

Chapter 15 Sampling

This chapter describes the sampling components that the DOPSoft software provides and how to operate History Setup.

- ◆ Classification of sampling components:

 Sampling		Historical Trend Graph
		Historical Data Table
		Historical Event Table

Table 15-1-1 Classification of sampling components

- ◆ Common properties of sampling components

History Elements	Read Address	Write Address	Style (Border Color/ Grid Color/ Grid number in Horizontal/ Foreground Color/ Background Color/ Curve Field)	Buffer Number	Time Format/ Date Format/ Show Color	Display Time/Date Labels	Global Range	Data No./ Min. Value/ Max. Value/ Line Size/ Line Color
Historical Trend Graph	◎		◎	◎	◎	◎	◎	◎
Historical Data Table	◎		◎ (Only border and Background Colors)	◎	◎			◎ (Only data no.)
Historical Event Table	◎		◎ (Only border and Background Colors)	◎	◎			◎ (Only data no.)

History Elements	History Buffer Setup	Set Scale	Min. Value/Max. Value	Data Type/ Data Format	Integer Digits/ Fractional Digits	Display High value/Display Low value	Column Counts/ Column Width/ Leading Zero	State
Historical Trend Graph	◎	◎	◎	◎	◎	◎		
Historical Data Table	◎			◎	◎		◎	
Historical Event Table	◎			◎				◎

Table 15-1-2 Common properties of sampling components

15-1 History Setup

We will explain how to use the History Setup function before describing the sampling components. The History Setup is used to set the properties such as address, length of the data type, sampling points, trigger source, whether to record the time and date, whether to store the data in an external device or output a file to the CSV file. The History data that the user edited will be run using the formula provided by the software. The size data calculated will be stored in the preset retained area. If the data are stored in HMI, the size of the History varies depending on the HMI model. For more information, refer to the Hardware Specifications in the HMI Installation Manual for the description of the non-volatile internal memory. If the data are stored in an external device (such as USB Disk, SD Card), the size of that device prevails.

Two log files are generated when history data are downloaded to HMI: DAT and CSV.

1. DAT file formulas

Each history data is stored as a Hxxxx.dat file. xxxx is the ordinal number of the history data record. Each.dat file has the following capacity.

$$\frac{\{[6\text{Bytes}(a) + 2\text{Bytes}(b)] \times N(c)\}}{1024 \times 1024} = \text{Actual file size MBytes}$$

a	Time/date data
b	Data type
c	Sample number

Additional history data will occupy extra header size.

$$\{8\text{Bytes}(a)\} \times N(b) = \text{Actual file size Bytes}$$

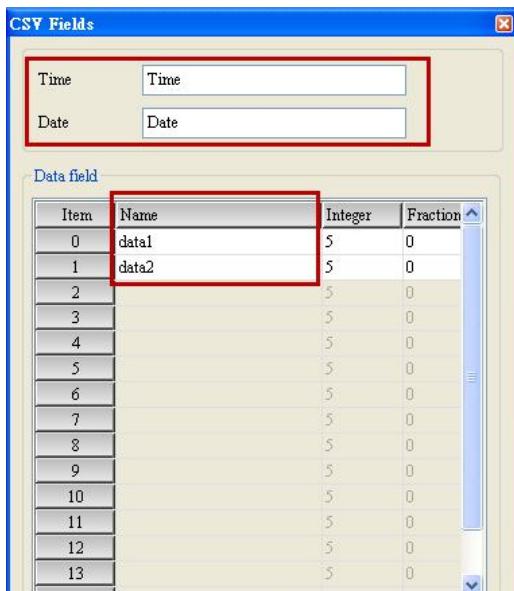
a	Header of each history data
b	Sample number

2. CSV file formulas

CSV file formulas are allocated by dynamic. According to every word is 2 byte, and every item have to separate by “,” then it also calculate 2 byte. Every rows ends also need 0x0D and 0x0A command that it calculate 4 byte.

As below will illustration how to calculate CSV file size.

■ Topic rows



For example illustrate how to calculate topic raw data size.

- Every word occupied 2 bytes (Word * 2 bytes)

Header	Time Name (Time)	,	Date Name (Date)	,	Data field Name (Data1)	Ends
2 Bytes	8 Bytes	2 Bytes	8 Bytes	2 Bytes	10 Bytes	4 Bytes
Total 36 Bytes						

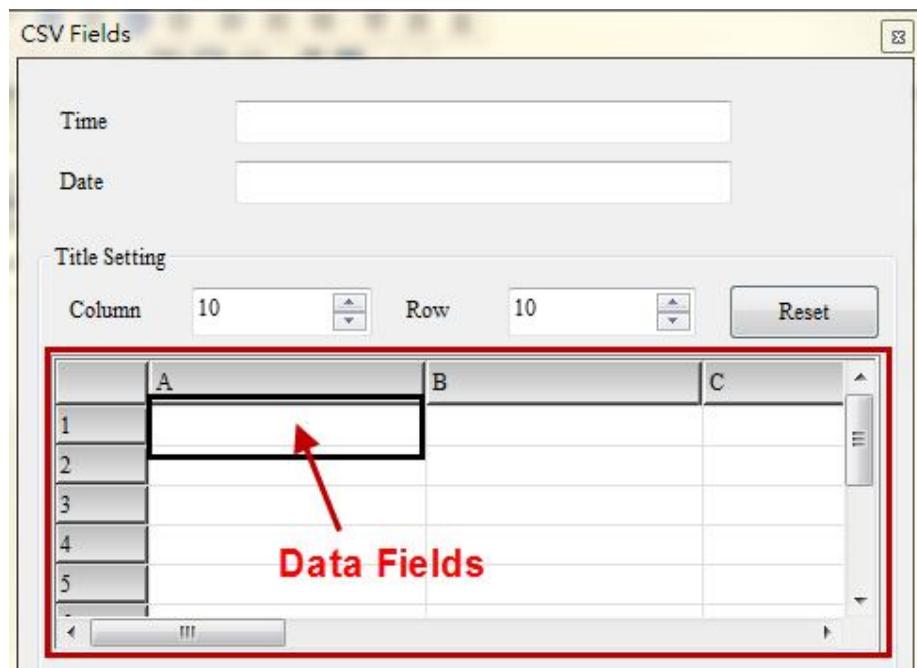
- Every word occupied 2 bytes (Word * 2 bytes)

Header	Time Name (Time)	,	Date Name (Date)	,	Data field Name (資料 1)	Ends
2 Bytes	4 Bytes	2 Bytes	4 Bytes	2 Bytes	6 Bytes	4 Bytes
Total 24 Bytes						

- Every word occupied 2 bytes (Word * 2 bytes)

Header	Time Name (Time)	,	Date Name (Date)	,	Data field Name (Data 1)	Data field Name (Data 2)	Ends
2 Bytes	4 Bytes	2 Bytes	4 Bytes	2 Bytes	6 Bytes	6 Bytes	4 Bytes
Total 30 Bytes							

