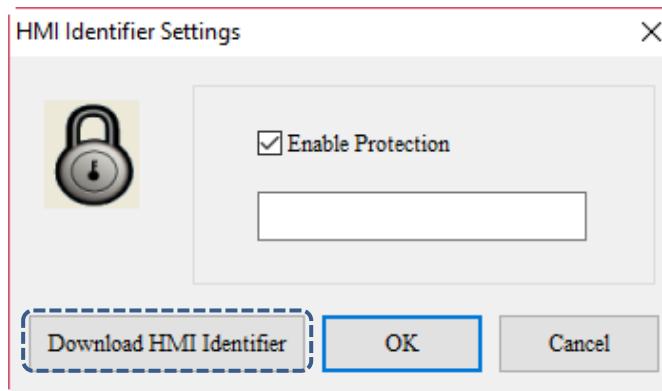
Figure 28.2.1 HMI Identifier Settings

Table 28.2.1 Properties of HMI Identifier Settings

Properties of HMI Identifier Settings	
	 <p>HMI Identifier Settings</p> <p><input type="checkbox"/> Enable Protection</p> <p>Download HMI Identifier      OK      Cancel</p>
Enable Protection	Select the check box to enable the HMI Identifier for protection. <input type="checkbox"/> Enable Protection
Password	The input format for passwords is HEX that supports numerals 0 - 9 and alphabets A - F. Other characters and symbols cannot be correctly entered to the password field.
Download HMI Identifier	<ul style="list-style-type: none"> <li>■ Executing this button only writes the identifier to the HMI.</li> <li>■ Once you downloaded the identifiers, the HMI compares the identifiers for the screen file and HMI each time the HMI is turned on.</li> </ul>

Note:

1. After you select the check box of **Enable Protection** and set its password, if you execute **Download All Data** without clicking **Download HMI Identifier**, only the identifier for the screen is downloaded.



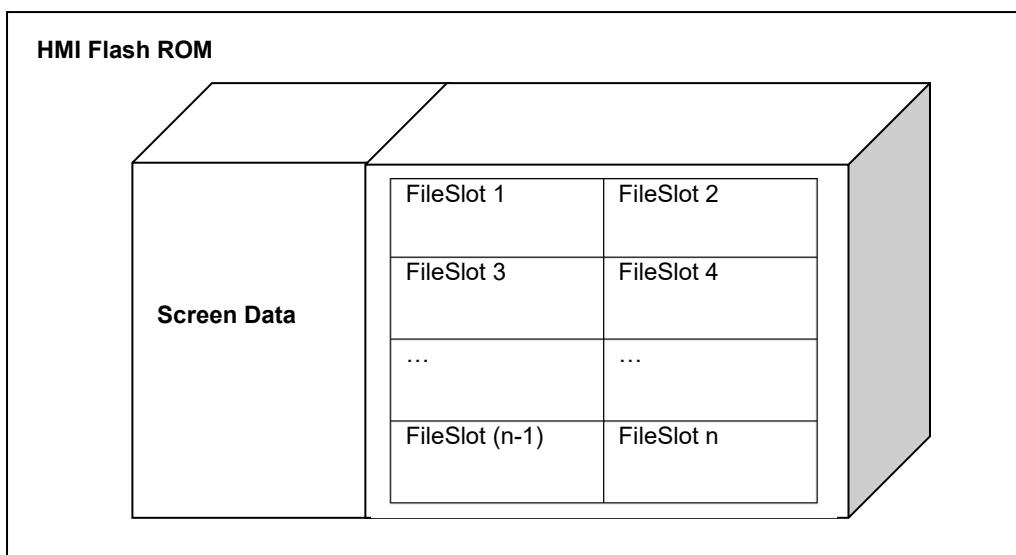
2. When there is an identifier for the HMI but no identifier for the screen, and you try to download the screen, the message "Check HMI Machine ID Fail 1" appears.
3. When there is an identifier for the screen but no identifier for the HMI, and you try to download the screen, the message "Check HMI Machine ID Fail 2" appears.
4. When the screen and HMI are set with different identifiers, and you try to download the screen, the message "Check HMI Machine ID Fail 3" appears.
5. If you forgot the set identifier, you can delete the identifier by going to [Tools] > [Reset HMI], but doing so will delete all the screen files in the HMI.

## 28.3 FileSlot File Management

In the FileSlot File Management setting window, you can configure for the size and content of each FileSlot. FileSlot files allow you to store and use the large amount of data in a flexible and convenient way. After creating a FileSlot, you can use the macro command FileSlotRead to read the file content to the register. You can also store the register data in these files. For example, when the pick-and-place arm programs for each product are different, you can store the program for each product in a different FileSlot and quickly switch to the program for the product by reading a different FileSlot.

Note:

1. After the FileSlot is downloaded to the HMI, a memory space required by the FileSlot is reserved in the HMI ROM.



2. Considering the efficiency of the HMI and data storage, when you download the screen with FileSlot configuration to the HMI, the HMI only reserves the memory space instead of directly generating the file. You need to use the file macro commands such as FileSlotWrite and ImportFileSlot to generate the file.
3. To delete the FileSlot file on the HMI, use Format HMI, Reset HMI, or the FileSlotRemove macro command.
4. If there is FileSlot file in the HMI and the data size you download is smaller than that already in the FileSlot file, some of the existing data in the FileSlot file will be cleared in the download screen. For example, if there are 5 sets of FileSlot data downloaded, but there are 10 sets of FileSlot data in the file, then the existing 6<sup>th</sup> to 10<sup>th</sup> data entries are cleared.
5. Except for the condition mentioned in Note No. 4, the number of the FileSlot data entries remains the same in the HMI. In other words, when you use the File Copy function of the HMI system to copy the screen files and the auto update files created with DOPSoft to the HMI that already has the FileSlot files, the number of data entries in the HMI remains unchanged.
6. As updating screens does not change the FileSlot file, we advise that you execute Format HMI or

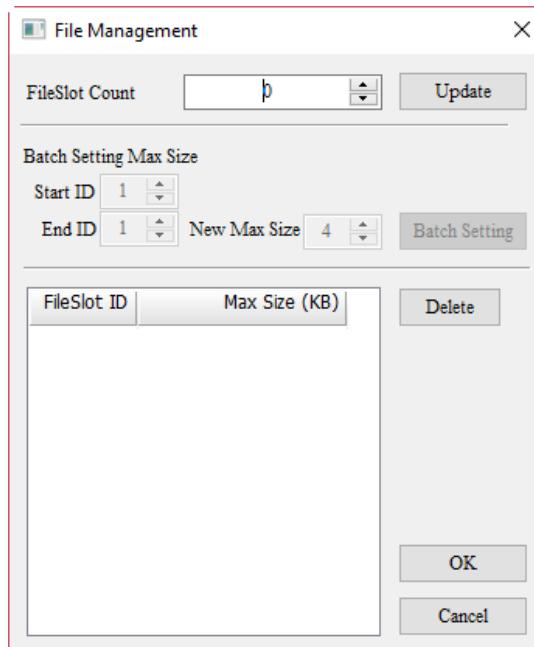
## 28

- Reset HMI before re-planning the screens and FileSlot size.
7. The File Copy function in the HMI system exports the FileSlot file. The exported file is stored in HMI-000\FILESLOT. Through this approach, you can import the FileSlot file to another HMI. If there is FileSlot file saved in the other HMI, the FileSlot file in that HMI will be overwritten.

The following section is the properties for File Management.

Table 28.3.1 Properties of File Management

File Management settings
--------------------------



FileSlot Count	You can input the count of FileSlots you need. The maximum is 1024 FileSlots.
Update	<p>Input the total FileSlot count, and then click <b>Update</b> to plan for the set number of FileSlot. As shown in the following figure, if you set the total FileSlot count to 6, there will be 6 FileSlots planned.</p>

**File Management settings**

You can set the Max Size for the FileSlot in batch. Enter the Start ID, End ID, and New Max Size, and then click **Batch Setting** to set the New Max Size to the FileSlot with the assigned ID. As shown in the following figure, set the Start ID to 3, End ID to 6, and New Max Size to 8, so the Max Size for the FileSlot of ID3 - ID6 is changed to 8 and others remains the default value of 4.

**Batch Setting Max Size**

FileSlot ID	Max Size (KB)
1	4
2	4
3	8
4	8
5	8
6	8

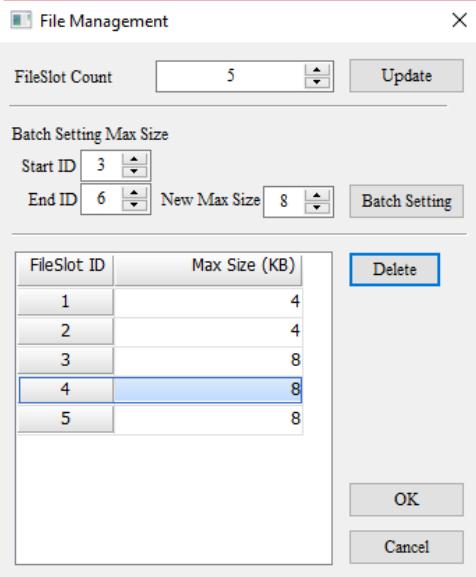
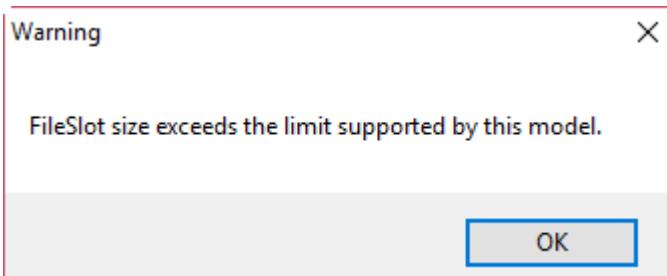
**Delete**

The **Delete** button deletes the FileSlots in the File Management window.

**Select one FileSlot and press **Delete**.**

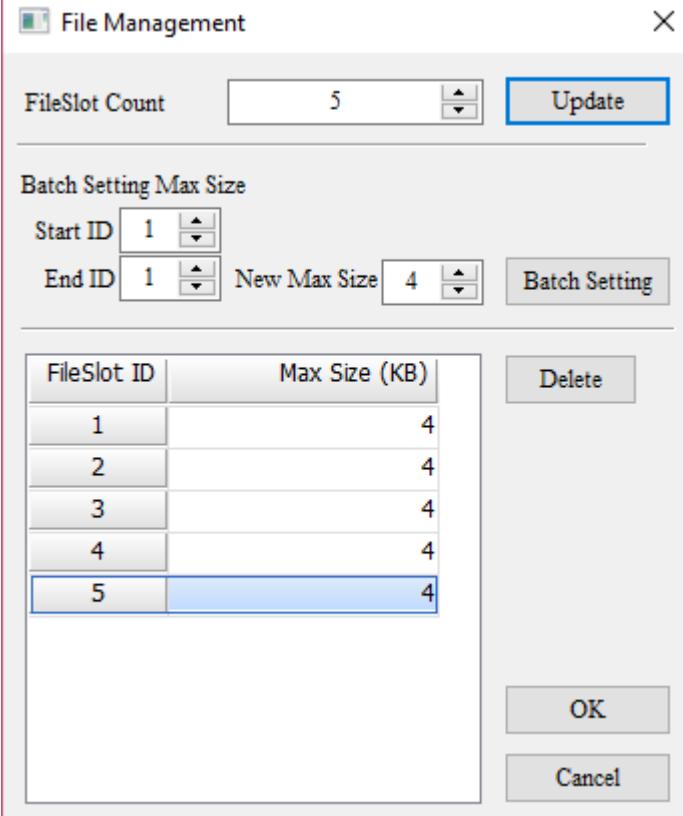
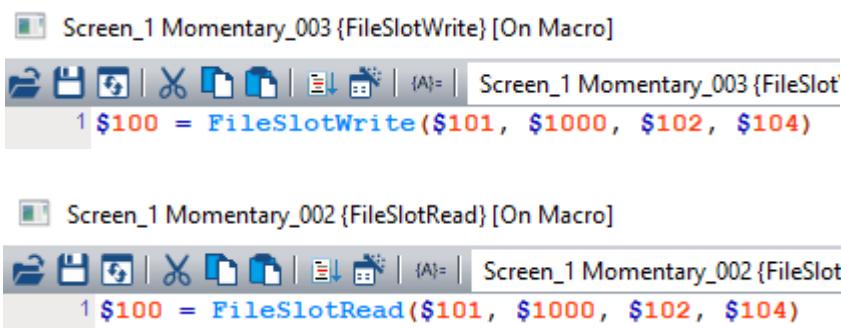
**Before deletion**

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File Management settings		
	<b>After deletion</b>	After the deletion, the number of FileSlots turns from 6 to 5.
Delete		
Max Size		You can set the Max Size for each FileSlot individually. The maximum value for Max Size is 102400 KB and the minimum value is 4 KB.
OK		 <p>Once you finish setting the FileSlot File Management properties, click <b>OK</b> to save the changes you made and then exit the File Management window. If the total FileSlot file size is larger than the User Application space in the Flash ROM provided for the model, a warning message appears, as shown in the following figure. For the size of the User Application space in the Flash ROM of each model, refer to the instruction sheet of the model.</p>
Cancel		When you click <b>Cancel</b> , no matter you have made any changes or not, the saving action is not executed, which works the same way as clicking  on the top right corner of the window.

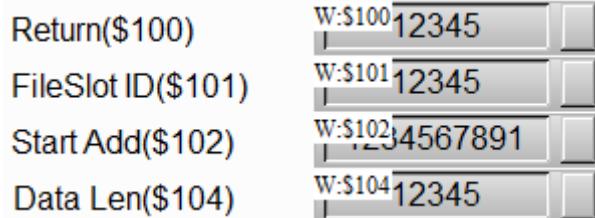
The following section is the example of File Management.

Table 28.3.2 File Management example

File Management example	
Add FileSlot	<ul style="list-style-type: none"> <li>■ Go to [Options] &gt; [FileSlot File Management].</li> <li>■ Set the FileSlot Count to 5. Click <b>Update</b> to display the set number of FileSlots. You can set the maximum file size for each FileSlot. When finishing the setting, click <b>OK</b> to exit the File Management window.</li> </ul> 
Create the button for executing macro command	<p>On the DOPSoft editing screen, create two Momentary buttons and set their Write Addresses to \$50.0 and \$50.1. For the On Macro, enter the FileSlotRead command, <b>\$100 = FileSlotRead(\$101, \$1000, \$102, \$104)</b> and the FileSlotWrite command, <b>\$100 = FileSlotWrite(\$101, \$1000, \$102, \$104)</b>.</p> 

Create Numeric Entry element

- On the screen, create the Numeric Entry elements that correspond to the macro command parameters, as shown in the following figure.



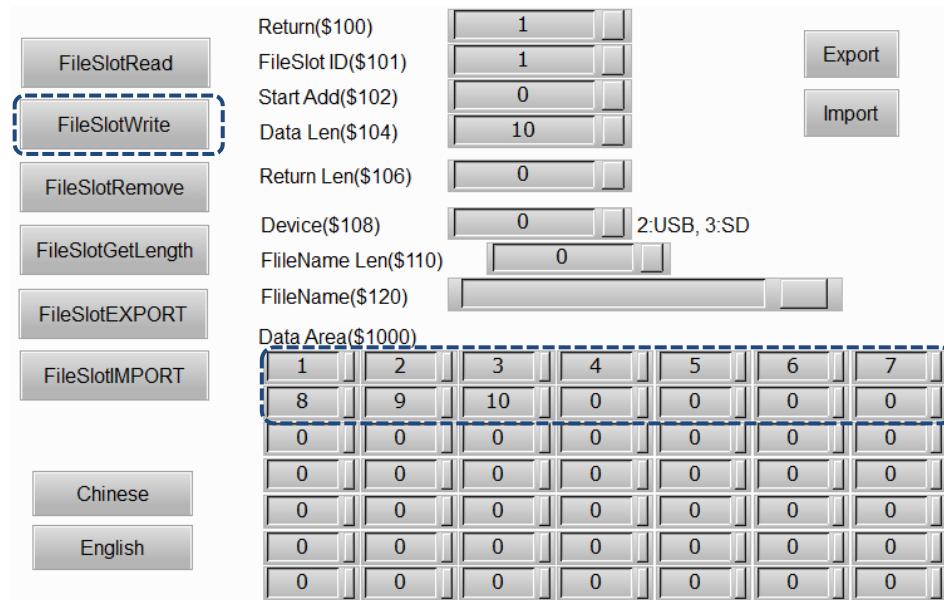
- On the screen, create Numeric Entry elements (addresses of \$1000 - \$1048) for reading the content of the FileSlot file, as shown in the following figure.

Data Area(\$1000)

W:\$1000_5	W:\$1001_5	W:\$1002_5	W:\$1003_5	W:\$1004_5	W:\$1005_5	W:\$1006_5
W:\$1007_5	W:\$1008_5	W:\$1009_5	W:\$1010_5	W:\$1011_5	W:\$1012_5	W:\$1013_5
W:\$1014_5	W:\$1015_5	W:\$1016_5	W:\$1017_5	W:\$1018_5	W:\$1019_5	W:\$1020_5
W:\$1021_5	W:\$1022_5	W:\$1023_5	W:\$1024_5	W:\$1025_5	W:\$1026_5	W:\$1027_5
W:\$1028_5	W:\$1029_5	W:\$1030_5	W:\$1031_5	W:\$1032_5	W:\$1033_5	W:\$1034_5
W:\$1035_5	W:\$1036_5	W:\$1037_5	W:\$1038_5	W:\$1039_5	W:\$1040_5	W:\$1041_5
W:\$1042_5	W:\$1043_5	W:\$1044_5	W:\$1045_5	W:\$1046_5	W:\$1047_5	W:\$1048_5

- When all the elements are created, compile the elements and download the screen to the HMI.
- Use the FileSlotWrite macro to write the data in the data area to the specified FileSlot file. The example in the following figure shows how to write the 10 Words in the data area to the FileSlot file with the ID as 1. After the data is written to the FileSlot, you can read the data back using FileSlotRead.

Execution result



- Before using the FileSlotRead, make sure you have created the actual file with FileSlotWrite or FileSlotImport.

## 28.4 Device Data table

The Device Data table enables the HMI to import or export \$M non-volatile data, but it is not for you to download the data after editing with DOPSoft. When you select the check box for **Include device table**, you can update \$M data to the HMI when downloading all screen data, creating screen data files, or copying files, which makes the operation easier when multiple HMIs need to share the same set of \$M data.

The following is how it works. Read the \$M data from HMI A and use the upload function of the DOPSoft to upload and export the \$M data. Then, import the \$M data to HMI B, so HMI B can share the same \$M data.

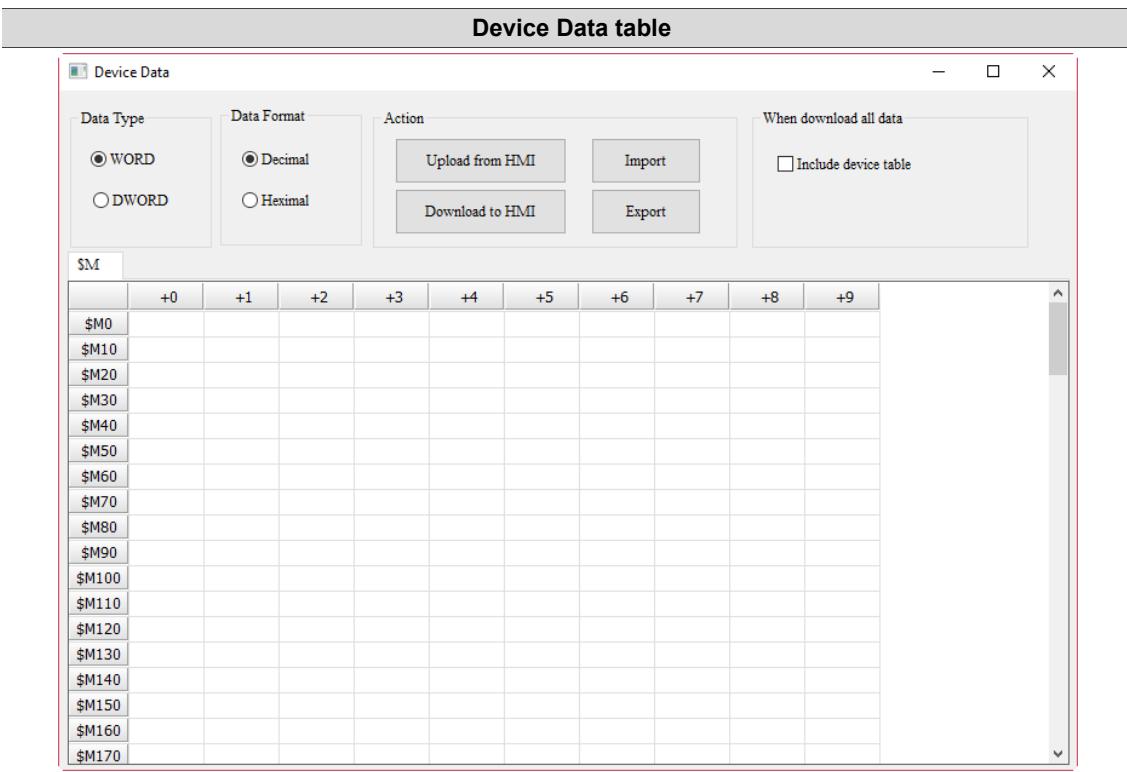
The screenshot shows a software interface titled "Device Data". It includes the following sections:

- Data Type:** WORD (radio button selected), DWORD (radio button unselected).
- Data Format:** Decimal (radio button selected), Heximal (radio button unselected).
- Action:** Buttons for "Upload from HMI", "Import", "Download to HMI", and "Export".
- When download all data:** A checkbox labeled "Include device table" is present.
- \$M Table:** A grid showing memory locations from \$M0 to \$M170 across addresses +0 to +9. The first row (\$M0) is highlighted in blue.

Figure 28.4.1 Device Data table

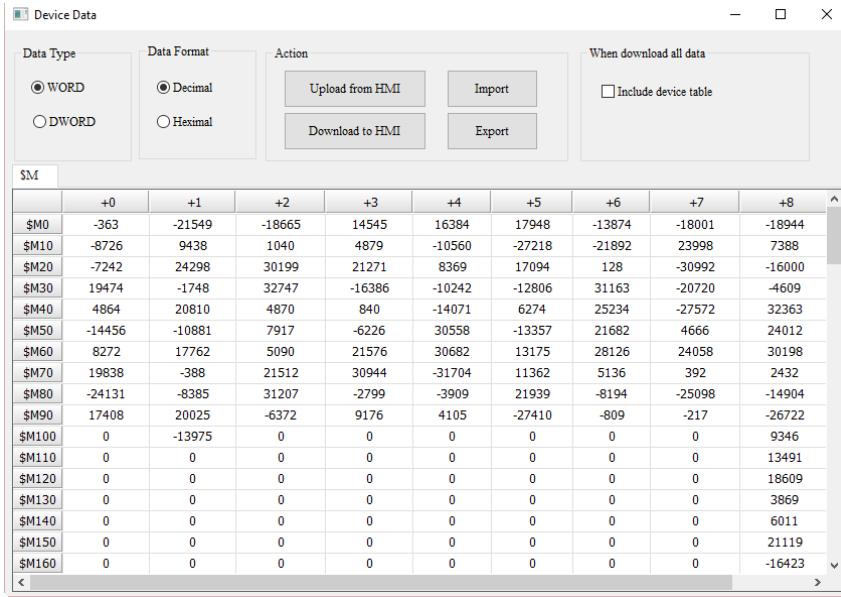
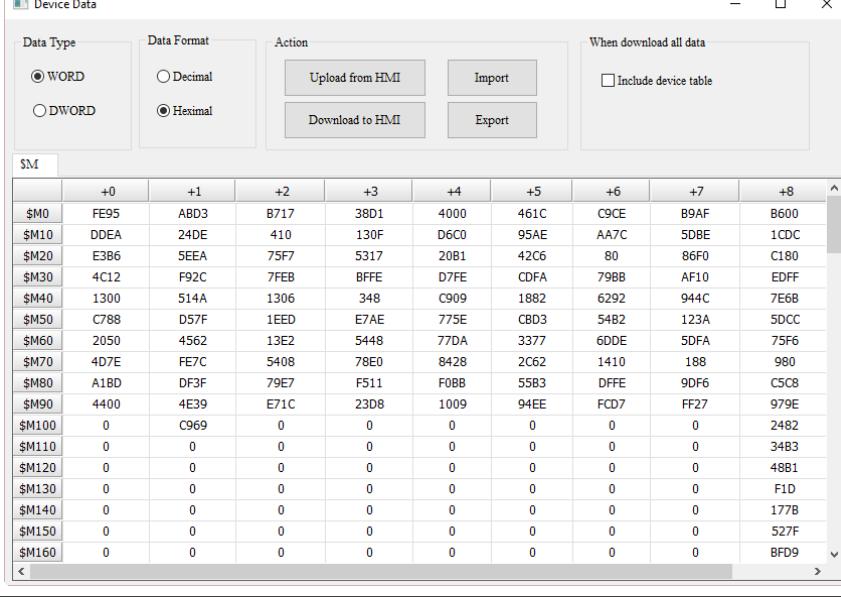
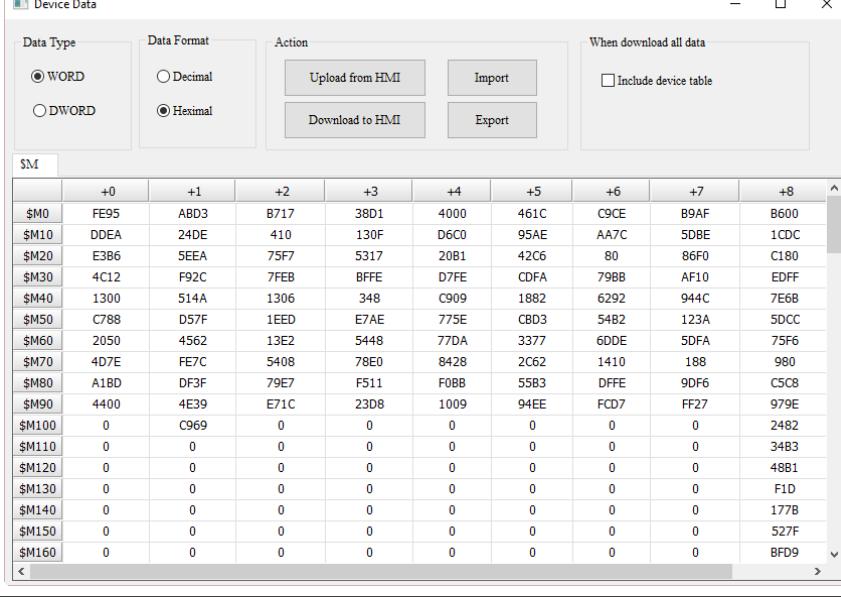
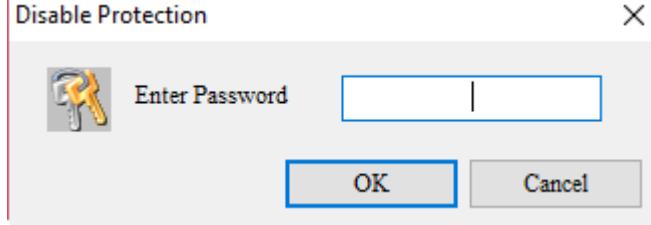
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Table 28.4.1 Properties of Device Data table

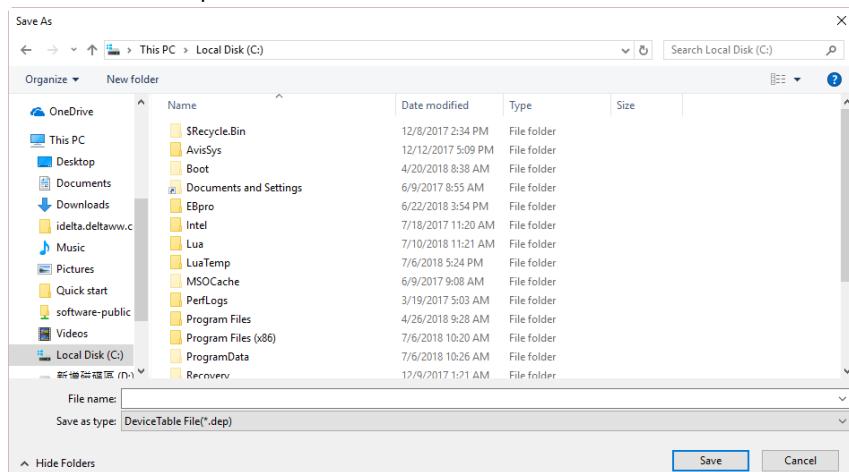


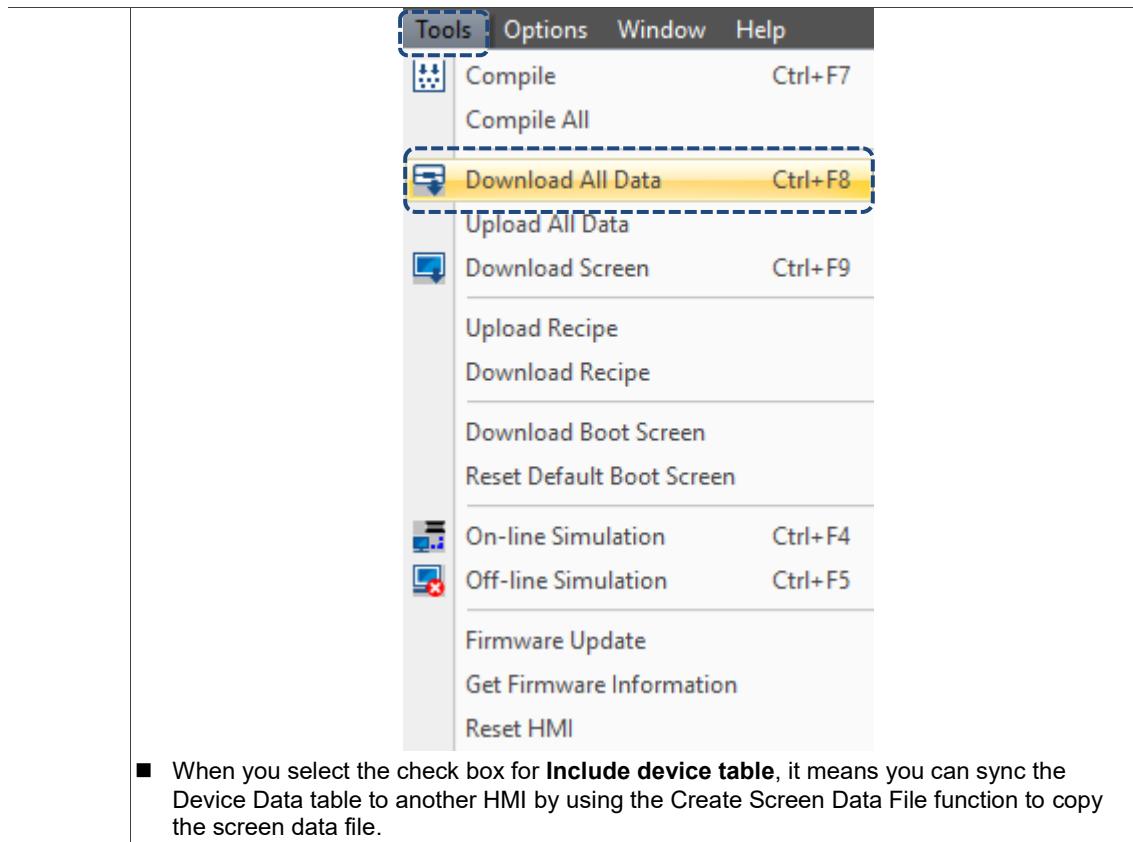
The Device Data table displays \$M non-volatile data, with the range of \$M0 - \$M1023. You can set the Data Type or Data Format for display.

	WORD	The default Data Type displayed is WORD.
	DWORD	You can change the data type of the \$M data to DWORD.
Data Type	DWORD	<p>This screenshot shows the same 'Device Data' dialog box, but with 'DWORD' selected in the 'Data Type' section. The rest of the interface and data table are identical to the WORD version, displaying the same range of memory locations and their decimal values.</p>

Device Data table									
Data Format	The default Data Format displayed is Decimal.								
									
Decimal									
									
Action	<ul style="list-style-type: none"> <li>This action reads the current \$M data on the HMI and uploads it to this Device Data table for display.</li> <li>Before carrying out this action, you are required to enter the highest security password. The default is 12345678.</li> </ul>								
									
Download to HMI	<ul style="list-style-type: none"> <li>This action downloads the \$M data displayed on the Device Data table to the HMI.</li> <li>You can check if the data is correct by creating registers \$M0 - \$M1023 on the HMI.</li> </ul>								

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Device Data table					
Import	You can import the Device Data table stored on another HMI. The supported file format is .dep.				
Action	<p>You can export the \$M data displayed on the current Device Data table. The file format saved is .dep.</p> 				
When download all data	<p>■ When you select the check box for <b>Include device table</b>, you can download the \$M non-volatile data to the HMI by executing Downloading All Data.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"><b>Action</b></td><td style="width: 50%; padding: 5px;"><b>When download all data</b></td></tr> <tr> <td style="padding: 5px; text-align: center;"> <input type="button" value="Upload from HMI"/>   <input type="button" value="Download to HMI"/> </td><td style="padding: 5px; text-align: center;"> <input type="button" value="Import"/>   <input type="button" value="Export"/>   <div style="border: 2px dashed #ccc; padding: 2px; margin-top: 5px;"> <input checked="" type="checkbox"/> <b>Include device table</b> </div> </td></tr> </table>	<b>Action</b>	<b>When download all data</b>	<input type="button" value="Upload from HMI"/> <input type="button" value="Download to HMI"/>	<input type="button" value="Import"/> <input type="button" value="Export"/> <div style="border: 2px dashed #ccc; padding: 2px; margin-top: 5px;"> <input checked="" type="checkbox"/> <b>Include device table</b> </div>
<b>Action</b>	<b>When download all data</b>				
<input type="button" value="Upload from HMI"/> <input type="button" value="Download to HMI"/>	<input type="button" value="Import"/> <input type="button" value="Export"/> <div style="border: 2px dashed #ccc; padding: 2px; margin-top: 5px;"> <input checked="" type="checkbox"/> <b>Include device table</b> </div>				

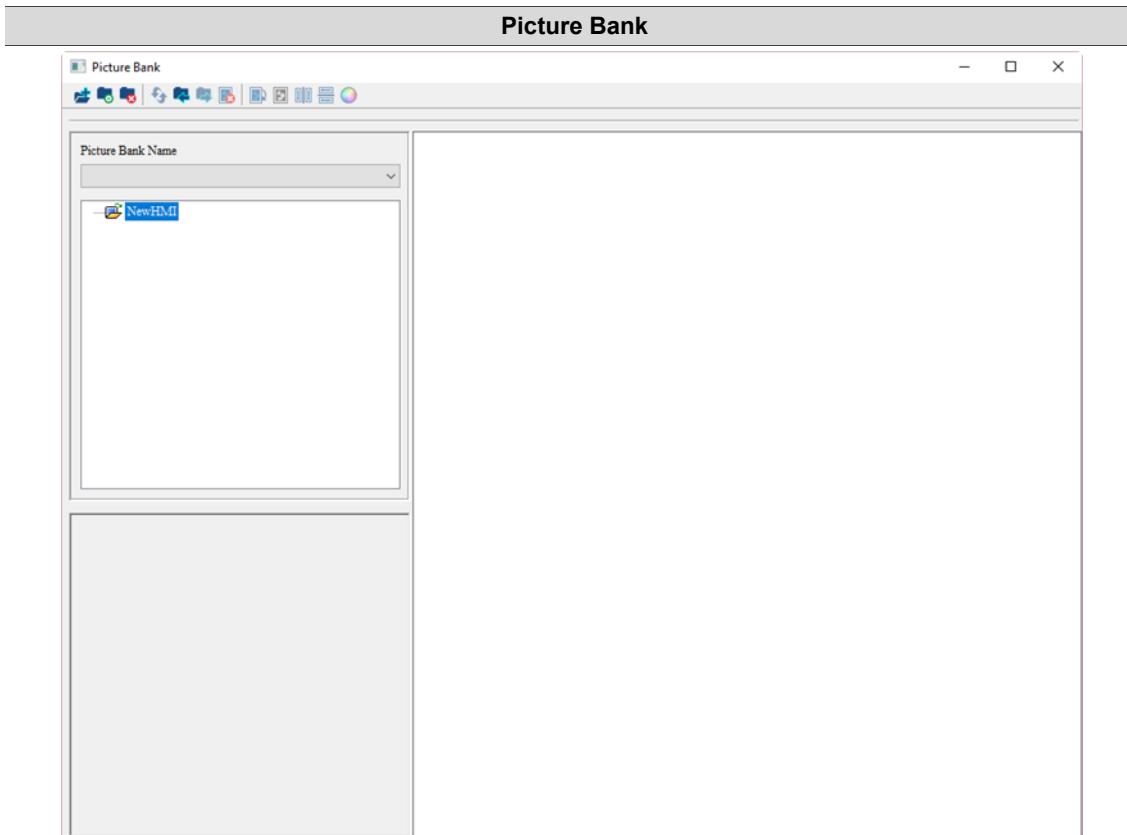


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## 28.5 Picture Bank

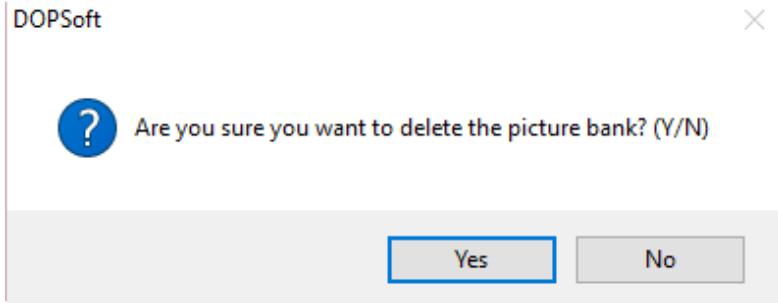
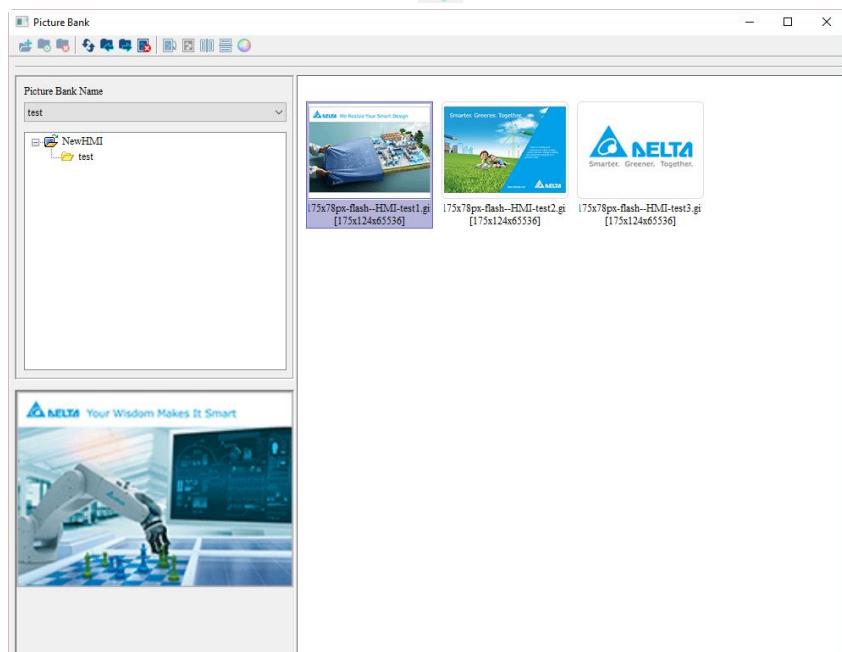
The Picture Bank allows you to quickly apply the pictures to the elements. You can also import non-built-in pictures and perform simple editing on the pictures, such as color inversion, converting to 256 colors grayscale, horizontal mirroring, and vertical mirroring.

Table 28.5.1 Properties of Picture Bank



Picture Bank provides functions including [Add Picture Bank 

<a href="#" style="font-size: small;">Add Picture Bank </a>	<ul style="list-style-type: none"> <li>■ Click this button and the software asks you to enter the name for the picture bank.</li> </ul> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p><b>New Picture Bank</b></p> <p>Bank <input type="text"/></p> <p style="text-align: right;"><b>OK</b> <b>Cancel</b></p> </div> <ul style="list-style-type: none"> <li>■ After adding the picture bank, click the icon of Import Picture Data  to import pictures to the picture bank.</li> </ul>
---	---

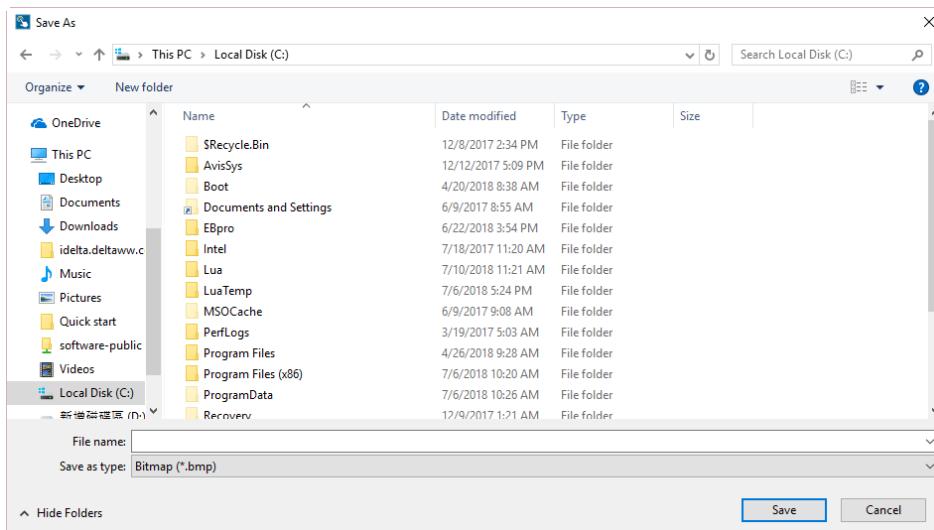
Picture Bank	
Open / Install Picture Bank 	This button allows you to install and use the picture bank created in another project. You must select the path to the location where the existing picture bank is stored.
Remove Picture Bank 	After you click  , the software will ask if you want to remove the picture bank. 
Import Picture Data 	After adding the picture bank, you can click  to import pictures into the picture bank. 

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**Export Picture Bank Content to File**



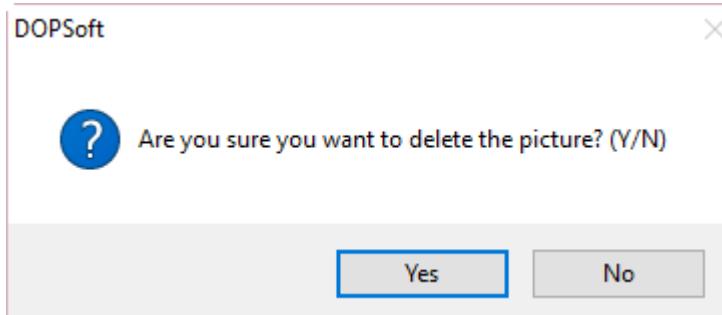
After importing the pictures, the content of the picture bank can also be exported. The exported file is saved in .bmp format.



**Delete**



This function is to delete the imported picture data and pictures. Before deleting, you will be asked whether to proceed with the deletion.



**Invert**



The Invert function switches colors for the original picture to have it displayed in negatives.



Picture Bank																	
The Grayscale 256 option converts original colors of the picture to have it displayed in grayscale (256 levels).																	
Convert to 256 Colors Grayscale 	<b>Before</b> 	<b>After</b> 															
Horizontal Mirror creates a left and right reversal mirror effect for the original picture.																	
Horizontal Mirror 	<b>Before</b> 	<b>After</b> 															
Vertical Mirror creates an upside down mirror effect for the original picture.																	
Vertical Mirror 	<b>Before</b> 	<b>After</b> 															
<ul style="list-style-type: none"> <li>■ Saturation is also known as chroma of the colors. It refers to the colorfulness of the colors or the amount of a single color within a specific color. The higher the amount, the higher the color saturation is for this color; whereas, the lower the amount, the lower the color saturation is for this color.</li> <li>■ This function is to make the original pictures more vivid in color rendering.</li> <li>■ The following example sets the saturation to 100.</li> </ul>																	
Adjust Saturation 	<p>Detail</p> <table> <tr> <td>Hue</td> <td>-100</td> <td></td> <td>100</td> <td><input type="text" value="0"/></td> </tr> <tr> <td>Saturation</td> <td>-100</td> <td></td> <td>100</td> <td><input type="text" value="100"/></td> </tr> </table> <table border="1"> <tr> <td><b>Before</b> adjusting saturation</td> <td><b>After</b> adjusting saturation</td> </tr> <tr> <td></td> <td></td> </tr> </table>			Hue	-100		100	<input type="text" value="0"/>	Saturation	-100		100	<input type="text" value="100"/>	<b>Before</b> adjusting saturation	<b>After</b> adjusting saturation		
Hue	-100		100	<input type="text" value="0"/>													
Saturation	-100		100	<input type="text" value="100"/>													
<b>Before</b> adjusting saturation	<b>After</b> adjusting saturation																

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## 28.6 Text Bank

You can edit some frequently used phrases and store them in the Text Bank. In this way, when you need to input the text to the element, you can directly import the previously edited string from the Text Bank without re-entering the string. After the text string is created in the Text Bank, if you click [Edit] > [Text Process], this function allows you to link with the Text Bank and import the already-created text directly to the selected element, as shown in the following figure.