■ Data Fields



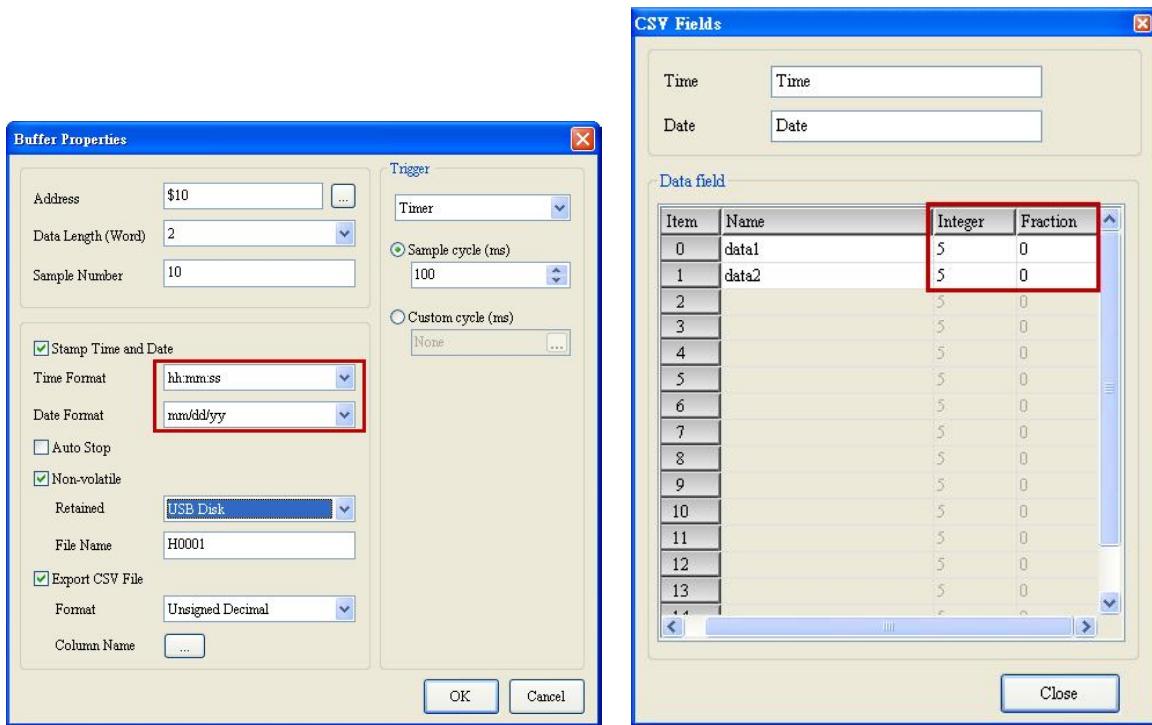
CSV fields supports up to 10* columns and 10* rows.

Each data field supports 128 Bytes and each word occupies 2 Bytes.

- Calculating method: each word occupies 2 Bytes (word count* 2 Bytes).
- Column* row = 2*2

A1 Setting value	CSV Separator	B1 Setting value	CSV Separator	A2 Setting value	CSV Separator	B2 Setting value	New line
123	,	Delta	,	abc	,	QWE	
6 Bytes	2 Bytes	8 Bytes	2 Bytes	6Bytes	2 Bytes	6 Bytes	4 Bytes
36 Bytes in total							

■ Data rows



- Every word occupied 2 bytes (Word * 2 bytes)

Time Format (hh:mm:ss)	,	Date Format (mm/dd/yyyy)	,	Integer (5)	Fraction (0)	Ends
16 Bytes	2 Bytes	20 Bytes	2 Bytes	10 Bytes	0 Bytes	4 Bytes
Total 54 Bytes						

- Every word occupied 2 bytes (Word * 2 bytes)

Time Format (hh:mm)	,	Date Format (mm.dd)	,	Integer (4)	Fraction (1)	Ends
10 Bytes	2 Bytes	10 Bytes	2 Bytes	8 Bytes	2 Bytes	4 Bytes
Total 38 Bytes						

- Every word occupied 2 bytes (Word * 2 bytes)

Time Format (N/A)	,	Date Format (N/A)	,	Data1		Data2		Ends
				Integer (4)	Fraction (1)	Integer (3)	Fraction (2)	
0 Bytes	2 Bytes	0 Bytes	2 Bytes	8 Bytes	8 Bytes	6 Bytes	4 Bytes	4 Bytes
Total 34 Bytes								

Every data rows data size have to multiplied by sample number N(a).

The CSV file size is equal to topic rows plus data rows multiplied by sample number.

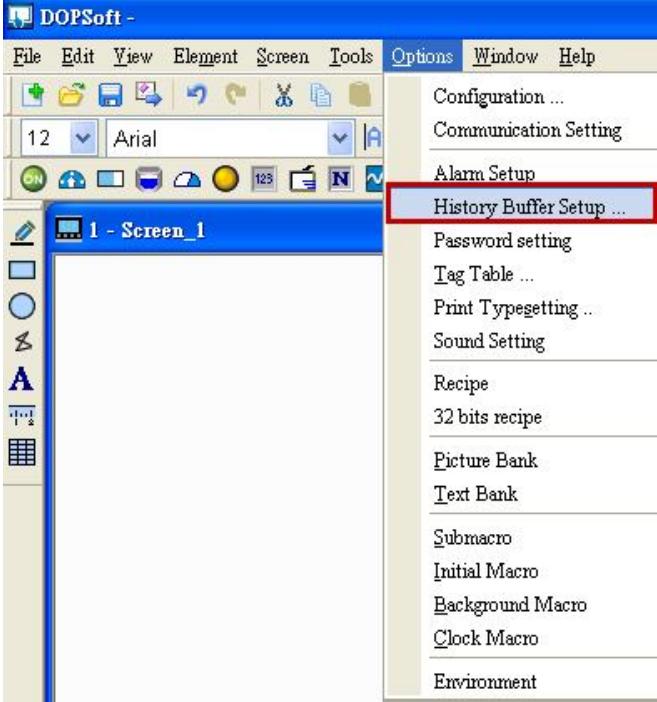
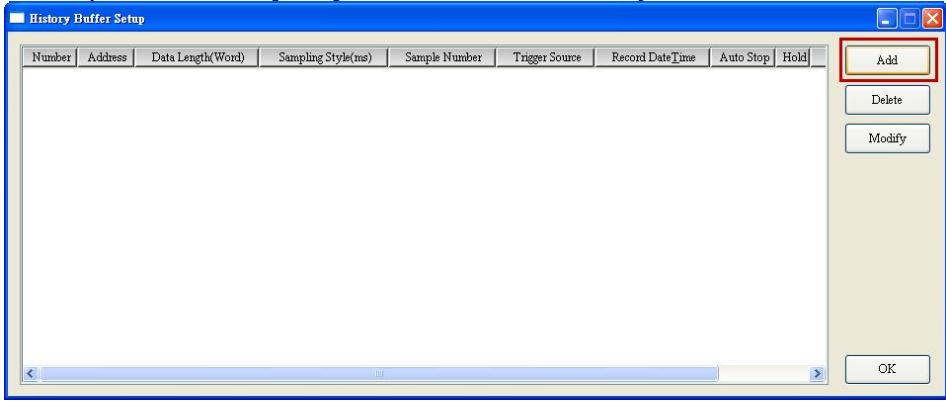
The formula is as below :

$$\frac{(\text{Topic row size Bytes} + \text{Data row size Bytes} + \text{Data field Bytes}) \times N(a)}{1024 \times 1024} = \text{CSV file size MBytes}$$

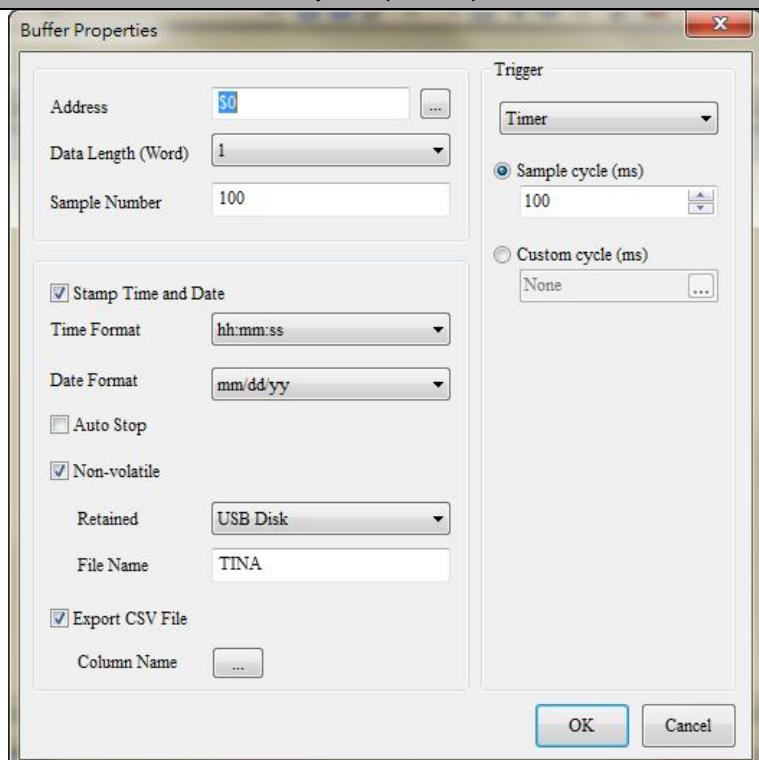
a	Sample number
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This chapter will introduce all history elements used function; it includes History buffer setup, Historical Trend Graph, Historical data table, Historical Event table.

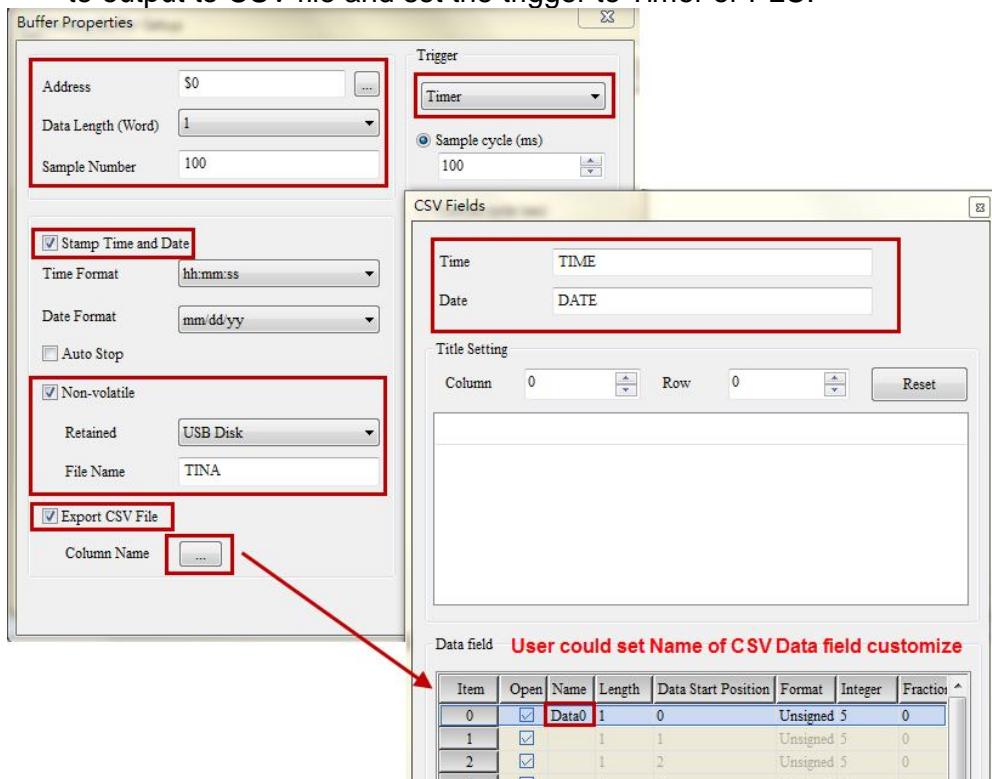
Please refer to as below table 15-1-3 History Buffer setup example.

<h3 style="text-align: center;">History Setup Example</h3> <p style="text-align: center;">Table 15-1-3 History Setup Example</p>	
History Setup steps	<ul style="list-style-type: none"> ➤ Step 1: Enter [Options] → [History Setup] to set up the property of the history data.  <ul style="list-style-type: none"> ➤ Step 2: Click the [Add] button to add a History datum.  <ul style="list-style-type: none"> ➤ Step 3: Set the buffer property as below:

History Setup Example
Table 15-1-3 History Setup Example



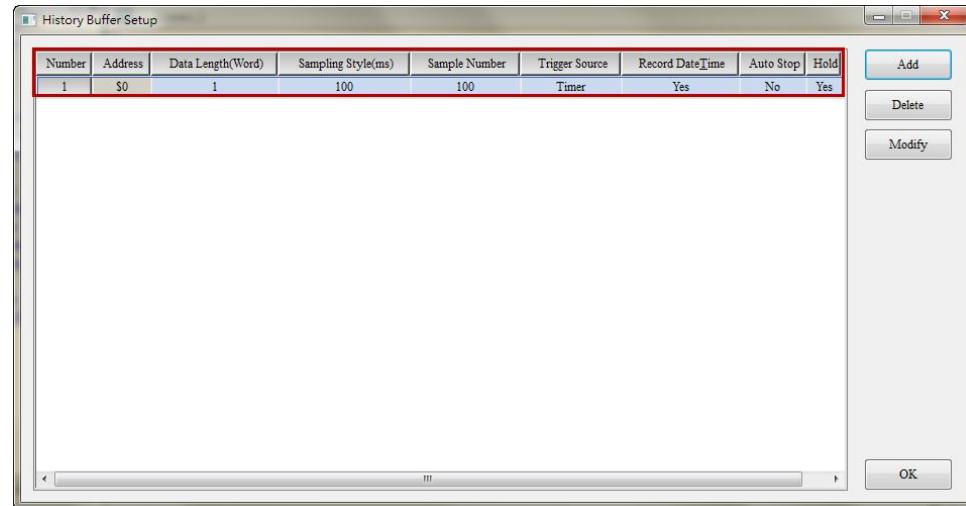
- Set the address and whether to record the time and date. Set the non-volatile data location to HMI, USB Disk or SD Card. Set whether to output to CSV file and set the trigger to Timer or PLC.



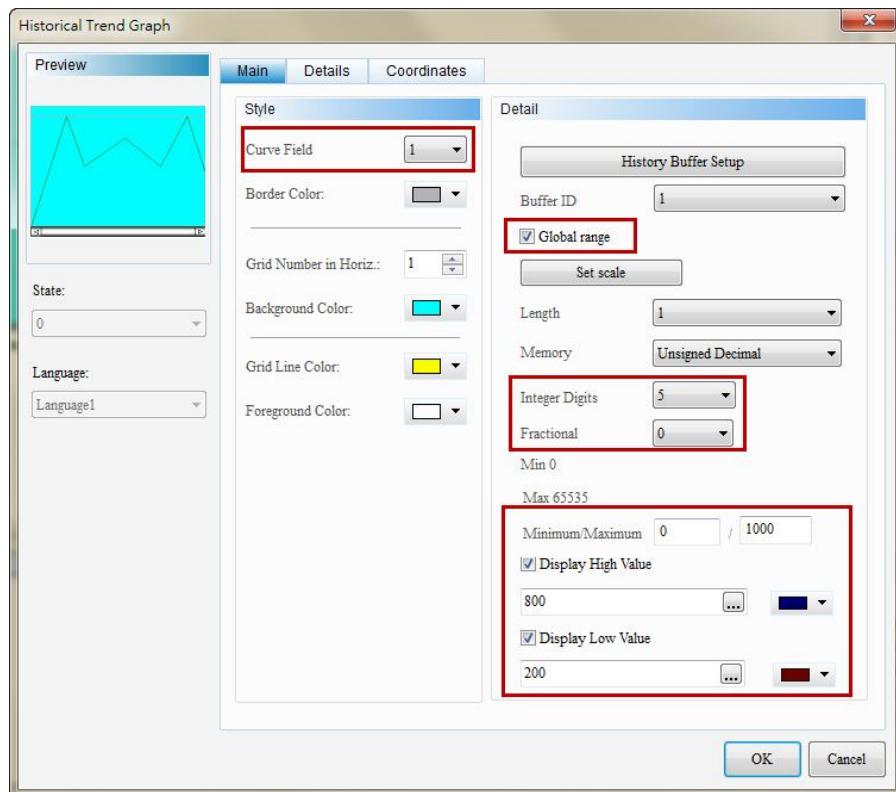
History Setup Example

Table 15-1-3 History Setup Example

- Step 4: After all the above-mentioned settings are completed, a datum is added to the buffer.