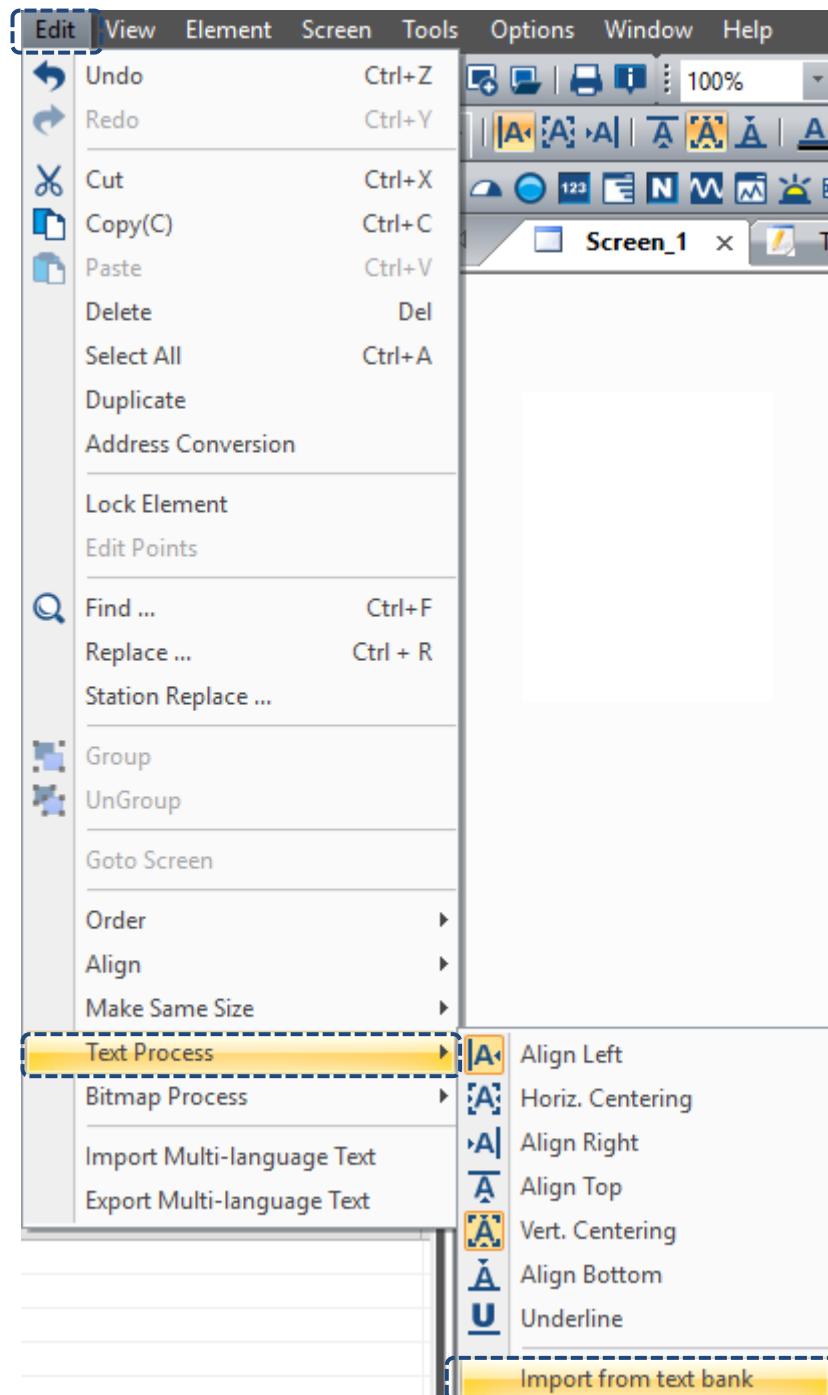


Figure 28.6.1 Import from text bank

If you have set multiple languages, you can also edit the texts in different languages in advance in the Text Bank.

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Table 28.6.1 Multi-language Text Bank content

English	Chinese
<b>Text Bank</b>	
No.	ENG
1	Delta 台達電子

Table 28.6.2 Properties of Text Bank

Text Bank	
<b>Screen_1</b> Text Bank	
No.	Language1

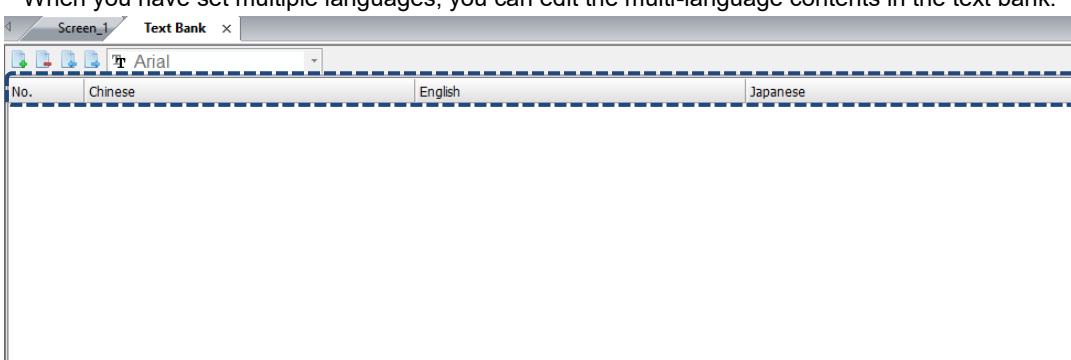
28

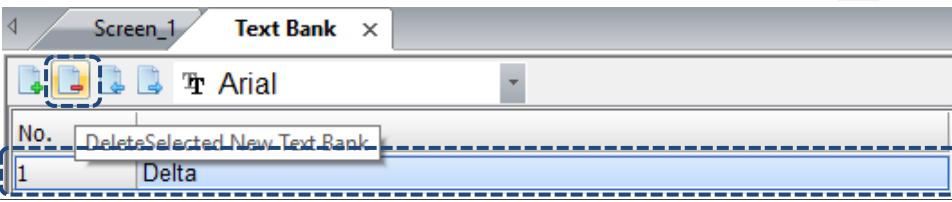
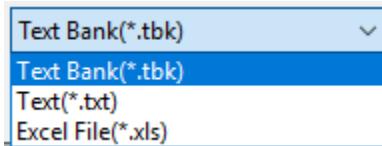
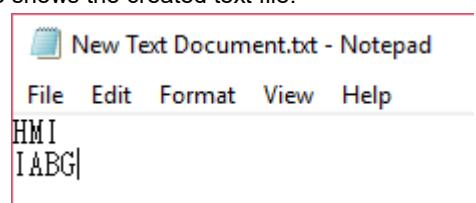
**Text Bank**

- Functions of the Text Bank include Add a text bank  , Delete selected text bank  , Open text bank file  , and Save  .
- You can also change the font for the entered text in the text bank.



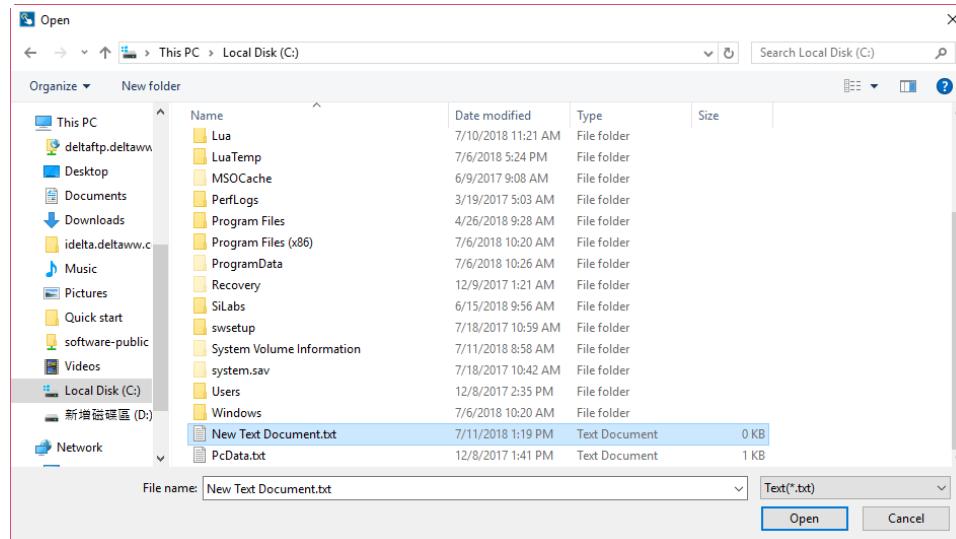
- When you have set multiple languages, you can edit the multi-language contents in the text bank.



 Add a text bank	<p>Press  to add a data row for you to enter the message content.</p> 
 Delete selected text bank	<p>To delete a data row, click on the data to be deleted and press the delete button  .</p> 
 Open text bank file	<ul style="list-style-type: none"> <li>File formats of .tbk, .txt, and .xls are supported.</li> </ul>  <ul style="list-style-type: none"> <li>You can directly use this function to import data from the already-created text file (.txt) or excel file ("xls").</li> <li>The following figure shows the created text file.</li> </ul> 

**Text Bank**

■ Press **Open** and select the text file to be imported.



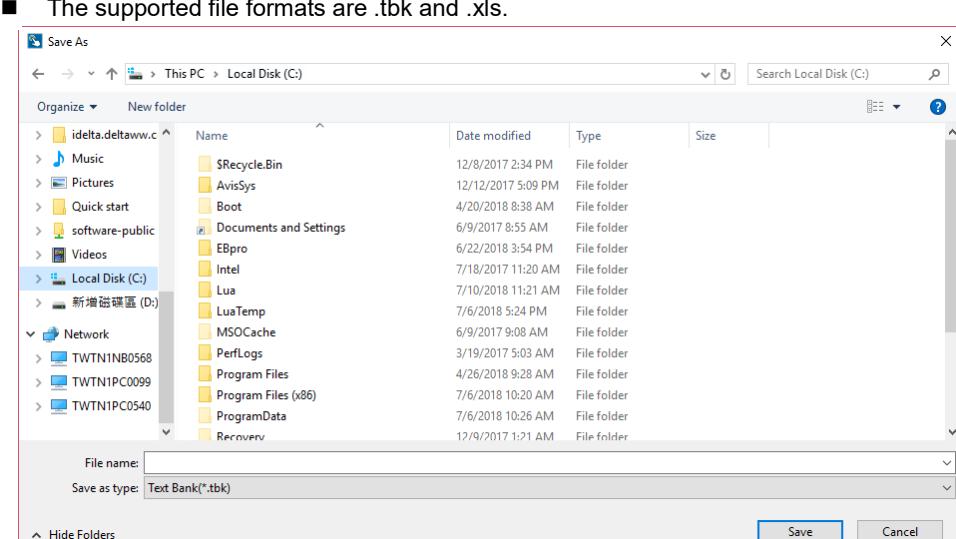
Open text bank file

Save

■ After the text file is opened, the text bank will import the data in the text file.

■ For the **Save** option, you can export the content in the text bank and save it as a file.

■ The supported file formats are .tbk and .xls.



## 28.7 Multi-Lang input character count calculation

This feature allows you to know the exact total bytes of the input characters. The number of bytes for different languages varies, so there may be errors in calculating the length. Thus, this tool can let you calculate the correct number of bytes for Unicode characters.



Figure 28.7.1 Multi-Lang input character count calculation tool

The following examples are the calculations of the byte numbers for the three languages.

Table 28.7.1 Multi-Lang input character count calculation result

Traditional Chinese	
English	
Japanese	

## 28.8 Cust-Keypad

To create a Cust-Keypad, drag the element from the Element Bank to the main screen (the Element Bank is at the right side of the screen editing window).

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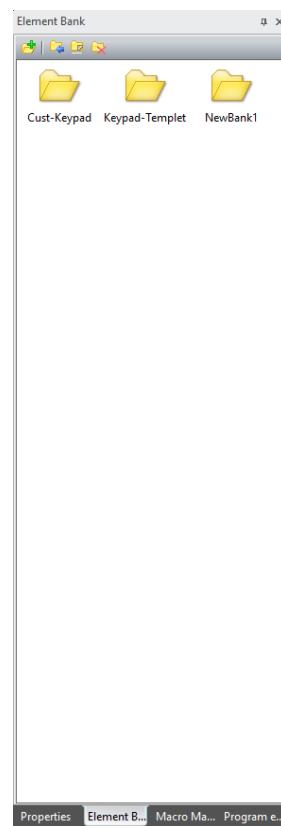
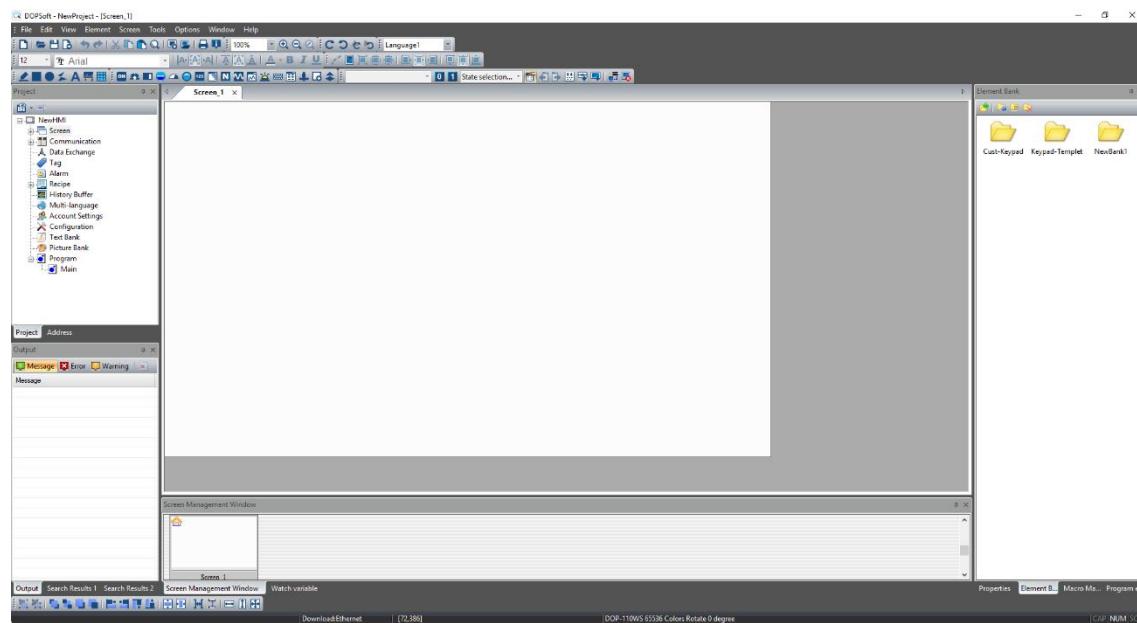


Figure 28.8.1 How to enter the Element Bank

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Click [Element Bank] > [Keypad-Template], and you can see the total 16 keypad template styles provided by the software.

- KP (1): decimal keypad (two styles with two different sizes for each, large and small)
- KP (2): hexadecimal keypad (two styles with two different sizes for each, large and small)
- KP (3): ASCII keypad (two styles with two different sizes for each, large and small)
- EASCII (3): extended ASCII keypad (one style with two different sizes, large and small)
- KP\_Swedish: Swedish keypad (one style with two different sizes, large and small)

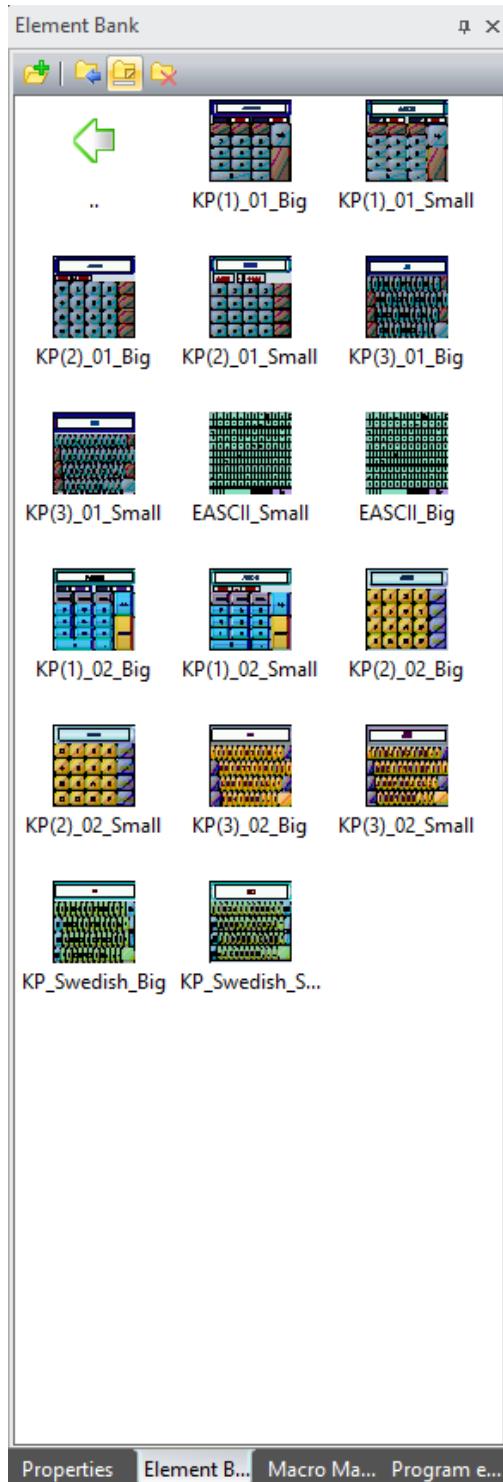
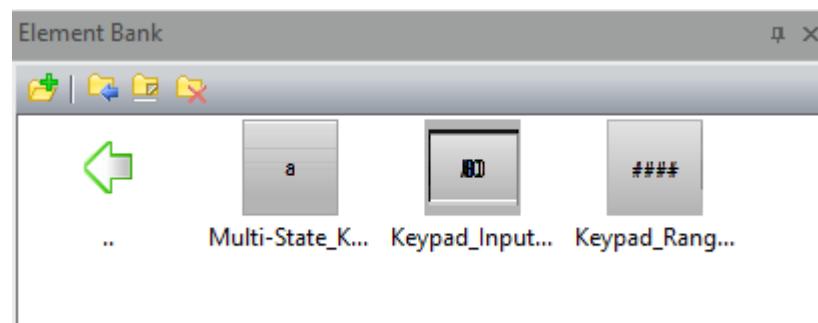


Figure 28.8.2 Element Bank - Keypad styles

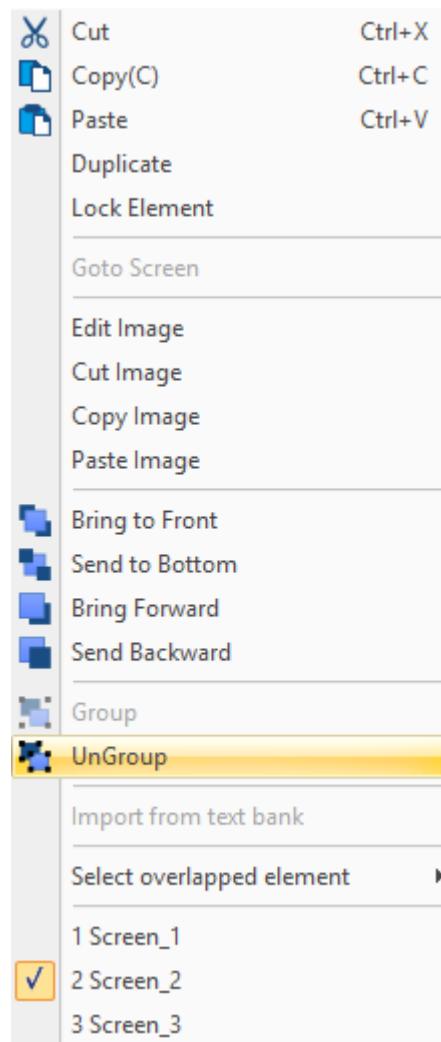
Apart from the built-in keypad styles, the software provides Cust-keypad for you to design your own keypad styles and the elements for customization are available in [Cust-Keypad].



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Figure 28.8.3 Cust-Keypad elements

With the customized elements, you can replace the original keypad provided by the software by simply ungrouping the keypad elements and adding the Cust-Keypad elements into the keypad, as shown in the following figure.



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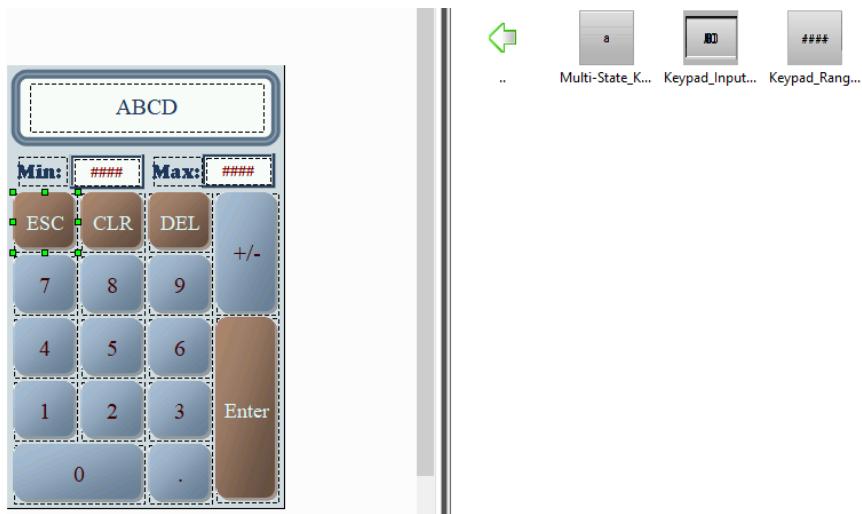


Figure 28.8.4 Replace the keypad with customized elements

### 28.8.1 Create Keypad Screen

Before creating the Cust-Keypad element of the Element Bank, you need to set the screen to Keypad Screen to make the options of the Custom Keypad selectable. If you create the Cust-Keypad element in the Screen or Subscreen, the software can compile the data normally. However, if you use the Custom Keypad function of the Global Keypad setting, Numeric Entry, Character Entry, Barcode Input elements, or Set Value button, the options for Screen and Subscreen are not available. In other words, the only screen option for the Custom Keypad function is Keypad Screen.

Ways to create the Keypad Screen:

- When creating the screen, select Keypad Screen for the Screen Type.

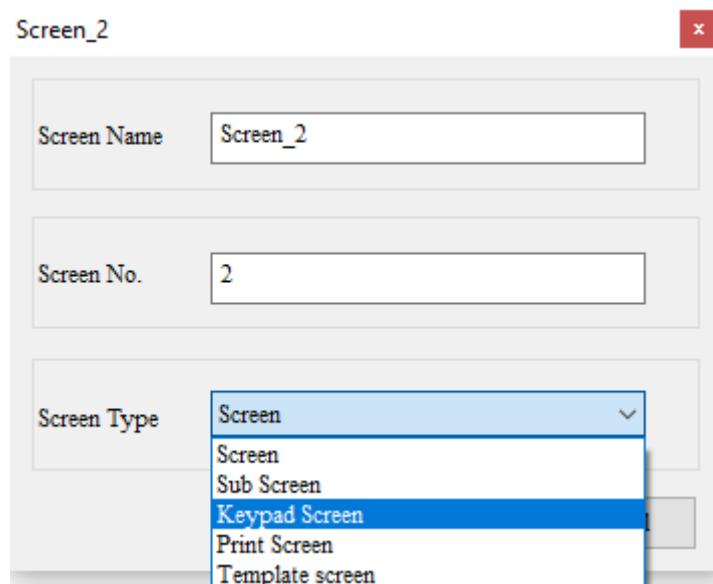


Figure 28.8.1.1 Create the screen

- Double-click the screen to enter the Screen property setting page and set the Screen to Keypad Screen.

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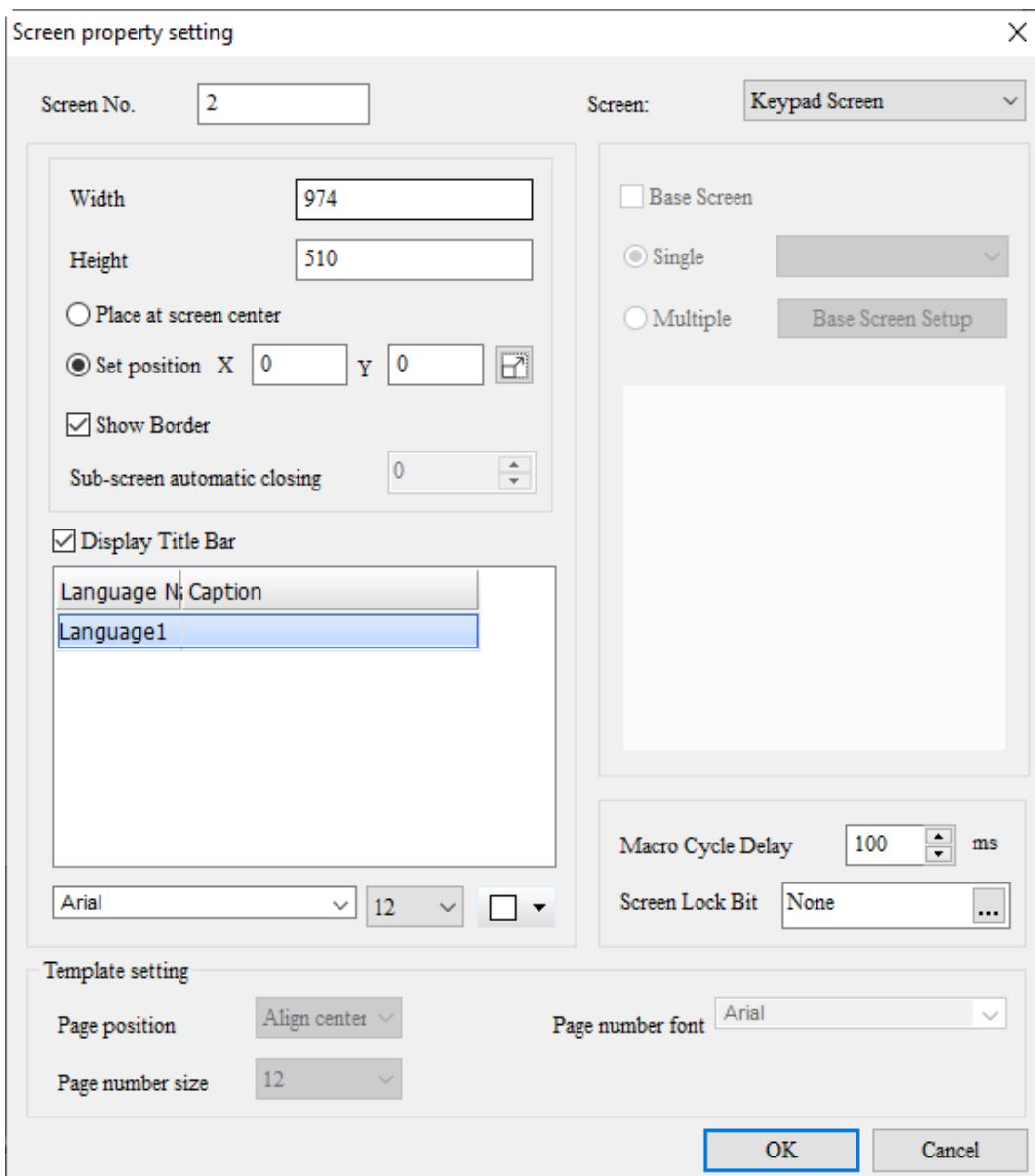


Figure 28.8.1.2 Screen property setting

You can use the Custom Keypad with the Global Keypad Setting. By simply setting the screen as Keypad Screen and creating the keypad style, you can apply this keypad style to all keypad elements. For details of Global Keypad Settings, refer to Table 27.1.4.

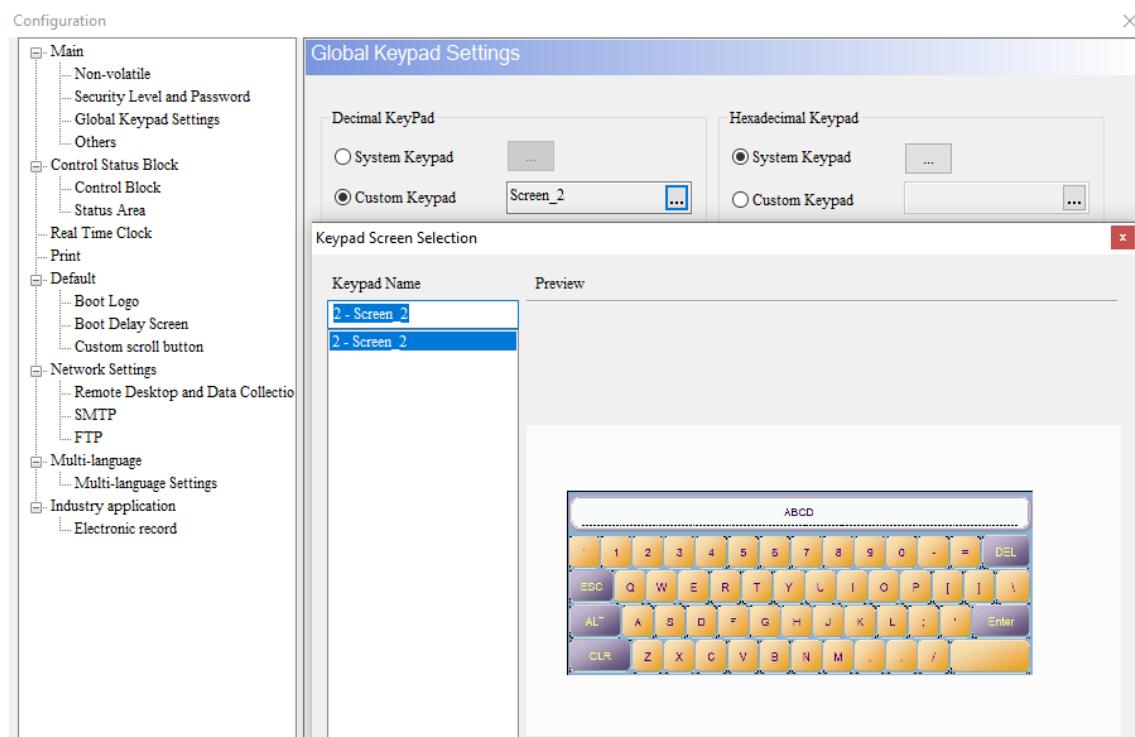


Figure 28.8.1.3 Custom Keypad

**Note:**

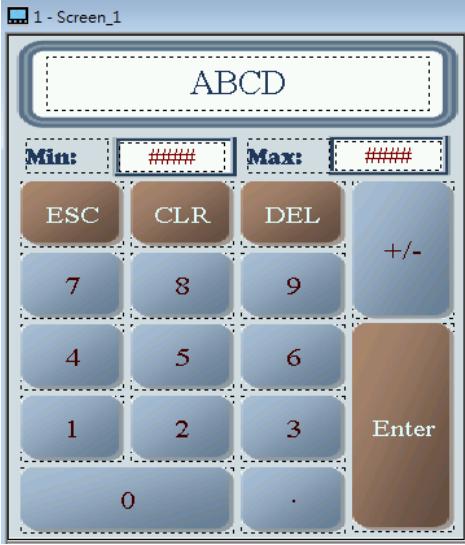
1. The Keypad Screen cannot be the default boot screen.
2. You can create multiple Keypad elements in the Keypad Screen.
3. You cannot restore the Keypad Screen you have deleted.
4. Off-line Simulation and On-line Simulation are supported.

The Cust-Keypad example is as follows. Refer to Table 28.8.1.1.

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Table 28.8.1.1

## Cust-Keypad

		<ul style="list-style-type: none"> <li>■ Create three screens. Set one of them as Screen and the other two as Keypad Screen.</li> <li>■ Go to the Keypad-Template in the Element Bank and select KP(1)_01.Big keypad style for the first Keypad Screen.</li> </ul> 
Step 1	Set Keypad screen and create Keypad element	<ul style="list-style-type: none"> <li>■ Go to the Keypad-Template in the Element Bank and select KP_Swedish.Big keypad style for the second Keypad Screen.</li> </ul> 

**Cust-Keypad**

- Select Custom Keypad for the Numeric Entry element of \$100 and set Screen\_2 as the Keypad Screen.

Numeric Entry

Step 3

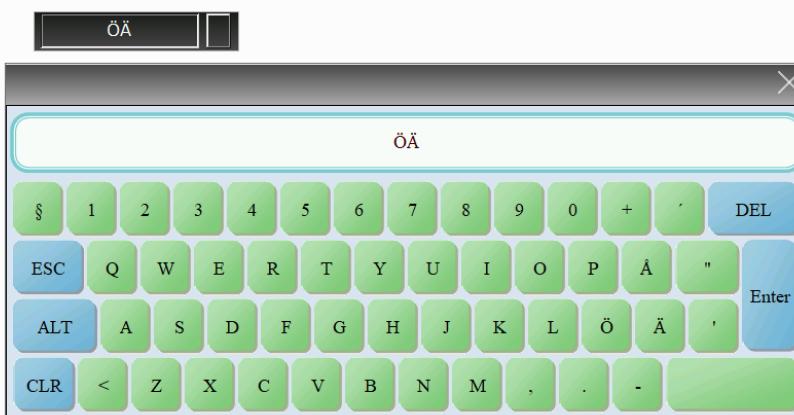
Custom Keypad

- Select Custom Keypad for the Character Entry element of \$150 and set Screen\_3 as the Keypad Screen.

Character Entry

28

28

Cust-Keypad	
Step 4	<ul style="list-style-type: none"> <li>■ After completing the above settings, compile the data and then download all data to the HMI.</li> <li>■ When the Numeric Entry element of \$100 is executed, the style of the pop-up keypad is Custom Keypad.</li> </ul>  
	<ul style="list-style-type: none"> <li>■ When the Character Entry element of \$150 is executed, the input and display for EASCII characters/symbols are also supported.</li> </ul> 

### 28.8.2 Delete Keypad Screen

For the deletion of the Keypad Screen, the description is based on whether the screen is referred.

There are three ways to delete the Keypad Screen.

- Go to the toolbar, and select [Screen] > [Delete Screen].

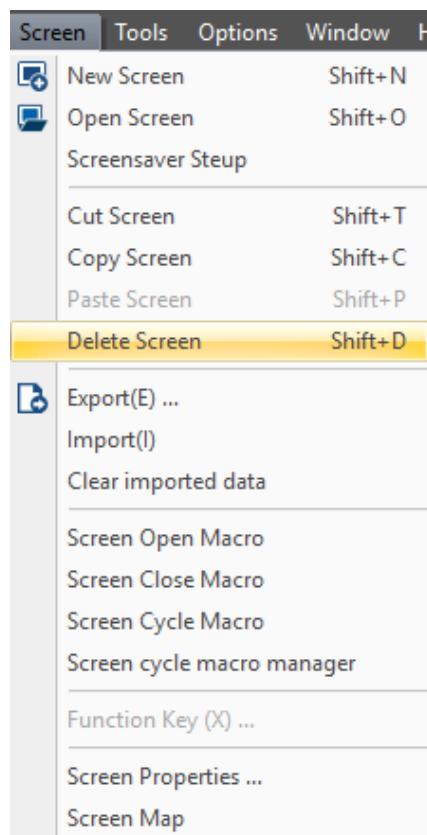


Figure 28.8.2.1 Custom Keypad - Delete Screen

- Go to the Screen Management window, right-click the mouse on the screen to be deleted, and click **Delete**.

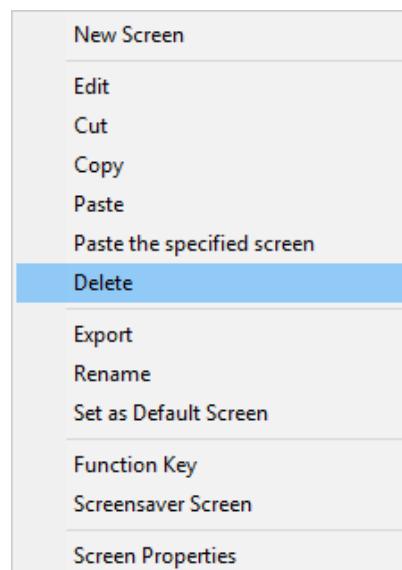


Figure 28.8.2.2 Delete the screen

- Change the screen to Screen or Subscreen and remove the Keypad Screen.

Screen property setting

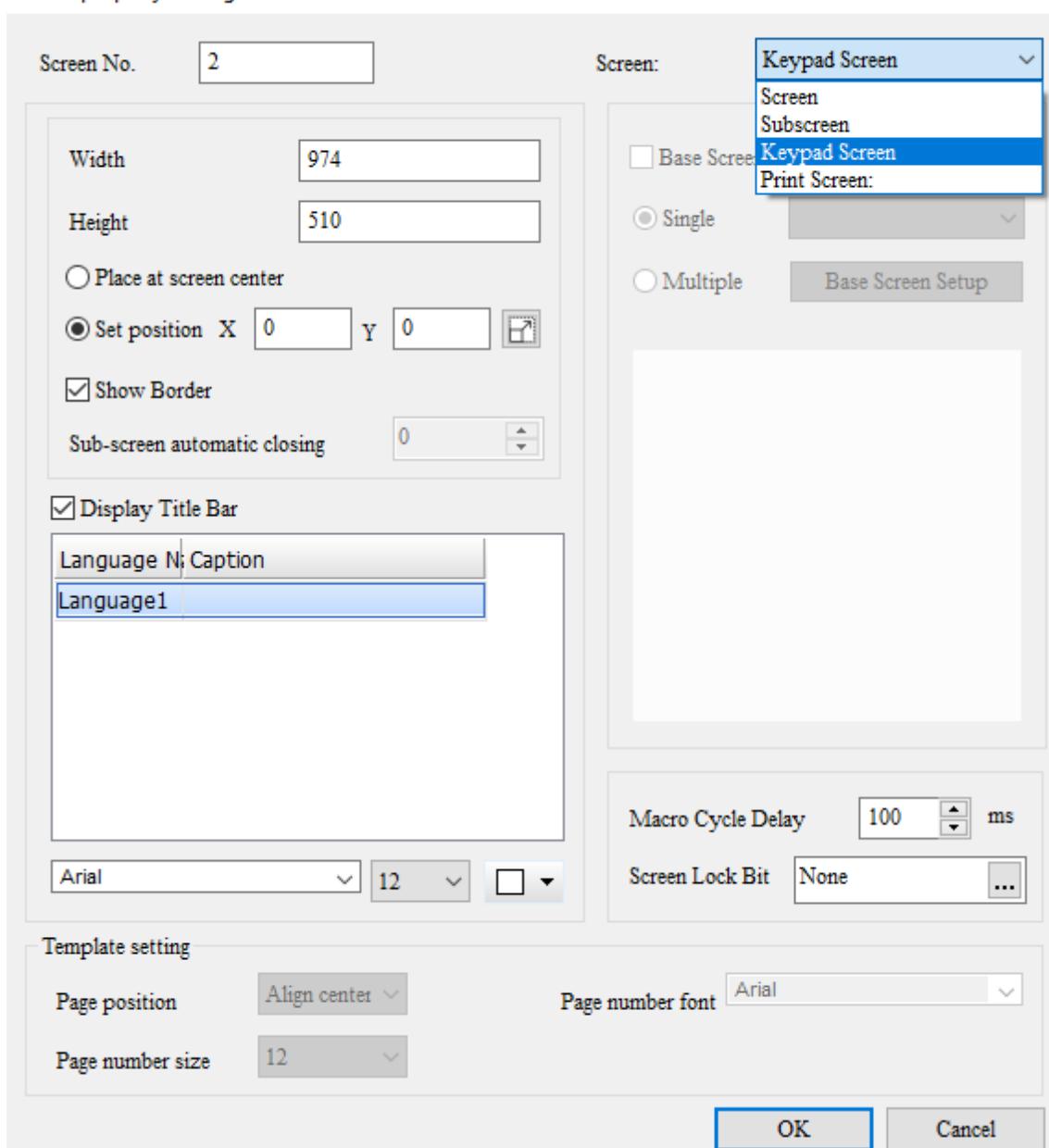


Figure 28.8.2.3 Delete the screen

### 28.8.2.1 The Keypad Screen is referred

When the created keypad screen is referred by the Custom Keypad of the Global Keypad Settings, Numeric Entry element, Character Entry element, Barcode Input element, or Set Value button, regardless the way you remove the keypad screen, the following window appears as a reminder.

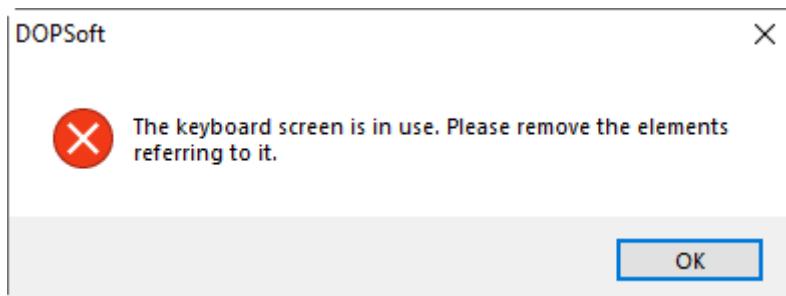


Figure 28.8.2.1.1 Keypad Screen is referred

Click **OK**, and the following keypad list appears for selection and conversion.

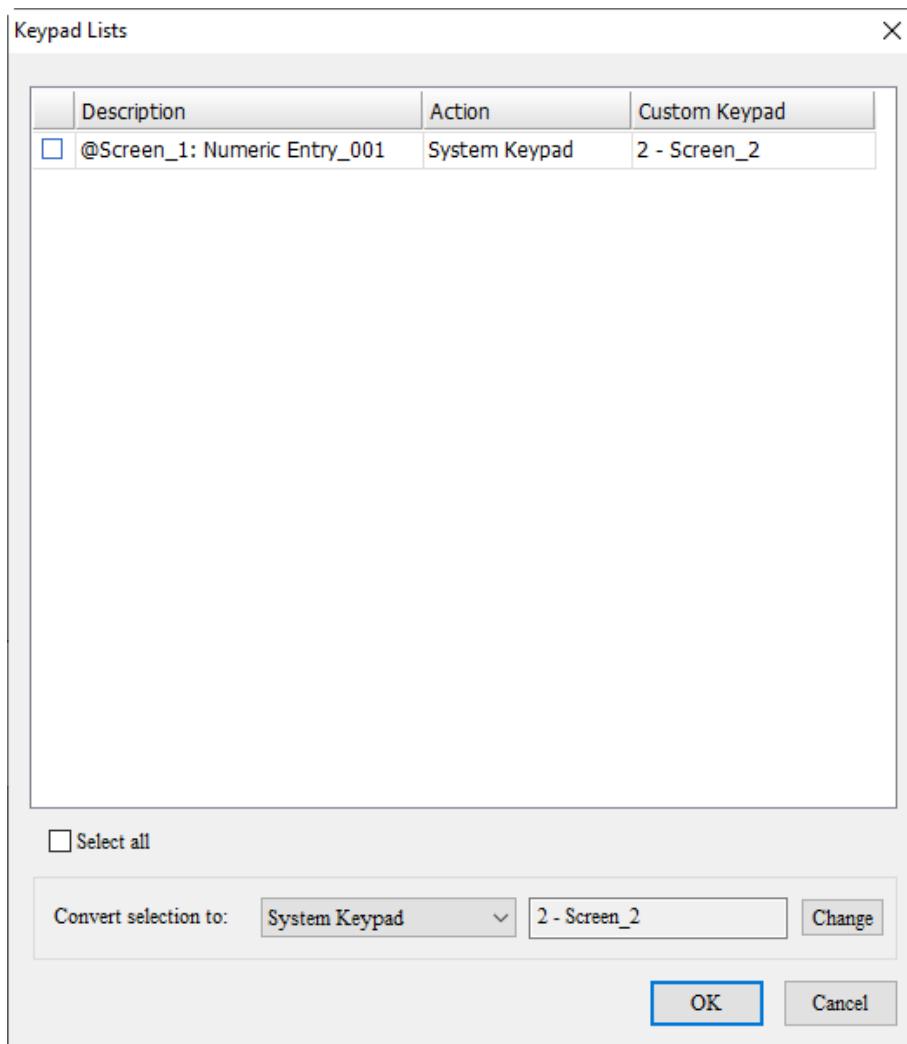
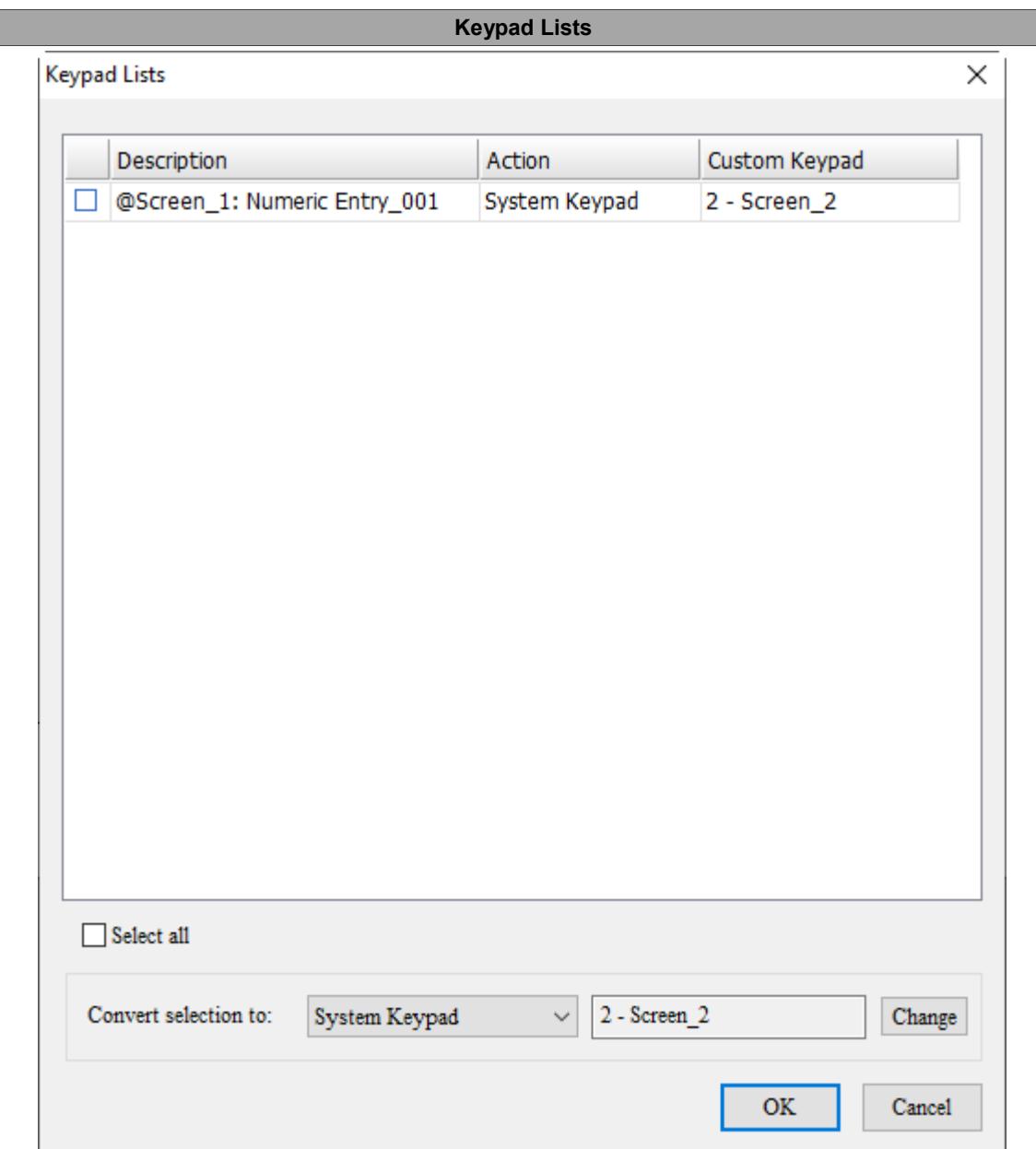


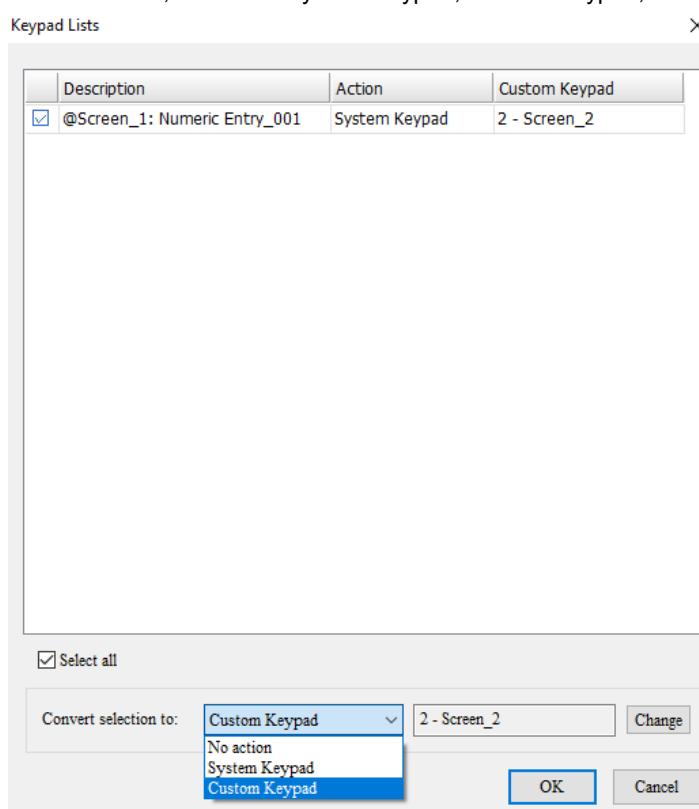
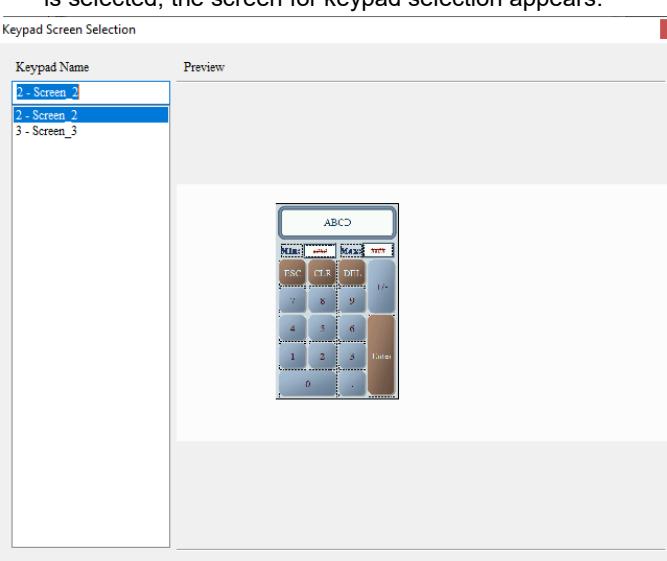
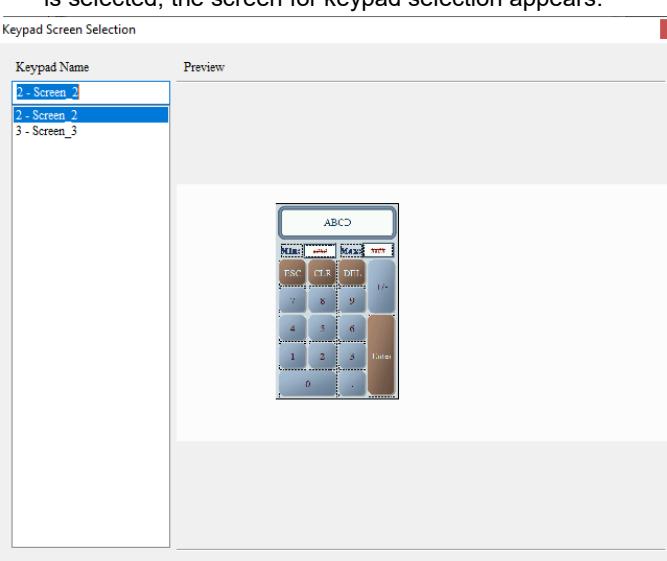
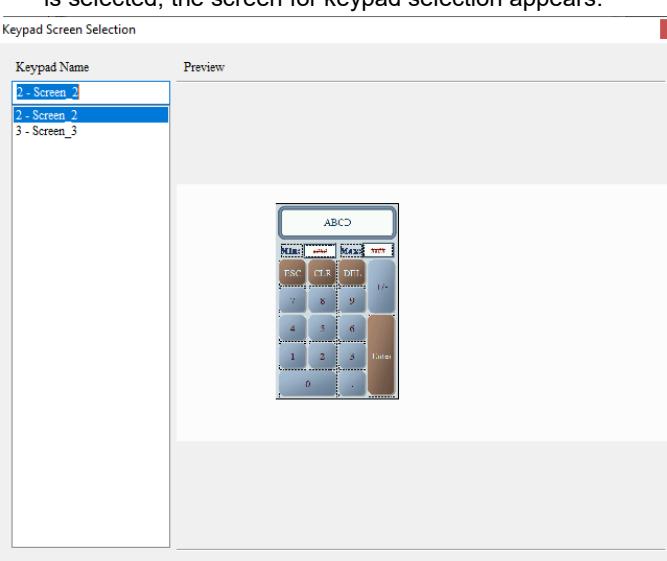
Figure 28.8.2.1.2 Keypad Lists

Refer to Table 28.8.2.1.1 for the Keypad Lists.

Table 28.8.2.1.1



<input type="checkbox"/>	■ You can select a specific element and have this element execute the action options of System Keypad, Custom Keypad, or No action.
Description	■ This is the description for the element or the Global Keypad. When the description you click is for an element, the corresponding screen appears for you to select the paired element.
Action	■ Use the keypad set for the element.
Custom Keypad	■ Displays the currently set Custom Keypad and the ID. This field setting is only applicable when you set Custom Keypad for the Action field.

Keypad Lists							
Select all	<ul style="list-style-type: none"> <li>You can select all elements and have them perform the action specified in the Action field in batch, which are System Keypad, Custom Keypad, or No action.</li> </ul> 						
Convert selection to	<table border="1"> <tr> <td>No action</td><td> <ul style="list-style-type: none"> <li>It means not to change the current setting.</li> </ul> </td></tr> <tr> <td>System Keypad</td><td> <ul style="list-style-type: none"> <li>It means changing to the System Keypad.</li> </ul> </td></tr> <tr> <td>Custom Keypad</td><td> <ul style="list-style-type: none"> <li>It means changing to the Custom Keypad. When this option is selected, the screen for keypad selection appears.</li> </ul>  </td></tr> </table>	No action	<ul style="list-style-type: none"> <li>It means not to change the current setting.</li> </ul>	System Keypad	<ul style="list-style-type: none"> <li>It means changing to the System Keypad.</li> </ul>	Custom Keypad	<ul style="list-style-type: none"> <li>It means changing to the Custom Keypad. When this option is selected, the screen for keypad selection appears.</li> </ul> 
No action	<ul style="list-style-type: none"> <li>It means not to change the current setting.</li> </ul>						
System Keypad	<ul style="list-style-type: none"> <li>It means changing to the System Keypad.</li> </ul>						
Custom Keypad	<ul style="list-style-type: none"> <li>It means changing to the Custom Keypad. When this option is selected, the screen for keypad selection appears.</li> </ul> 						
Change	<ul style="list-style-type: none"> <li>The conversion result is determined by the element and action you select or the option for the conversion selection.</li> <li>If you do not click <b>OK</b> after the conversion, this conversion is not applied.</li> </ul>						
OK	<ul style="list-style-type: none"> <li>After you click <b>OK</b>, the system applies the setting to the corresponding elements and global keypad.</li> <li>When you click <b>X</b> or <b>Cancel</b> to close the window, no setting is changed.</li> </ul>						

After the conversion, the HMI asks you whether you want to delete the screen. You can select **Yes** to delete the keypad screen. You also can select **No** to keep the keypad screen and simply cancel or transfer the link referred by the element.

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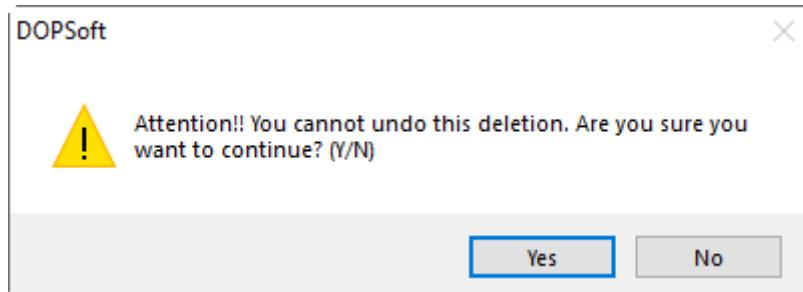


Figure 28.8.2.1.3 Confirmation for Delete Screen

### 28.8.2.2 The Keypad Screen is not referred

When the keypad screen you created is not referred by the Custom Keypad of the Global Keypad Settings, Numeric Entry element, Character Entry element, Barcode Input element, or Set Value button, and if you use the screen of the tool bar and click **Delete Screen** or execute the deletion by right-clicking the mouse in the [Screen Management Window], only the following window appears as a reminder.

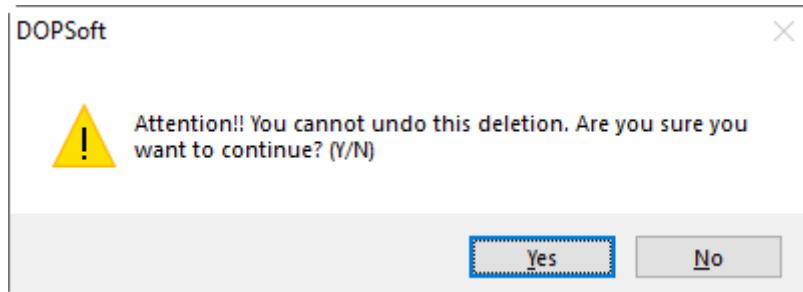


Figure 28.8.2.2.1 Confirmation for deleting the screen

Select **Yes** to delete the keypad Screen; select **No** to keep the keypad screen.

If you use the Screen property setting to set this screen to Screen or Subscreen, there will be no warning messages, and your setting is directly applied.

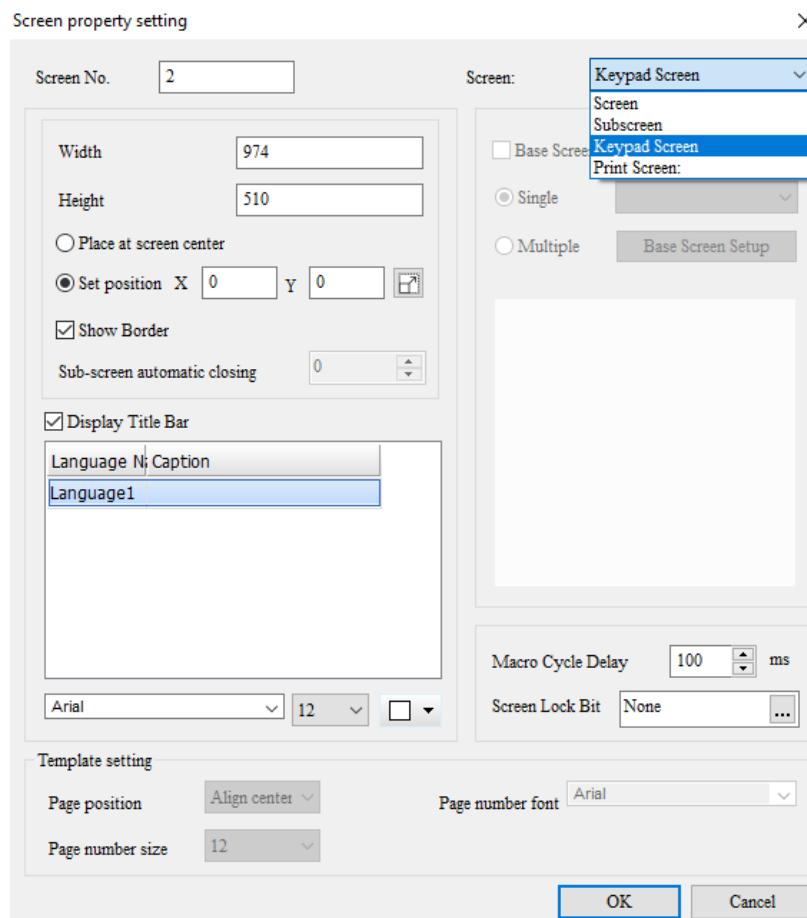


Figure 28.8.2.2.2 Change the screen type

## 28.9 Sound Settings

You can use the Sound Settings to inform the on-site operators whether an error occurs. The Sound Settings can trigger the bit address of the sound file to have the sound played and it can play different sounds according to the value assigned in the word register. The supported sound track formats are mp3 and wav. Models supporting the Sound Settings are DOP-107IV, DOP-107EG, DOP-108IG, DOP-110IG, DOP-110IS, DOP-112MX, DOP-112WX, DOP-115MX, and DOP-115WX. If you are editing the project for the model which does not support the sound settings, then this option is not available.

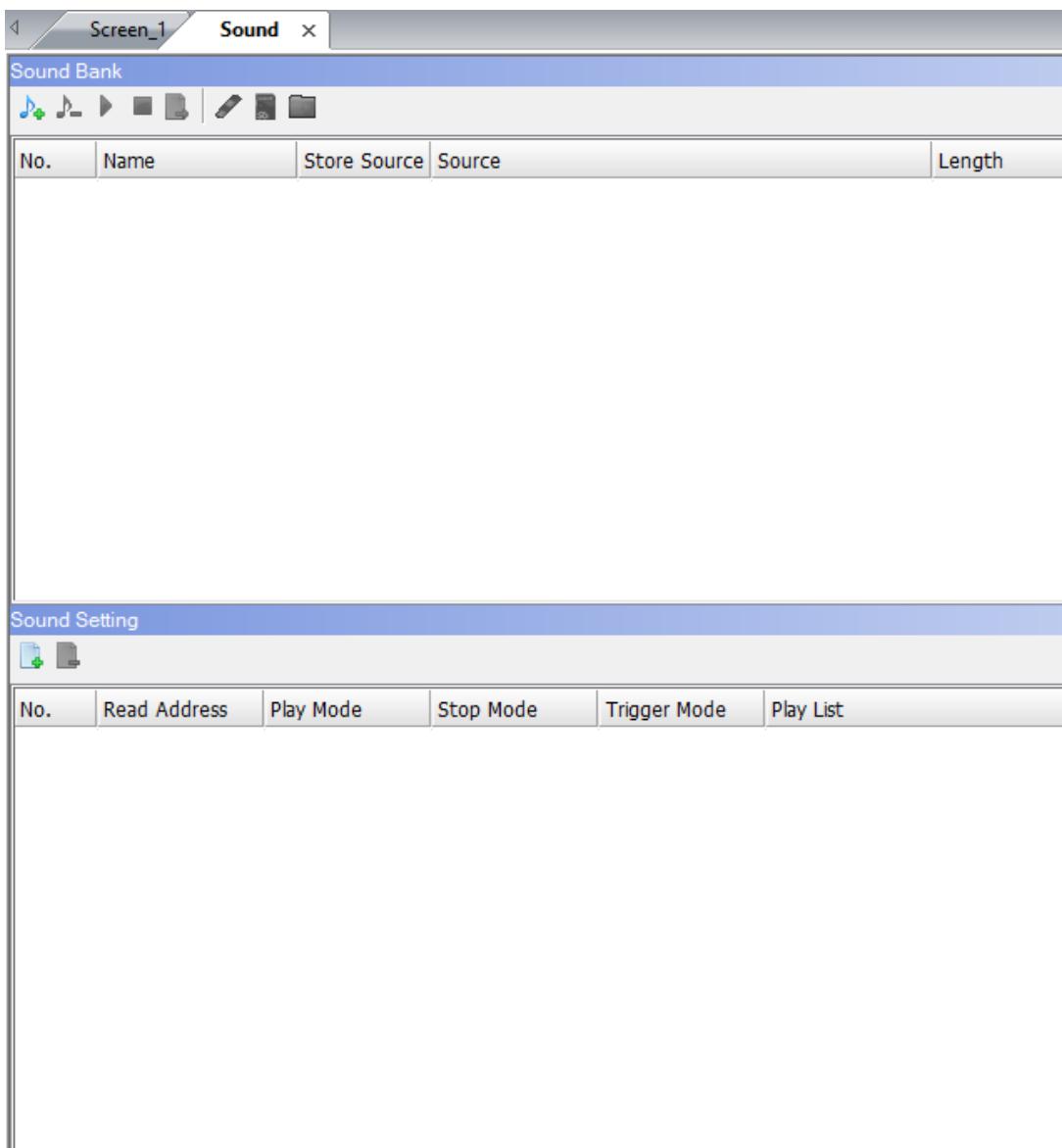


Figure 28.9.1 Sound Settings

The Sound Settings can be divided into two categories for description. The first is Sound Bank and the second is Sound Setting.

The Sound Bank is for adding, deleting, and exporting sound files, and specifying the saving location for the sound files.



Figure 28.9.2 Sound Settings

The Sound Setting is for setting how the sound is played, stopped, and triggered.

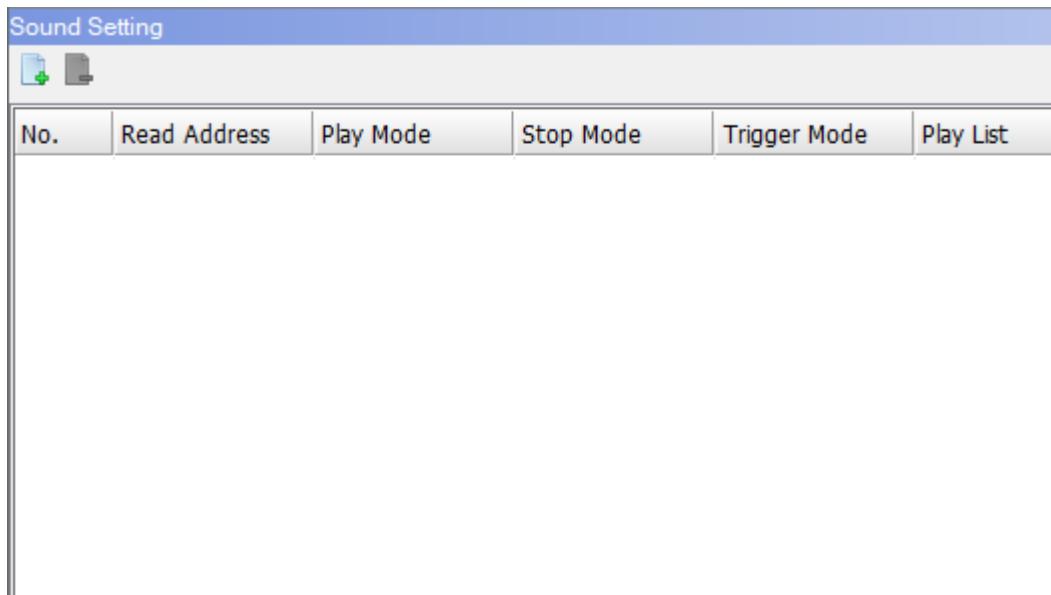


Figure 28.9.3 Sound Setting

Detailed descriptions for the Sound Bank and Sound Setting are as follows.

Table 28.9.1 Properties of sound file management

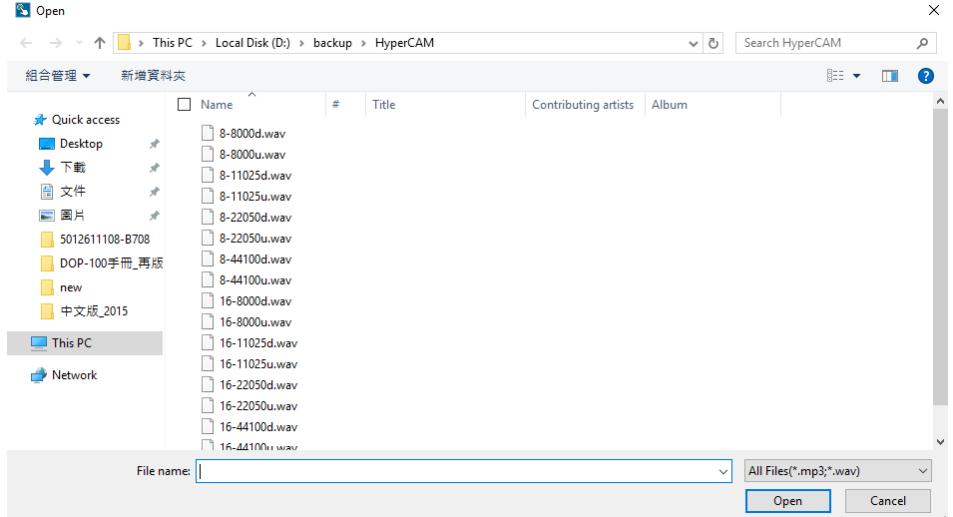
### Sound Bank

No.	Name	Store Source	Source	Length

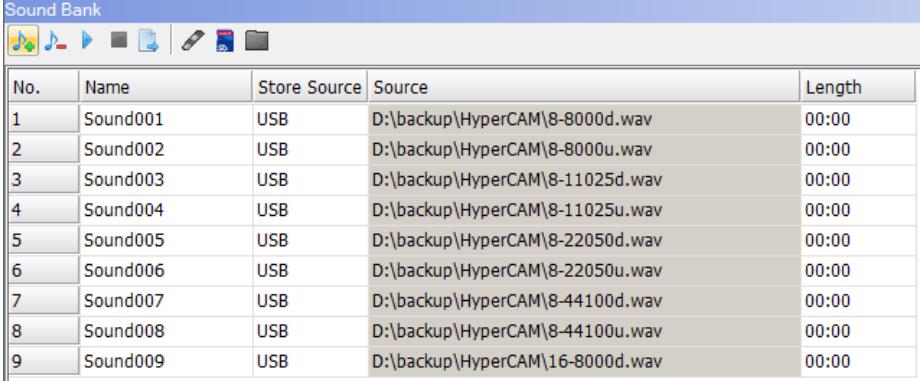
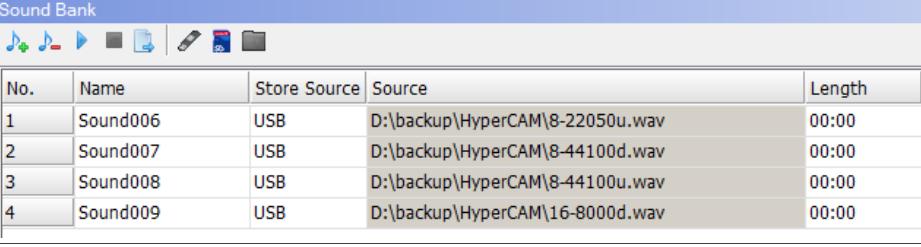
■ Descriptions of icons in the sound file tool bar

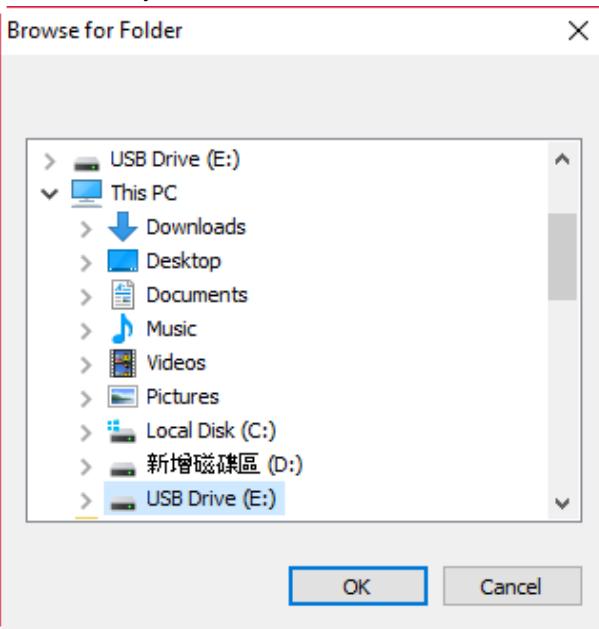
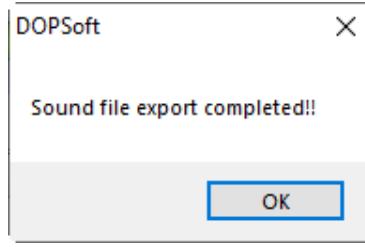
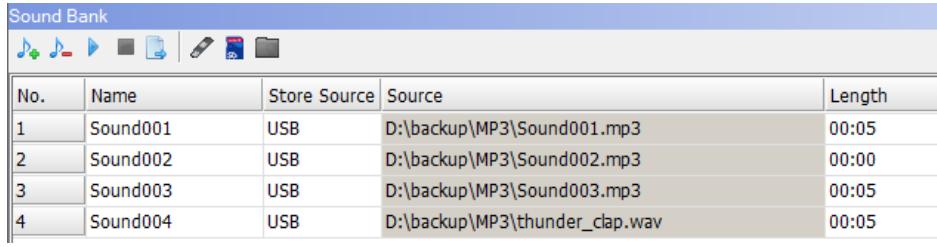
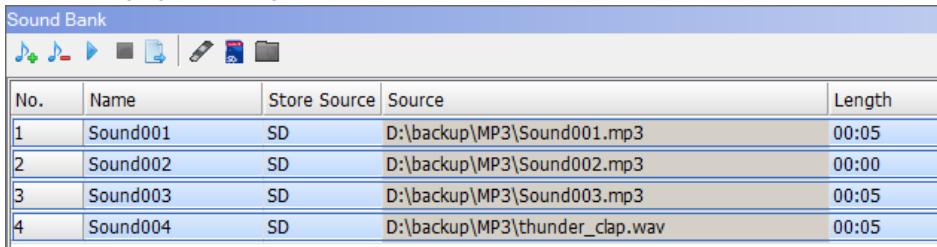
- Click the Add audio file icon, and you will be asked to select the audio file to be played.
- You can add up to 1000 audio files (0 - 999).

Add audio file 



The screenshot shows a Windows 'Open' file dialog. The left pane displays a file tree with 'This PC' selected. The right pane lists several WAV files in the 'HyperCAM' folder. At the bottom, there is a 'File name:' input field, a 'File type:' dropdown set to 'All Files (\*.mp3; \*.wav)', and 'Open' and 'Cancel' buttons.

Sound Bank																																																							
■ Descriptions of icons in the sound file tool bar																																																							
Delete audio file					■ To delete one or multiple audio files after the files are added, you can directly click on one file or hold the <b>SHIFT</b> or <b>Ctrl</b> key and click on multiple files to be deleted, and then click the Delete audio file icon.																																																		
					 <table border="1"> <thead> <tr> <th>No.</th><th>Name</th><th>Store</th><th>Source</th><th>Length</th></tr> </thead> <tbody> <tr><td>1</td><td>Sound001</td><td>USB</td><td>D:\backup\HyperCAM\8-8000d.wav</td><td>00:00</td></tr> <tr><td>2</td><td>Sound002</td><td>USB</td><td>D:\backup\HyperCAM\8-8000u.wav</td><td>00:00</td></tr> <tr><td>3</td><td>Sound003</td><td>USB</td><td>D:\backup\HyperCAM\8-11025d.wav</td><td>00:00</td></tr> <tr><td>4</td><td>Sound004</td><td>USB</td><td>D:\backup\HyperCAM\8-11025u.wav</td><td>00:00</td></tr> <tr><td>5</td><td>Sound005</td><td>USB</td><td>D:\backup\HyperCAM\8-22050d.wav</td><td>00:00</td></tr> <tr><td>6</td><td>Sound006</td><td>USB</td><td>D:\backup\HyperCAM\8-22050u.wav</td><td>00:00</td></tr> <tr><td>7</td><td>Sound007</td><td>USB</td><td>D:\backup\HyperCAM\8-44100d.wav</td><td>00:00</td></tr> <tr><td>8</td><td>Sound008</td><td>USB</td><td>D:\backup\HyperCAM\8-44100u.wav</td><td>00:00</td></tr> <tr><td>9</td><td>Sound009</td><td>USB</td><td>D:\backup\HyperCAM\16-8000d.wav</td><td>00:00</td></tr> </tbody> </table>	No.	Name	Store	Source	Length	1	Sound001	USB	D:\backup\HyperCAM\8-8000d.wav	00:00	2	Sound002	USB	D:\backup\HyperCAM\8-8000u.wav	00:00	3	Sound003	USB	D:\backup\HyperCAM\8-11025d.wav	00:00	4	Sound004	USB	D:\backup\HyperCAM\8-11025u.wav	00:00	5	Sound005	USB	D:\backup\HyperCAM\8-22050d.wav	00:00	6	Sound006	USB	D:\backup\HyperCAM\8-22050u.wav	00:00	7	Sound007	USB	D:\backup\HyperCAM\8-44100d.wav	00:00	8	Sound008	USB	D:\backup\HyperCAM\8-44100u.wav	00:00	9	Sound009	USB	D:\backup\HyperCAM\16-8000d.wav	00:00
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Play	 You can play the audio files that have been added to the Sound File Settings.																																																						
Stop	 You can use the stop button to stop playing the current audio file.																																																						

Sound Bank																																																			
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Export audio file 	<ul style="list-style-type: none"> <li>When you export an audio file, the software will ask you to specify the device for saving the file. Note that you must select a root directory as the saving destination. In other words, do not save the audio files in any folders.</li> </ul> 																																																		
Save audio file to USB drive 	<ul style="list-style-type: none"> <li>After the export, the software informs you that the audio file has been successfully exported.</li> </ul> 																																																		
Save audio file to SD drive 	<ul style="list-style-type: none"> <li>The function of saving audio files to the USB drive or SD card is for you to quickly change the storage device of multiple or some specific audio files. You can also select a single audio file and use these two buttons to change its storage device. For selecting multiple audio files, the methods are the same as that of selecting audio files for deletion. Refer to the selection methods previously mentioned.</li> <li>Before changing the storage device to SD card:</li> </ul>  <p>Sound Bank</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Name</th> <th>Store Source</th> <th>Source</th> <th>Length</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Sound001</td> <td>USB</td> <td>D:\backup\MP3\Sound001.mp3</td> <td>00:05</td> </tr> <tr> <td>2</td> <td>Sound002</td> <td>USB</td> <td>D:\backup\MP3\Sound002.mp3</td> <td>00:00</td> </tr> <tr> <td>3</td> <td>Sound003</td> <td>USB</td> <td>D:\backup\MP3\Sound003.mp3</td> <td>00:05</td> </tr> <tr> <td>4</td> <td>Sound004</td> <td>USB</td> <td>D:\backup\MP3\thunder_clap.wav</td> <td>00:05</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>After changing the storage device to SD card:</li> </ul>  <p>Sound Bank</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Name</th> <th>Store Source</th> <th>Source</th> <th>Length</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Sound001</td> <td>SD</td> <td>D:\backup\MP3\Sound001.mp3</td> <td>00:05</td> </tr> <tr> <td>2</td> <td>Sound002</td> <td>SD</td> <td>D:\backup\MP3\Sound002.mp3</td> <td>00:00</td> </tr> <tr> <td>3</td> <td>Sound003</td> <td>SD</td> <td>D:\backup\MP3\Sound003.mp3</td> <td>00:05</td> </tr> <tr> <td>4</td> <td>Sound004</td> <td>SD</td> <td>D:\backup\MP3\thunder_clap.wav</td> <td>00:05</td> </tr> </tbody> </table>	No.	Name	Store Source	Source	Length	1	Sound001	USB	D:\backup\MP3\Sound001.mp3	00:05	2	Sound002	USB	D:\backup\MP3\Sound002.mp3	00:00	3	Sound003	USB	D:\backup\MP3\Sound003.mp3	00:05	4	Sound004	USB	D:\backup\MP3\thunder_clap.wav	00:05	No.	Name	Store Source	Source	Length	1	Sound001	SD	D:\backup\MP3\Sound001.mp3	00:05	2	Sound002	SD	D:\backup\MP3\Sound002.mp3	00:00	3	Sound003	SD	D:\backup\MP3\Sound003.mp3	00:05	4	Sound004	SD	D:\backup\MP3\thunder_clap.wav	00:05
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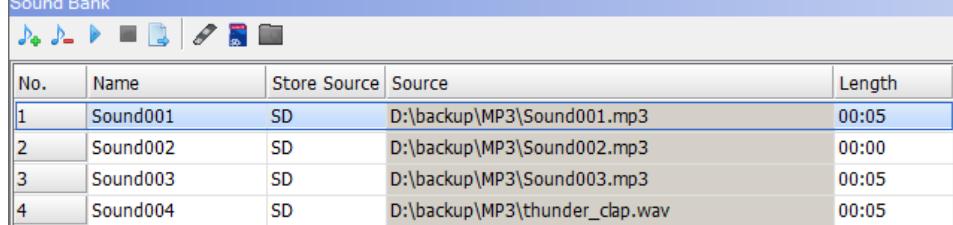
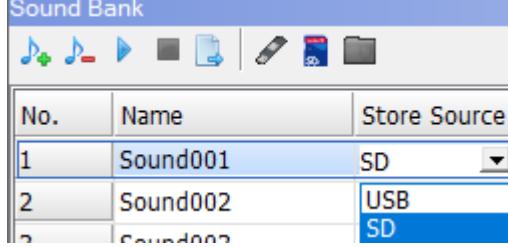
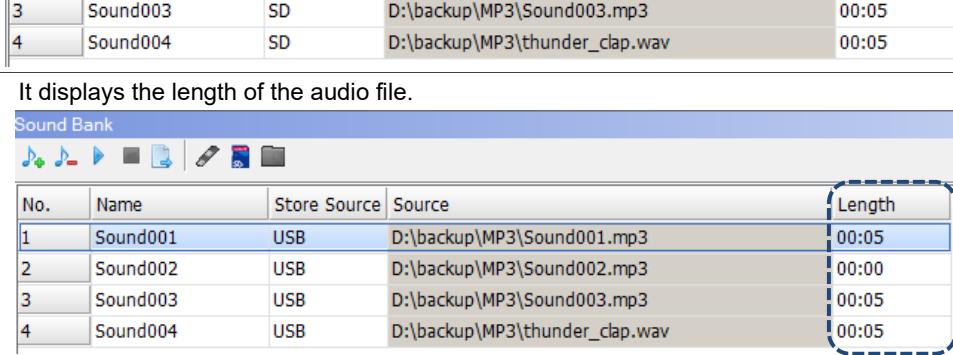
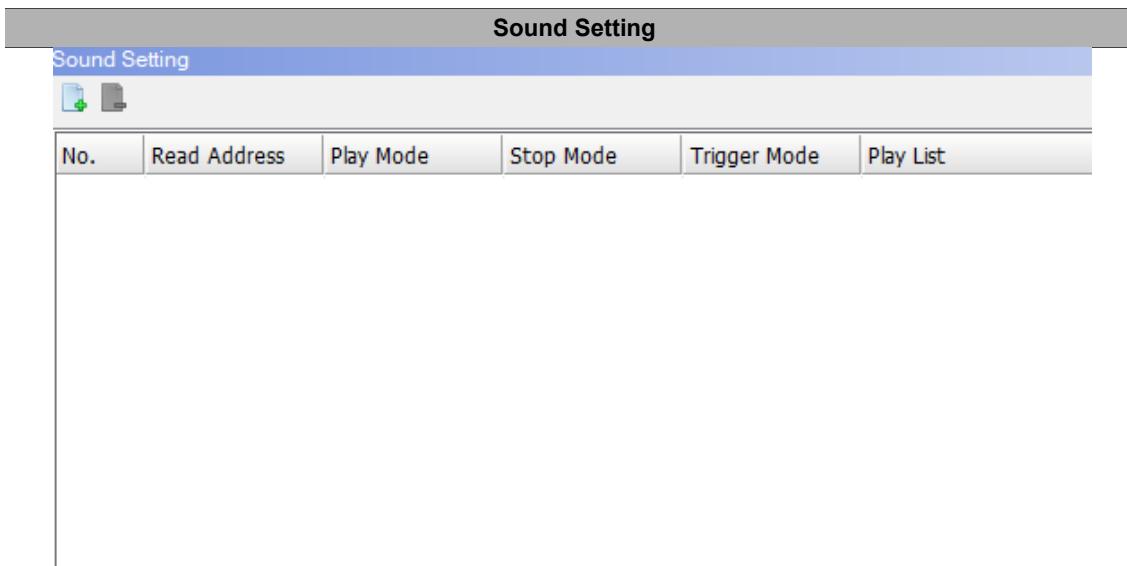
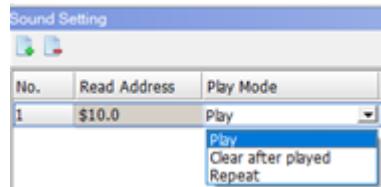
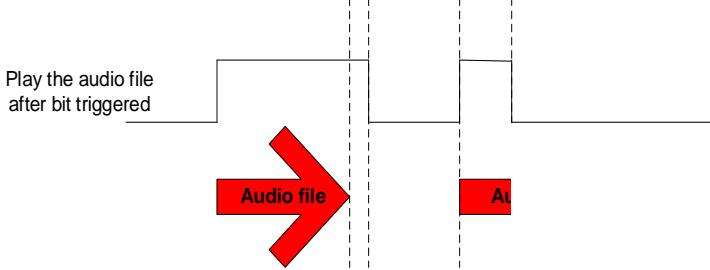
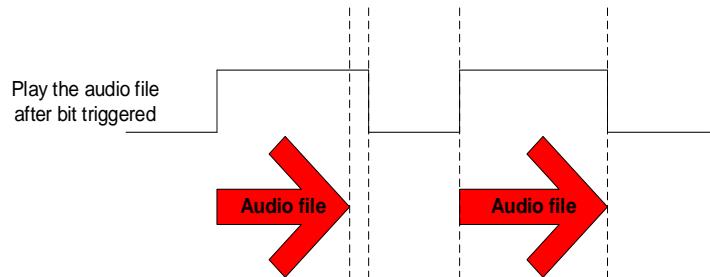
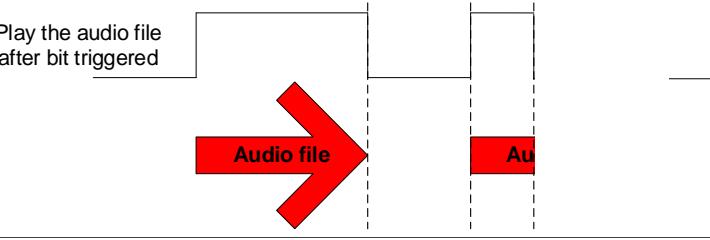
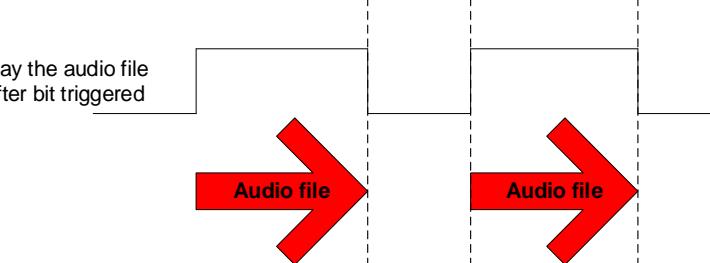
Sound Bank																													
■ Descriptions of fields																													
No.	<ul style="list-style-type: none"> <li>The No. field is the main reference for playing the audio file. When you set the reading method of the play list as Address, the software plays the audio file based on the setting address.</li> </ul>																												
	 <table border="1"> <thead> <tr> <th>No.</th><th>Name</th><th>Store Source</th><th>Source</th><th>Length</th></tr> </thead> <tbody> <tr> <td>1</td><td>Sound001</td><td>SD</td><td>D:\backup\MP3\Sound001.mp3</td><td>00:05</td></tr> <tr> <td>2</td><td>Sound002</td><td>SD</td><td>D:\backup\MP3\Sound002.mp3</td><td>00:00</td></tr> <tr> <td>3</td><td>Sound003</td><td>SD</td><td>D:\backup\MP3\Sound003.mp3</td><td>00:05</td></tr> <tr> <td>4</td><td>Sound004</td><td>SD</td><td>D:\backup\MP3\thunder_clap.wav</td><td>00:05</td></tr> </tbody> </table>				No.	Name	Store Source	Source	Length	1	Sound001	SD	D:\backup\MP3\Sound001.mp3	00:05	2	Sound002	SD	D:\backup\MP3\Sound002.mp3	00:00	3	Sound003	SD	D:\backup\MP3\Sound003.mp3	00:05	4	Sound004	SD	D:\backup\MP3\thunder_clap.wav	00:05
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Name	<ul style="list-style-type: none"> <li>Filenames of the audio files added to the list are displayed as Sound. The filename of the first audio file starts with 001, which is Sound001, and followed by Sound002, Sound003, and so on.</li> </ul>																												
Store Source	<ul style="list-style-type: none"> <li>The options are USB drive and SD card. You can change the storage device as required. The default is USB drive.</li> </ul>  <table border="1"> <thead> <tr> <th>No.</th><th>Name</th><th>Store Source</th></tr> </thead> <tbody> <tr> <td>1</td><td>Sound001</td><td>SD</td></tr> <tr> <td>2</td><td>Sound002</td><td>USB</td></tr> </tbody> </table>				No.	Name	Store Source	1	Sound001	SD	2	Sound002	USB																
No.	Name	Store Source																											
1	Sound001	SD																											
2	Sound002	USB																											
Source	<ul style="list-style-type: none"> <li>This is the path of the added audio file. After the audio file is added, you can change the source audio file, which means replacing the sound track.</li> </ul>																												
Length	<ul style="list-style-type: none"> <li>It displays the length of the audio file.</li> </ul>  <table border="1"> <thead> <tr> <th>No.</th><th>Name</th><th>Store Source</th><th>Source</th><th>Length</th></tr> </thead> <tbody> <tr> <td>1</td><td>Sound001</td><td>SD</td><td>D:\backup\MP3\Sound001.mp3</td><td>00:05</td></tr> <tr> <td>2</td><td>Sound002</td><td>SD</td><td>D:\backup\MP3\Sound002.mp3</td><td>00:00</td></tr> <tr> <td>3</td><td>Sound003</td><td>SD</td><td>D:\backup\MP3\Sound003.mp3</td><td>00:05</td></tr> <tr> <td>4</td><td>Sound004</td><td>SD</td><td>D:\backup\MP3\thunder_clap.wav</td><td>00:05</td></tr> </tbody> </table>				No.	Name	Store Source	Source	Length	1	Sound001	SD	D:\backup\MP3\Sound001.mp3	00:05	2	Sound002	SD	D:\backup\MP3\Sound002.mp3	00:00	3	Sound003	SD	D:\backup\MP3\Sound003.mp3	00:05	4	Sound004	SD	D:\backup\MP3\thunder_clap.wav	00:05
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4	Sound004	SD	D:\backup\MP3\thunder_clap.wav	00:05																									

Table 28.9.2 Descriptions of Sound Setting

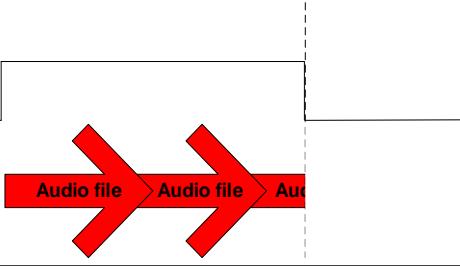
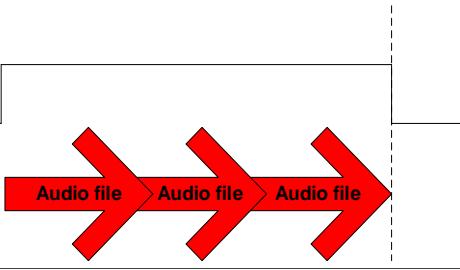


- The Sound Setting includes No., Read Address, Play Mode, Stop Mode, Trigger Mode, and Play List.

No.	<ul style="list-style-type: none"> <li>Allows maximum 512 data entries.</li> </ul>
Read Address	<ul style="list-style-type: none"> <li>For the Read Address, you can only use bit triggering to trigger and play the audio file.</li> </ul>

Sound Setting			
	Play Mode	Stop Mode	
The control list includes Play, Clear after played, and Repeat.			The control list includes Stop and Stop after finished.
			