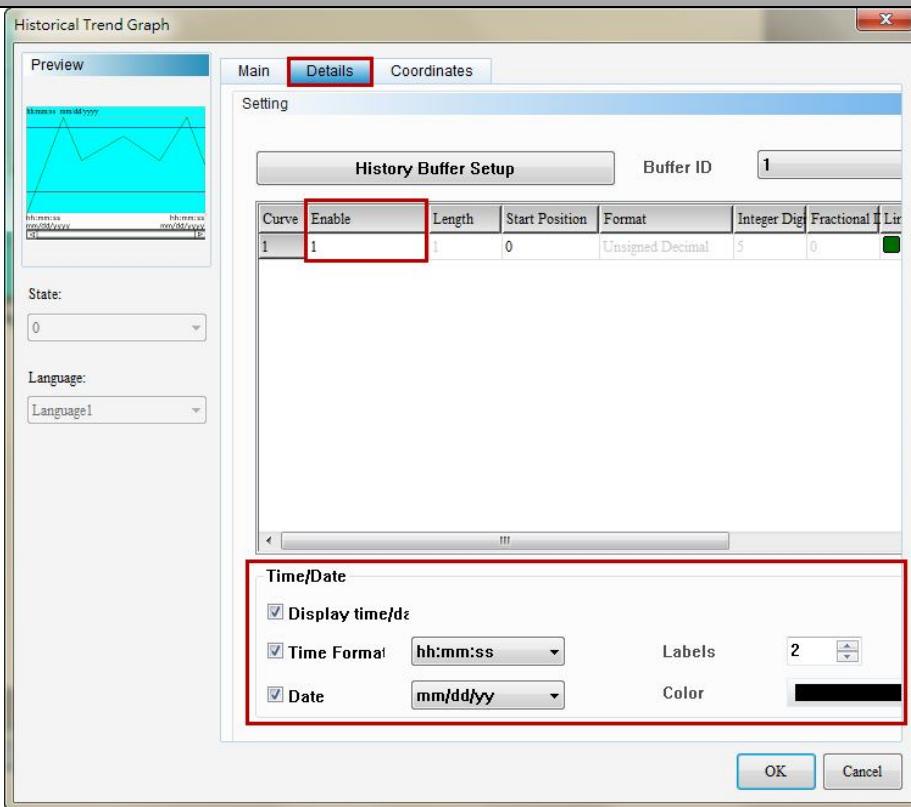


- Step 5: Create the element of historical trend graph and setup its property, such as time/date display, integer digits and fractional and whether to use global range. Then, go to details setting range to set curve 1 as 1 to access the data.

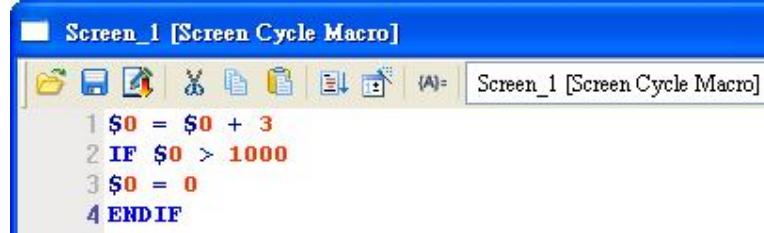


History Setup Example

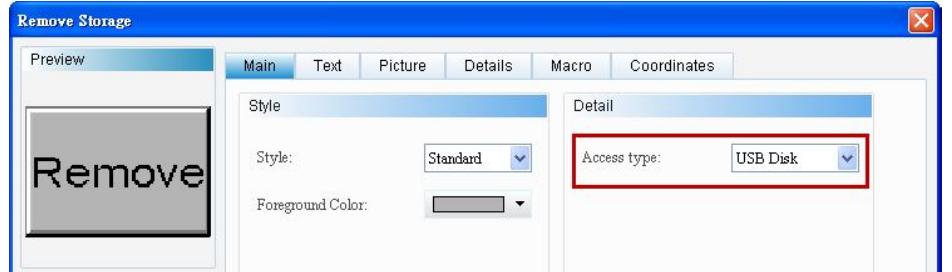
Table 15-1-3 History Setup Example

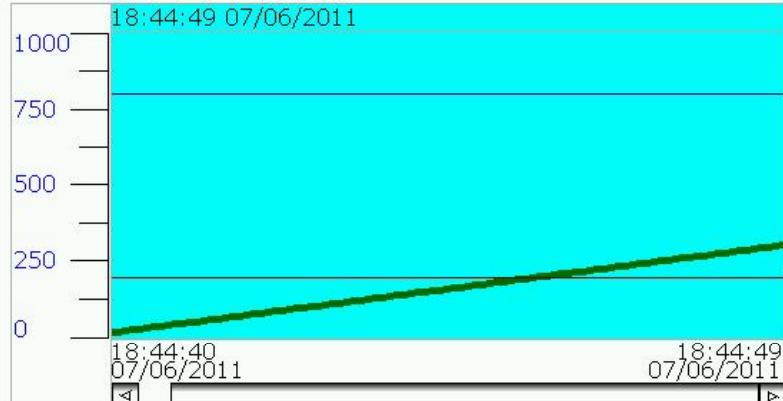


- Step 6: Enter [Screen] → [Screen Cycle Macro]. Edit the action to allow \$0 increase automatically.



- Step 7: Create the Remove Storage button and set the Access Type to USB Disk. This action ensures writing the data to the USB Disk correctly. If the USB Disk is pulled out without executing the removal action, the data may be read/written incorrectly leading to corruption of the saved file.



History Setup Example	
Table 15-1-3 History Setup Example	
	<ul style="list-style-type: none"> ➤ After the setting of the History and the creation of the Historical Trend Graph and Remove Storage components are completed, perform the compilation and download the data to HMI. Since the retained area in this example is set to USB Disk, H.had and TINA.dat will be generated and stored in the USB Disk when HMI reads the screen. The History function will then execute the action in the Screen Cycle Macro to modify the data, and store on the USB Disk in CSV file format. To stop the storage, press the Remove button and remove the external device to ensure the correctness of the data.
Execution Results	 <p>The screenshot shows two separate windows side-by-side. Both windows have a red header bar and a white body. The top window's header says "HMI-000\History\H.had" and contains the word "Creating" in red text. The bottom window's header says "HMI-000\History\TINA.dat" and also contains the word "Creating" in red text.</p>  <p>The screenshot shows a historical trend graph with a cyan background. A single black line series starts at the origin (0, 0) and trends upwards to approximately (18:44:49, 700). The y-axis has major ticks at 0, 250, 500, 750, and 1000. The x-axis shows two time points: 18:44:40 07/06/2011 and 18:44:49 07/06/2011. A horizontal scrollbar is visible at the bottom of the graph area.</p>

History Setup Example

Table 15-1-3 History Setup Example

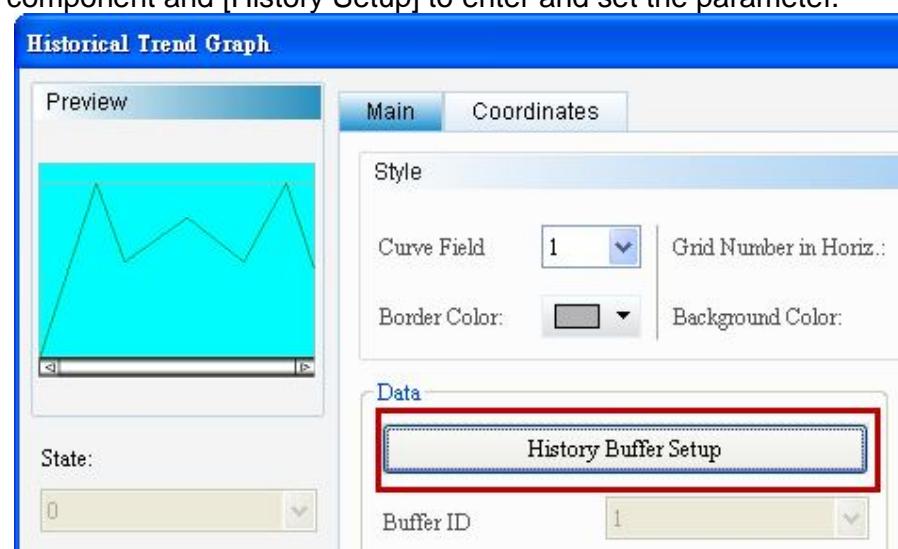
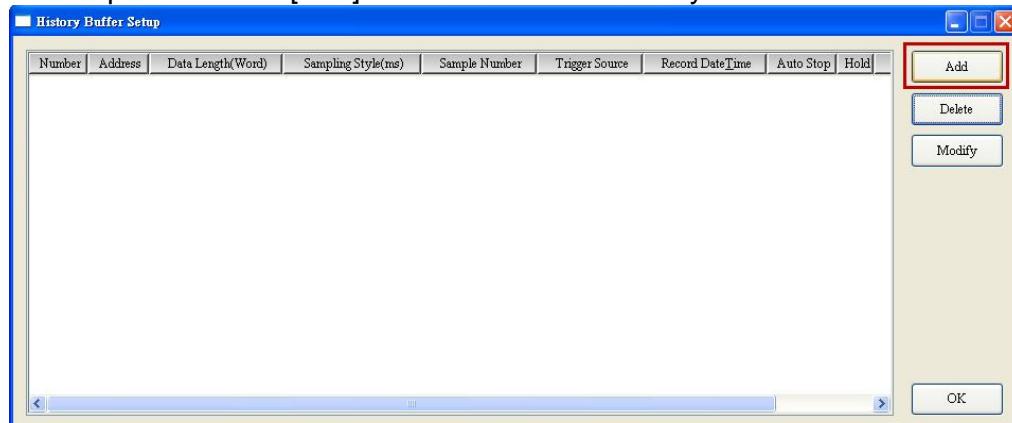
- Press the Remove button and the following message appears to inform the user that the USB Disk has been removed.



- The user can insert the USB Disk in 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 TINA. The path to save all CSV files is HMI\HMI-000\CSV\xxxxxxx.CSV.

	A	B	C
1	TIME	DATE	data0
2	14:37:46	07/06/2011	483
3	14:37:46	07/06/2011	486
4	14:37:46	07/06/2011	489
5	14:37:46	07/06/2011	495
6	14:37:47	07/06/2011	498
7	14:37:47	07/06/2011	498
8	14:37:47	07/06/2011	501
9	14:37:47	07/06/2011	504
10	14:37:47	07/06/2011	507
11	14:37:47	07/06/2011	510
12	14:37:48	07/06/2011	513
13	14:37:48	07/06/2011	519
14	14:37:48	07/06/2011	522
15	14:37:48	07/06/2011	525
16	14:37:48	07/06/2011	528
17	14:37:48	07/06/2011	531
18	14:37:49	07/06/2011	534
19	14:37:49	07/06/2011	537
20	14:37:49	07/06/2011	540
21	14:37:49	07/06/2011	543
22	14:37:49	07/06/2011	543
23	14:37:50	07/06/2011	549
24	14:37:50	07/06/2011	552
25	14:37:50	07/06/2011	552

Refer to the Historical Trend Graph example in Table 15-1-4.

<h3 style="text-align: center;">Historical Trend Graph Example</h3> <p style="text-align: center;">Table 15-1-4 Historical Trend Graph Example</p>	
Add Historical Trend Graph Component	<ul style="list-style-type: none"> ➤ Step 1: Create the Historical Trend Graph component. Double click this component and [History Setup] to enter and set the parameter.  <ul style="list-style-type: none"> ➤ Step 2: Click the [Add] button to add new history data.  <ul style="list-style-type: none"> ➤ Step 3: Set the Address to \$3765, Data length to 2, sample number to 100. Check Record Time/Date and use the default H0001 as the file name. Set the Non-volatile Data Location to USB Disk and check Output to CSV File. Set the Field Name and define the Trigger as Timer.

Historical Trend Graph Example
Table 15-1-4 Historical Trend Graph Example

User could set data name, Integer and Fraction of CSV data field.

Item	Open	Name	Length	Data Start	Format	Integer	Fraction
0	<input checked="" type="checkbox"/>	data0	1	0	Unsigned De_5	0	0
1	<input checked="" type="checkbox"/>	data1	1	1	Unsigned De_5	0	0
2	<input checked="" type="checkbox"/>		1	2	Unsigned De_5	0	0

Step 4: After all the above-mentioned settings are completed, a datum is added to the buffer.

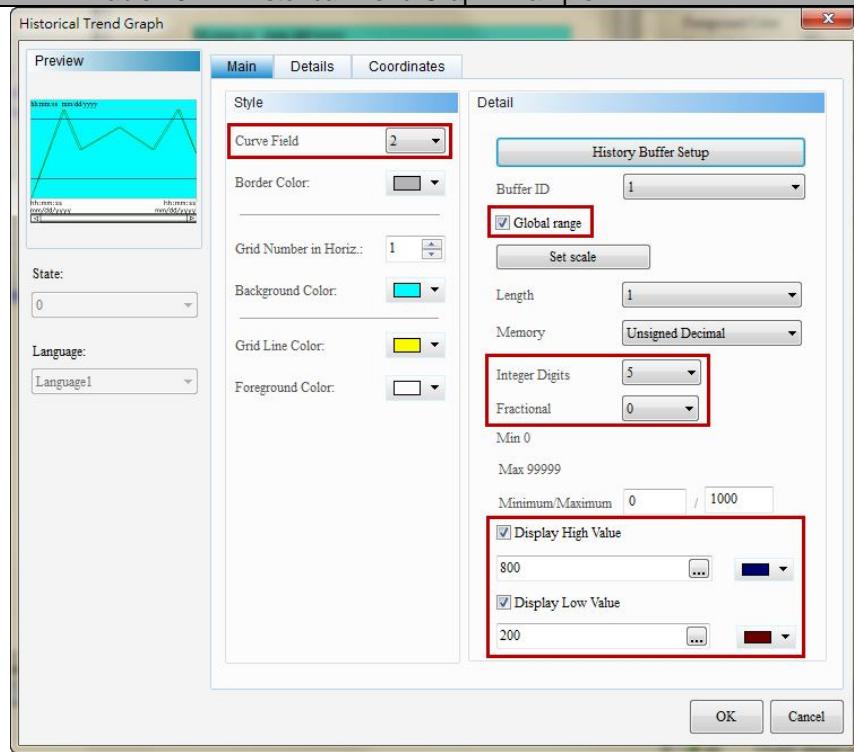
History Buffer Setup

Number	Address	Data Length(Word)	Sampling Style(ms)	Sample Number	Trigger Source	Record Date/Time	Auto Stop	Hold
1	\$3765	2	100	100	Timer	Yes	No	Yes