Modes	<b>■ Play Mode: Play</b> <b>■ When the bit set for sound play is triggered, the HMI immediately plays the sound track.</b>	<b>■ If you choose Stop as the Stop Mode, no matter the sound track is playing or not, the HMI immediately stops the soundtrack.</b>	
	<b>■ Play Mode: Stop</b> <b>■ If you choose Stop after finished, then the sound track is played to the end and stopped.</b>		
	<b>■ Play Mode: Clear after played</b> <b>■ The Clear after played option means clearing the bit after the sound track is played.</b>		
	<b>■ If you select the same address for triggering and playing two sound tracks, this bit is cleared after these two sound tracks finish playing.</b>		

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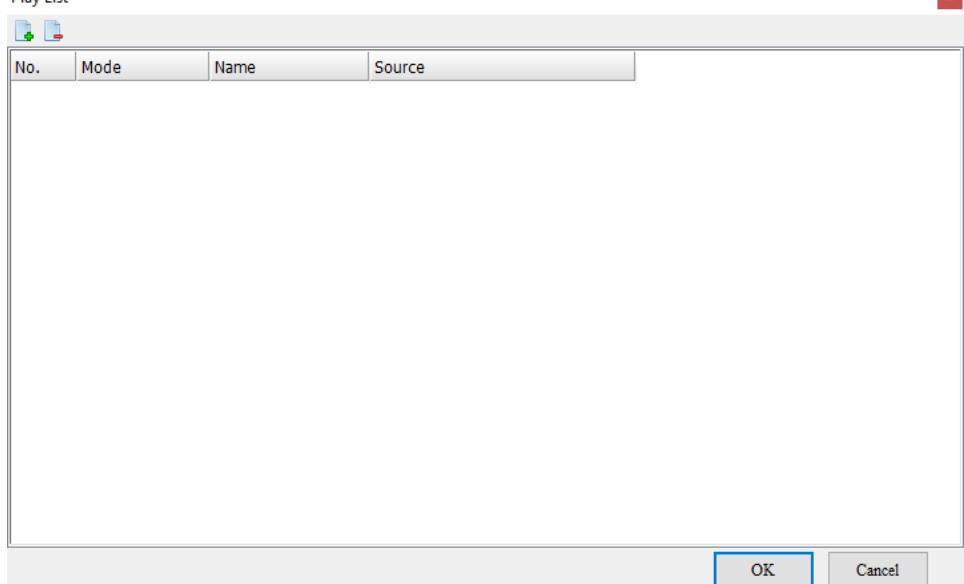
Sound Setting																
■ Play Mode: Repeat																
Modes	<p>Stop Mode: <u><b>Stop</b></u></p> <p>Play the audio files after bit triggered</p> 															
	<p>Stop Mode: <u><b>Stop after finished</b></u></p> <p>Play the audio files after bit triggered</p> 															
Trigger Mode	<ul style="list-style-type: none"> <li>The triggering options include setting the bit to ON or OFF. This is for you to set whether to use ON or Off state to trigger the play of the sound track.</li> </ul> <table border="1"> <thead> <tr> <th>No.</th> <th>Read Address</th> <th>Play Mode</th> <th>Stop Mode</th> <th>Trigger Mode</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$100.0</td> <td>Play</td> <td>Stop</td> <td>ON</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td> <input type="button" value="OFF"/> <input type="button" value="ON"/> </td> </tr> </tbody> </table>	No.	Read Address	Play Mode	Stop Mode	Trigger Mode	1	\$100.0	Play	Stop	ON					<input type="button" value="OFF"/> <input type="button" value="ON"/>
No.	Read Address	Play Mode	Stop Mode	Trigger Mode												
1	\$100.0	Play	Stop	ON												
				<input type="button" value="OFF"/> <input type="button" value="ON"/>												

28

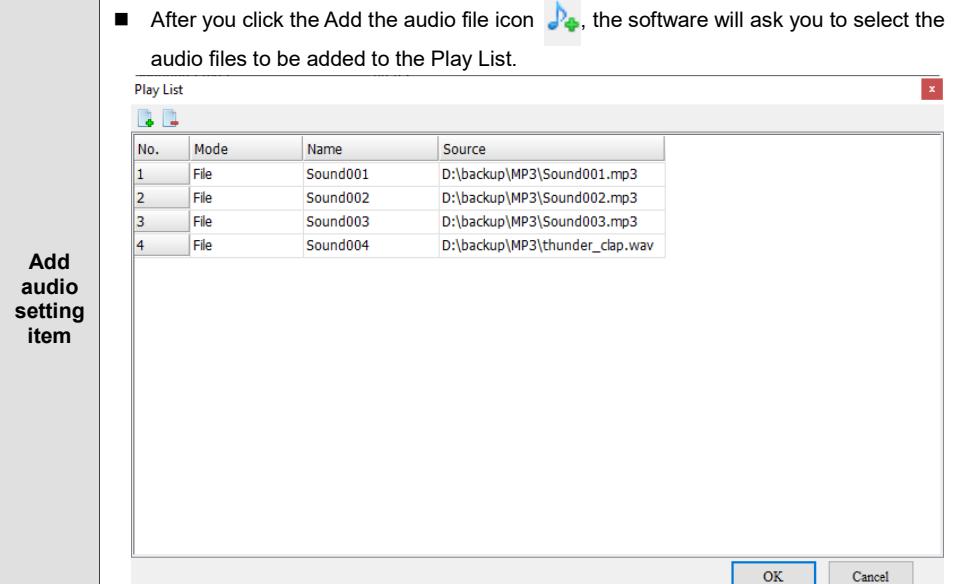
### Sound Setting

- The Play List includes functions of adding and removing playing items.
- Each trigger address set in the Play List supports maximum 100 sound files.
- The read mode (Mode) is determined by the added sound files.
- The read modes (Mode) include **File** and **Address**.

Play List



■ After you click the Add the audio file icon , the software will ask you to select the audio files to be added to the Play List.



No.	Mode	Name	Source
1	File	Sound001	D:\backup\MP3\Sound001.mp3
2	File	Sound002	D:\backup\MP3\Sound002.mp3
3	File	Sound003	D:\backup\MP3\Sound003.mp3
4	File	Sound004	D:\backup\MP3\thunder_clap.wav

Sound Setting																												
Remove audio setting item	<ul style="list-style-type: none"> <li>After the audio files are added to the Play List, you can remove the unnecessary audio files as required.</li> </ul> <p>Play List</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Mode</th> <th>Name</th> <th>Source</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>File</td> <td>Sound001</td> <td>D:\backup\MP3\Sound001.mp3</td> </tr> <tr> <td>2</td> <td>File</td> <td>Sound003</td> <td>D:\backup\MP3\Sound003.mp3</td> </tr> </tbody> </table>			No.	Mode	Name	Source	1	File	Sound001	D:\backup\MP3\Sound001.mp3	2	File	Sound003	D:\backup\MP3\Sound003.mp3													
No.	Mode	Name	Source																									
1	File	Sound001	D:\backup\MP3\Sound001.mp3																									
2	File	Sound003	D:\backup\MP3\Sound003.mp3																									
Mode	<ul style="list-style-type: none"> <li>The options for the read mode (Mode) include File and Address.</li> </ul> <p>Play List</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Mode</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>File</td> <td>Sound001</td> </tr> <tr> <td>2</td> <td>File Address</td> <td>Sound003</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>File: you can directly select the audio file to be played from the Sound Bank and add it to the Play List. When the read bit address of the Sound Setting is triggered, the selected audio file is played.</li> <li>Address: you can specify a register address, and once the trigger condition is met, the HMI reads the input values of the register and plays the sound file according to the No. in the Sound File List from the Sound Bank.</li> </ul> <p>Sound Bank</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Name</th> <th>Store Source</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Sound001</td> <td>USB</td> </tr> <tr> <td>2</td> <td>Sound002</td> <td>USB</td> </tr> <tr> <td>3</td> <td>Sound003</td> <td>USB</td> </tr> <tr> <td>4</td> <td>Sound004</td> <td>USB</td> </tr> </tbody> </table>			No.	Mode	Name	1	File	Sound001	2	File Address	Sound003	No.	Name	Store Source	1	Sound001	USB	2	Sound002	USB	3	Sound003	USB	4	Sound004	USB	
No.	Mode	Name																										
1	File	Sound001																										
2	File Address	Sound003																										
No.	Name	Store Source																										
1	Sound001	USB																										
2	Sound002	USB																										
3	Sound003	USB																										
4	Sound004	USB																										
Play List	<ul style="list-style-type: none"> <li>The filename starts with Sound plus 001 as the initial number, so the name is Sound001 and followed by Sound002, Sound003, and so on.</li> </ul> <p>Sound Bank</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Name</th> <th>Store Source</th> <th>Source</th> <th>Length</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Sound001</td> <td>USB</td> <td>D:\backup\MP3\Sound001.mp3</td> <td>00:05</td> </tr> <tr> <td>2</td> <td>Sound002</td> <td>USB</td> <td>D:\backup\MP3\Sound002.mp3</td> <td>00:00</td> </tr> <tr> <td>3</td> <td>Sound003</td> <td>USB</td> <td>D:\backup\MP3\Sound003.mp3</td> <td>00:05</td> </tr> <tr> <td>4</td> <td>Sound004</td> <td>USB</td> <td>D:\backup\MP3\thunder_clap.wav</td> <td>00:05</td> </tr> </tbody> </table>			No.	Name	Store Source	Source	Length	1	Sound001	USB	D:\backup\MP3\Sound001.mp3	00:05	2	Sound002	USB	D:\backup\MP3\Sound002.mp3	00:00	3	Sound003	USB	D:\backup\MP3\Sound003.mp3	00:05	4	Sound004	USB	D:\backup\MP3\thunder_clap.wav	00:05
No.	Name	Store Source	Source	Length																								
1	Sound001	USB	D:\backup\MP3\Sound001.mp3	00:05																								
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4	Sound004	USB	D:\backup\MP3\thunder_clap.wav	00:05																								
Name	<ul style="list-style-type: none"> <li>In [Play List] &gt; [Source], the path of the sound file is unchangeable. This Source field is only for sound file path display. If changing the path is required, go to [Sound Bank] &gt; [Source].</li> </ul> <p>Play List</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Mode</th> <th>Name</th> <th>Source</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>File</td> <td>Sound001</td> <td>D:\backup\MP3\Sound001.mp3</td> </tr> <tr> <td>2</td> <td>File</td> <td>Sound003</td> <td>D:\backup\MP3\Sound003.mp3</td> </tr> <tr> <td>3</td> <td>File</td> <td>Sound004</td> <td>D:\backup\MP3\thunder_clap.wav</td> </tr> </tbody> </table>			No.	Mode	Name	Source	1	File	Sound001	D:\backup\MP3\Sound001.mp3	2	File	Sound003	D:\backup\MP3\Sound003.mp3	3	File	Sound004	D:\backup\MP3\thunder_clap.wav									
No.	Mode	Name	Source																									
1	File	Sound001	D:\backup\MP3\Sound001.mp3																									
2	File	Sound003	D:\backup\MP3\Sound003.mp3																									
3	File	Sound004	D:\backup\MP3\thunder_clap.wav																									
Source																												

## 28.10 Modbus TCP mapping table

In the past, screen editing and address planning can be inflexible because ranges and addresses of the Modbus address table are very limited, as shown in the following table.

Modbus address	Modbus 6-digit address	HMI internal register definition	
<b>W40001 – W41024</b>	<b>W4-00001 – W4-01024</b>	→ \$0 – \$1023	Internal register
<b>W42001 – W43024</b>	<b>W4-02001 – W4-03024</b>	→ \$M0 – \$M1023	Non-volatile internal register
<b>W44001</b>	<b>W4-04001</b>	→ RCPNO	Recipe number register
<b>W45001 ...</b>	<b>W4-05001 ...</b>	→ RCP0 – RCPn	Recipe register
<b>B00001 – B01024</b>	<b>B0-00001 – B0-01024</b>	→ \$2000.0 – \$2063.15	Internal register (bit)
<b>B01025 – B02048</b>	<b>B0-01025 – B0-02048</b>	→ \$M200.0 – \$M263.15	Non-volatile internal register (bit)

The DOP-100 software provides users with a more flexible editing approach for the Modbus addresses. In addition to the expanded length of the Modbus and HMI memory addresses, you can define the initial address and the range of the read length.

External connection function code Description:

Coils	Registers
0x01: read multiple Bit	0x03: read multiple Word
0x05: write a Bit	0x04: read multiple Word
0x0F: write multiple Bit	0x06: write a Word
	0x10: write multiple Word

Figure 28.10.1 Modbus TCP mapping table

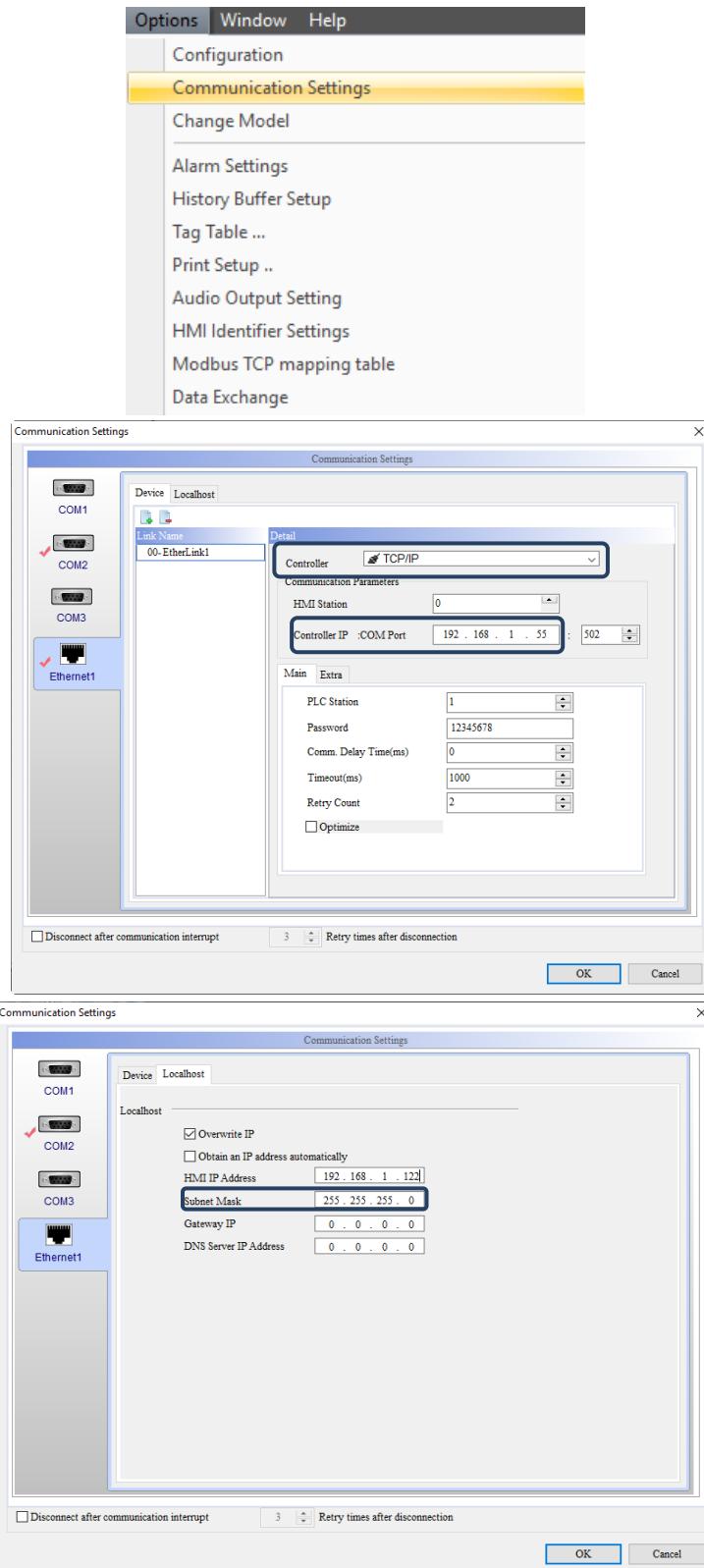
The Modbus TCP mapping table supports both internal and external addresses. You can set the HMI internal and the external memory addresses which the Modbus addresses are mapped to. Refer to the following example.

## Communication Settings

Table 28.10.1 Descriptions of Modbus TCP mapping table

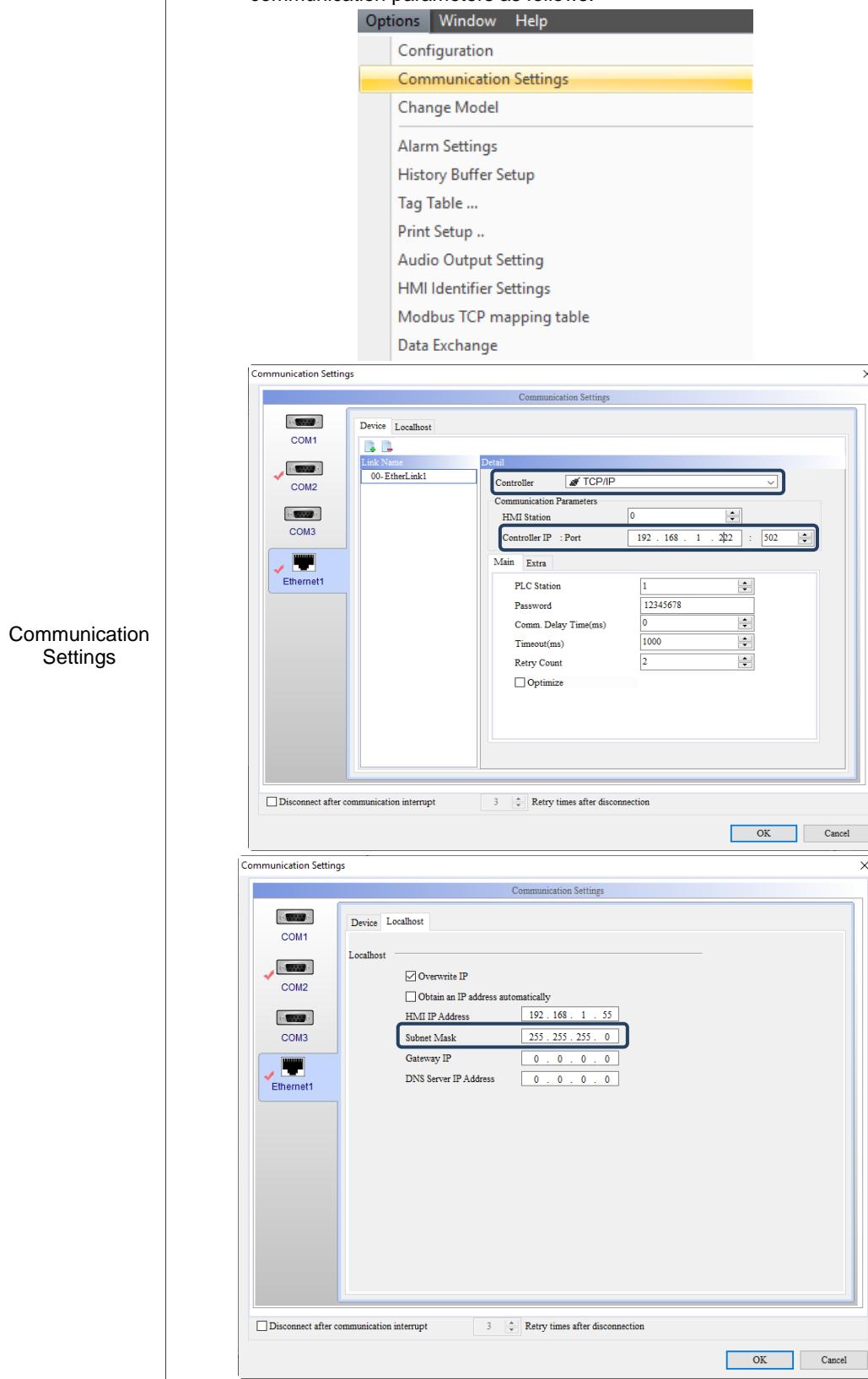
**Modbus TCP mapping table**

In this example, Modbus TCP is used to establish communication between two HMIs.  
 Step 1: set the communication parameters for the first HMI.  
 Go to [Options] > [Communication Settings] > [Ethernet1] and add a network connection by setting the Controller to TCP/IP, and set the communication parameters as follows.



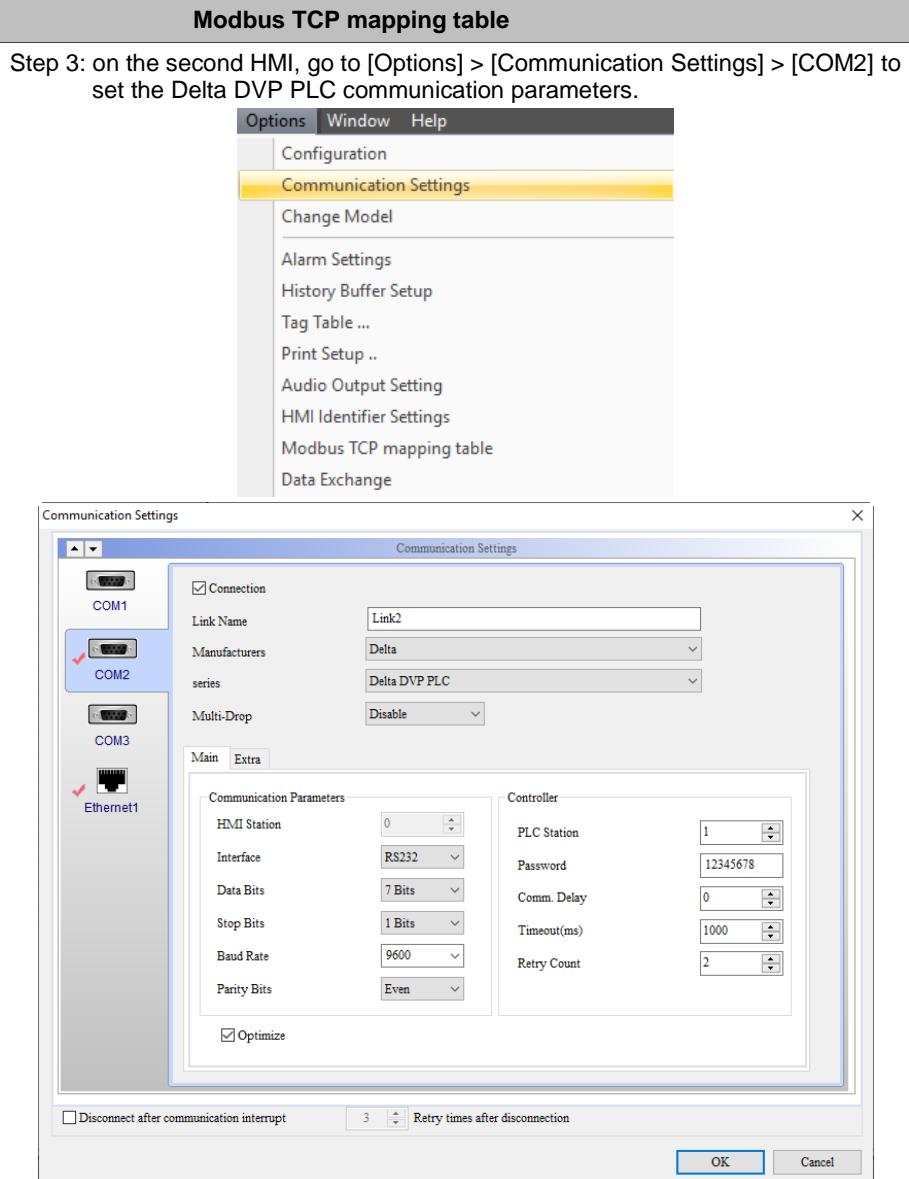
### Modbus TCP mapping table

Step 2: set the communication parameters for the second HMI.  
 Go to [Options] > [Communication Settings] > [Ethernet1] and add a network connection by setting the Controller to TCP/IP, and set the communication parameters as follows.



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## Communication Settings



- Go to [Options] > [Modbus TCP mapping table] and set the Modbus address 2, {EtherLink1}1@RW-1, to map to the external memory address, {Link2}1@D0, with the mapping length as 1024 words.

Modbus TCP mapping table					
External connection function code Description:		Coils	Registers		
No	Data Type	Modbus Address	HMI Address	Length	Modbus Range
1	Coils	1	\$2000.0	1024	00001(0x0000) ~ 01024(0x03FF)
2	Coils	1025	\$M200.0	1024	01025(0x0400) ~ 02048(0x07FF)
3	Registers	1	{Link2}1@D0	1024	00001(0x0000) ~ 01024(0x03FF)
4	Registers	2001	\$M0	1024	02001(0x07D0) ~ 03024(0x0BCF)
5	-----				

## Set Modbus TCP mapping table parameters

- On the first HMI, create a Numeric Entry element and then set the Write Address as {EtherLink1}1@RW-1.
- On the second HMI, create a Numeric Display element and set the external address as {Link2}1@D0.

Modbus TCP mapping table	
Execution results	<ul style="list-style-type: none"> <li>After creating and setting the elements, compile and download the project to the HMI.</li> <li>On the first HMI, write 100 to the Numeric Entry element which address is {EtherLink1}1@RW-1. Meanwhile, the second HMI uses the Modbus TCP mapping table to map the value 100 to the external memory address {Link2}1@D0.</li> </ul>

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## 28.11 Font management

The Font management function allows you to search for a specific font and batch replace the font.

With this function, you can quickly change the font when required, which improves the programming efficiency.

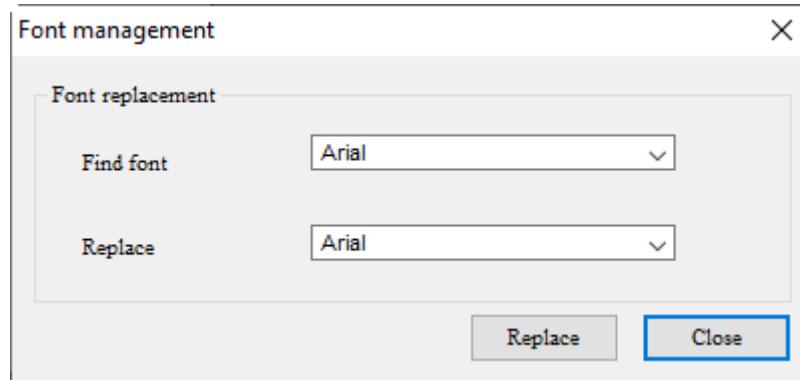


Figure 28.11.1 Font management

# System Screen

A

This chapter describes the functions that the HMI system screen provides, including System Settings, Up/Download, System Info, and HMI Doctor.

A.1	System screen overview.....	A-3
A.2	System Setting .....	A-10
A.3	Up/Download .....	A-28
A.4	System Info .....	A-36
A.5	HMI Doctor .....	A-37

Both the HMI system screen and DOPSoft software provide users with the function of setting the system display language, including English, French, Russian, Simplified Chinese, Spanish, Traditional Chinese, and Turkish.



Figure A.1 System Menu - system language setup

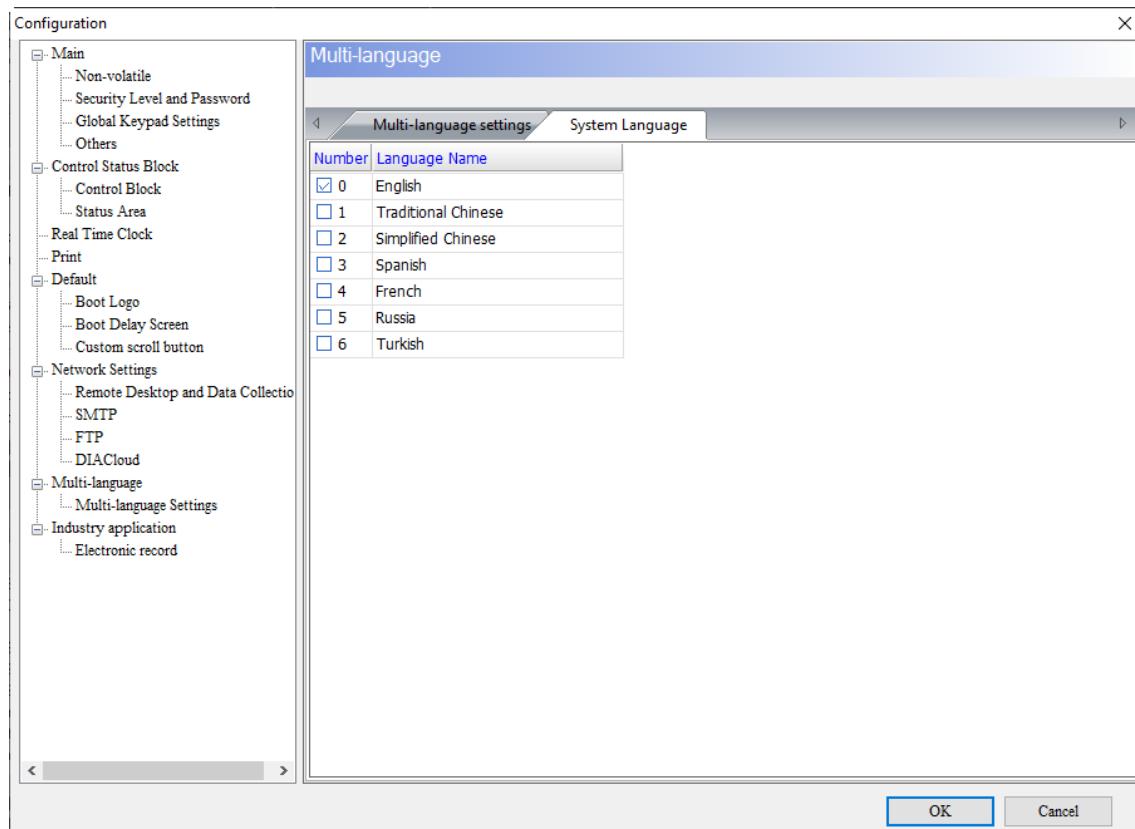


Figure A.2 DOPSoft - system language setup

## A.1 System screen overview

- How to enter the system screen

After you press any blank space for more than 3 seconds, the system directory will be displayed on the left.

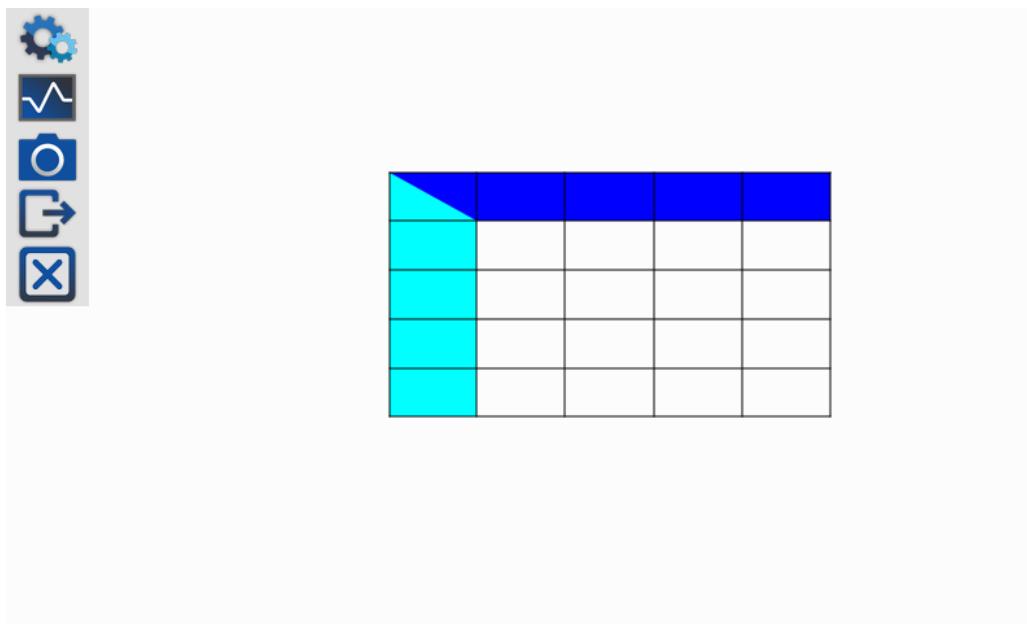
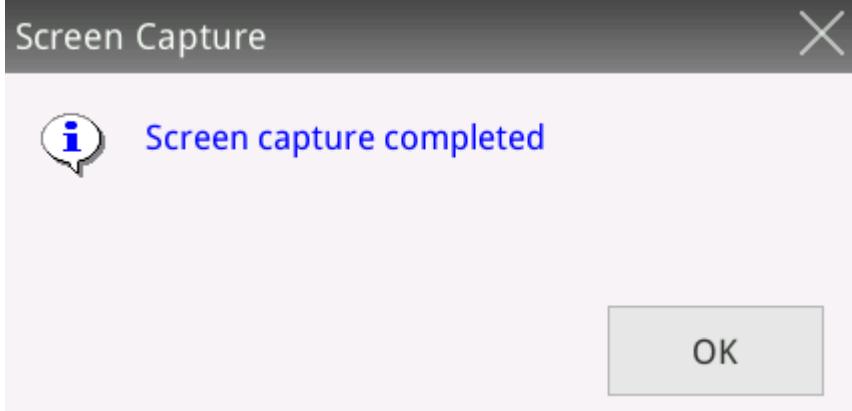


Figure A.1.1 System screen directory

Table A.1.1 System screen directory

System menu 	Execute this button to directly enter the system menu.
System monitor 	Display the system usage status.
Screen capture 	Capture the screen and save the screenshot in USB disk as a PNG file. After you execute this button, the following message will be displayed. 

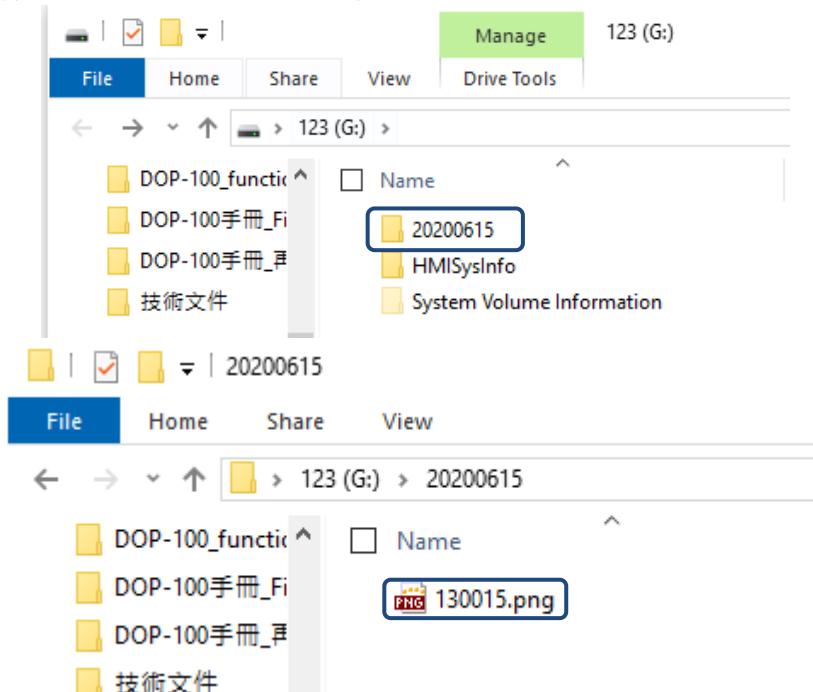
A

A

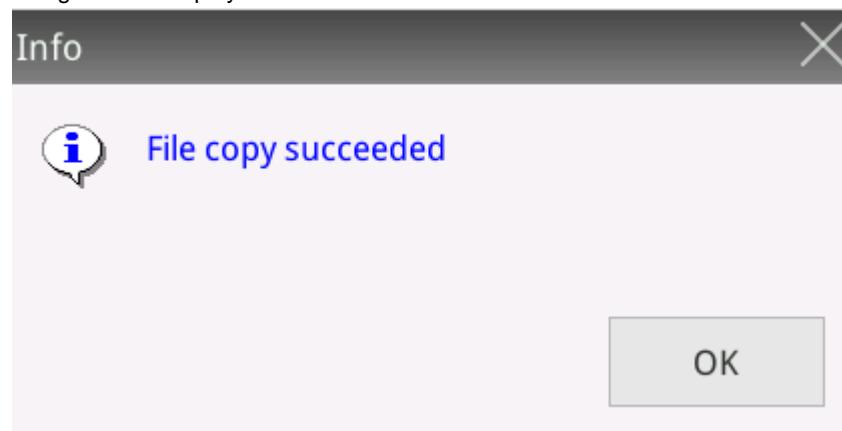
Screen capture



The exported file will be archived in the archive folder and named by date (yyyymmdd), and the file is named by time (hhmmss).



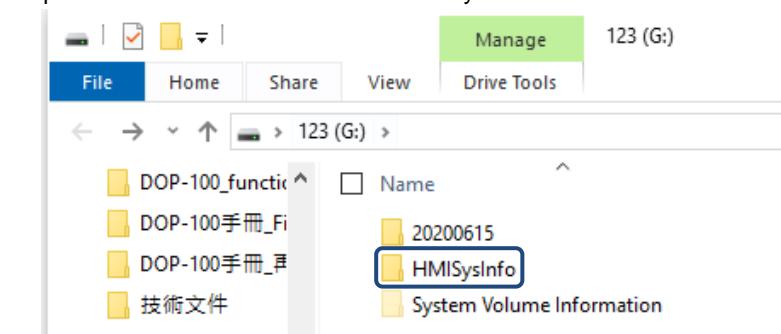
System related data can be exported. After the export is complete, the following message will be displayed.



Export system data



The exported files will be archived in the HMISysInfo folder.



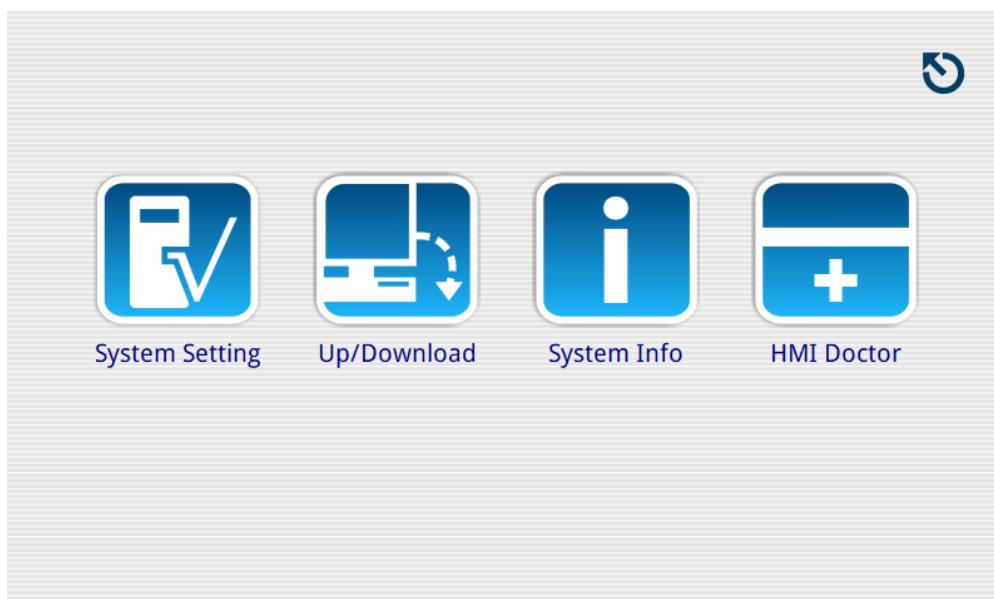
Exit system directory



Execute this button to cancel the display of the system directory on the left and return to the HMI operation screen.

- How to exit the system screen

Once in the system screen, press the button on the top right corner to exit the HMI system screen.



A

Figure A.1.2 Press the top right corner to exit the system screen

- How to operate the system screen

You can press the icon on the screen to access the corresponding function options. The following section introduces each of the functions on the system screen.

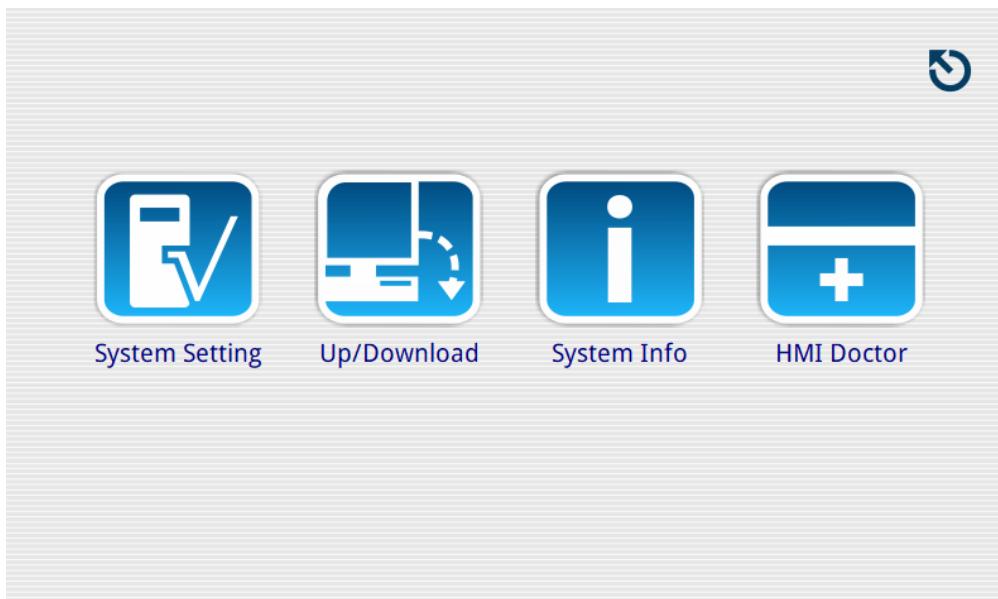


Figure A.1.3 System screen

Table A.1.2 System screen function list

System screen function list			
A	Display 	Brightness 	Adjust the brightness.
	Date 	Date May 18	Set the system date.
	Date/Time 	Time 	Set the system time.
System Setting 	Touch Panel 	Delay 	Set the delay time for the touch panel.
		Force 	Set the pressing force on the touch panel.
		Calibration 	Calibrate the touch panel.
	Network 	HMI Name	Display the name set for the HMI.
	Mode	DHCP	Auto-acquire IP address.
		Static	Customize IP address.
		BOOTP	Auto-acquire IP address.
	IP	Set the IP address.	
	Mask	Set the network mask.	
	Gateway	Set the gateway.	
	DNS	Set the domain name.	
	MAC	Display the MAC address for the HMI.	

System screen function list			
System Setting 	Network App 	VNC	Enable Password Port
		eServer	Enable Password
		COM Port 	COM 1 COM 2 COM 3
	Audio 	Buzzer 	Set the COM Mode, Baud Rate, Stop Bits, Data Bits, Parity Bits, Comm. Delay, Comm. Timeout, Comm. Retry Times, HMI Station, PLC Station, Multi-Link Mode, and Baud Rate Tuning for COM 1 - COM 3.
	Password 	Buzzer	Adjust the HMI key tone and buzzer volume.
		System Language	Set the Password Table for Levels 0 - 7. The highest security password is needed for setting up the Password Table.
	MISC 	Touch Cursor ScreenSaver Time Boot Delay Times Default Language Boot Display USB Comm. Mode	Set the display language of the System Menu. Set whether to display the touch cursor. Set up the time after which the screensaver is enabled. Set up the delay time for starting the device. Select the ID number of the language to use. Set whether to display the boot screen at startup. Set the USB upload / download mode.

A

System screen function list			
A System Setting 	File Manager 	Format 	Formatting is available for HMI, USB Disk, and SD Card. The HMI project file is cleared after formatting.
		File Copy 	Copy the screen to the external storage device (USB Disk or SD Card).
		Firmware Update 	Update the HMI firmware from USB Disk or SD Card.
Up/Download 	Standard Mode 	COM 1	To upload / download through the COM Port, select COM 1 or COM 2 in the Standard Mode for up- and downloading the screen data.
	COM 2		
	Bypass Mode 	Mode 1 COM 1 > COM 2	The HMI is used as a bridge in the Bypass Mode to transmit data between PC and PLC.
System Info 	Transfer Mode 	Mode 2 COM 2 > COM 1	
		Upload	Upload and download DVP files used in the PLC.
		Download	

System screen function list			
	Network	Network test.	
HMI Doctor 	Color	Red	Red screen test.
		Green	Green screen test.
		Blue	Blue screen test.
		Black	Black screen test.
		White	White screen test.
		Color	Color saturation test.
	ADC	ADC test.	
	Buzz/LED	Buzzer / LED test.	
	Draw Line	Line drawing test for the touch panel.	

A

## A.2 System Setting

The System Setting operation is described as follows.