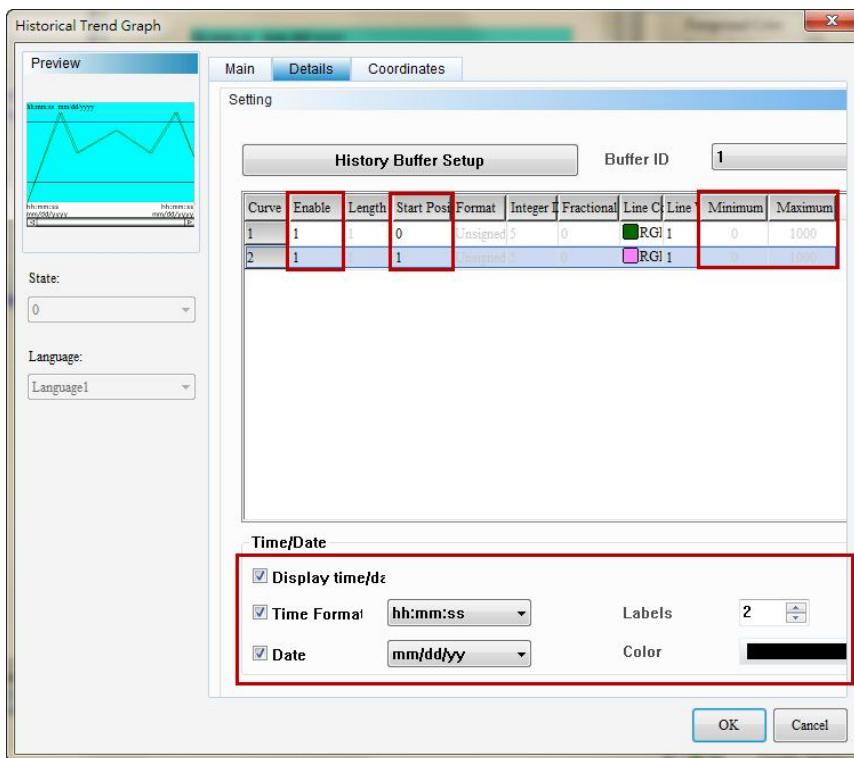
Step 5: Then configure other settings of the Historical Trend Graph, such as time/date display, integer and fractional and whether to use the global range. Also, go to Details Setting to set 1 as activation of curvilinear data capturing. Since you have already checked to use global range, it is unable to setup minimum and maximum value for each curve.

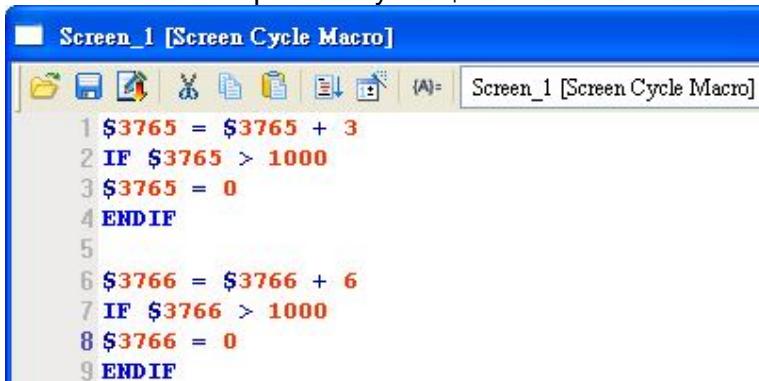
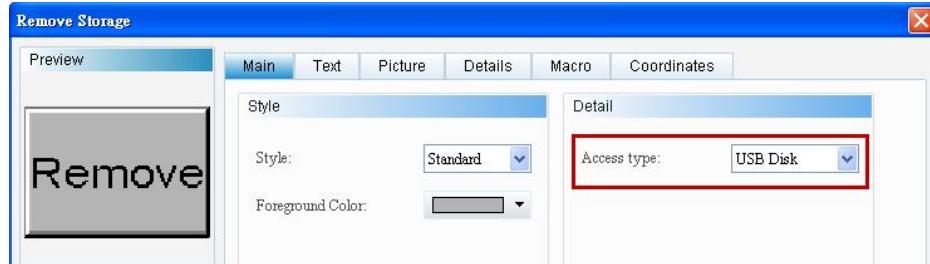
Historical Trend Graph Example

Table 15-1-4 Historical Trend Graph Example

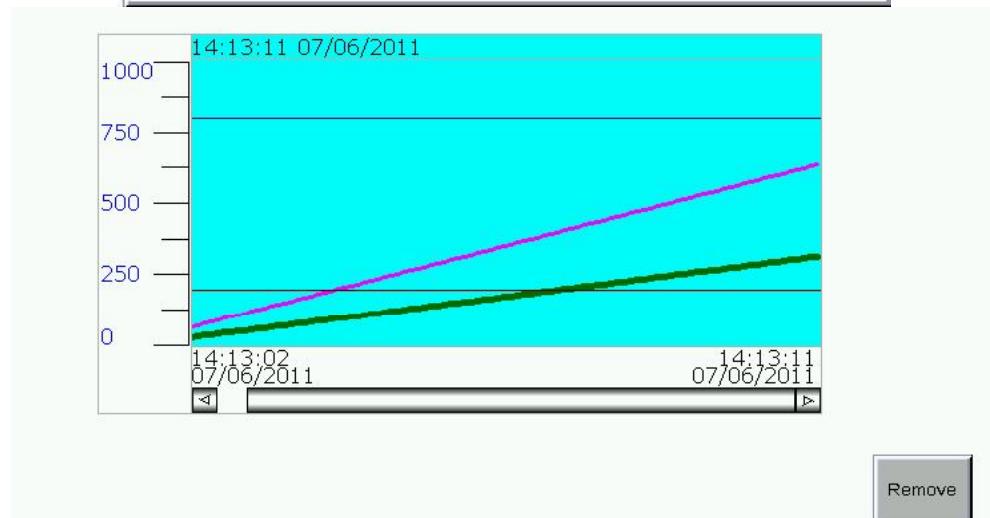


In Details Setting page, set 1 as activation of curvilinear data capturing. Then, set the start position of curve 1 and 2 to 0 and 1, respectively. Since you have already checked to use global range, it is unable to setup minimum and maximum value for each curve.



Historical Trend Graph Example Table 15-1-4 Historical Trend Graph Example	
	<ul style="list-style-type: none"> ➤ Step 6: Enter [Screen] → [Screen Cycle Macro]. Edit the action to modify the data in the History and store it in the external storage device USB Disk. Since two Words are read for the Data Type, two data locations are available for access and, thus, there is a \$3766 data address in the macro in addition to the previously set \$3765 address.  <ul style="list-style-type: none"> ➤ Step 7: Create the Remove Storage button and set the Access Type to USB Disk. This action ensures writing the data to the USB Disk correctly. If the USB Disk is pulled out without executing the removal action, the data may be read/written incorrectly leading to corruption of the saved file. 
Execution Results	<ul style="list-style-type: none"> ➤ After the creation of the History and Remove Storage components is completed, perform the compilation and download the data to HMI. Since the retained area in this example is set to USB Disk, H.had and H0001.dat will be generated and stored in the USB Disk when HMI reads the screen. The History function will then execute the action in the Screen Cycle Macro to modify the data, and store it on the USB Disk in CSV file format. To stop the storage, press the Remove button and remove the external device to ensure the correctness of the data. 