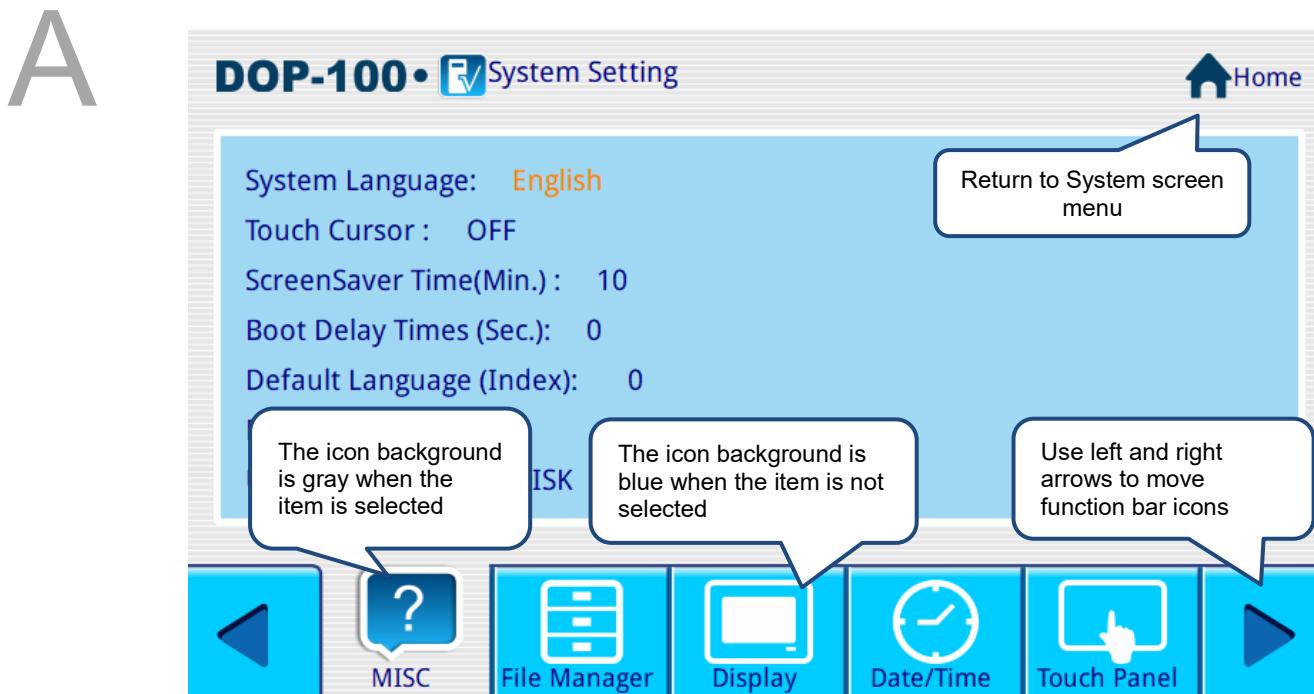
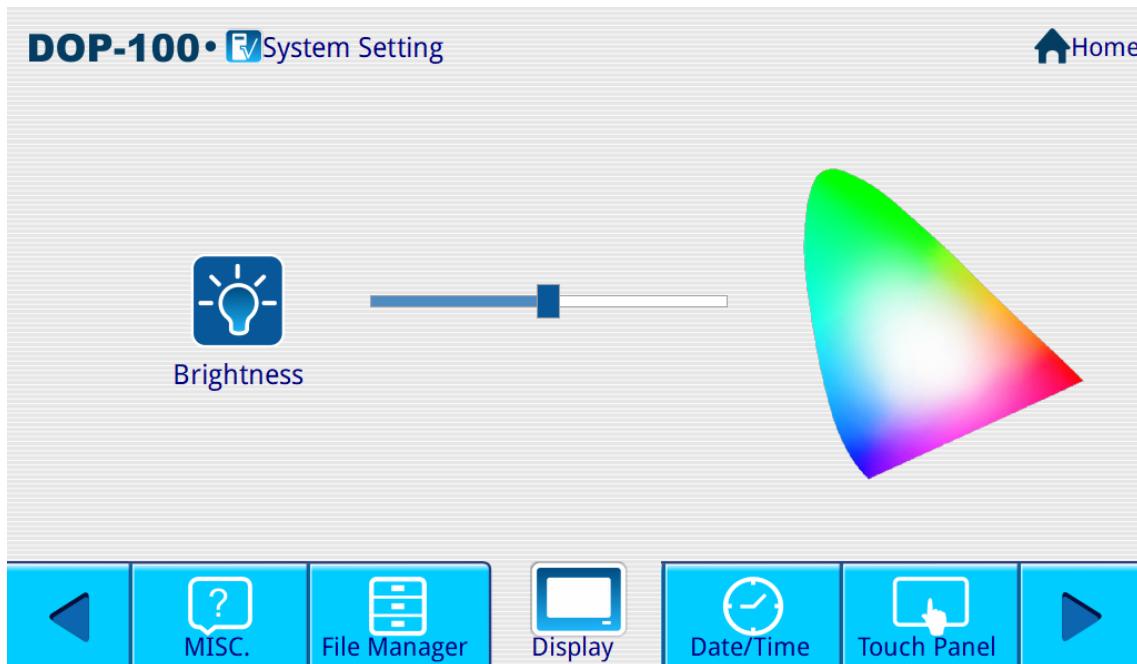


Figure A.2.1 System Setting operation description

■ Display



A

Figure A.2.2 Display

Set the LCD display.

		You can adjust the brightness of the HMI screen.
--	--	--

## ■ Date/Time

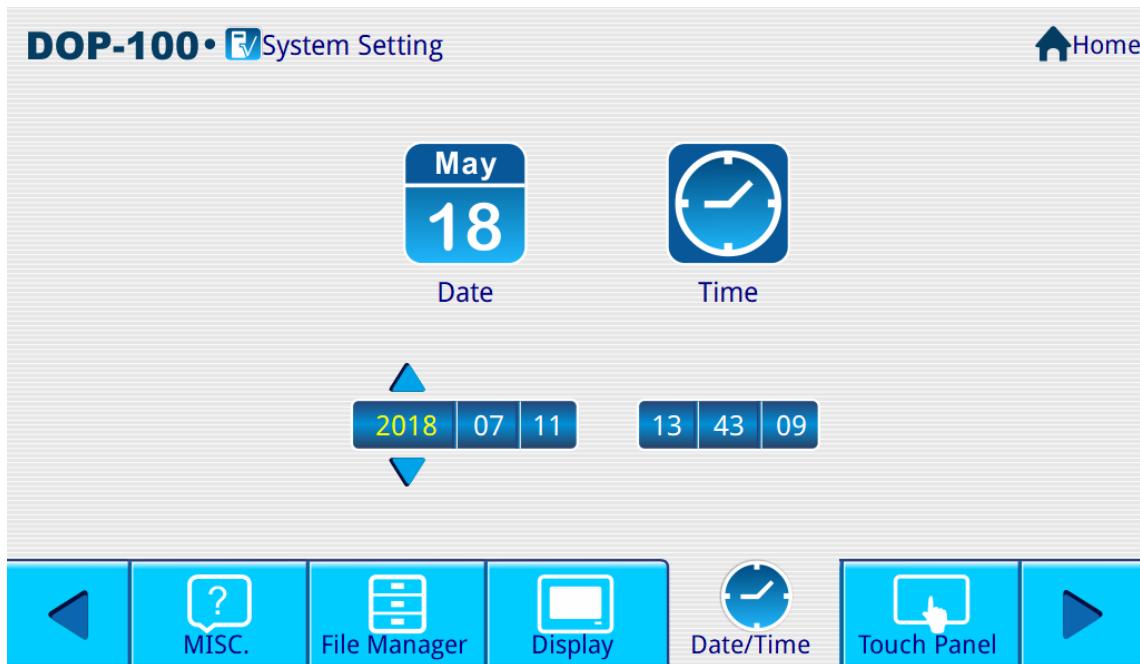


Figure A.2.3 Date/Time

Set the date and time (year, month, day, hour, minute, second) for the HMI system.

 Date/Time	Date 	Set the HMI system date with the year, month, and day.
	Time 	Set the HMI system time with the hour, minute, and second.

#### ■ Touch Panel

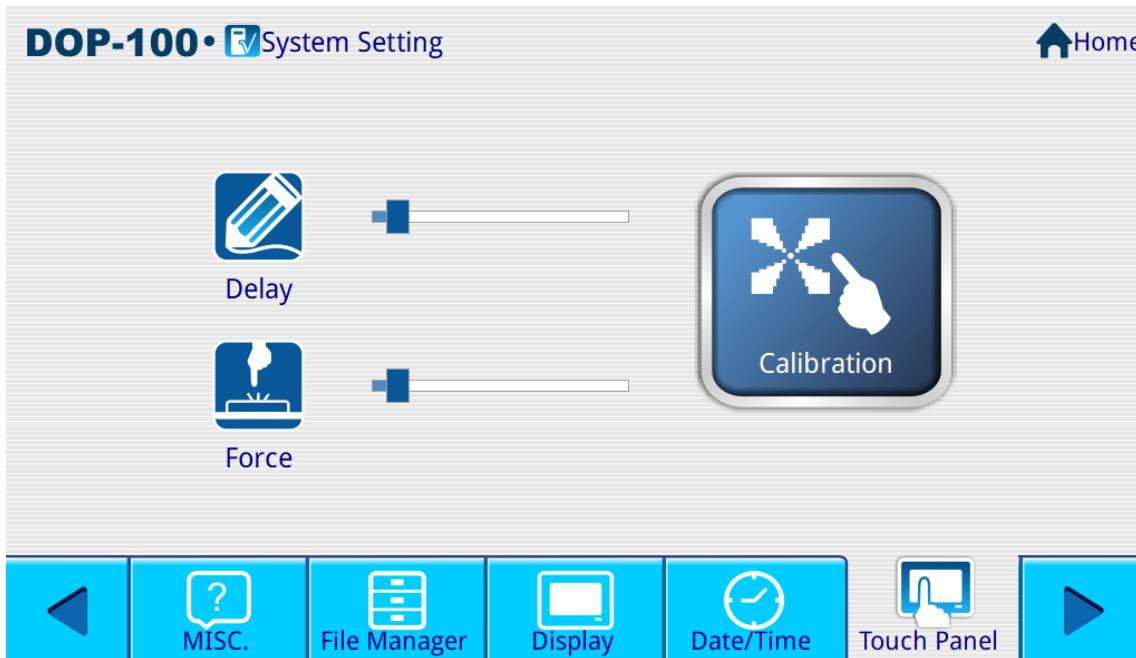
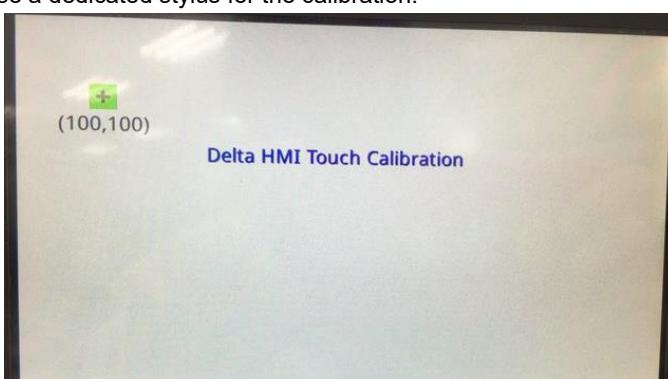


Figure A.2.4 Touch Panel

Set the delay time, pressing force, and calibration for the touch panel.

	<h3>Delay</h3> 	<p>Set the delay time of HMI processing the touch and movement data. The farther to the right, the shorter the delay time, which means the speed is faster; the farther to the left, the longer the delay time, which means the speed is slower.</p>
	<h3>Force</h3> 	<p>Set the pressing force for the HMI touch panel. Move the slider left to reduce the force, meaning the HMI is more sensitive to forces, thereby requiring less force for the touch operation; move the slider right to increase the force, meaning the HMI is less sensitive to forces, thereby requiring more force for the touch operation.</p>
	<h3>Calibration</h3> 	<p>Follow the instructions and touch the center of the calibration icon to conduct five-point calibration for the HMI touch panel. A significant deviation may occur to the touch panel if you touch a point far away from the center point in the calibration area. It is suggested that you use a dedicated stylus for the calibration.</p> 

■ Network

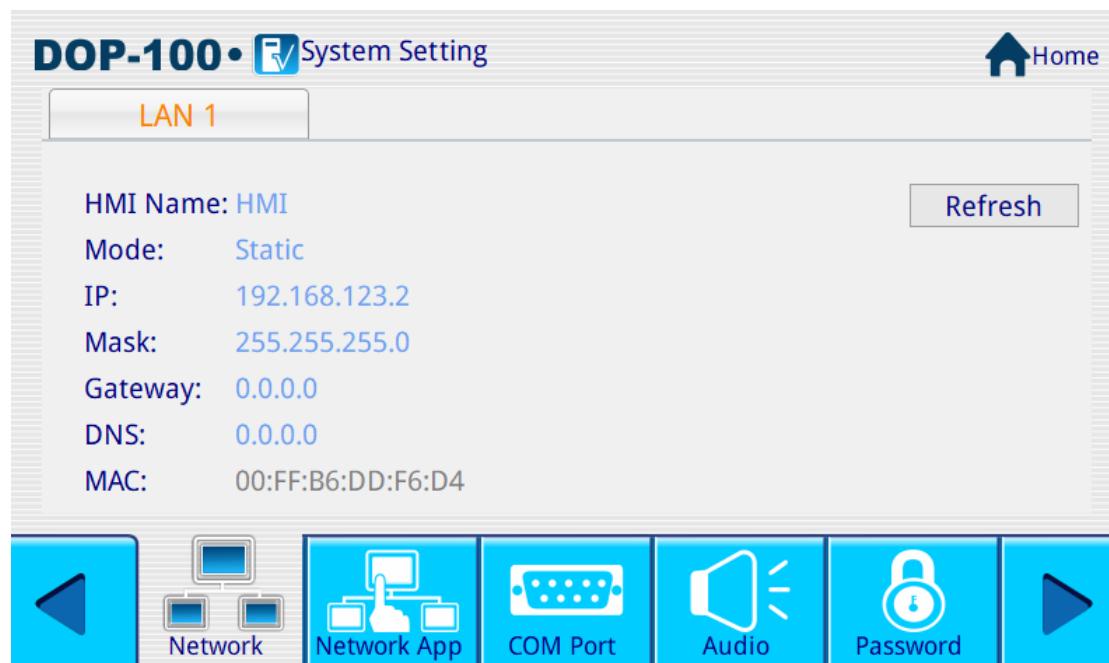
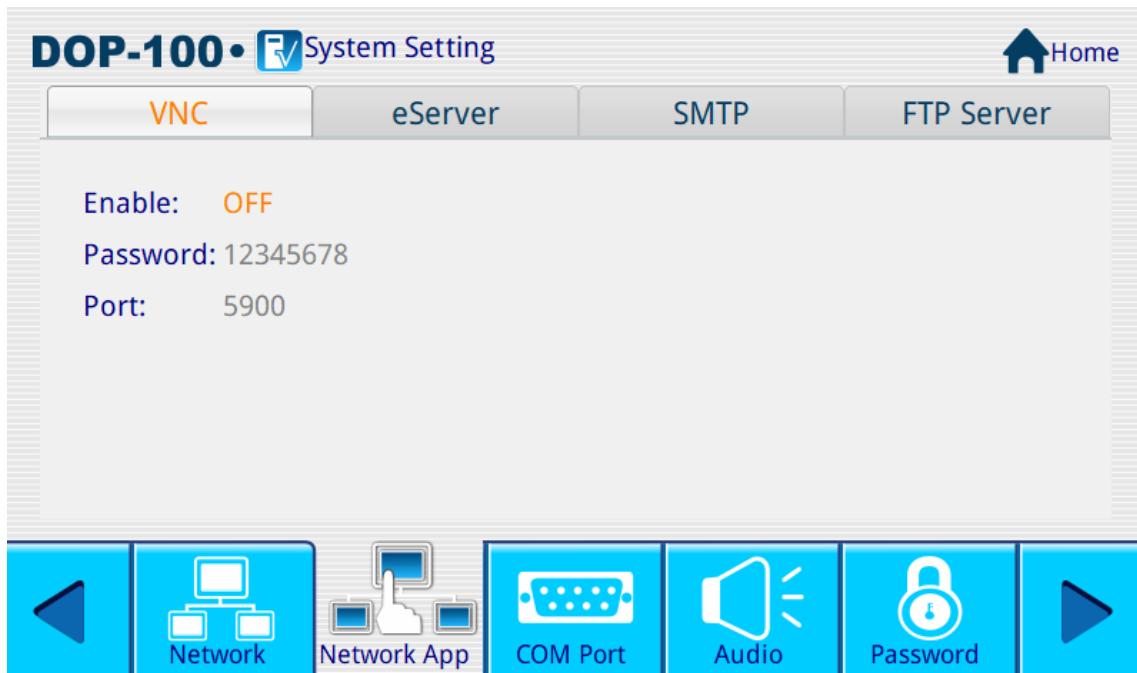


Figure A.2.5 Network

You can use this function to set the network IP access mode, IP, Mask, Gateway, and DNS.

          	<p>You can go to [Options] &gt; [Communication Settings] &gt; [Ethernet1] &gt; [Localhost] in the DOPSoft to change the following settings for the Network in System Setting.</p> <p><b>Communication Settings</b></p>						
	HMI Name	Display the name set for the HMI. This is the default name set up by the HMI. To change the name, go to [Options] > [Configuration] > [Main].					
	Mode	<table border="1"> <tr> <td>DHCP</td><td>Auto-acquire IP address for the HMI.</td></tr> <tr> <td>Static</td><td>Manually set IP address for the HMI.</td></tr> <tr> <td>BOOTP</td><td>Auto-acquire IP address for the HMI, but there is no lease period for this IP address.</td></tr> </table>	DHCP	Auto-acquire IP address for the HMI.	Static	Manually set IP address for the HMI.	BOOTP
DHCP	Auto-acquire IP address for the HMI.						
Static	Manually set IP address for the HMI.						
BOOTP	Auto-acquire IP address for the HMI, but there is no lease period for this IP address.						
Mask	Set the network mask. When DHCP is OFF, the mask can be set manually.						
Gateway	Set the gateway. When DHCP is OFF, the gateway can be set manually.						
DNS	Set the domain name server. When DHCP is OFF, DNS can be set manually.						
MAC	Display the MAC address of the HMI. This setting cannot be changed.						

■ Network App



A

Figure A.2.6 Network App

Set to enable the VNC and eServer functions.

Network App	VNC	Enable	<ul style="list-style-type: none"> <li>■ The default is Off.</li> <li>■ When this function is set to On, you can use VNC Viewer to remotely control the HMI.</li> </ul>
		Password	<ul style="list-style-type: none"> <li>■ The default password is 12345678.</li> <li>■ You can change the password.</li> </ul>
		Port	<ul style="list-style-type: none"> <li>■ Set the connecting port password.</li> </ul>
eServer	Enable	<ul style="list-style-type: none"> <li>■ The default is Off.</li> <li>■ When the eServer function is set to On, you can use it to collect the HMI data.</li> </ul>	
	Password	<ul style="list-style-type: none"> <li>■ The default password is 12345678.</li> <li>■ You can change the password.</li> </ul>	

■ COM Port

A

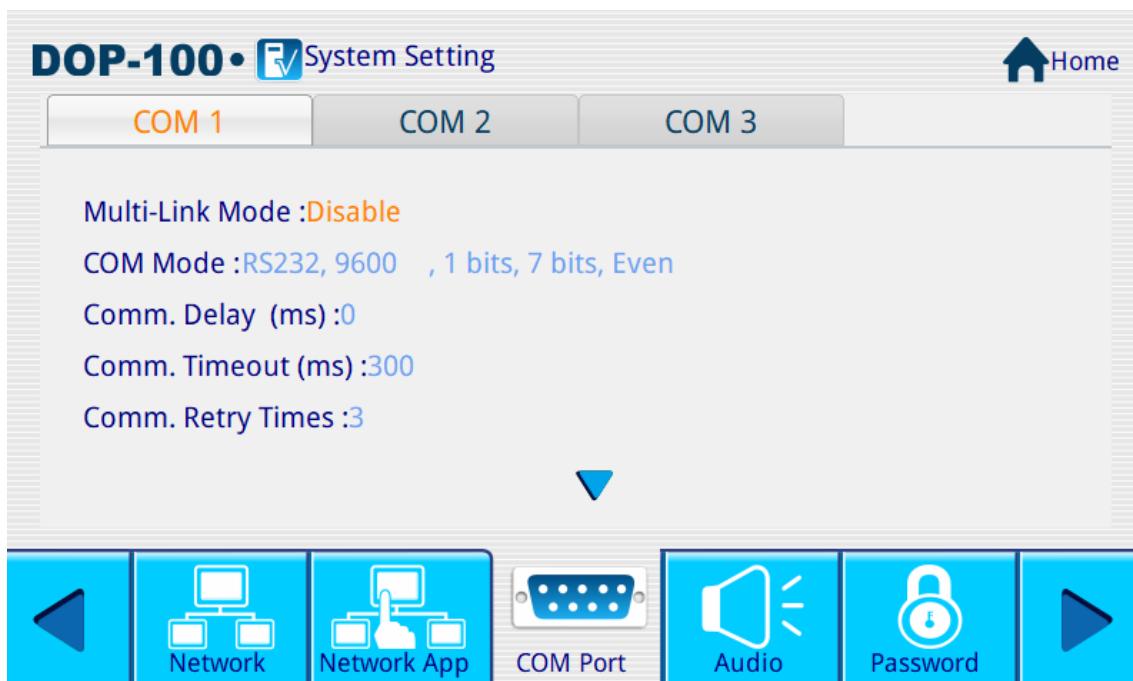


Figure A.2.7 COM Port

Set the COM 1, COM 2, and COM 3 parameters.

	COM 1	Set the COM Mode, Baud Rate, Stop Bits, Data Bits, Parity Bits, Comm. Delay, Comm. Timeout, Comm. Retry Times, HMI Station, PLC Station, Multi-Link Mode, and Baud Rate Tuning for COM 1 - COM 3.
	COM 2	
	COM 3	

■ Audio

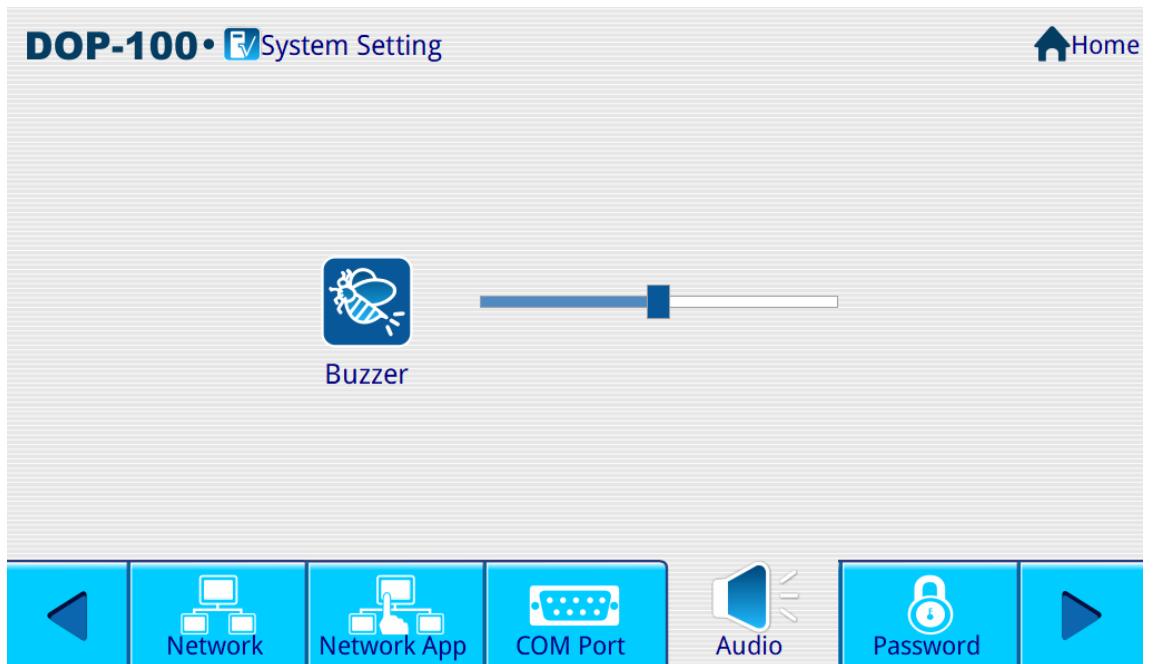


Figure A.2.8 Audio

Set the volume for the buzzer.

Audio	Buzzer	Adjust the volume for the HMI buzzer. Move the slider left to decrease the volume; move the slider right to increase the volume.
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#### ■ Password

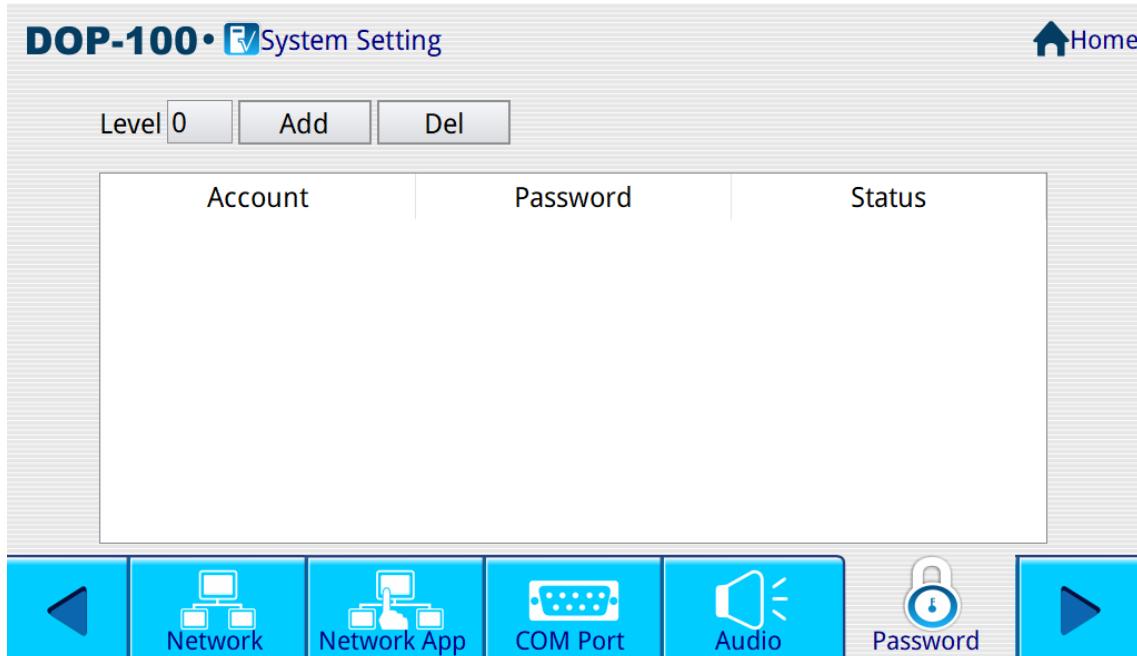
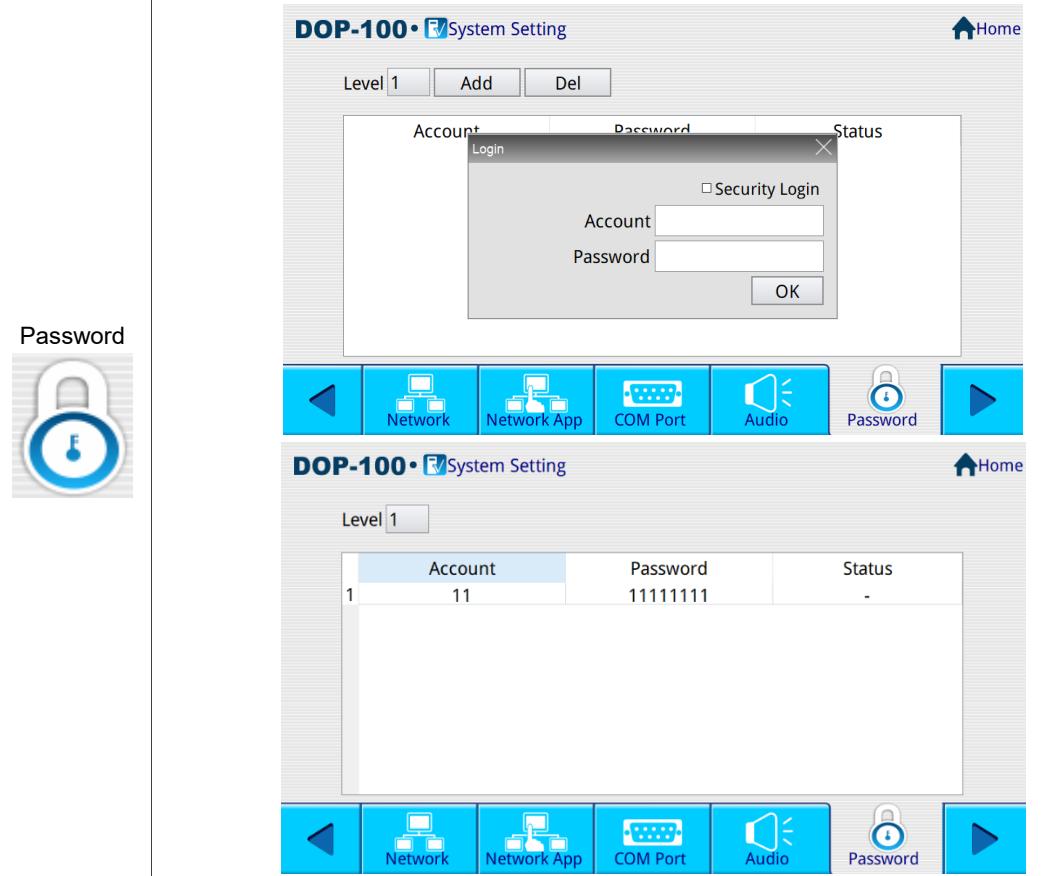


Figure A.2.9 Password

Set up the HMI Password Table for passwords of Levels 0 - 7.

Set the Password Table for Levels 0 - 7. Select the level to log in with, and then enter the account and password to set the password.



■ MISC

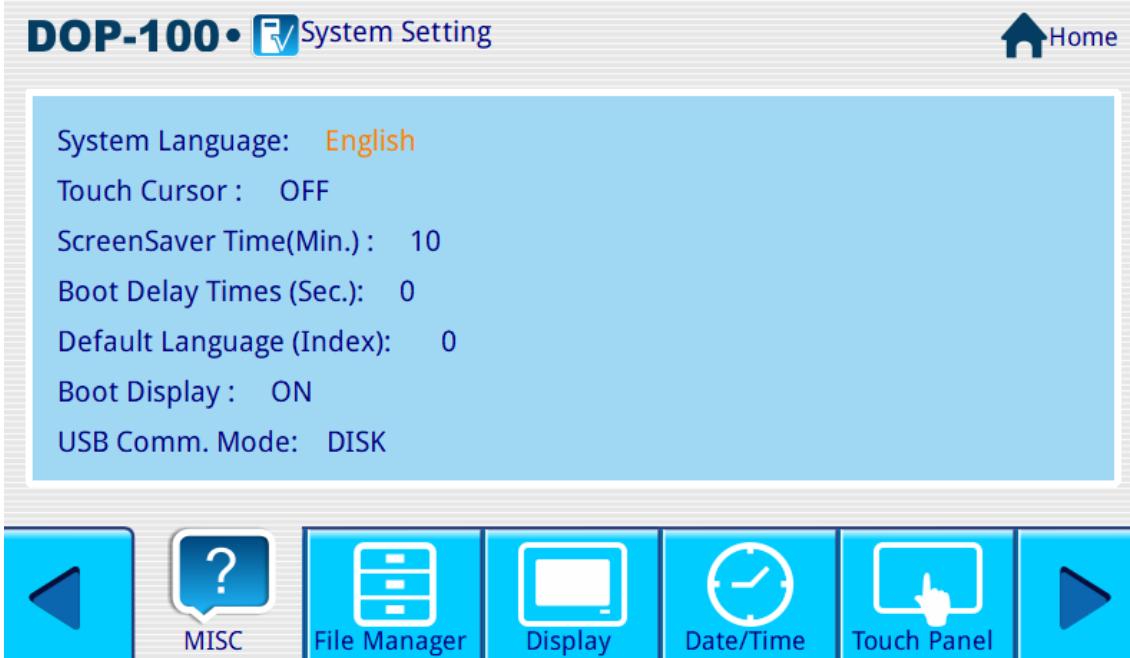


Figure A.2.10 MISC

Set the MISC settings for the HMI as follows:

	System Language	Set the language of the interface for the System Menu. It supports English, French, Russian, Simplified Chinese, Spanish, Traditional Chinese, and Turkish.														
	Touch Cursor	Set whether to display the touch cursor.														
	ScreenSaver Time	Set up the time after which the screensaver is enabled.														
	Boot Delay Times	Set up the delay time for starting the device.														
	Default Language	Select the ID number of the language to use. <table border="1"> <thead> <tr> <th>Number</th><th>Language Name</th><th>Detail..</th><th>Enable</th><th>Default Font Style</th></tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> 1</td><td>Chinese</td><td>0</td><td><input checked="" type="checkbox"/></td><td>Arial</td></tr> <tr> <td><input type="checkbox"/> 2</td><td>English</td><td>1</td><td><input checked="" type="checkbox"/></td><td>Arial</td></tr> </tbody> </table>	Number	Language Name	Detail..	Enable	Default Font Style	<input checked="" type="checkbox"/> 1	Chinese	0	<input checked="" type="checkbox"/>	Arial	<input type="checkbox"/> 2	English	1	<input checked="" type="checkbox"/>
Number	Language Name	Detail..	Enable	Default Font Style												
<input checked="" type="checkbox"/> 1	Chinese	0	<input checked="" type="checkbox"/>	Arial												
<input type="checkbox"/> 2	English	1	<input checked="" type="checkbox"/>	Arial												
Boot Display	Set whether to display the boot screen at startup.															

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		DISK	<p>Under this mode, you can find a removable storage device named "DELTA" in [This PC].</p> <p>▼ Devices and drives (3)</p> <table><tr><td>Local Disk (C:)</td><td>Local Disk</td></tr><tr><td>新增磁碟區 (D:)</td><td>Local Disk</td></tr><tr><td>DELTA (E:)</td><td>USB Drive</td></tr></table>	Local Disk (C:)	Local Disk	新增磁碟區 (D:)	Local Disk	DELTA (E:)	USB Drive
Local Disk (C:)	Local Disk								
新增磁碟區 (D:)	Local Disk								
DELTA (E:)	USB Drive								
MISC	USB Comm. Mode	CDC	<p>Under this mode, go to [This PC] &gt; right click and select [Content] &gt; [Device Manager] and see if the device named "HMI" is displayed under [Ports].</p> <p>▼ TWTN1NB0568</p> <ul style="list-style-type: none"><li>&gt; Audio inputs and outputs</li><li>&gt; Batteries</li><li>&gt; Biometric devices</li><li>&gt; Bluetooth</li><li>&gt; Computer</li><li>&gt; Disk drives</li><li>&gt; Display adapters</li><li>&gt; Human Interface Devices</li><li>&gt; IDE ATA/ATAPI controllers</li><li>&gt; Imaging devices</li><li>&gt; Jungs</li><li>&gt; Keyboards</li><li>&gt; Memory technology devices</li><li>&gt; Mice and other pointing devices</li><li>&gt; Monitors</li><li>&gt; Network adapters</li><li>▼ Ports (COM &amp; LPT)<ul style="list-style-type: none"><li>HMI (COM13)</li></ul></li></ul>						

■ File Manager

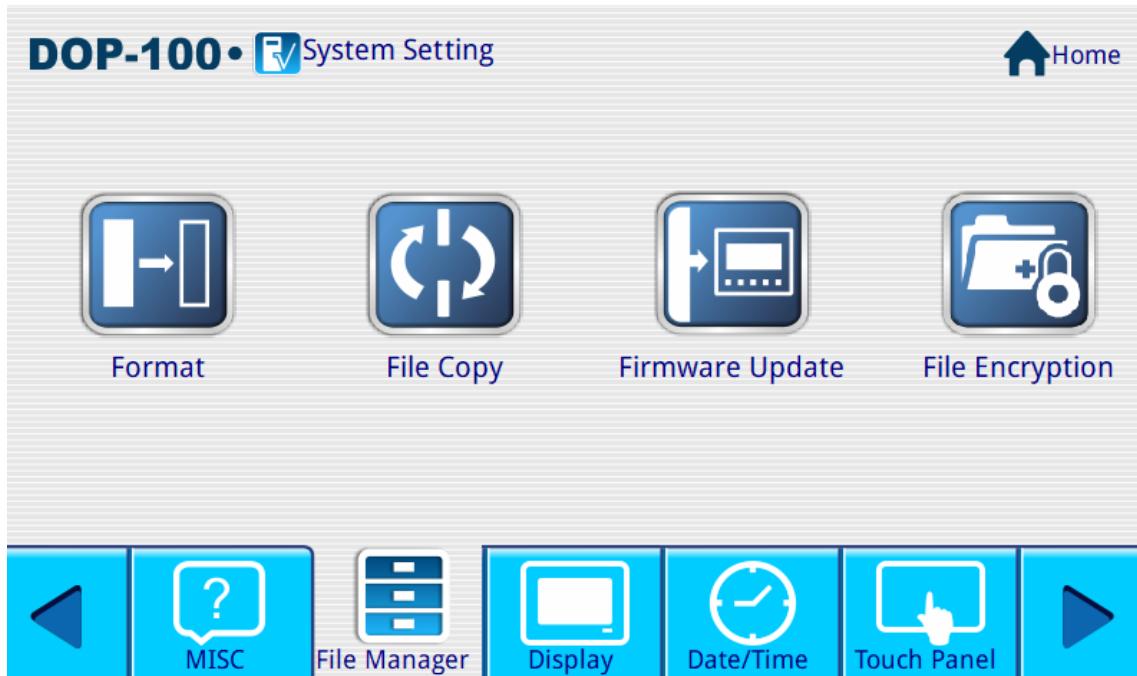


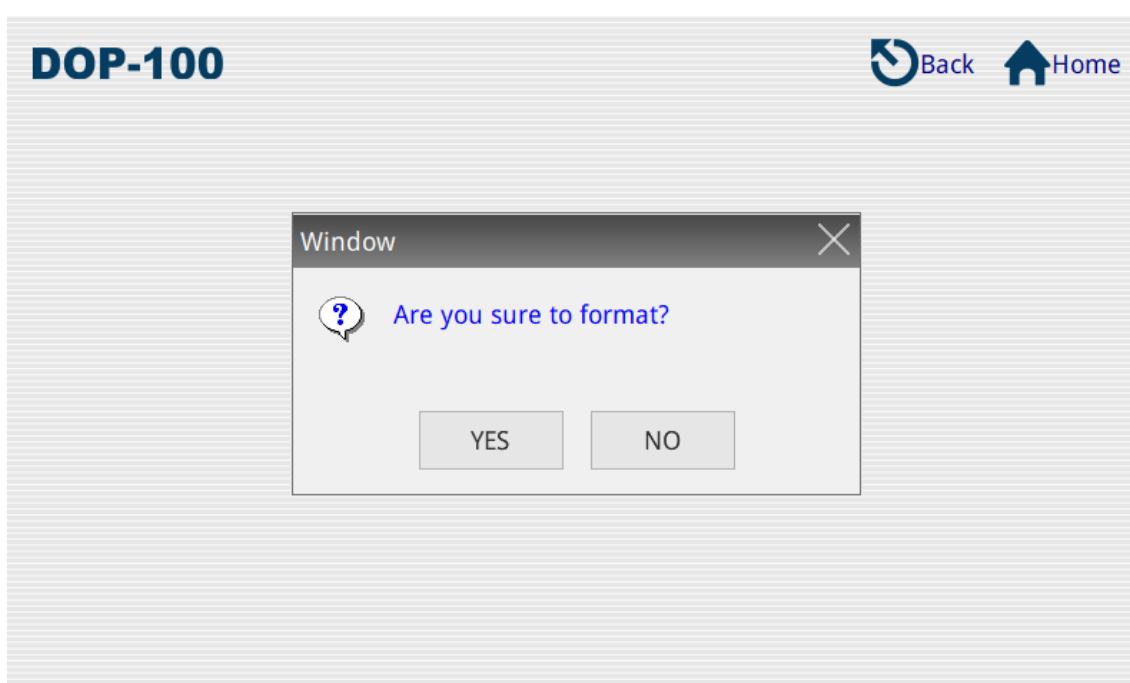
Figure A.2.11 File Manager

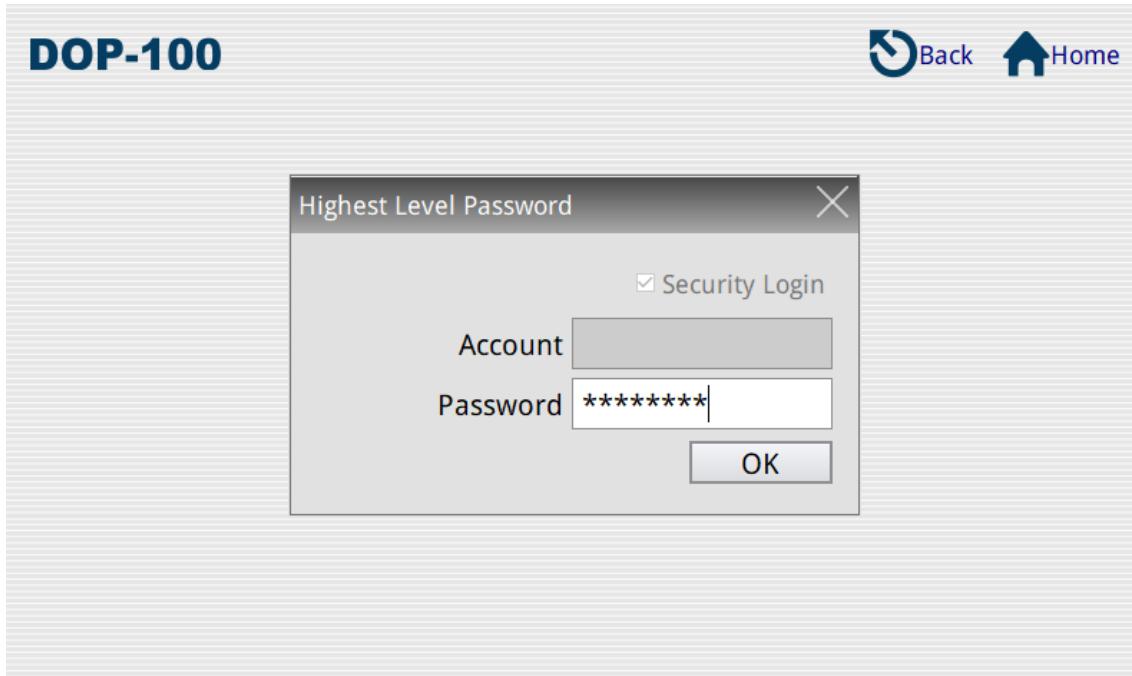
This setting is for formatting, copying files, and updating firmware.

 <b>File Manager</b>	<b>Format</b> 	Formatting is available for HMI, USB Disk, and SD Card. The HMI project file is cleared after formatting.
	<b>File Copy</b> 	Copy the screen to external storage device (USB Disk or SD Card).
	<b>Firmware Update</b> 	Update the HMI firmware from USB Disk or SD Card.

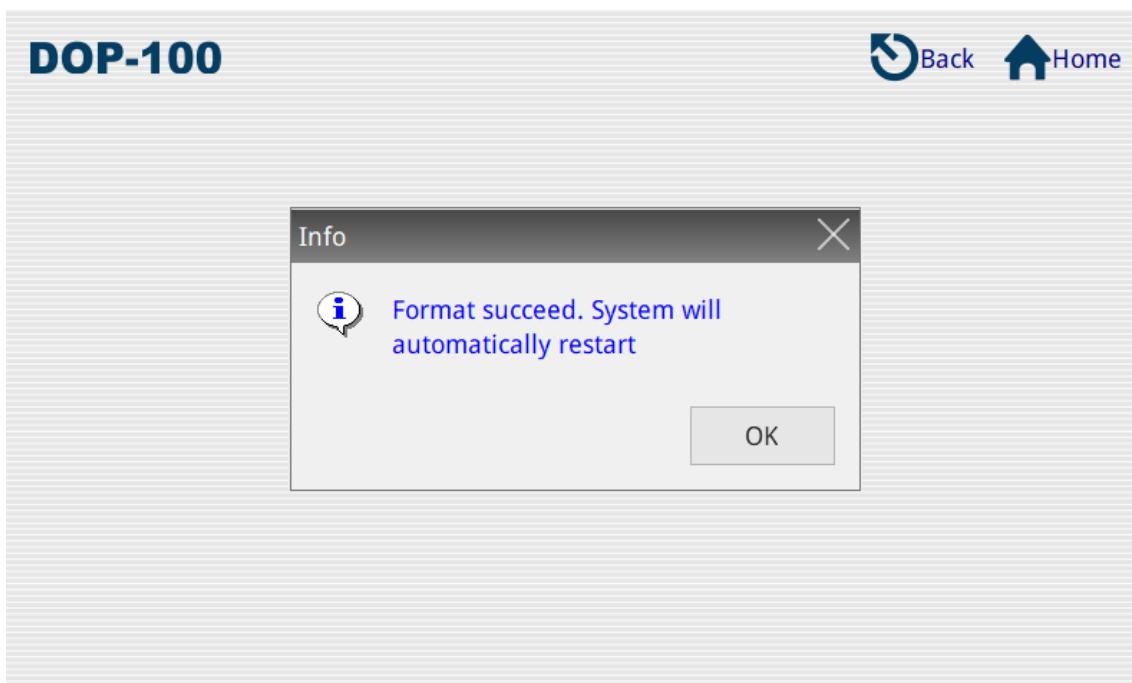
## ■ Format

You can format the HMI internal and external devices with this Format function, and the devices include HMI, USB Disk, and SD Card. You cannot select the USB and SD options if the USB Disk and SD Card are not inserted into the HMI. After selecting the device to be formatted, enter the highest security password (default is 12345678), and the selected device will be formatted once the password is verified. When the formatting is complete, the system displays a message to remind you that the HMI will be restarting.