Historical Trend Graph Example
Table 15-1-4 Historical Trend Graph Example



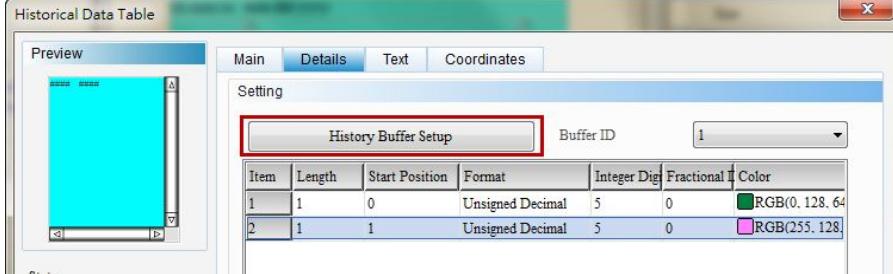
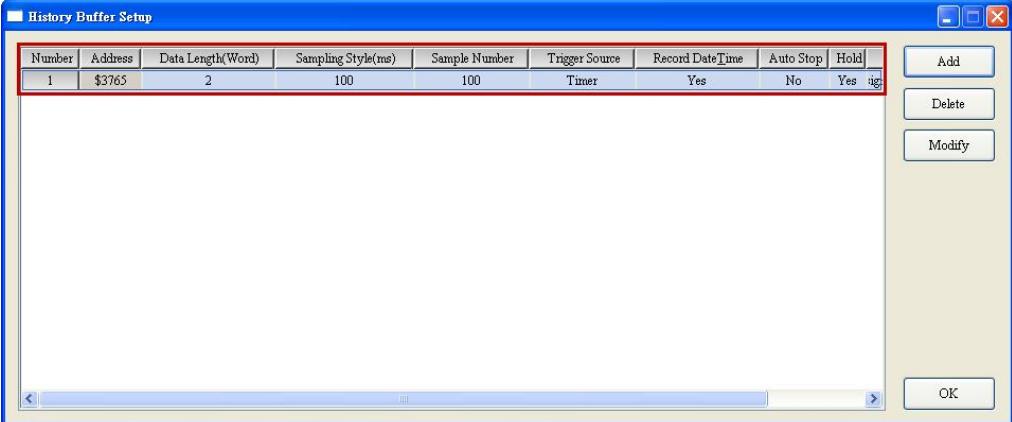
- Press the Remove button and the following message appears to inform the user that the USB Disk has been removed.



- The user can insert the USB Disk in 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. The path to save all CSV files is HMI\HMI-000\CSV\filename.CSV.

Historical Trend Graph Example				
Table 15-1-4 Historical Trend Graph Example				
	A	B	C	D
1	TIME	DATE	data0	data1
2	11:45:32	07/06/2011	669	336
3	11:45:32	07/06/2011	672	342
4	11:45:32	07/06/2011	675	348
5	11:45:32	07/06/2011	678	354
6	11:45:33	07/06/2011	681	360
7	11:45:33	07/06/2011	684	366
8	11:45:33	07/06/2011	690	378
9	11:45:33	07/06/2011	693	384
10	11:45:33	07/06/2011	693	384
11	11:45:33	07/06/2011	696	390
12	11:45:34	07/06/2011	702	402
13	11:45:34	07/06/2011	702	402
14	11:45:34	07/06/2011	705	408
15	11:45:34	07/06/2011	708	414
16	11:45:34	07/06/2011	711	420
17	11:45:34	07/06/2011	714	426
18	11:45:35	07/06/2011	717	432
19	11:45:35	07/06/2011	720	438
20	11:45:35	07/06/2011	723	444
21	11:45:35	07/06/2011	726	450
22	11:45:35	07/06/2011	729	456
23	11:45:35	07/06/2011	732	462
24	11:45:36	07/06/2011	735	468
25	11:45:36	07/06/2011	738	474
26	11:45:36	07/06/2011	744	486

Refer to the Historical Data Table example in Table 15-1-5.

<h3 style="text-align: center;">Historical Data Table Example</h3> <p style="text-align: center;">Table 15-1-5 Historical Data Table Example</p>																																								
Add Historical Data Table Component	<p>The Historical Data Table example is described in conjunction with the Historical Trend Graph example in Table 15-1-4. Use the previously created Historical Trend Graph and perform the settings below.</p> <ul style="list-style-type: none"> ➤ Step 1: Create the Historical Data Table component. Double click this component and click [History Setup]. You can see the data created in Table 15-1-4 Historical Trend Graph Example. Refer to the link.  <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th>Item</th> <th>Length</th> <th>Start Position</th> <th>Format</th> <th>Integer Digits</th> <th>Fractional Digits</th> <th>Color</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>0</td> <td>Unsigned Decimal</td> <td>5</td> <td>0</td> <td>RGB(0, 128, 64)</td> </tr> <tr> <td>2</td> <td>1</td> <td>1</td> <td>Unsigned Decimal</td> <td>5</td> <td>0</td> <td>RGB(255, 128, 0)</td> </tr> </tbody> </table>  <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Number</th> <th>Address</th> <th>Data Length(Word)</th> <th>Sampling Style(ms)</th> <th>Sample Number</th> <th>Trigger Source</th> <th>Record Date/Time</th> <th>Auto Stop</th> <th>Hold</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$3765</td> <td>2</td> <td>100</td> <td>100</td> <td>Timer</td> <td>Yes</td> <td>No</td> <td>Yes</td> </tr> </tbody> </table> <ul style="list-style-type: none"> ➤ Step 2: Set the Column Counts to 2 (corresponding to the Data Type 2 of the History). When the Column Counts 2 is selected, relevant parameters of Data 1 and Data 2 must be set up. Set the data location of Data 1 to 0 and the data location of Data 2 to 1. Set the color for the value to be displayed. Check Display Time/Date. 	Item	Length	Start Position	Format	Integer Digits	Fractional Digits	Color	1	1	0	Unsigned Decimal	5	0	RGB(0, 128, 64)	2	1	1	Unsigned Decimal	5	0	RGB(255, 128, 0)	Number	Address	Data Length(Word)	Sampling Style(ms)	Sample Number	Trigger Source	Record Date/Time	Auto Stop	Hold	1	\$3765	2	100	100	Timer	Yes	No	Yes
Item	Length	Start Position	Format	Integer Digits	Fractional Digits	Color																																		
1	1	0	Unsigned Decimal	5	0	RGB(0, 128, 64)																																		
2	1	1	Unsigned Decimal	5	0	RGB(255, 128, 0)																																		
Number	Address	Data Length(Word)	Sampling Style(ms)	Sample Number	Trigger Source	Record Date/Time	Auto Stop	Hold																																
1	\$3765	2	100	100	Timer	Yes	No	Yes																																

Historical Data Table Example

Table 15-1-5 Historical Data Table Example

Number	Address	Data Length(Word)
1	\$3765	2

It is corresponding to Data Length of History Buffer Setup

Item	Length	Start Position	Format	Integer Digits	Fractional Digits	Color
1	1	0	Unsigned Decimal	5	0	RGB(0, 128, 64)
2	1	1	Unsigned Decimal	5	0	RGB(255, 128)

Step 3: The created Historical Data Table is shown below.

Historical Data Table Example

Table 15-1-5 Historical Data Table Example



- Step 4: Enter [Screen] → [Screen Cycle Macro]. Edit the action to modify the data in the History and store it in the external storage device USB Disk. Since two Words are read for the Data Type and the Column Counts is 2, the Historical Data Table will display two columns to read the two data locations.