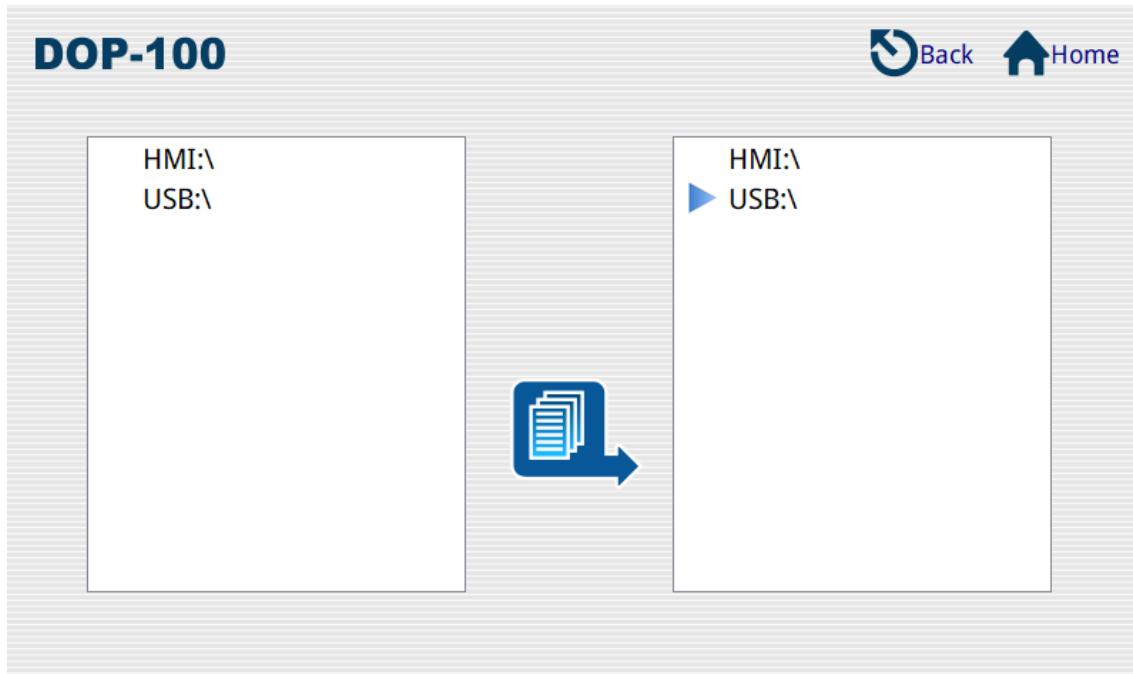


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- File Copy

You can select files in the source directory to copy them to the destination directory.



Note:

1. The HMI does not support direct copying between disks.
2. The HMI only supports the fixed directories HMI-000 to HMI-255.
3. If you select HMI as the destination directory, the original files will be removed before the files from the source directory are copied to the destination directory.
4. If you select **New...** as the destination directory, the HMI will look for a directory not used in HMI-000 to HMI-255 and create it as the destination directory.
5. If the screen file in the source directory is password protected, the HMI will display a dialog box for password input. Enter the highest security password for the screen file of the source directory to perform the copy function.

■ Firmware Update

This function enables the user to perform firmware update using an external storage device (USB Disk or SD Card).

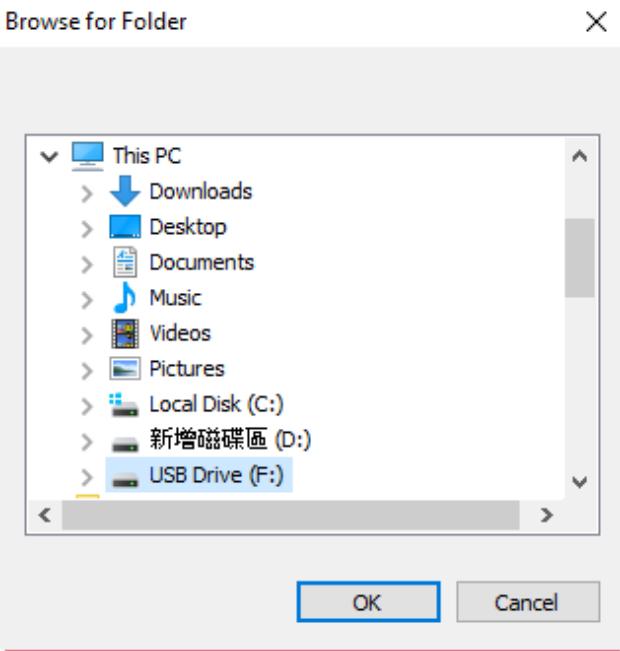
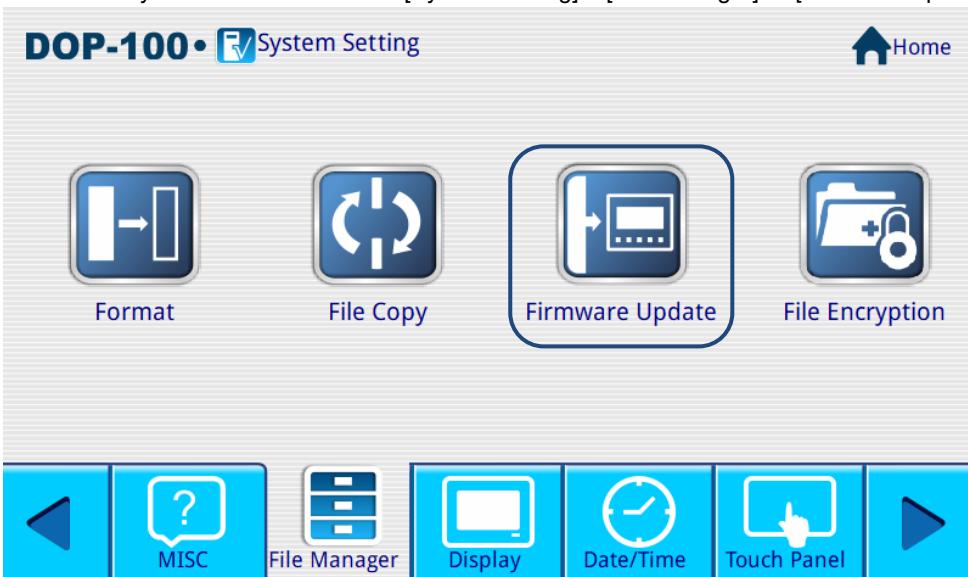


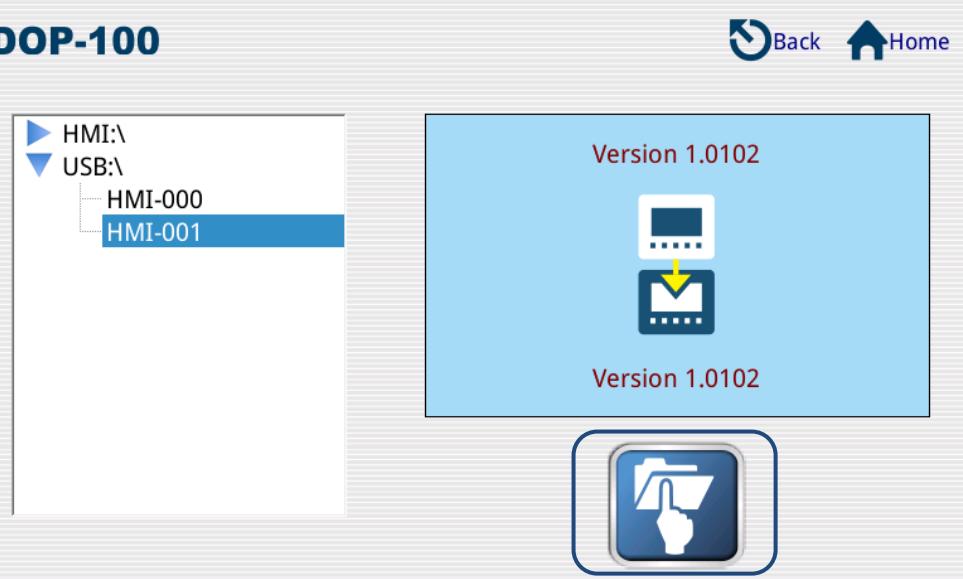
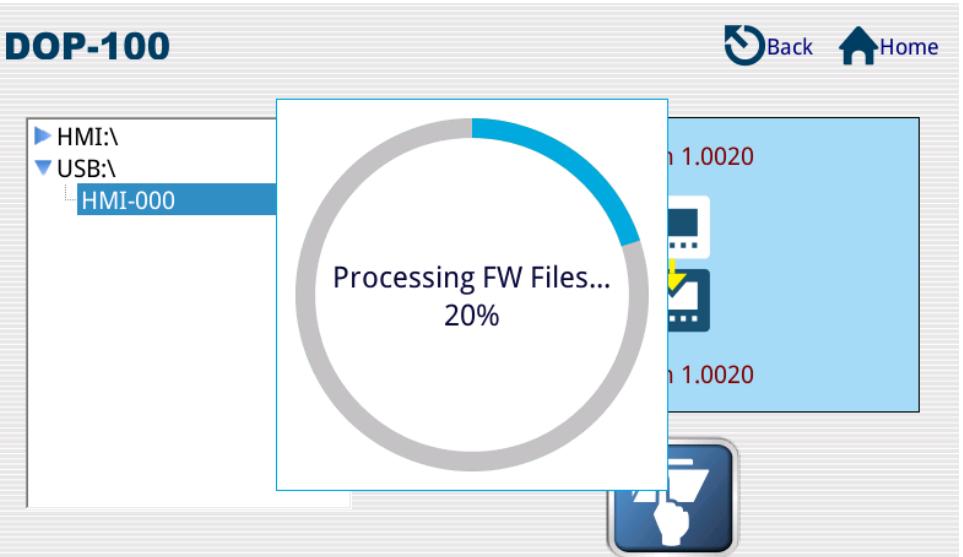
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The following section presents an example for the firmware update.

Step 1	Select [File] > [Create Screen Data File]. <p>The screenshot shows the software's "File" menu open. The "Create Screen Data File ..." option is highlighted with a yellow background. Other options in the menu include "New...", "Open...", "Close", "Save", "Save As...", "Create Auto Update Data File", "Open Screen Data File...", "Create Download Screen Exe. File...", "Password Protect", "Print(P) ...", "Print Preview(V)", "Print settings (R)", and "Exit".</p>
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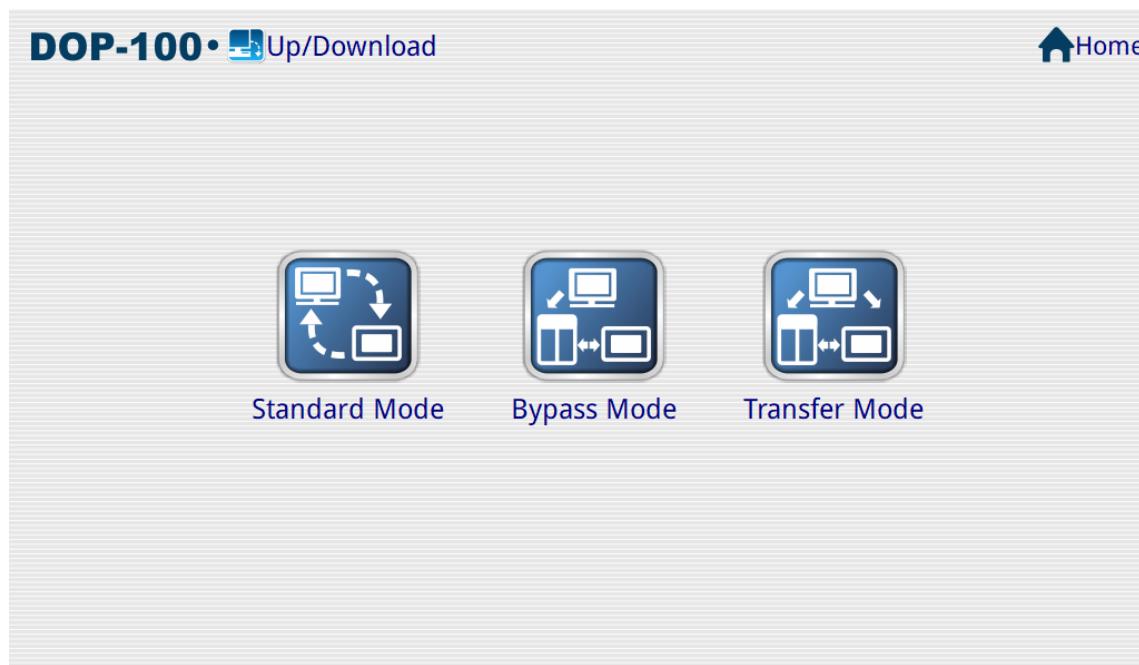
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	Select an external disk (USB Disk or SD Card) for creating the screen data and click <b>OK</b> .
Step 2	
Step 3	When the screen data is created successfully, the following message appears.
Step 4	Insert the external disk into the HMI.
Step 5	Enter the HMI system screen and select [System Setting] > [File Manager] → [Firmware Update]. 

Step 6	<p>Select the source location of the firmware to be updated. The firmware version after the update will be displayed on the screen. After confirming that the version is correct, click the icon at the bottom to update the firmware.</p> 
Step 7	<p>After you click the icon, the HMI will process and unzip the firmware file in the USB Disk or SD Card.</p> 
Step 8	<p>Upon completing unzipping the firmware file, the HMI will automatically restart and proceed with the firmware updating.</p> 

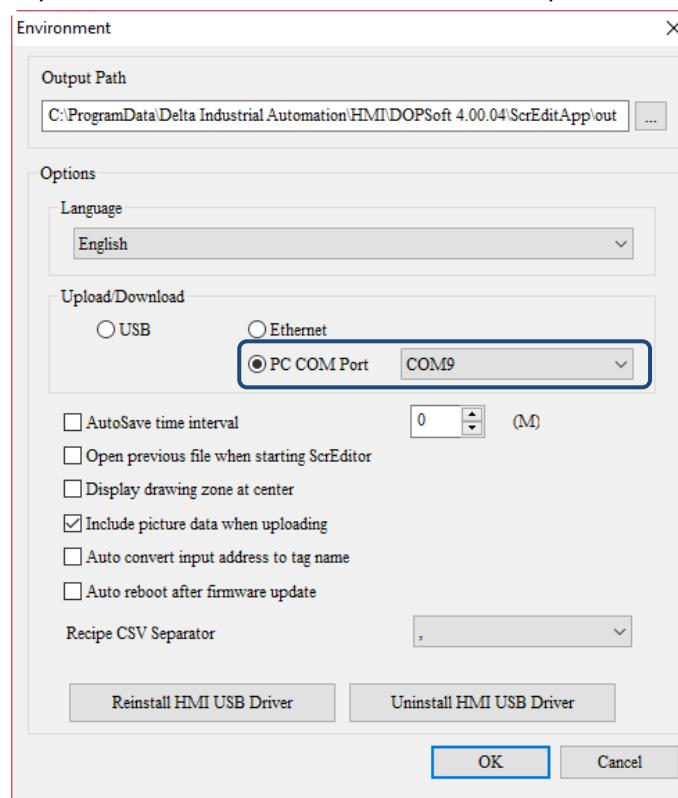
A

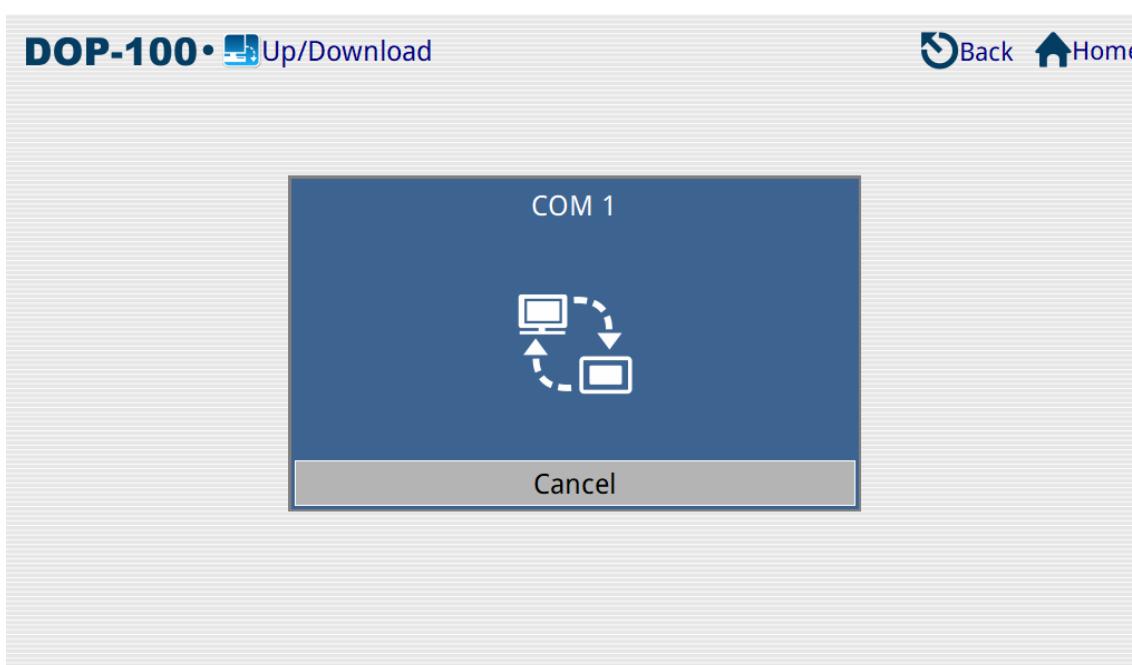
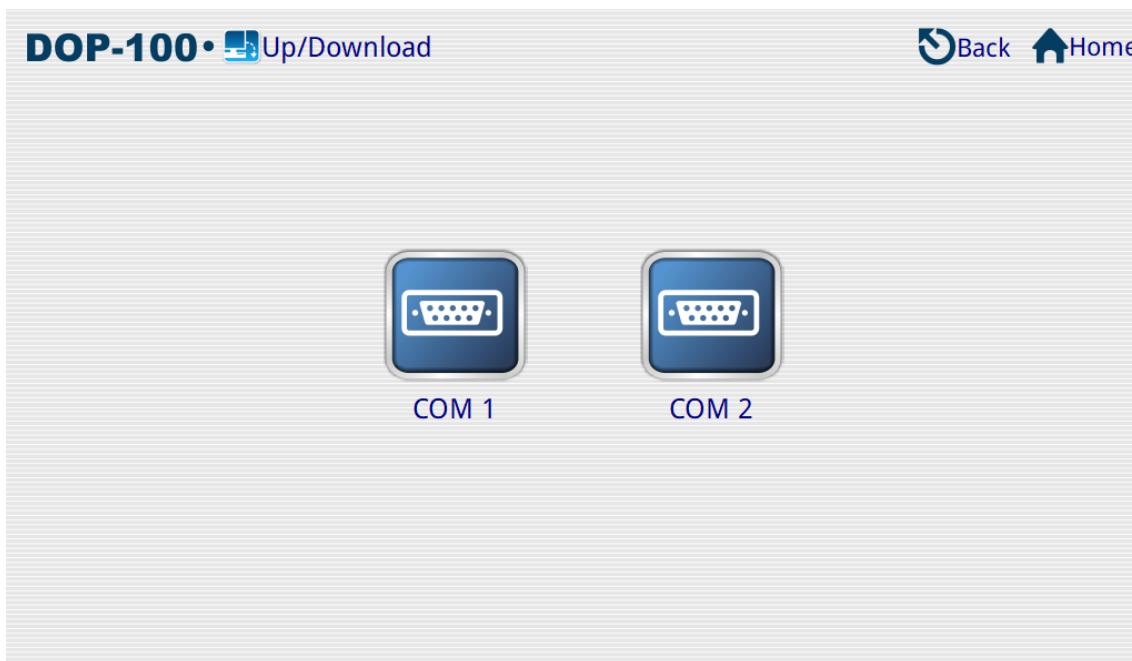
## A.3 Up/Download



### ■ Standard Mode

Set the COM Port to communicate with the DOPSoft and wait for the DOPSoft to send the motion command and data packets for upload/download. When you use the PC COM Port provided by the software to download data by going to [Options] > [Environment], you need to go to the system screen to select [Up/Download] > [Standard Mode]. Select the COM 1 or COM 2 port and wait for the upload/download of the screen data and recipe data.

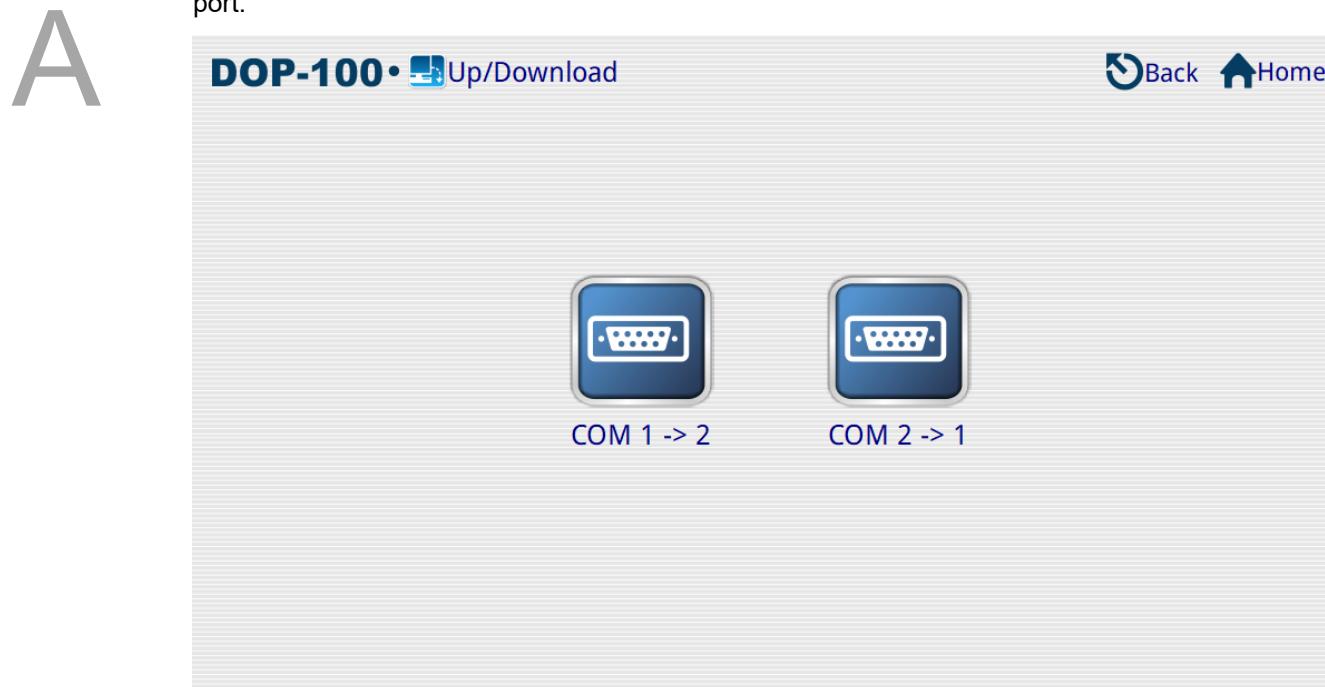


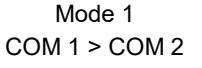
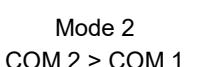


 Standard Mode	COM 1	Upload/Download through COM 1. Set COM 1 to transmit and receive the command data and data packets for the up/downloading of DOPSoft.
	COM 2	Upload/Download through COM 2. Set COM 2 to transmit and receive the command data and data packets for the up/downloading of DOPSoft.

- Bypass Mode

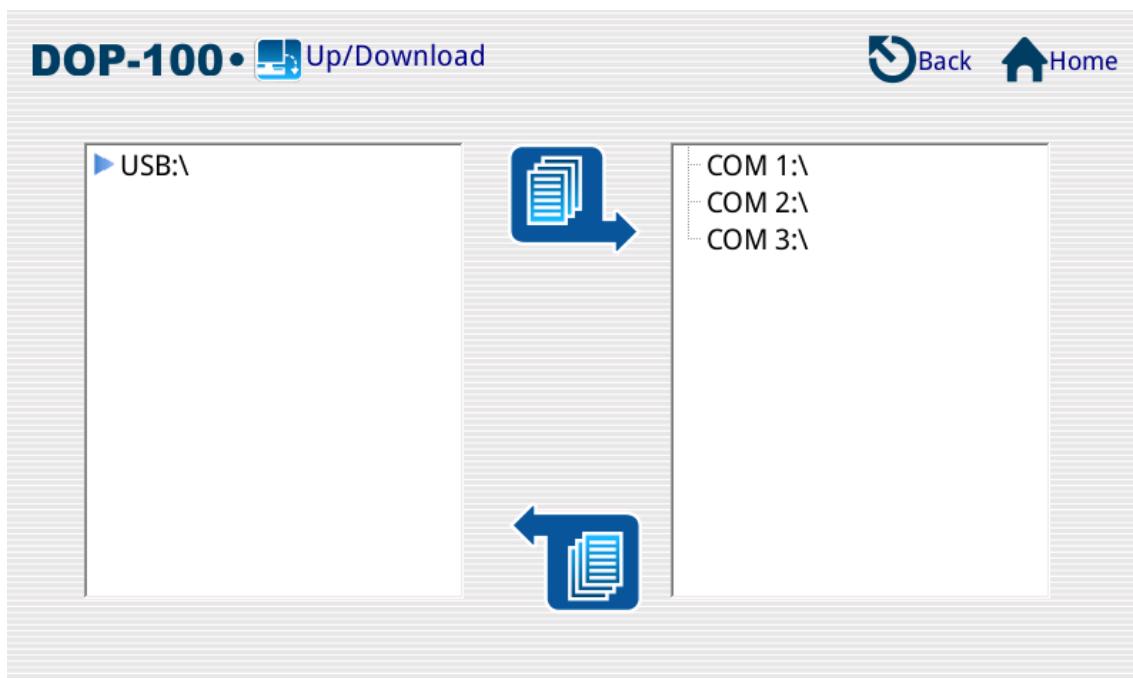
As an intermediary, the HMI will transmit the data received from the source port to the destination port.



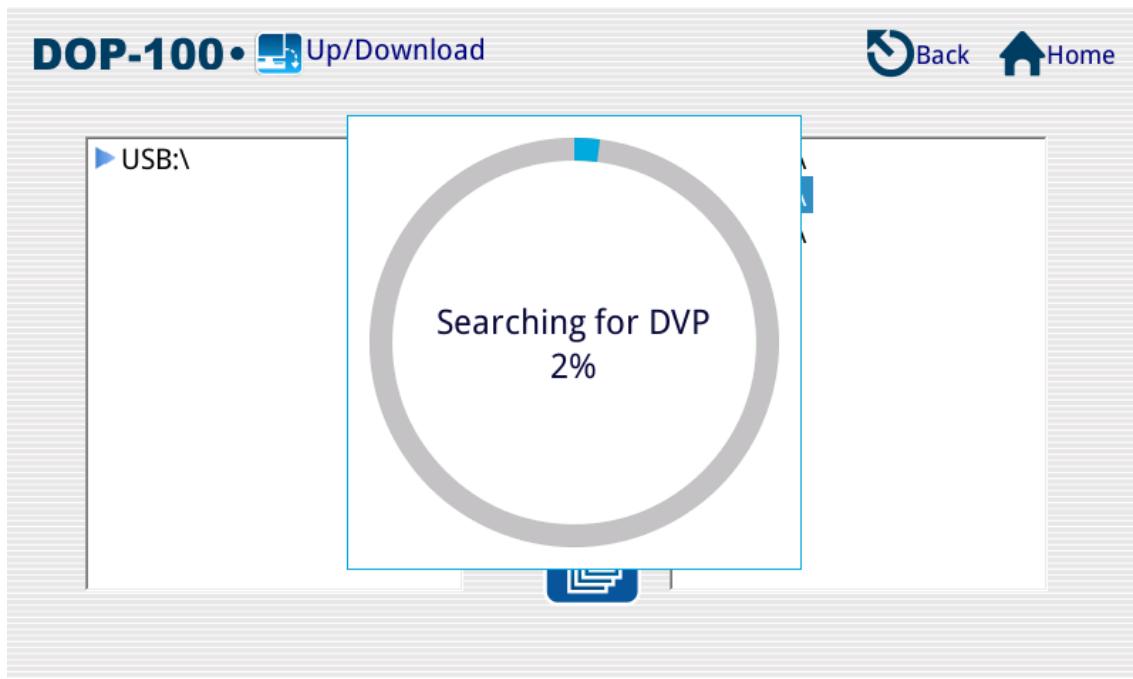
 Bypass Mode	 Mode 1 COM 1 > COM 2	With COM 1 as the source port and COM 2 as the destination port, the data that COM 1 received is transmitted using the COM 2 protocol.
	 Mode 2 COM 2 > COM 1	With COM 2 as the source port and COM 1 as the destination port, the data that COM 2 received is transmitted using the COM 1 protocol.

- Transfer Mode

Transfer Mode is used for uploading / downloading the DVP and ISP files in the PLC used by the HMI.

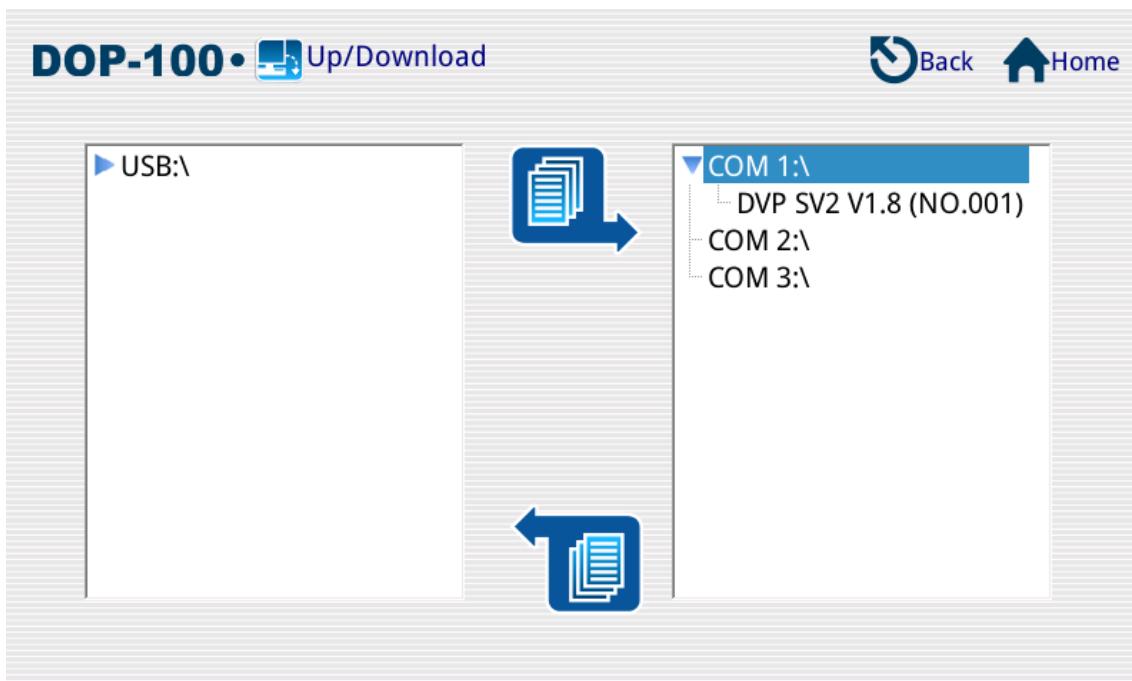


Select COM 2, and the HMI will automatically search for the PLC.



Once the search is complete, the DVP file found can be uploaded to the external storage device or downloaded from the external storage device to the PLC.

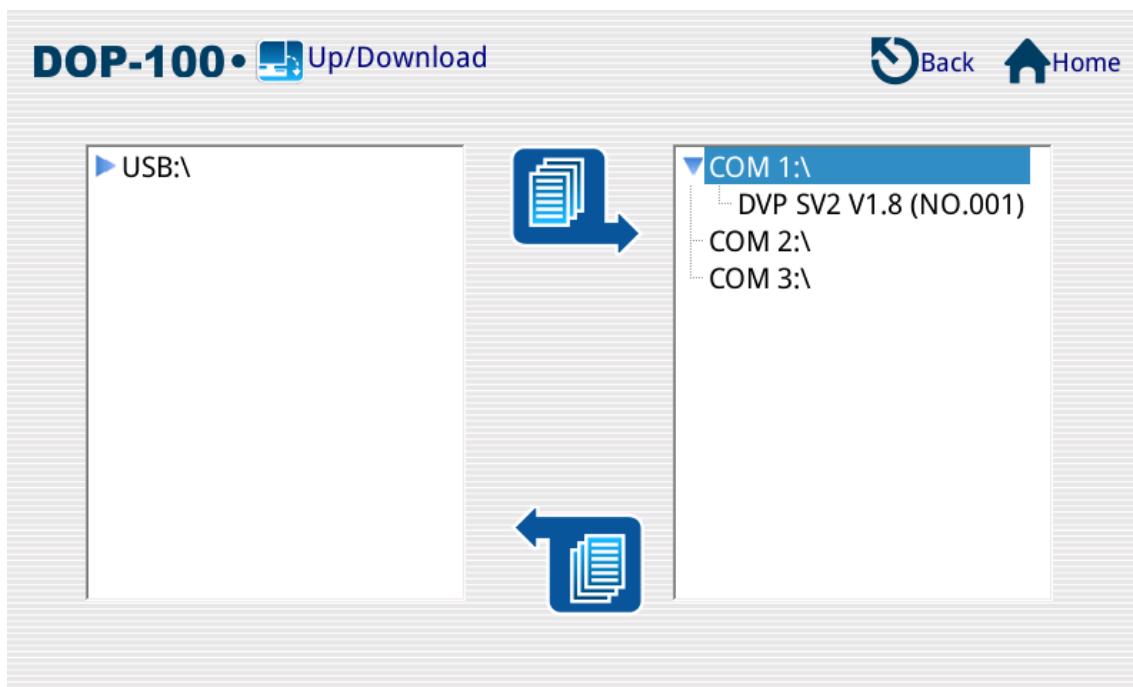
A



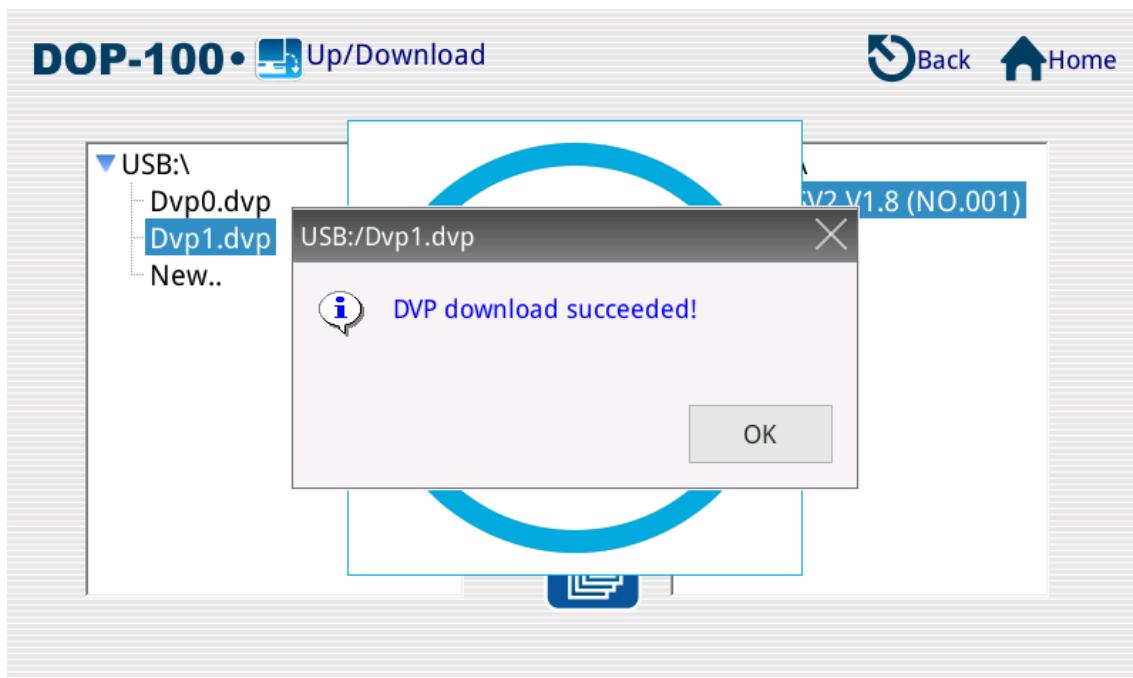
Transfer Mode	Upload	Download
	Upload and download the DVP and ISP files used in the PLC. When you press COM 1 - COM 3, the software will automatically search for the currently connected PLC devices. Once the searching is done, the files found during the search can be uploaded to the storage device. To copy the DVP and ISP files from the storage device to the PLC, click the download button.	

**■ Download DVP file to PLC**

Select the communication port that connects to the PLC. Then, the HMI will search for the files in the PLC.

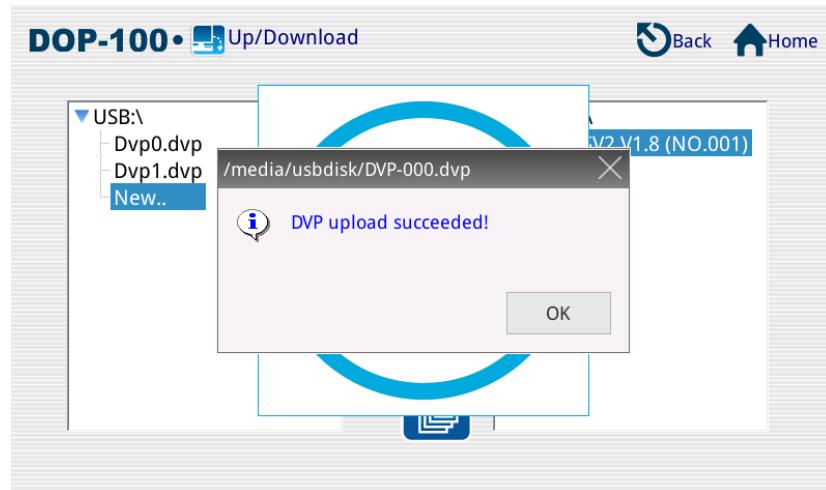


Select the Dvp0.dvp file in the external storage device, and click the download button to download the file to the PLC.



### ■ Upload DVP file in the PLC to the external storage device (USB Disk)

Select the DVP file in the PLC and click the upload button to upload the file to the USB Disk.



**Descriptions:**

1. If a PLC file is to be uploaded as a new file, select "New.." from the window on the left and press the upload button.
2. The program uploaded by the HMI will be saved in .DVP format.
3. When PLC files are downloaded, the HMI will ask for the project password and PLC password\*.
4. When a PLC file is downloaded, both the program and PLC need IDs, and their IDs need to be identical to be allowed for downloading. Or, when both of them have no IDs, the downloading is also allowed.
5. When a PLC file is downloaded, the HMI displays a dialog box to ask for the project password first and then the PLC password.
6. When a PLC file is uploaded, the HMI displays a dialog box to ask for the PLC ID first and then the PLC password.
7. When a PLC file is uploaded, the HMI will ask for the PLC ID and PLC password. If the PLC has a set PLC password, this PLC password will be placed in the program as the project password when the PLC file is uploaded. For example, assuming that the PLC password is set to 1234 and the project password is set to 5678, the password inquired by the HMI is the PLC password when the file is uploaded. The PLC password will be regarded as the project password for the program when the file is opened after uploaded. At this time, both the PLC password and the project password will be 1234.
8. When using a project edited by ISPSoft, compile the project before downloading it to the PLC. Otherwise, the error message "IL code size is mismatch" will appear.
9. The Transfer Mode only supports .dvp and .isp file up/download. It does not support the upload or download of Subroutine/Ladder Graphic Code/SFC Graph/Device Name Comment/Row Comment/Non-volatile Data/Label Structure/Symbol Structure and so on.

Note: the PLC password is the password set in the WPL and ISP software by selecting [System Security Setting] > [Password Function].

See the following tables for the functions supported on each version:

PLC series	PLC Password	Limit on login attempts	Password for subroutines	PLC ID and program ID	Project password (set in the editing software)
ES / EC / EC3	V	V8.20 or above	V8.20 or above	V8.20 or above	WPLSoft V2.20 and ISPSoft V1.60 or above versions support the project password function
SS	V	X	X	X	
EX	V	V8.20 or above	V8.20 or above	V8.20 or above	
SA	V	X	X	X	
SX	V	V3.00 or above	V3.00 or above	V3.00 or above	
SC	V	X	X	X	
EH	V	X	X	X	
EH2	V	V1.40 or above	V1.40 or above	V1.40 or above	
SV	V	V1.40 or above	V1.40 or above	V1.40 or above	
ES2 / EX2	V	V	V	V	
SS2	V	V	V	V	
SA2	V	V	V	V	
SX2	V	V	V	V	
SE	V	V	V	V	
MC	V	V	V	V	
EH3	V	V	V	V	
SV2	V	V	V	V	

AH series	PLC Password	Limit on login attempts	Password for subroutines	PLC ID and program ID	Project password (set in the editing software)
AHCPU510-EN	V	V	V	V	ISPSoft supports the project password function
AHCPU510-RS2	V	V	V	V	
AHCPU520-EN	V	V	V	V	
AHCPU520-RS2	V	V	V	V	
AHCPU530-EN	V	V	V	V	
AHCPU530-RS2	V	V	V	V	

AS series	PLC Password	Limit on login attempts	Password for subroutines	PLC ID and program ID	Project password (set in the editing software)
AS218PX-A	V	V	X	V	ISPSoft supports the project password function
AS218RX-A	V	V	X	V	
AS218TX-A	V	V	X	V	
AS228P-A	V	V	X	V	
AS228R-A	V	V	X	V	
AS228T-A	V	V	X	V	
AS300N-A	V	V	X	V	
AS320P-B	V	V	X	V	
AS320T-B	V	V	X	V	
AS324MT-A	V	V	X	V	
AS332P-A	V	V	X	V	
AS332T-A	V	V	X	V	

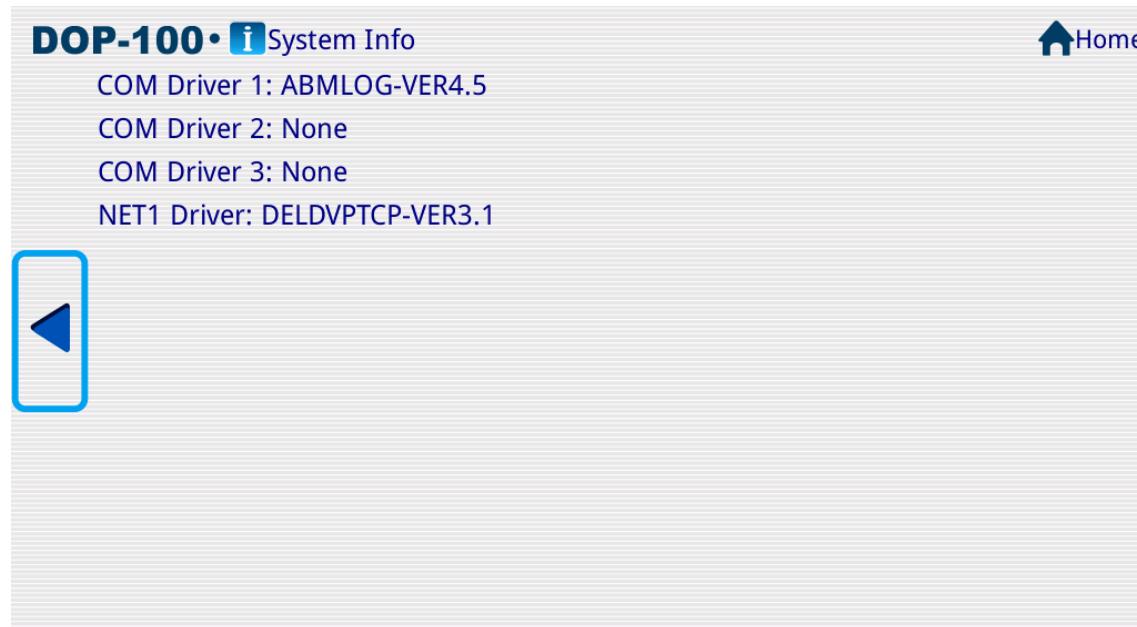
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## A.4 System Info

This function enables the user to view the HMI-related info including the firmware version, model, current battery capacity, size of internal Flash ROM, CPU clock, current system date and time, PLC device, and external storage device.



After switching the screen, you can see the PLC Driver information of the HMI.



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## A.5 HMI Doctor

HMI Doctor is a simple application that enables the user to test the hardware interface. Functions currently available include Color (Red, Green, Blue, Black, and White), Draw Line, Buzz/LED, ADC, and Network.



### ■ Red screen test

Check if there is any dark point or similar stain on the red screen of the LCD surface.



- Green screen test

Check if there is any dark point or similar stain on the green screen of the LCD surface.



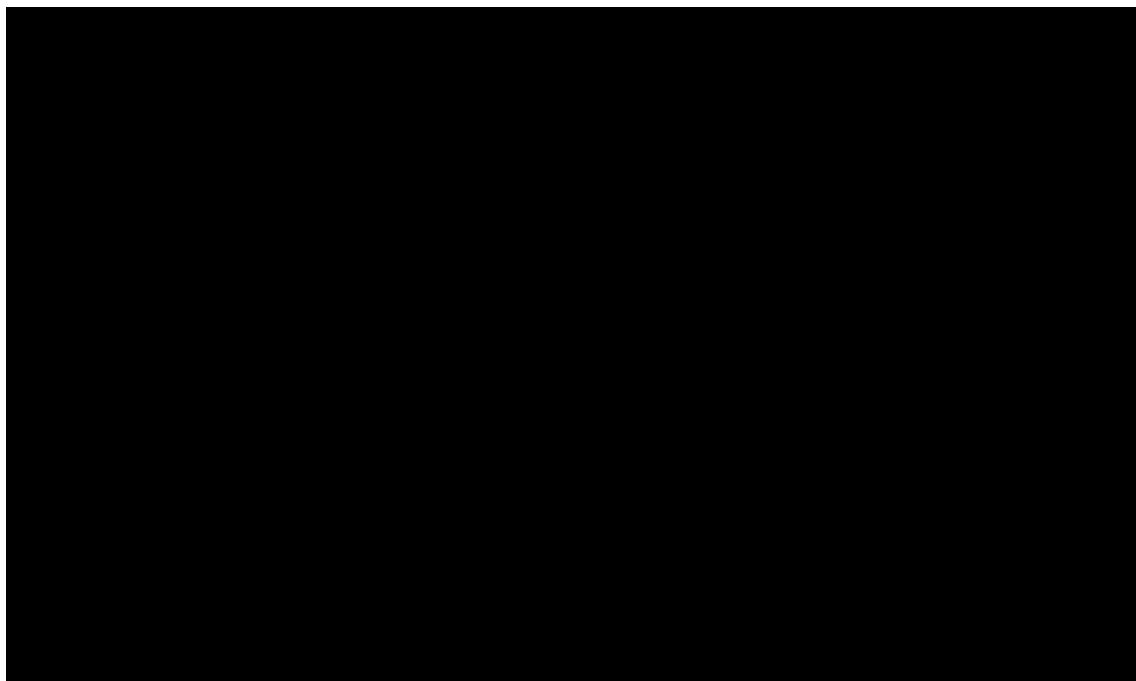
- Blue screen test

Check if there is any dark point or similar stain on the blue screen of the LCD surface.



- Black screen test

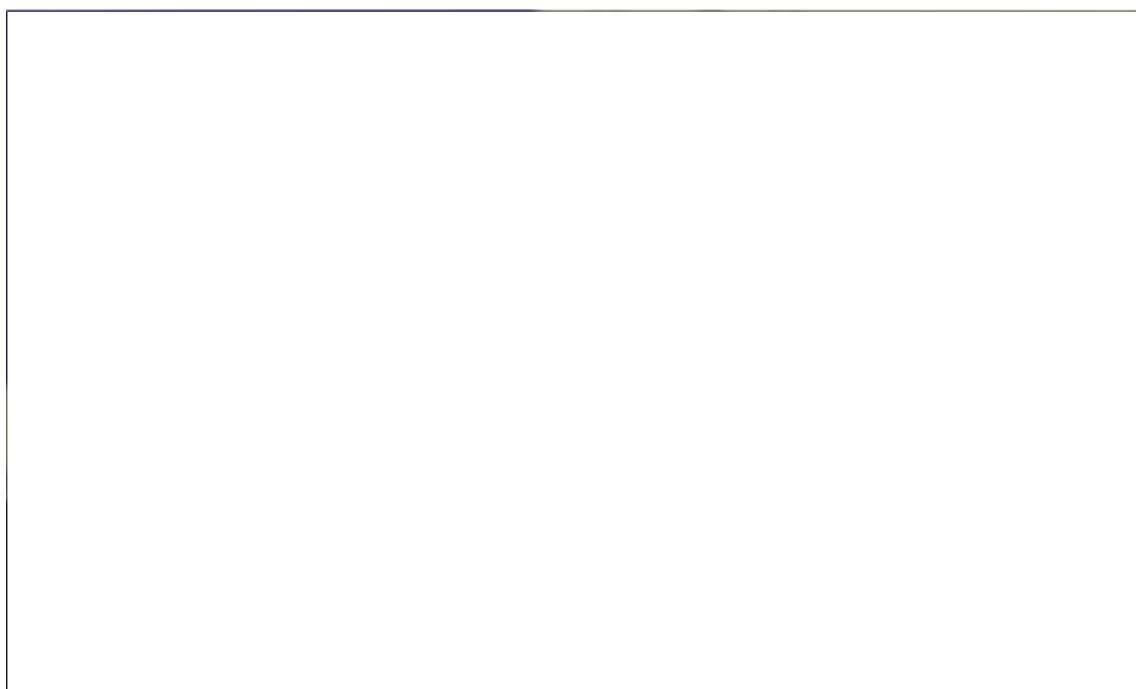
Check if there is any dark point or similar stain on the black screen of the LCD surface.



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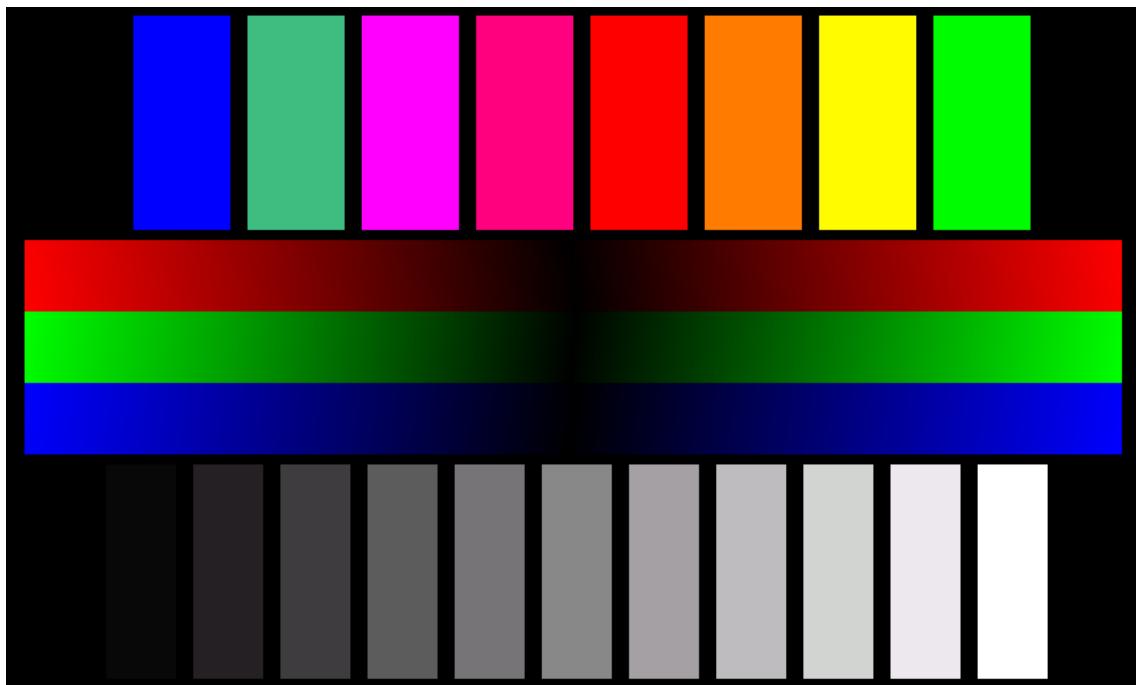
- White screen test

Check if there is any dark point or similar stain on the white screen of the LCD surface.



- Color test

Check if the LCD color scale is displayed normally.

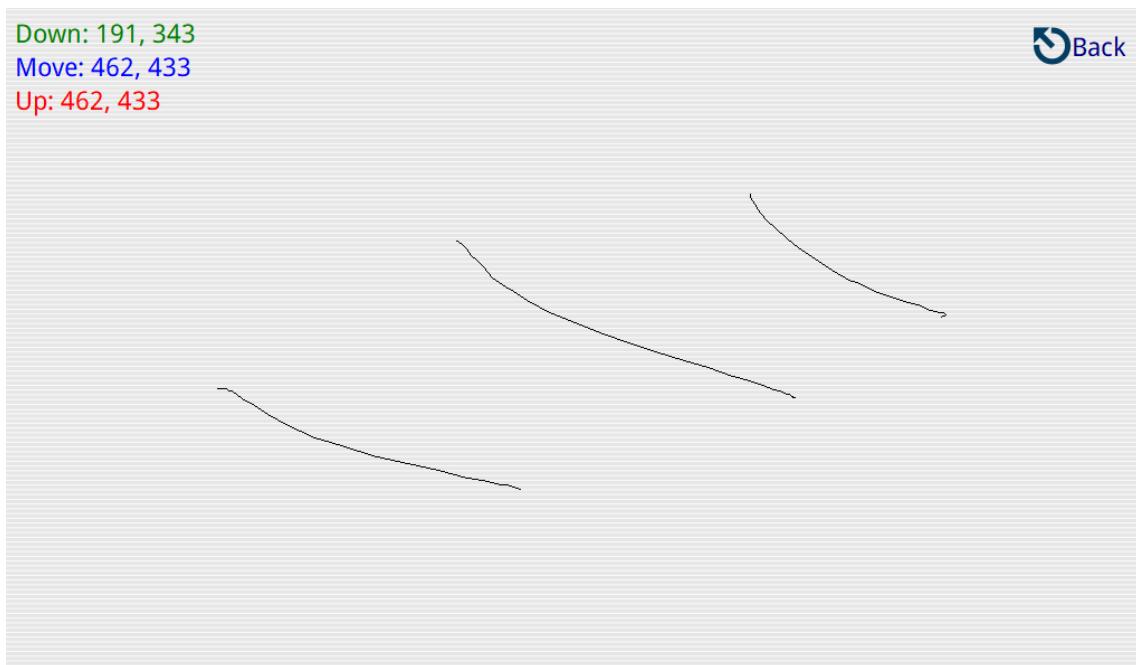


- Draw Line

This function tests if there is deviation between the position where you draw the line and the actual position of the line displayed on the screen. If the deviation is significant, re-calibrate the touch panel.

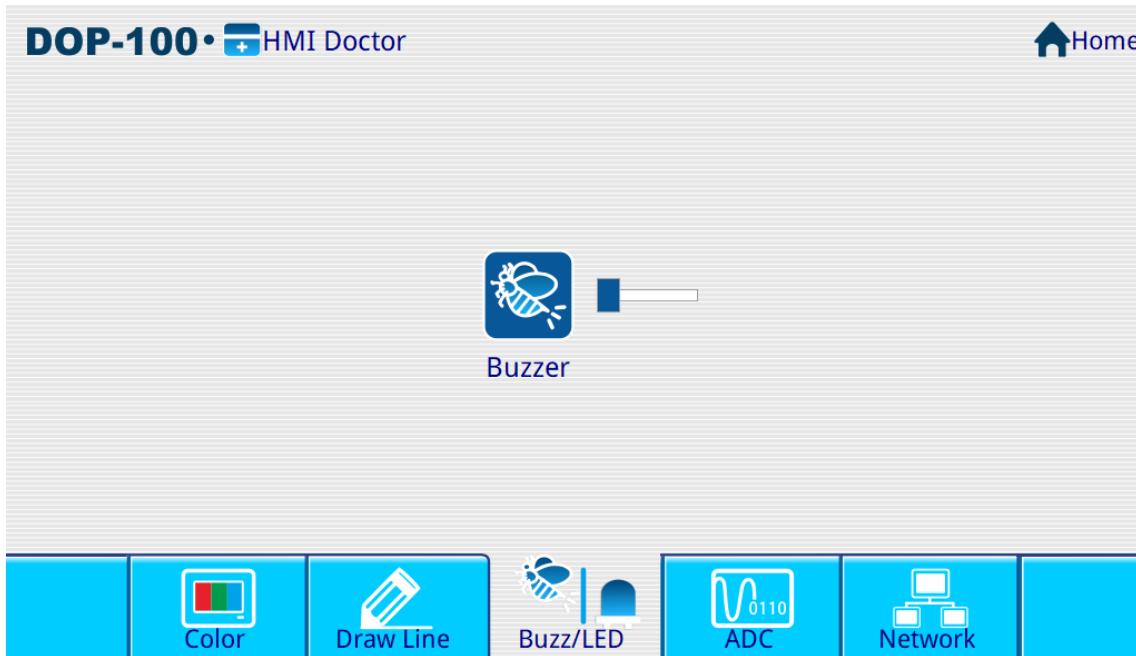
Down: 191, 343  
Move: 462, 433  
Up: 462, 433

Back



- Buzz/LED

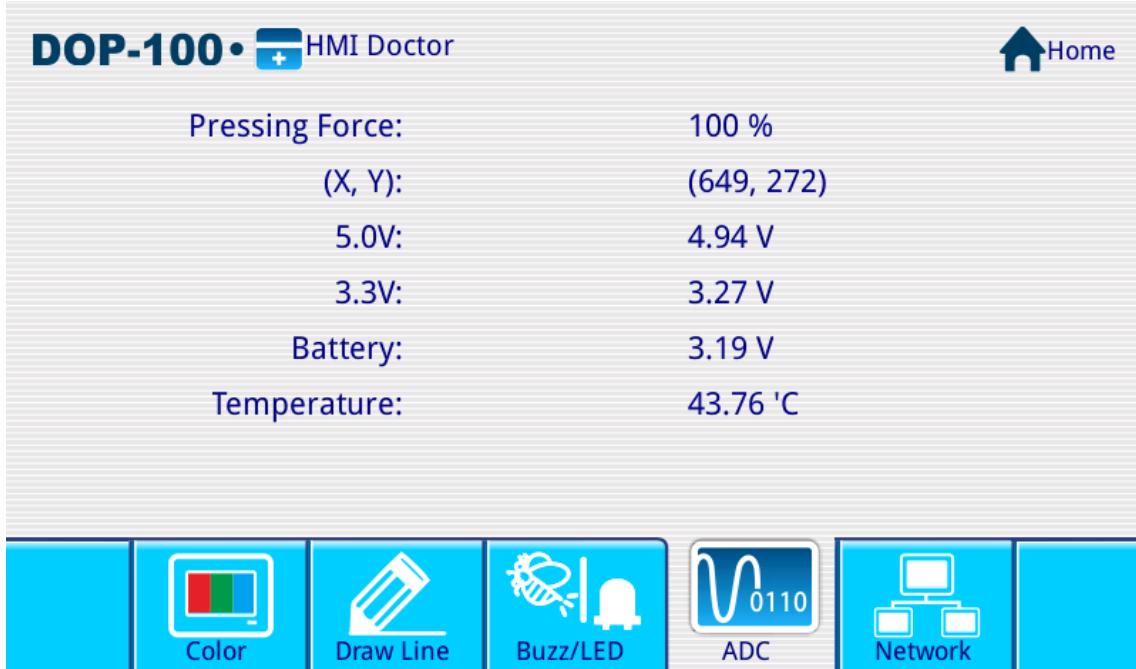
The Buzz/LED function tests if the buzzer would ring.



A

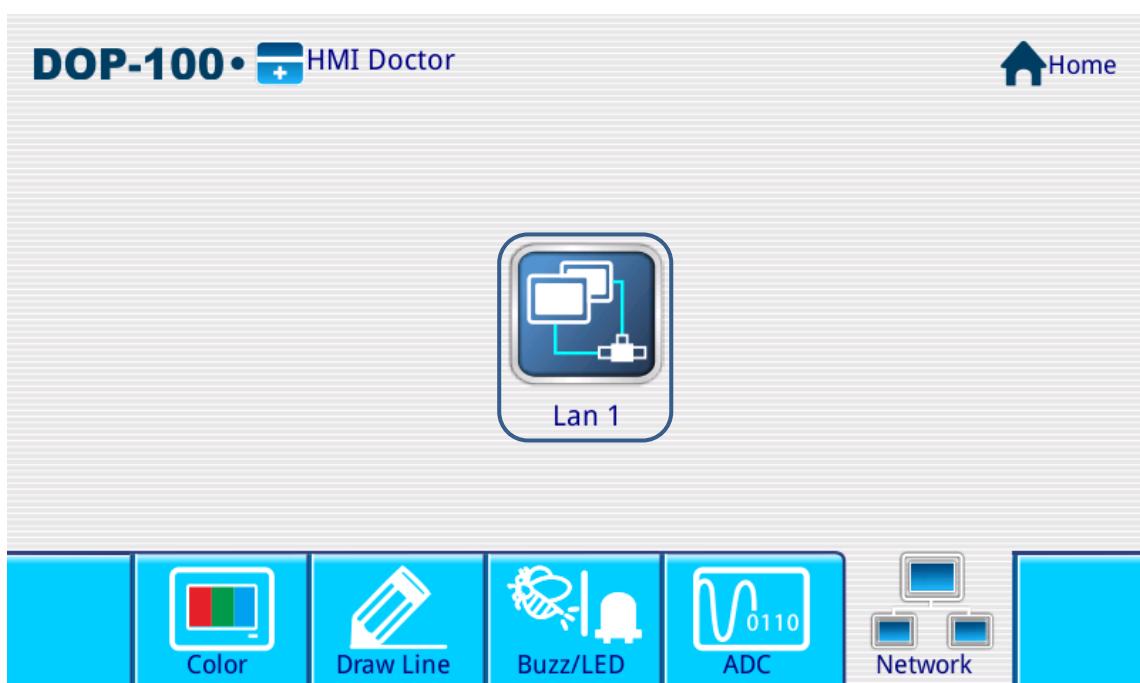
- ADC test

The ADC test function tests the Pressing Force, touch position (X and Y coordinates), system voltage, Battery, and Temperature.



- Network test

This function tests to see if the network is successfully connected. At first, the Lan 1 icon displays in gray, and if the connection is successful, the icon will be displayed in color.



# B

## Multi-Drop

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This appendix explains the multi-drop structure and limits, as well as the multi-drop setup steps.

B.1	Multi-drop example .....	B-4
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B

The multi-drop concept refers to the connection of multiple HMIs to one or more PLCs. When the host HMI is connected to a device, all client HMIs can create virtual connections via the network. Hence, you can operate a physical equipment using a single HMI in the multi-drop mode. Up to 12 links are available in the multi-drop structure, with every communication port added indicating a link for each of the 12 links. For example, if only one COM Port (using one PLC) is used, up to 12 HMIs can be connected. Assuming that each COM Port is connected to one PLC (using three PLCs), up to four HMIs can be connected. Refer to the following figure.

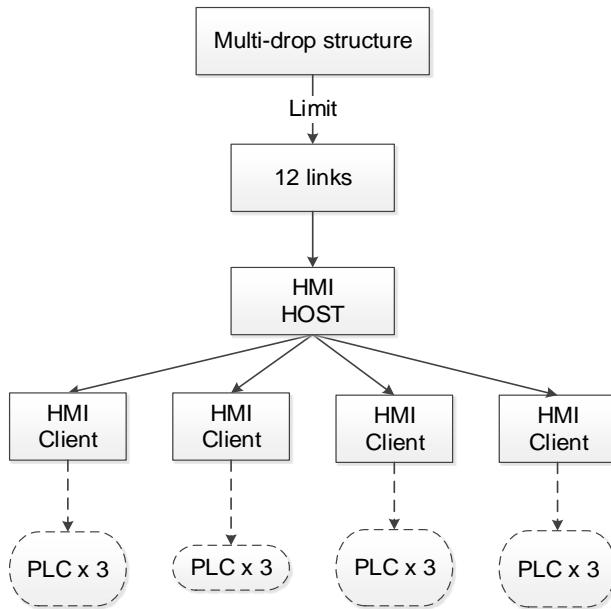


Figure B.1 Multi-drop structure I

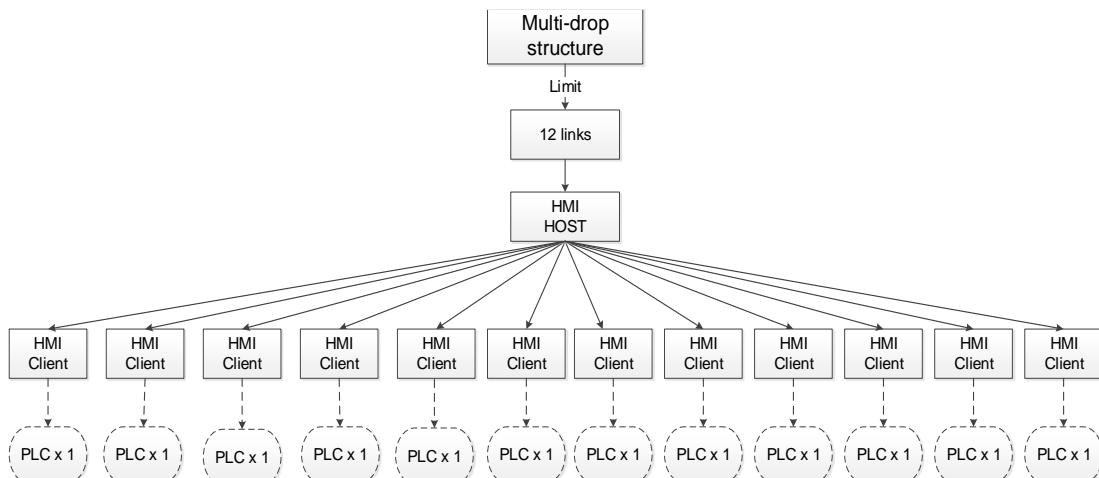
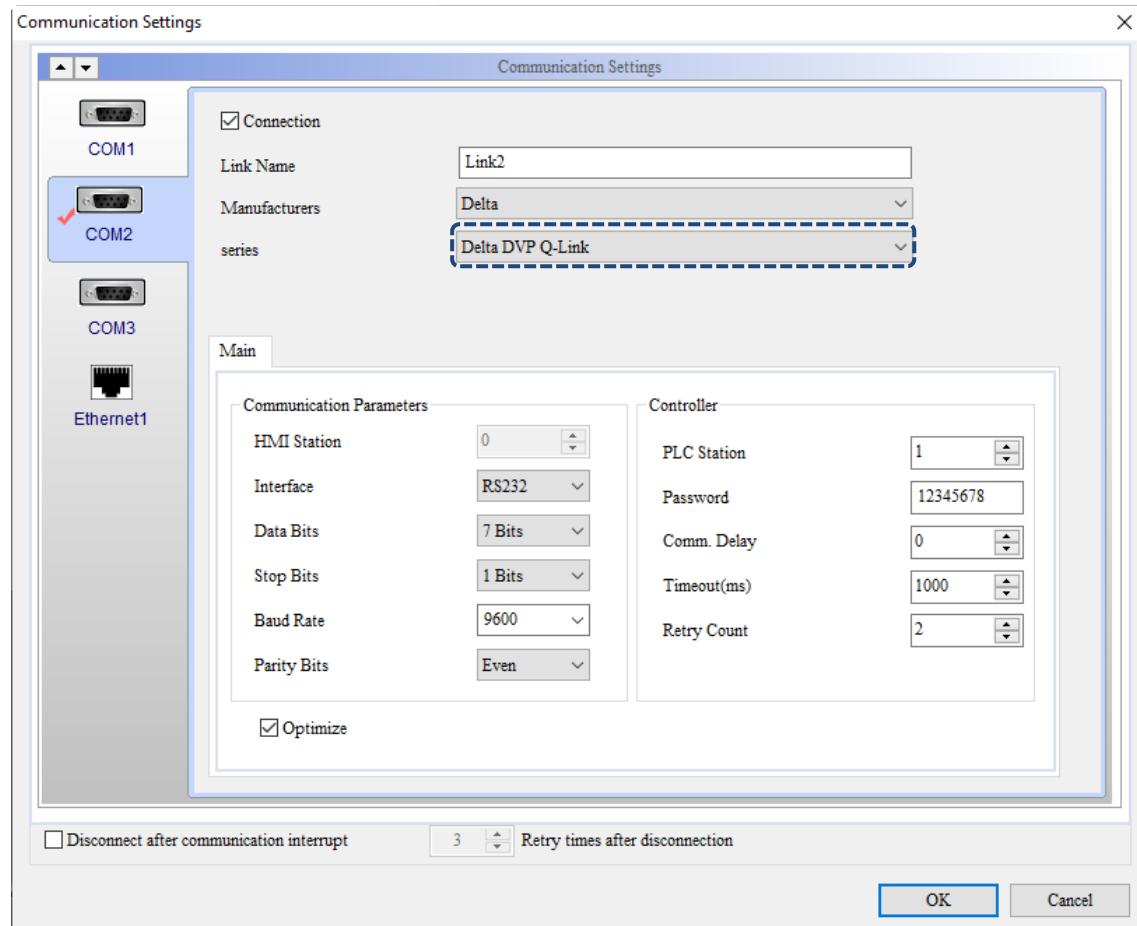


Figure B.2 Multi-drop structure II

The concept and limit of the multi-drop structure are described above, with the setup and operation of the multi-drop structure explained as follows.

The multi-drop mode is not supported when you select Delta DVP Q-Link as the controller.



B

Figure B.3 Multi-drop mode

## B.1 Multi-drop example

The following example is taken in an environment using 3 HMIs to test the multi-drop mode. The HMI-HOST is the host, and the HMI-Client 1 and HMI-Client 2 are the clients.

The HMI-HOST is physically connected to a Delta DVP PLC. Refer to the following figure.

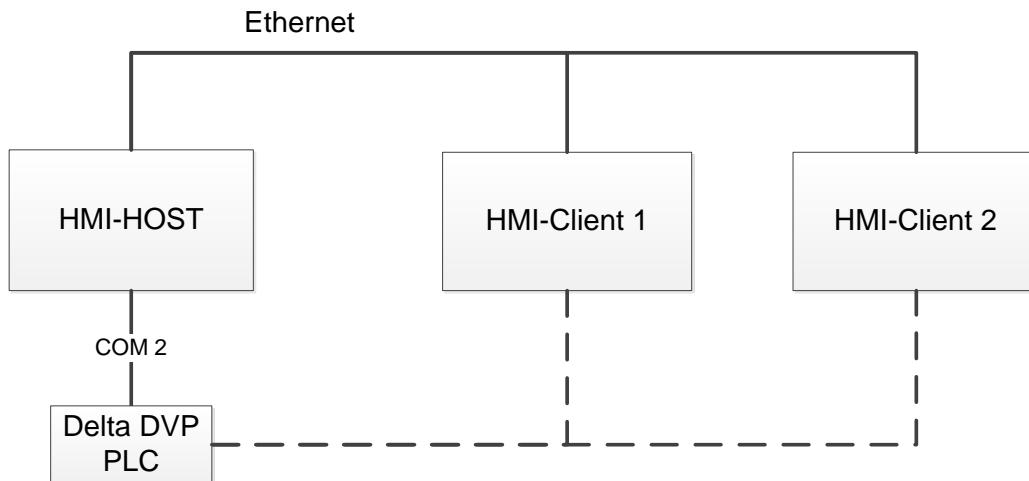


Figure B.1.1 Multi-drop environment

■ HMI-HOST setup

Create a project. Select the Delta DVP PLC as the controller and select Host for the Multi-Drop mode.

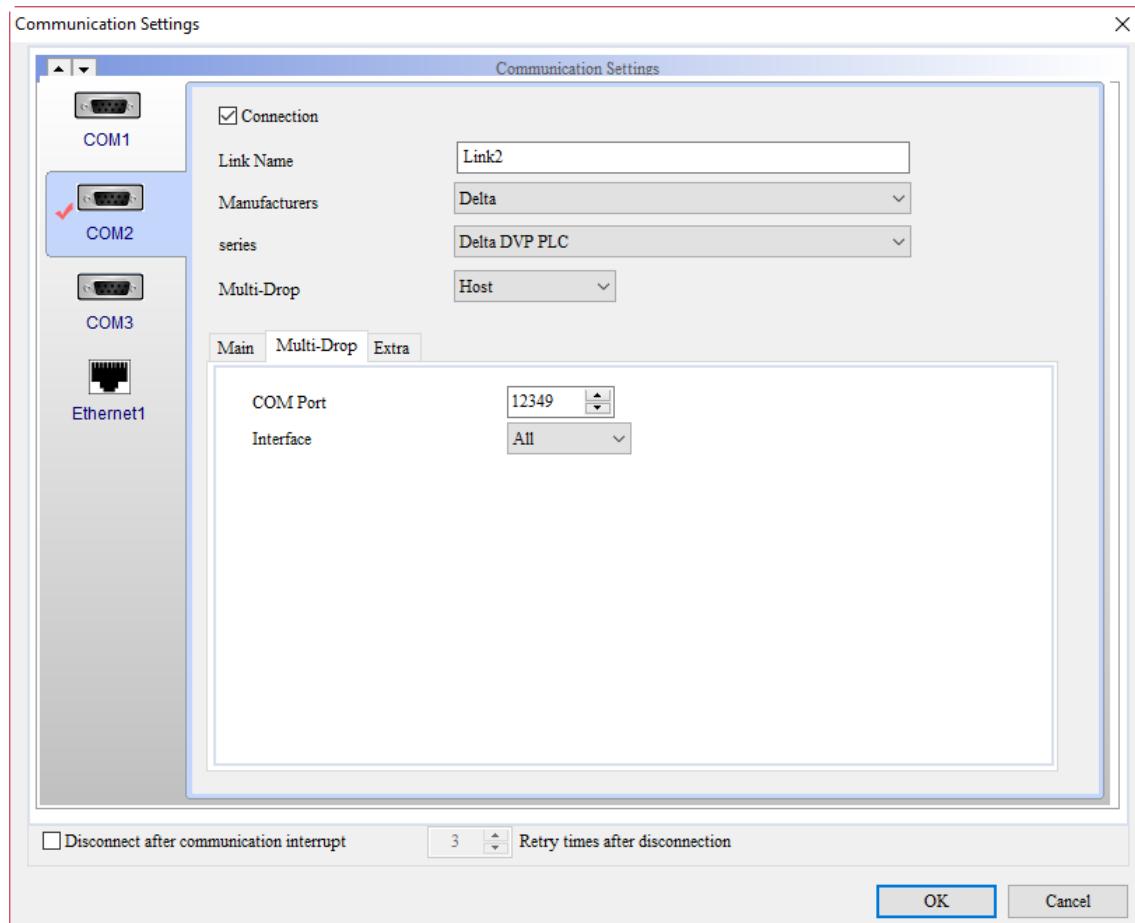


Figure B.1.2 Select Host for the Multi-Drop mode

B

Go to [Ethernet1] > [Localhost]. Select the check box of **Overwrite IP** and set the HMI IP Address to 172.16.190.100.

Go to [Options] > [Configuration] > [Network Settings] to set the name of the HMI as HMI-HOST.

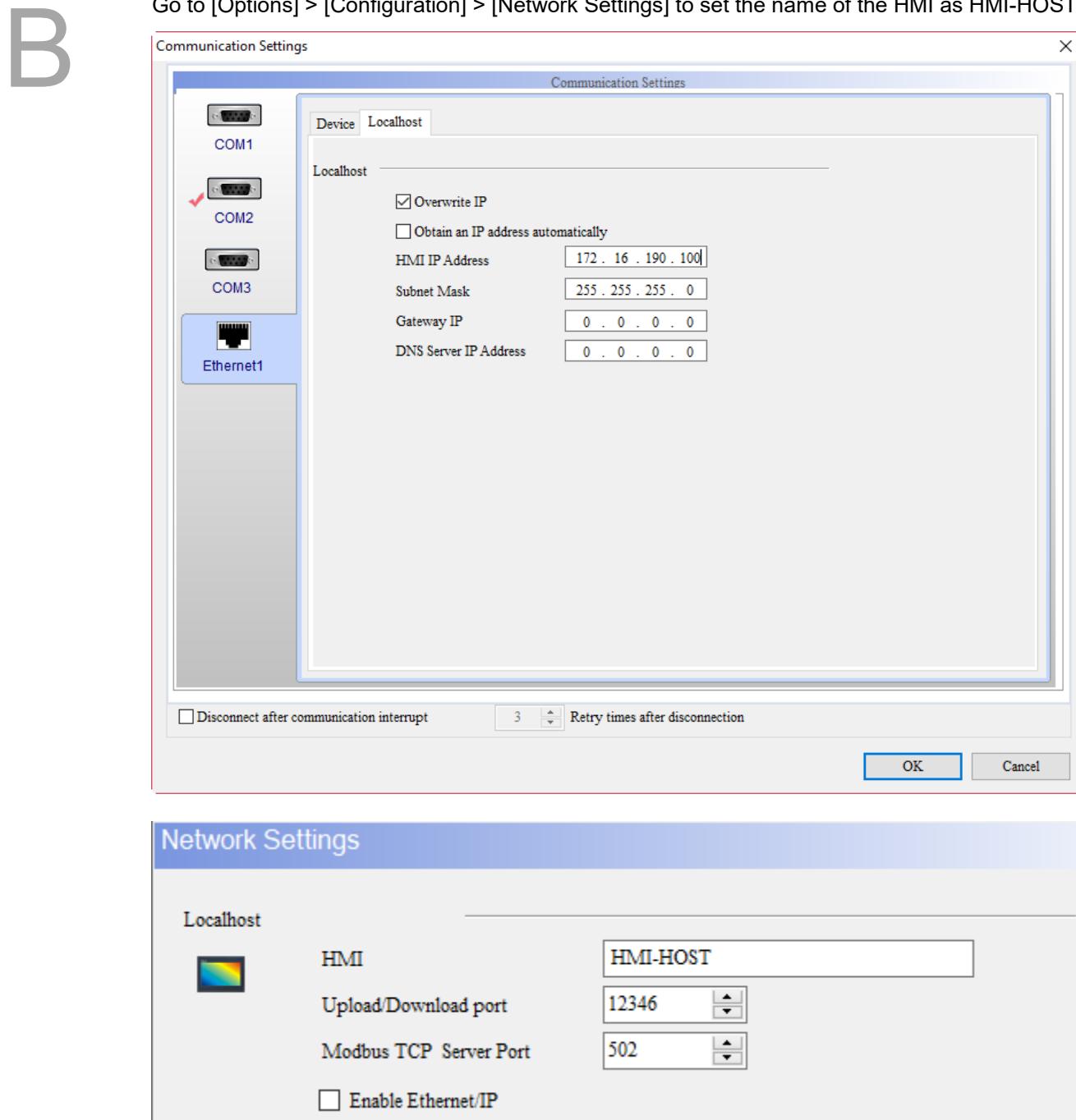
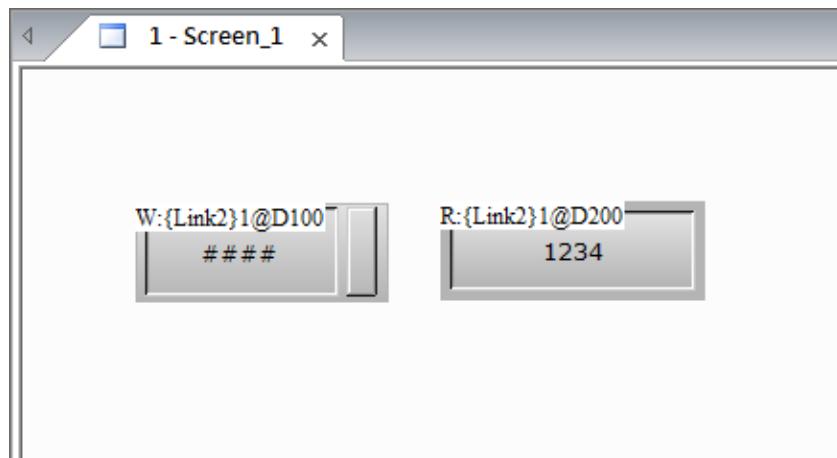


Figure B.1.3 HMI-HOST IP address setup

Create a Numeric Entry element on the editing screen and set its Write Address to D100.

Create a Numeric Display element with its Read Address as D200.



B

Figure B.1.4 Create elements

After the editing is completed, compile the elements and download the screen to the HMI.

#### ■ HMI-Client1 setup

Create a project. Set the Delta DVP PLC as the controller and select Client for the Multi-Drop mode.

Enter 172.16.190.100 in the IP Address field, which is the HMI-HOST IP address.

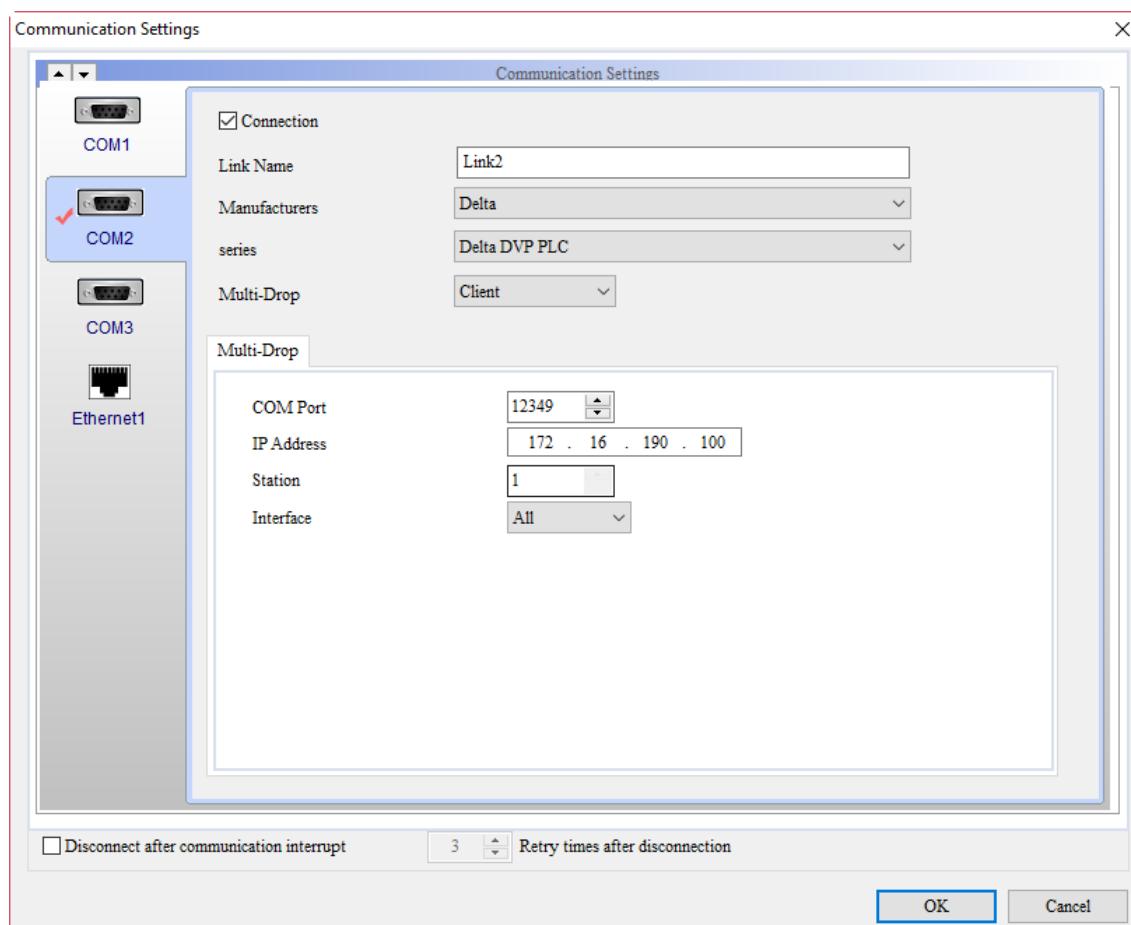


Figure B.1.5 Select Client for the Multi-Drop mode

Go to [Ethernet1] > [Localhost]. Select the check box of **Overwrite IP** and set the HMI IP Address to 172.16.190.101.

Go to [Options] > [Configuration] > [Network Settings] to set the name of the HMI as HMI-Client1.

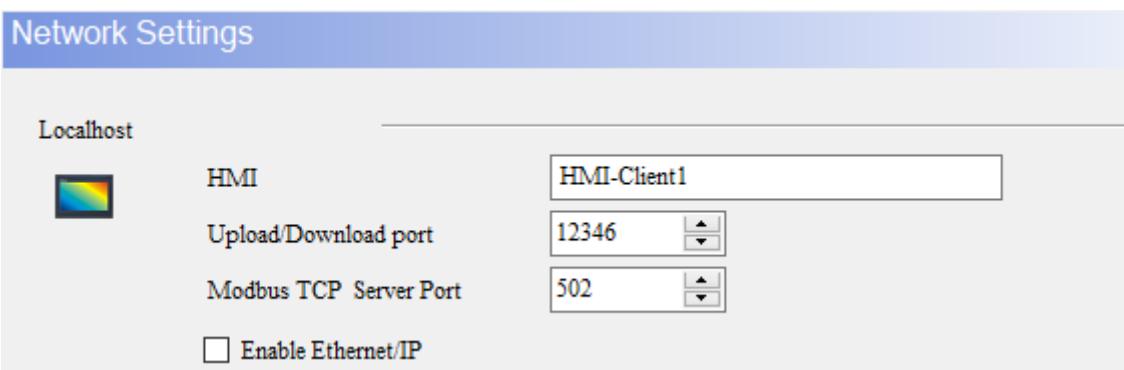
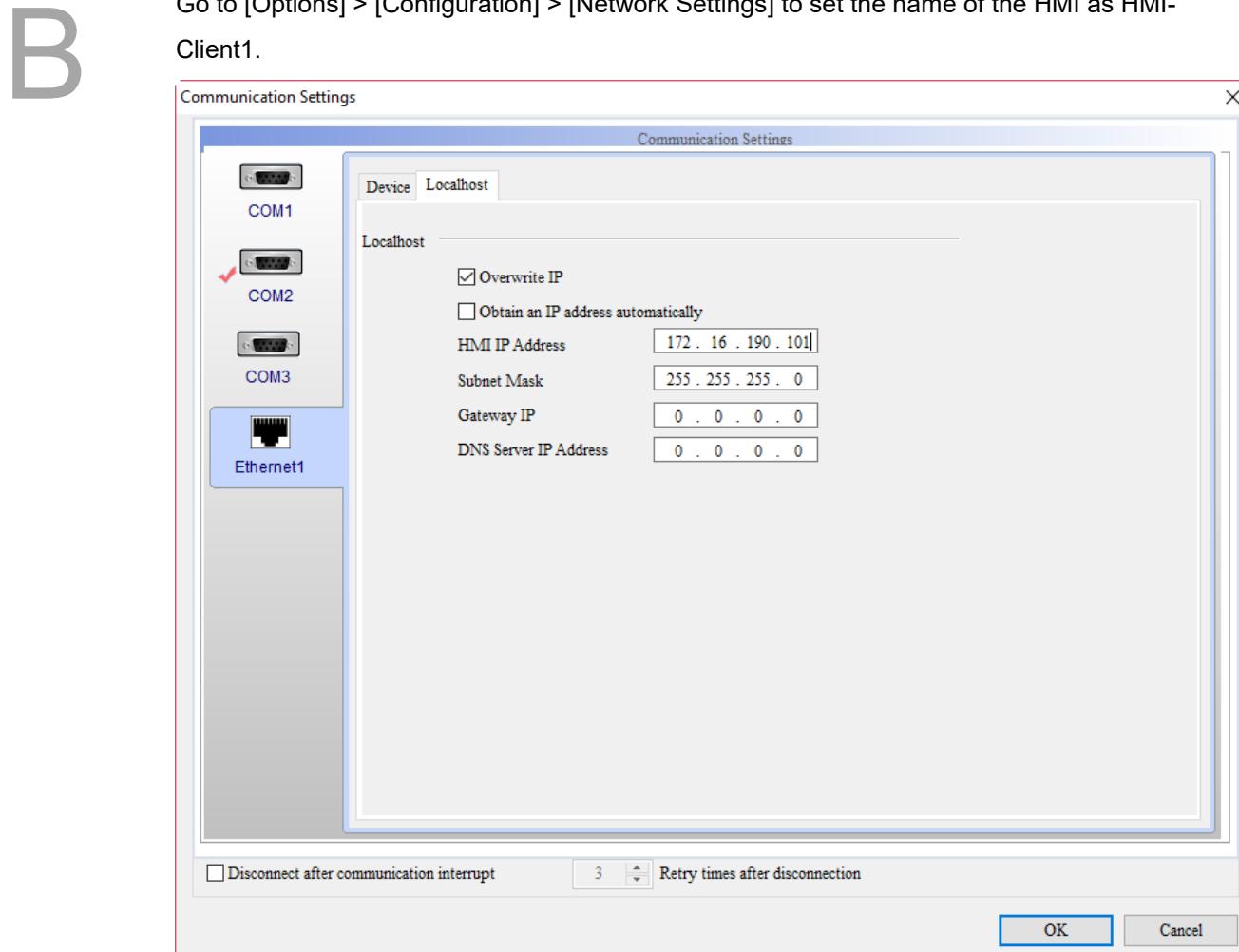
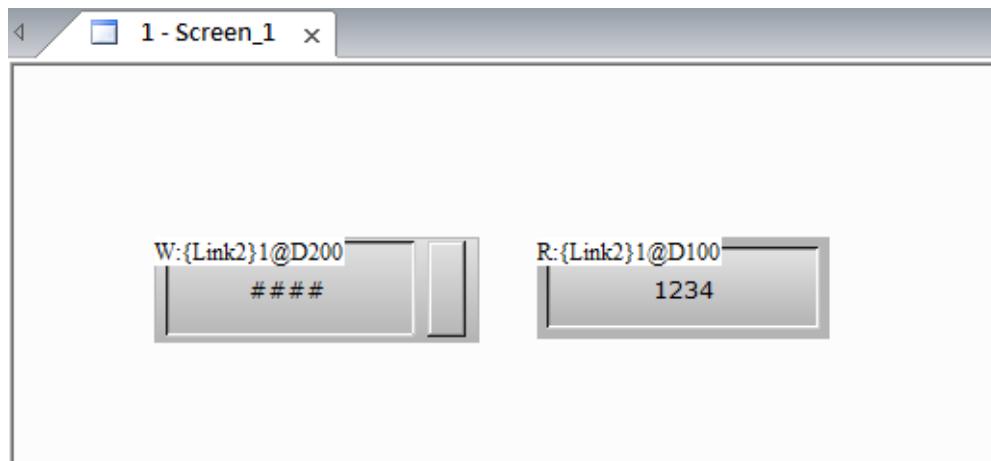


Figure B.1.6 HMI-Client1 IP address setup

Create a Numeric Entry element on the editing screen and set its Write Address to D200.

Create a Numeric Display element with its Read Address as D100.



B

Figure B.1.7 Create elements

After the editing is completed, compile the elements and download the screen to the HMI.

#### ■ HMI-Client2 setup

Create a project. Set the Delta DVP PLC as the controller and select Client for the Multi-Drop mode.

Enter 172.16.190.100 in the IP Address field, which is the HMI-HOST IP address.

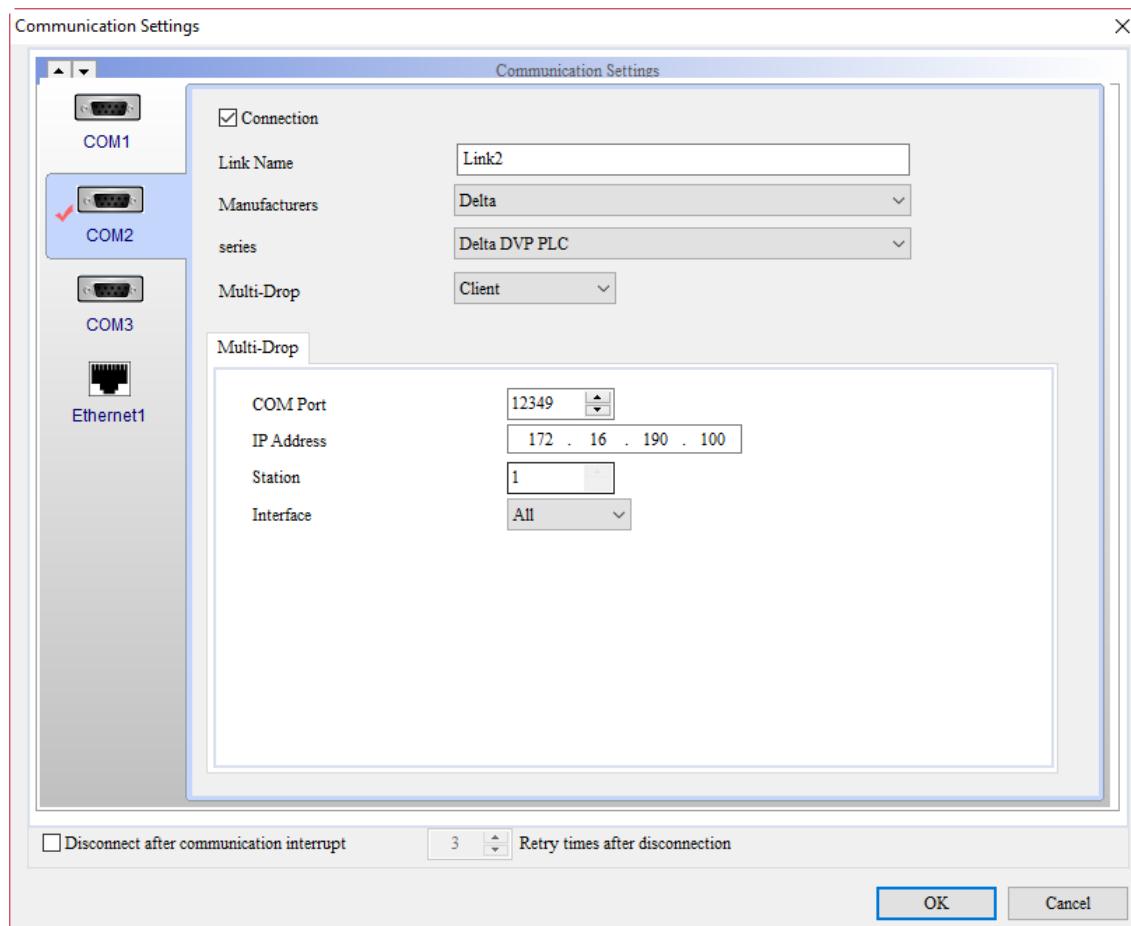


Figure B.1.8 Select Client for the Multi-Drop mode

Go to [Ethernet1] > [localhost]. Select the check box of **Overwrite IP** and set the HMI IP Address to 172.16.190.102.

Go to [Options] > [Configuration] > [Network Settings] to set the name of the HMI as HMI-Client2.

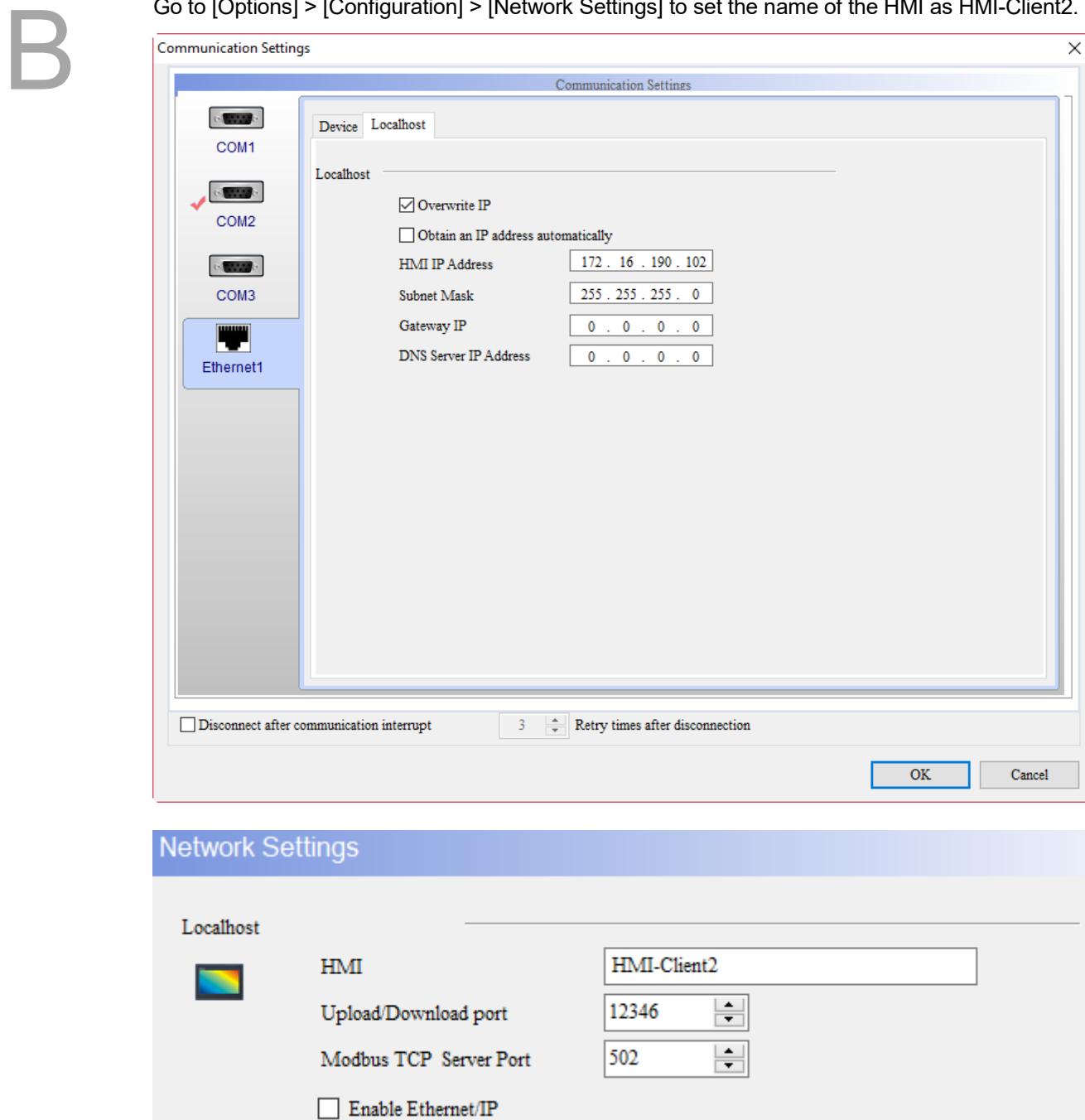
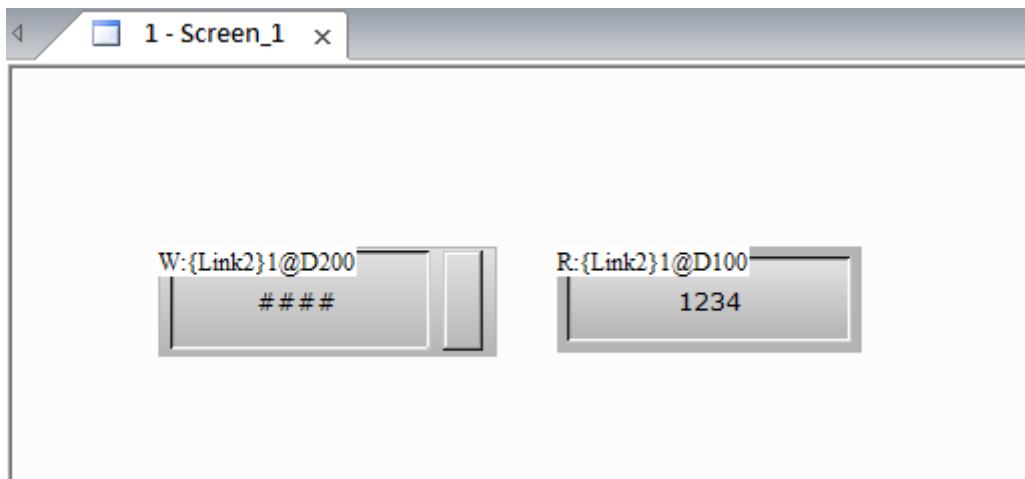


Figure B.1.9 HMI-Client2 IP address setup

Create a Numeric Entry element on the editing screen and set its Write Address to D200.

Create a Numeric Display element with its Read Address as D100.



B

Figure B.1.10 Create elements

After the editing is completed, compile the elements and download the screen to the HMI.

After HMI-HOST, HMI-Client1, and HMI-Client2 are set up and downloaded to the HMI, you can use any HMI to operate the PLC. If you input 36 for D200 on the HMI-Client1, then both the D200 addresses of the HMI-HOST and HMI-Client 2 show 36. If you input 99 for D100 on the HMI-HOST, then both the D100 addresses of the HMI-Client 1 and HMI-Client 2 show 99.

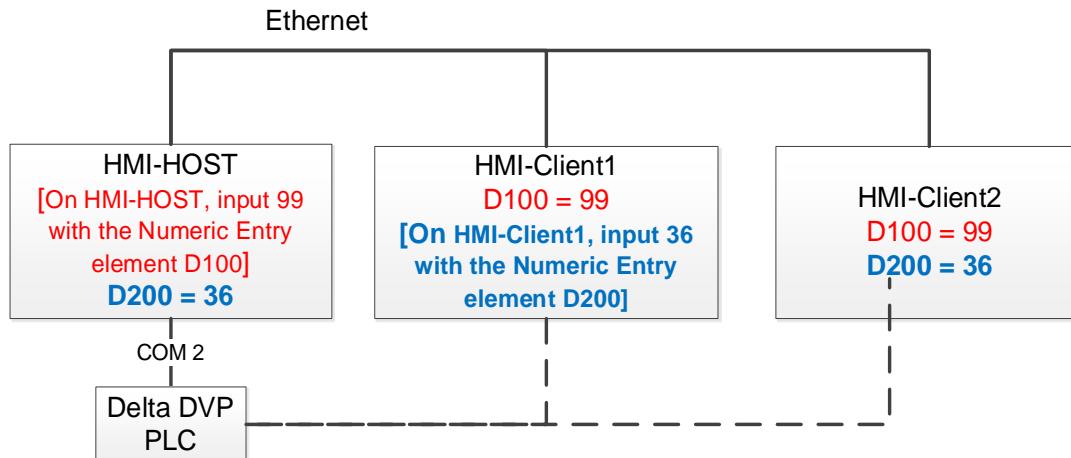


Figure B.1.11 Execution results

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B

# Communication Error Messages

# C

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This appendix describes the meanings of the communication error messages and the ways to troubleshoot these errors when a communication error occurs for the HMI.

C.1 Communication error messages ..... C-2

## C.1 Communication error messages

This appendix describes the meanings of the communication error messages and the ways to troubleshoot these errors when a communication error occurs for the HMI. COMMUNICATION ERROR 3 displayed in the following screenshot is the code for the error.

For communication error messages for DOP-100 models, a message has been added to display which register cannot access data normally, as can be seen in the following screenshot, the D100 address cannot be accessed normally.



Figure C.1.1 Example of the HMI communication error message

Through these codes, you can view the messages displayed and determine the reason why the HMI cannot be connected. The following table lists the communication error codes and messages, as well as the corresponding meanings of these error codes.

Table C.1.1 Communication error codes

Code	Communication error messages	Cause	Troubleshooting
0x02	Unknown	Noise interference.	Improve the anti-noise interference equipment and shielding for the transmission cable.
0x03	NoResponse	Incorrect communication cable wiring, PLC station number, and communication parameters including baudrate, parity, data bits, stop bit, and etc.	Check if the setting on the left is incorrect.
0x05	ControllerChecksumError	Error identified by HMI from checking the PLC CheckSum.	Check if PLC CheckSum has been enabled (usually requires use of PLC software for the checking).
0x06	CommandError	Read and write PLC command is in error.	Check if the read and write address for the HMI exceeded the address available for use by the PLC, or if this address cannot be written.
0x07	AddressError	Read and write PLC address is in error.	Check if the read and write address for the HMI exceeded the address available for use by the PLC, or if this address cannot be written.
0x08	ValueError	Error in data written to the PLC.	Check the range of value accepted by the PLC.
0x09	Controller busy	PLC busy and unable to process the given command.	PLC is busy, please try again later.
0x0A	NoCTS	HMI CTS pin did not receive PLC RTS signal.	Check if CTS pin on HMI end and RTS pin on PLC end are connected, or if the PLC has sent out RTS signal.
0x0E	HMIStationNumberError	HMI station number error.	Check if the HMI station number exceeded the range of valid station numbers, or if it is duplicated with other station numbers.
0x0F	PLCStationNumberError	PLC station number error.	Check if the PLC station number exceeded the range of valid station numbers, or if it is duplicated with other station numbers.
0x10	UARTCommunicateFail	Communication error occurred at the bottom layer of HMI. COM port was not opened correctly, or task overload on HMI causing abnormal COM port operation.	Make sure if the COM port could be used normally, or simplify HMI task load, for example, delete ALARM or MACRO command.
0x1A	RTCSYNCError	PLC does not support this command.	Use the PLC that supports this command.
0x1B	Receive Error	Data format sent by PLC is in error.	Make sure the data format is correct.

C

MPI communication error codes are created for Siemens' controllers, such as S7-300 series (Direct MPI), S7-300 series (without PC Adaptor), and S7-200 series, when communication with the HMI fails.

Communication Settings

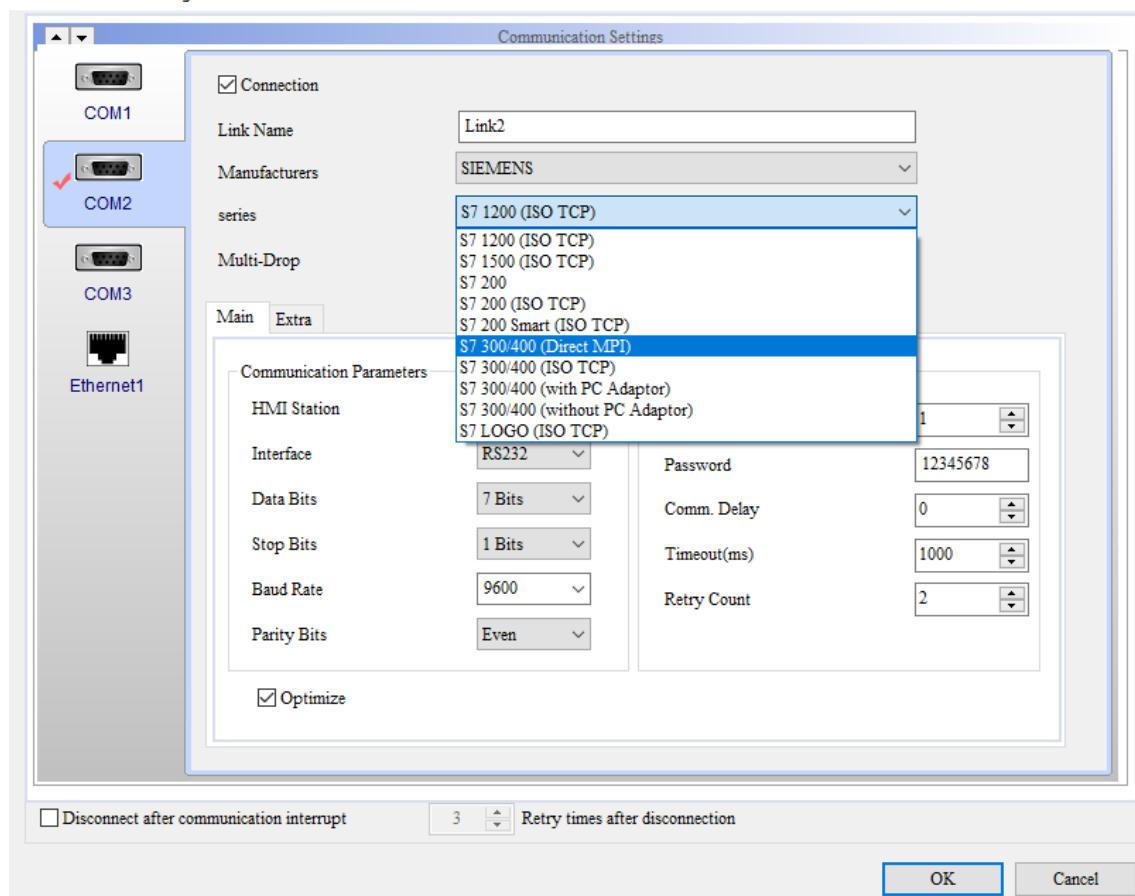


Figure C.1.2 Siemens controller

Table C.1.2 MPI communication error codes

<b>Code</b>	<b>Communication error messages</b>	<b>Cause</b>	<b>Troubleshooting</b>
0x11	MPI_IDLE (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. HMI cannot acquire packets under idle internet connection.	Check if there are too many connected modules causing insufficient bandwidth.
0x12	MPI_SN_COLLID (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. Station numbers are duplicated.	Make sure if there are modules with duplicated stations.
0x14	MPI_NO_SC (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. The number of connected stations is full, with no more connections available.	Check if the number of the connected modules exceeds the limit.
0x18	MPINoResponse (For S7 300 - without PC adaptor or S7 300 - Direct MPI)	This is a special error message for Siemens PLC. There is no response for the connection requested, as there is no resource allocated.	Check if the network cable is disconnected or if it has poor connection.
0x0B	NoResource (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. It is caused by task overload on the PLC.	This issue can be solved by simplifying the programs on the PLC to reduce task load.
0x0C	NoService (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. It is caused by task overload on the PLC.	This issue can be solved by simplifying the programs on the PLC to reduce task load.
0x3F	Read Error (For S7 300 - without PC adaptor, S7 300 - Direct MPI, or S7-200)	This is a special error message for Siemens PLC. The set PLC address exceeded the accessible range.	Set the PLC address within the accessible range.

C

If the connecting controller used for communication is Omron's C/CPM/CQM Series, please refer to the following Table C.1.3 for the applicable error code when an error occurred.

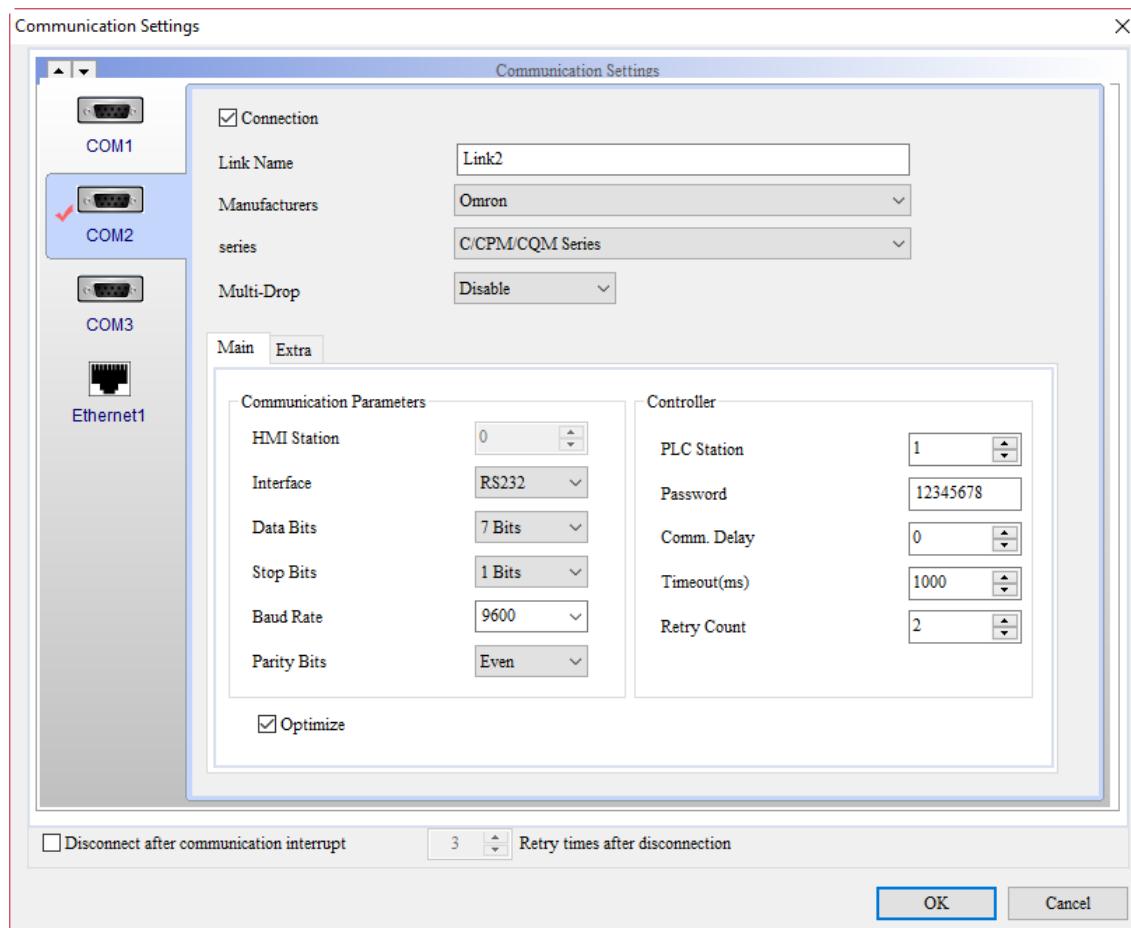


Figure C.1.3 Omron controller

Table C.1.3 Omron communication error code

Code	Communication error messages	Cause	Troubleshooting
0x1F	NOTEExecutableInRunMode	It means the HMI is already connected with the PLC, but PLC is in Run mode, so it cannot accept "write data" command.	The PLC must be in Monitor mode to accept "write data" command. This error message will only appear once because when the HMI notices an error with the mode, it will automatically change the PLC mode to Monitor mode.

# Write and Read Offset Addresses

D

This appendix describes the method for using the write and read offset addresses.

D.1 Write and read offset addresses ..... D-2

## D.1 Write and read offset addresses

The offset address enables users to flexibly read and write the memory address without downloading the screen again when changing the address.

After setting the offset address:

The actual write address of the element:

Write Address + Value in Write Offset Address × Element [Data Type].

The actual read address of the element:

Read Address + Value in Read Offset Address × Element [Data Type].

If you have set the Write Offset Address but not the Read Offset Address, the Read Offset Address will be regarded the same as the Write Offset Address.



Figure D.1.1 Offset address setup

Note:

1. Values in offset addresses have to be unsigned within the range of 0 - 65535.
2. If the Data Type options are not available for the button element, the Data Type of this element is Bit.

The Data Type for the Character Display and Character Entry elements is Word, not String Length.

3. All elements that can be set with a Write Address can also be set with a Write Offset Address.

The same applies to elements set with a Read Address can also be set with a Read Offset Address.

Refer to the following table for all the elements that can be set with write or read offset addresses.

Element		Offset address	
		Write	Read
Button	Set to On	v	v
	Set to Off	v	v
	Momentary	v	v
	Maintained	v	v
	Multistate	v	v
	Set Value	v	
	Set Constant	v	
	Increment	v	v
	Decrement	v	v
Meter (1)(2)(3)			v
Bar	Normal		v
	Differential		v
Pipe (1)(2)(6)(7)			v
Pie (1)(2)(3)(4)			v
Indicator	Multistate Indicator		v
	Range Indicator		v
	Simple Indicator		v
Data Display	Numeric Display		v
	Character Display		v
	General Message Display		v
	Moving Sign		v
Graph Display	State Graphic		v
	Animated Graphic		v
Input	Numeric Entry	v	v
	Character Entry	v	v
	Barcode Input	v	v
	Multi-language Input	v	v
Analog	Slider	v	v
List	ComboBox	v	v
	ListBox	v	v
Drawing	Line		v
	Rectangle		v
	Circle		v
	Text		v

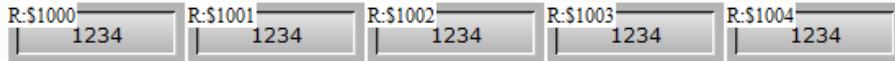
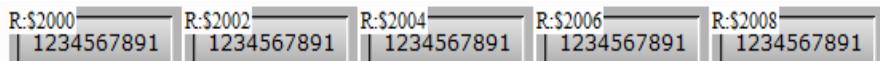
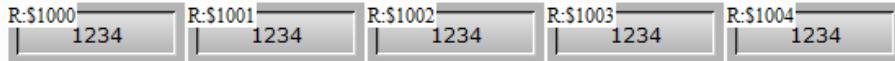
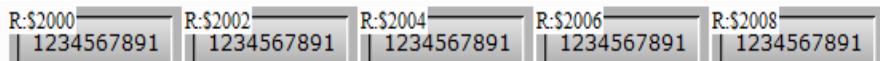
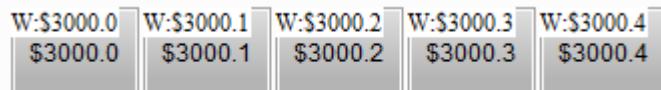
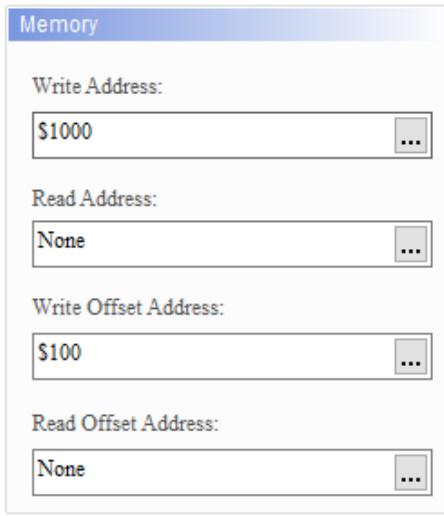
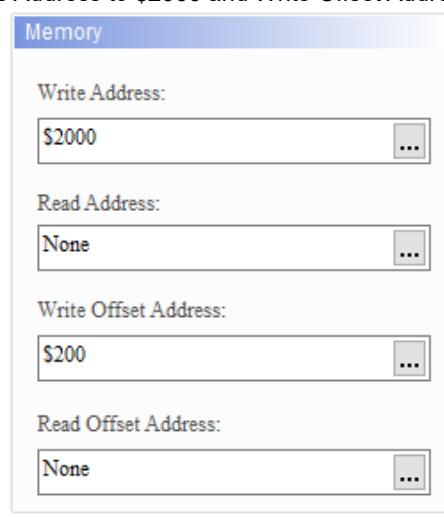
4. You can select the internal memory or controller register address as the Write / Read Address for the elements, but the controller register address which the Data Length is not Word is currently not supported. For example, C200 - C255 in Delta's DVP PLC are not supported because their Data Length is Double Word.

Variables	Type		
	Internal memory	PLC register	Constant
Write Offset Address	v	v	
Read Offset Address	v	v	

D

See the following examples of Offset Address.

Table D.1.1 Examples for applying offset address

Examples for applying offset address	
Create Numeric Entry elements	<p>Create three Numeric Entry elements and set the write addresses to \$100, \$200, and \$300, respectively.</p> <ul style="list-style-type: none"> <li>Step 1: create five Numeric Display elements with the Data Type as Word and set the addresses from \$1000 to \$1004 in sequence.</li> </ul>  <ul style="list-style-type: none"> <li>Step 2: create five Numeric Display elements with the Data Type as Double Word and set the addresses from \$2000 to \$2004 in sequence.</li> </ul> 
Create Numeric Display elements	<ul style="list-style-type: none"> <li>Step 1: create five Numeric Display elements with the Data Type as Word and set the addresses from \$1000 to \$1004 in sequence.</li> </ul>  <ul style="list-style-type: none"> <li>Step 2: create five Numeric Display elements with the Data Type as Double Word and set the addresses from \$2000 to \$2004 in sequence.</li> </ul> 
Create Maintained button elements	<p>Create five Maintained button elements and set the addresses from \$3000.0 to \$3000.4 in sequence.</p> 
Set offset addresses	<ul style="list-style-type: none"> <li>Step 1: create one Numeric Entry element with the Data Type as Word and set the Write Address to \$1000 and Write Offset Address to \$100.</li> </ul>  <ul style="list-style-type: none"> <li>Step 2: create one Numeric Entry element with the Data Type as Double Word and set the Write Address to \$2000 and Write Offset Address to \$200.</li> </ul> 

D

### Examples for applying offset address

- Step 3: create one Maintained button element and set the Write Address to \$3000.0 and Write Offset Address to \$300.

Set offset addresses

**Memory**

Write Address:  
\$3000.0

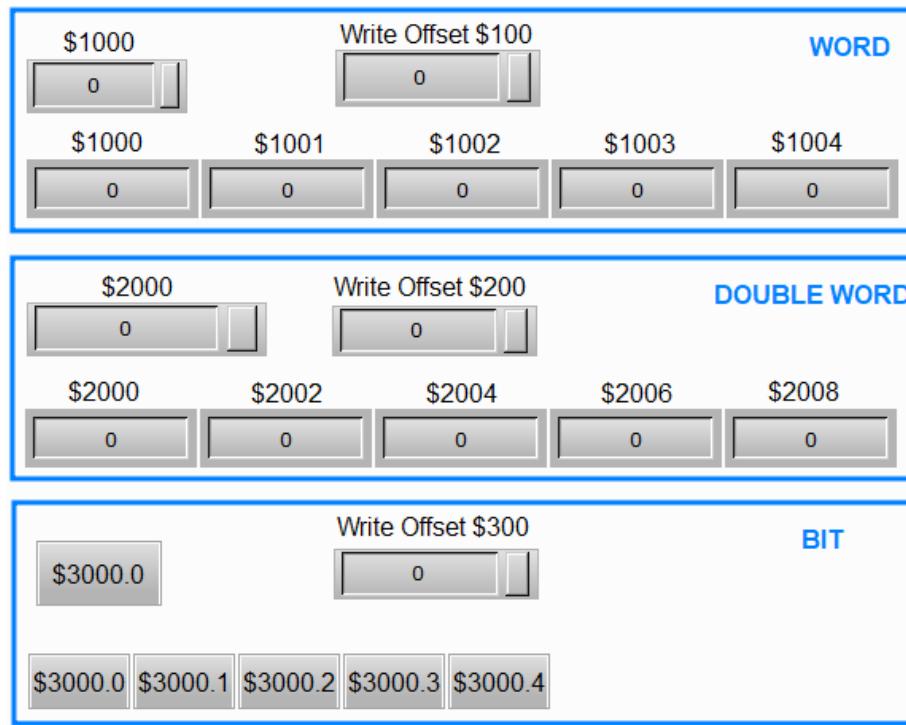
Read Address:  
None

Write Offset Address:  
\$300

Read Offset Address:  
None

After creating all the elements, please compile and download the elements to the HMI.

Download the screen to HMI



D

Examples for applying offset address					
		<ul style="list-style-type: none"> <li>When the Write Offset \$100 is 0, the actual write address of the Numeric Entry element in Word is \$1000.</li> </ul>			
		\$1000	Write Offset \$100	WORD	
		\$1000	\$1001	\$1002	\$1003
		\$1004			
		<ul style="list-style-type: none"> <li>When the Write Offset \$100 is 1, the actual write address of the Numeric Entry element is 1 Word address after \$1000, which is \$1001.</li> </ul>			
		\$1000	Write Offset \$100	WORD	
		\$1000	\$1001	\$1002	\$1003
		\$1004			
		<ul style="list-style-type: none"> <li>When the Write Offset \$100 is 3, the actual write address of the Numeric Entry element is 3 Word addresses after \$1000, which is \$1003.</li> </ul>			
		\$1000	Write Offset \$100	WORD	
		\$1000	\$1001	\$1002	\$1003
		\$1004			
		<ul style="list-style-type: none"> <li>When the Write Offset \$200 is 0, the actual write address of the Numeric Entry element in Double Word is \$2000.</li> </ul>			
		\$2000	Write Offset \$200	DOUBLE WORD	
		\$2000	\$2002	\$2004	\$2006
		\$2008			
		<ul style="list-style-type: none"> <li>When the Write Offset \$200 is 1, the actual write address of the Numeric Entry element is 1 Double Word address after \$2000, which is \$2002.</li> </ul>			
		\$2000	Write Offset \$200	DOUBLE WORD	
		\$2000	\$2002	\$2004	\$2006
		\$2008			
		<ul style="list-style-type: none"> <li>When the Write Offset \$200 is 3, the actual write address of the Numeric Entry element is 3 Double Word addresses after \$2000, which is \$2006.</li> </ul>			
		\$2000	Write Offset \$200	DOUBLE WORD	
		\$2000	\$2002	\$2004	\$2006
		\$2008			

Examples for applying offset address		
	■ When the Write Offset \$300 is 0, the actual write address of the Maintained button element is \$3000.0.	
	Write Offset \$300 \$3000.0      0	BIT
		D
Execution result when the Data Type is Bit	■ When the Write Offset \$300 is 1, the actual write address of the Maintained button element is 1 Bit address after \$3000.0, which is \$3000.1.	
	Write Offset \$300 \$3000.0      1	BIT
	■ When the Write Offset \$300 is 3, the actual write address of the Maintained button element is 3 Bit addresses after \$3000.0, which is \$3000.3.	
	Write Offset \$300 \$3000.0      3	BIT

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D

# Revision History

Release date	Version	Chapter	Revision contents
December, 2021	V2.0 (Second edition)	1.2	Modified the supported operating system.
		1.3	Modified the supported models.
		2.2	Modified the pictures in the Element Bank.
		2.2.1.1	Modified the supported language options for the System Menu Language.
		2.2.1.6	Added the password protection function for copying files when creating the screen data file.
		2.2.1.7	Added the password protection function for copying files when creating the update data file.
		2.2.2.2	Added the Address Conversion function.
		2.2.2.3	Added the Lock Element function.
		2.2.2.5	Added the Tab Order function.
		2.2.3.8	Removed the cross-reference address table section.
		2.2.4.3	Modified the interface diagram and descriptions for the Screensaver Setup.
		3.1	The internal memory supported by the DOP-112/115 models increased to 200,000 sets.
		3.4	<p>Added the Internal Parameters:</p> <ul style="list-style-type: none"><li>• NET_IP1 to NET_IP4, SUBMASK_IP1 to SUBMASK_IP4, and GWAY_IP1 to GWAY_IP4</li><li>• NET_STATUS1 and NET_STATUS2</li><li>• REMO_COUNT</li><li>• ACCOUNT</li><li>• PROGRAM_STATUS</li><li>• PROGRAM_INFO</li><li>• KEY_CHAR</li><li>• SMTP_STATUS</li><li>• SMTP_INFO</li></ul>

<b>Release date</b>	<b>Version</b>	<b>Chapter</b>	<b>Revision contents</b>
December, 2021	V2.0 (Second edition)	5.1	Set to On, Set to Off, Maintained, and Momentary buttons: added the options of Use Text Pic, Filled style, Interlock Display Mode, and Modifier + Hot Key.
		5.2	Multistate button: added the options of Use Text Pic, Filled style, Interlock Display Mode, and Modifier + Hot Key.
		5.3	Set Value button: added the options of Use Text Pic, Filled style, Interlock Display Mode, and Modifier + Hot Key.
		5.4	Set Constant button: added the options of Use Text Pic, Filled style, Interlock Display Mode, and Modifier + Hot Key.
		5.5	Increment / Decrement buttons: added the options of Use Text Pic, Filled style, Interlock Display Mode, and Modifier + Hot Key.
		5.6	Goto Screen button: added the options of Use Text Pic, Filled style, Interlock Display Mode, and Modifier + Hot Key.
		5.7.7	Added the Print Output element.
		5.7.8	Modified the storage device options for the Report List as USB Disk and SD card.
		5.7.14	Modified the FileSlot export interface.
		5.7.15	Added the options of Interlock Display Mode and Modifier + Hot Key.
		5.8	Multiple actions button: added the options of Use Text Pic, Filled style, Interlock Display Mode, and Modifier + Hot Key.
		6.1	Added the option of Variable minimum/maximum limits for the Meter elements.
		7.1	Normal bar: added the option of Filled style.
		7.2	Differential bar: added the option of Filled style.
		8.1	Pipe (1) / Pipe (2): added the option of Filled style.
		10.1	Multistate Indicator: added the option of Filled style.

<b>Release date</b>	<b>Version</b>	<b>Chapter</b>	<b>Revision contents</b>
December, 2021	V2.0 (Second edition)	10.2	Range Indicator: added the option of Filled style.
		11.1	Numeric Display: Added the option of Filled style. Added the allowable range descriptions for the Quad Word data display. Added the contents of Data Type and Data Format for Quad Word. Added the option of Word arrangement.
		11.2	Character Display: Added the option of Filled style. Added the option of Insufficient string length zero.
		11.3.1	Date Display: added the option of Filled style.
		11.3.2	Time Display: added the option of Filled style.
		11.3.3	Week Display: added the option of Filled style.
		11.4	General Message Display: added the options of Use Text Pic and Filled style.
		11.5	Moving Sign: added the options of Use Text Pic and Filled style.
		11.6	Added Section 11.6 QR code display.
		11.7	Added Section 11.7 Barcode.
		12.2	Modified the default of the Clear Picture option to Yes.
		13.1	Numeric Entry: Added the allowable range descriptions for the Quad Word data. Added the contents of Data Type and Data Format for Quad Word. Added the options of Filled style and Border Fill Style. Added the options of Interlock Display Mode and Word arrangement.
		13.2	Character Entry: added the options of Filled style and Border Fill Style. Added the options of Insufficient string length zero and Interlock Display Mode.

Release date	Version	Chapter	Revision contents
December, 2021	V2.0 (Second edition)	13.3	Barcode Input: added the options of Filled style, Border Fill Style, and Interlock Display Mode.
		13.4	Multi-language Input: added the options of Filled style, Border Fill Style, read only, and Encoding. Added the option of Interlock Display.
		13.5	Added Section 13.5 Multi-line text input.
		14.1	Trend Graph: added the option of setting the Minimum / Maximum as variables.
		14.2	X-Y Chart: added the options of Horiz. Minimum / Horiz. Maximum, setting the Vert. Minimum / Vert. Maximum as variables, Number of Groups, Enable Value Line, Set For Curve, Vert. Low Limit, and Vertical high limit.
		14.4	Curve Input: added the option of setting the Minimum / Maximum as variables.
		15.1	History Buffer: Added the +-↑↓ buttons in the CSV Fields settings. Added the option of Enable active bit in the History Buffer Setup. Added the option of Enable optimized alarm reading. Added the support of DWORD for the Custom Cycle option in Timer.
		15.2	Historical Trend Graph: Added the supported Number of Curves to 60 and the supported Read Length to 60 words for the Curve setting. Added the option of setting the Minimum / Maximum of Global range as variables. Added the Timeline scaling function. Added the Set the time display interval function button.

<b>Release date</b>	<b>Version</b>	<b>Chapter</b>	<b>Revision contents</b>
December, 2021	V2.0 (Second edition)	15.3	<p>Historical Data Table:</p> <p>Added the supported number of columns to 60 and the supported Read Length to 60 words.</p> <p>Added the options of Alignment and Field Width in Time/Date.</p> <p>Added the No. option in Show Title.</p> <p>Added the Show No. check box and the options of Color and Alignment.</p> <p>Added the Details-2 page.</p>
		15.4	<p>Historical Event Table: added the supported Read Length for the Data No. to 60 words.</p>
		15.5	<p>Historical Overview Table:</p> <p>Added the supported Number of Curves to 60 and the Read Length to maximum 60 words for the Curve setting.</p> <p>Added the option of setting the Minimum / Maximum of Global range as variables.</p> <p>Added the Timeline scaling function.</p> <p>Added the option of Set the time display interval function button.</p>
		15.6	<p>Operation Log Table: added the Save in HMI option in the Save Settings.</p>
		16.1	<p>Alarm Settings:</p> <p>Modified the supported range for the Alarm Category Settings from 1 - 255 to 0 - 4095.</p> <p>Added the option of Enable optimized alarm reading.</p> <p>Added the support of %f1 format and setting up to 8 monitoring addresses for Monitor Address.</p> <p>Modified the interface for Monitor Address.</p> <p>Added the Time to enter screen saver again option.</p> <p>Added the Show alarm number option.</p>

<b>Release date</b>	<b>Version</b>	<b>Chapter</b>	<b>Revision contents</b>
December, 2021	V2.0 (Second edition)	16.2	<p>Alarm History Table:</p> <p>Added the Enable group number filtering option.</p> <p>Added the Allow to change the field width option.</p> <p>Added the option of Group for Column display.</p> <p>Added the function buttons of Scroll up an interval, Scroll down an interval, Scroll up one page, and Scroll down one page.</p>
		16.3	<p>Active Alarm List:</p> <p>Added the Enable group number filtering option.</p> <p>Added the Details page.</p> <p>Added the Allow to change the field width option.</p> <p>Added the option of Group for Column display.</p> <p>Added the Function Buttons page.</p>
		16.4	<p>Alarm Frequency Table:</p> <p>Added the Enable group number filtering option.</p> <p>Added the Details page.</p> <p>Added the Allow to change the field width option.</p> <p>Added the option of Group for Column display.</p> <p>Added the Function Buttons page.</p>
		16.5	<p>Alarm Moving Sign:</p> <p>Added the Alarm Group option.</p> <p>Added the Enable group number filtering option.</p> <p>Added the Details page.</p>
		19.1	<p>ComboBox:</p> <p>Added the State invisible Address option.</p> <p>Added the Interlock Display Mode option.</p>
		19.2	Added Section 19.2 Drop-down Menu.
		19.3	ListBox: added the Interlock Display Mode option.

<b>Release date</b>	<b>Version</b>	<b>Chapter</b>	<b>Revision contents</b>
December, 2021	V2.0 (Second edition)	19.5	PDF Viewer: Added the File Extension Filter function. Added the Show File List option.
		19.6	Added Section 19.6 Text Viewer.
		19.7	Added Section 19.7 ENRPC Viewer.
		19.8	Added Section 19.8 FTP file list.
		19.9	Added Section 19.9 FTP File Setting.
		19.10	Added Section 19.10 Text List.
		20.2	Added Section 20.2 Camera display.
		20.3	Added Section 20.3 VGA display.
		20.4	Added Section 20.4 Video Play.
		20.5	Added Section 20.5 Event trigger.
		21.2	Right Triangle: added the Invisible Address option
		21.8	Triangle: added the Invisible Address option.
		22.2	Rectangle: added the Filled style option.
		22.3	Circle: Added the Filled style option. Added the Invisible Address option.
		22.4	Polygon: added the Invisible Address option.
		22.5	Text: added the Use Text Pic function.
		23.1	16-bit Recipe: Modified the interface. Added the Groups / Fields Search function.
		23.2	32-bit recipe: Modified the interface. Added the Groups / Fields Search function.
		23.4	Enhanced recipe: Modified the interface. Added the Groups / Fields Search function. Added the RCPNOname index function. Added the Title field.
		24.1.7	Added the Cycle macro manager window.
		24.3.8	Communication: Added the commands of COMLINKSTATUS, NETLINKSTATUS, and CLOSECOM.

<b>Release date</b>	<b>Version</b>	<b>Chapter</b>	<b>Revision contents</b>
December, 2021	V2.0 (Second edition)	24.3.10	File Access: Added the commands of FileSlotGetName, FileSlotSetName, and FileSlotGetID.
		24.4	Added the Macro error codes.
		26.1	Template printing: added the Print Screen option. Added the Each picture function for setting how many screens are included in one page in the Screen Print Setup.
		26.4	Added Section 26.4 Template printing.
		Table 27.1.1	The Boot Delay Screen function in the Main screen is moved to the Default Screen.
		Table 27.1.3	Security Level and Password: Added the options of Logout when time out, Account disabled after login failed, and Password Keypad.  Added the quick password button  for you to use the user security level and the password used on the DOP-B series models to continue the login. Changed the interface of the Account and Password.
		Table 27.1.5	Others: Added the options for HMI action priority. Added the slide bars for Animation FPS (graphic update speed) and Audio. Added the options of Enable backlight saving, Screensaver trigger address, Screensaver Screen, and the display of Screensaver Status. Added the option of Insufficient storage hint screen.
		Table 27.1.6	Real Time Clock: added the function of synchronizing PC time to the HMI.
		Table 27.1.7	Print: added the setting options of File read address, Save in, and String.

<b>Release date</b>	<b>Version</b>	<b>Chapter</b>	<b>Revision contents</b>
December, 2021	V2.0 (Second edition)	Table 27.1.8	<p>Default:</p> <p>Added the options of Use Fallback Font and Top Priority.</p> <p>Added the default Style options.</p> <p>Added the Font Smoothing and Apply to all options for the elements.</p>
		Table 27.1.10	Added the Boot Delay Screen function.
		Table 27.1.11	<p>Network Settings:</p> <p>Added the switch of daylight saving time.</p> <p>Added the option of Enable OPC UA.</p>
		Table 27.1.15	Multi-language settings: added system languages French, Russian, and Turkish.
		Table 27.1.16	<p>Multi-language Settings: added Japanese (only halfwidth).</p> <p>Added the Default Input option.</p>
		Table 27.1.17	Added the Industry application option.
		27.3	Added more model options and non-volatile / import / export destinations for transition in the Change Model function.
		27.4	Added software interface languages: Japanese, Korean, Turkish, Russian, Spanish, and French.
		28.1	Modified the interface of the Tag Table.
		28.6	Modified the Text Bank interface and it now supports the .xls format.
		28.8	Added Section 28.8 Custom-Keypad.
		28.9	Added Section 28.9 Audio Output setting.
		28.10	Added Section 28.10 Modbus TCP mapping table.
		28.11	Added Section 28.11 Font Management.

Release date	Version	Chapter	Revision contents
December, 2021	V2.0 (Second edition)	Appendix A	Modified the way to enter the System Screen. Added the System Screen directory. Added the System Language options on the MISC page. Added the VNC port setting on the Network App page. Removed the Multi-Screen File function on the File Manager page. The AS models now support PLC file download.
May, 2018	V1.0 (First edition)	ALL	-