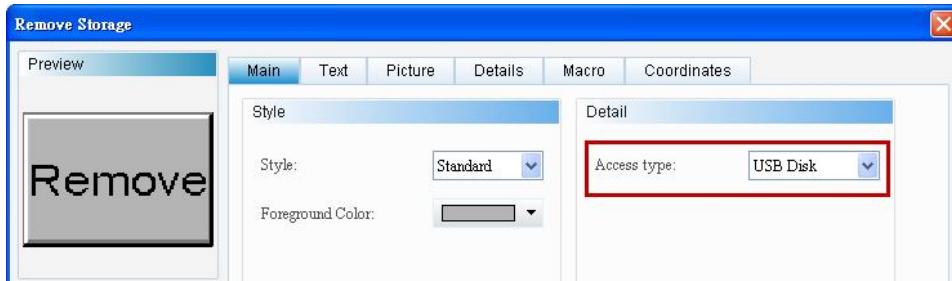
Screen_1 [Screen Cycle Macro]

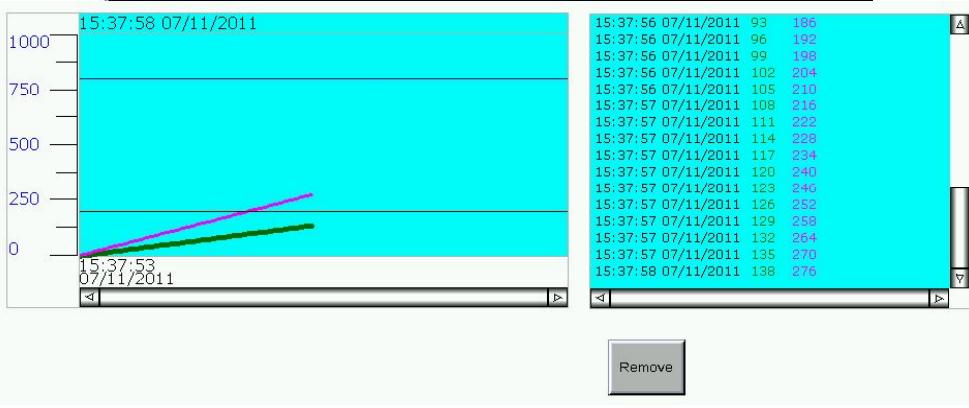
```

1 $3765 = $3765 + 3
2 IF $3765 > 1000
3 $3765 = 0
4 ENDIF
5
6 $3766 = $3766 + 6
7 IF $3766 > 1000
8 $3766 = 0
9 ENDIF

```

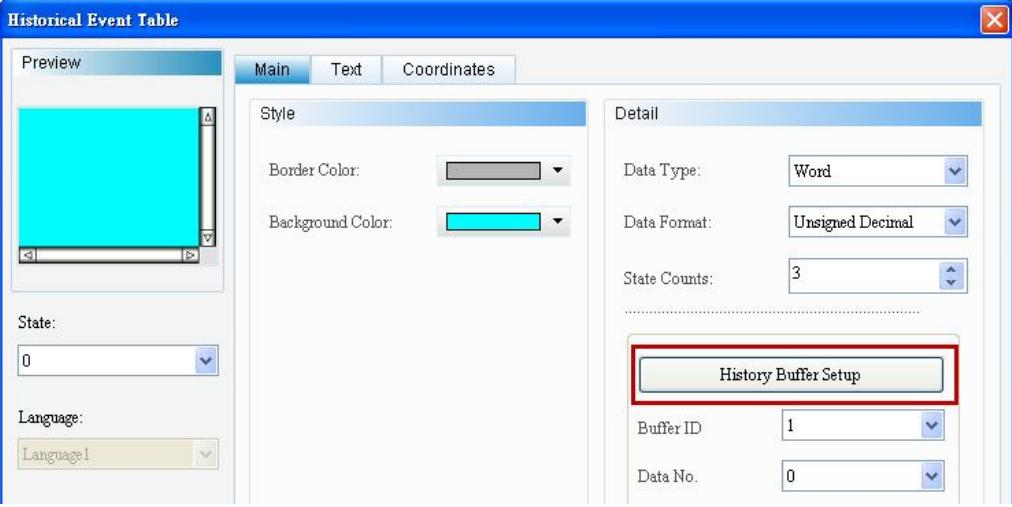
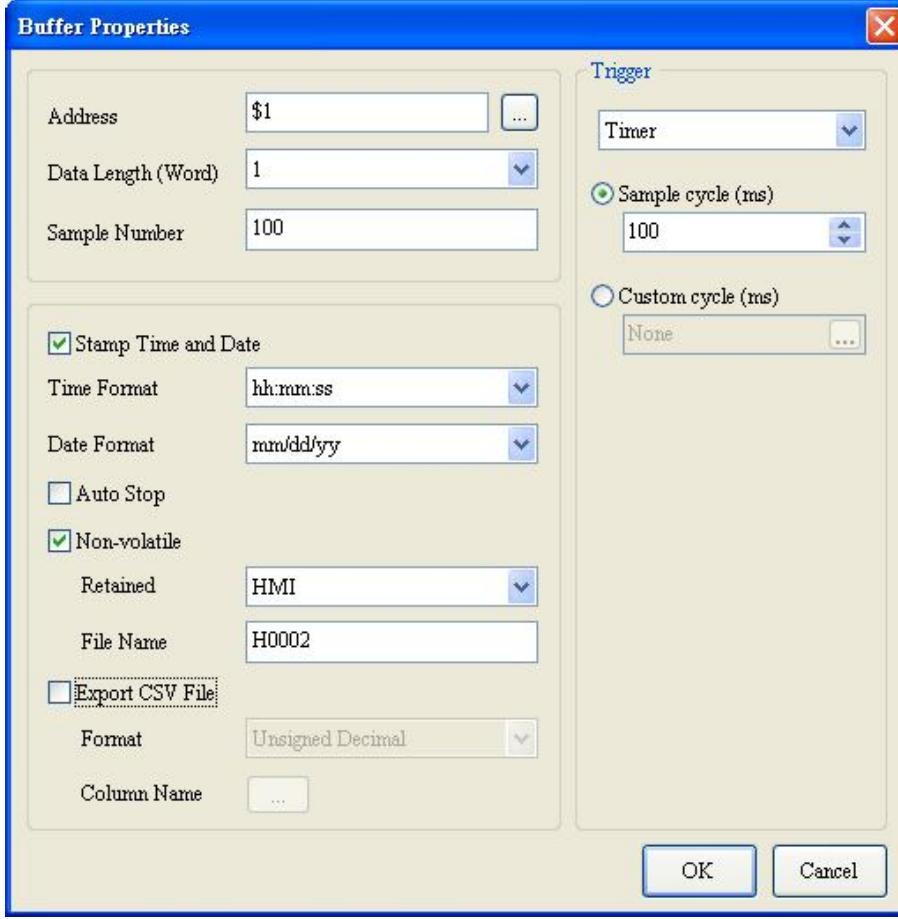
- Step 5: Create the Remove Storage button and set the Access Type to USB Disk. This action ensures writing the data to the USB Disk correctly. If the USB Disk is pulled out without executing the removal action, the data may be read/written incorrectly leading to corruption of the saved file.



Historical Data Table Example Table 15-1-5 Historical Data Table Example	
	<p>➤ After the creation of the History and Remove Storage components is completed, perform the compilation and download the data to HMI. Since the retained area in this example is set to USB Disk, H.had and H0001.dat will be generated and stored in the USB Disk when HMI reads the screen. The History function will then execute the action in the Screen Cycle Macro to modify the data, and stored it in the USB Disk in CSV file format. To stop the storage, press the Remove button and remove the external device to ensure the correctness of the data.</p> 
Execution Results	  <p>➤ Press the Remove button and the following message appears to inform the user that the USB Disk has been removed.</p>



Refer to the Historical Event Table example in Table 15-1-6.

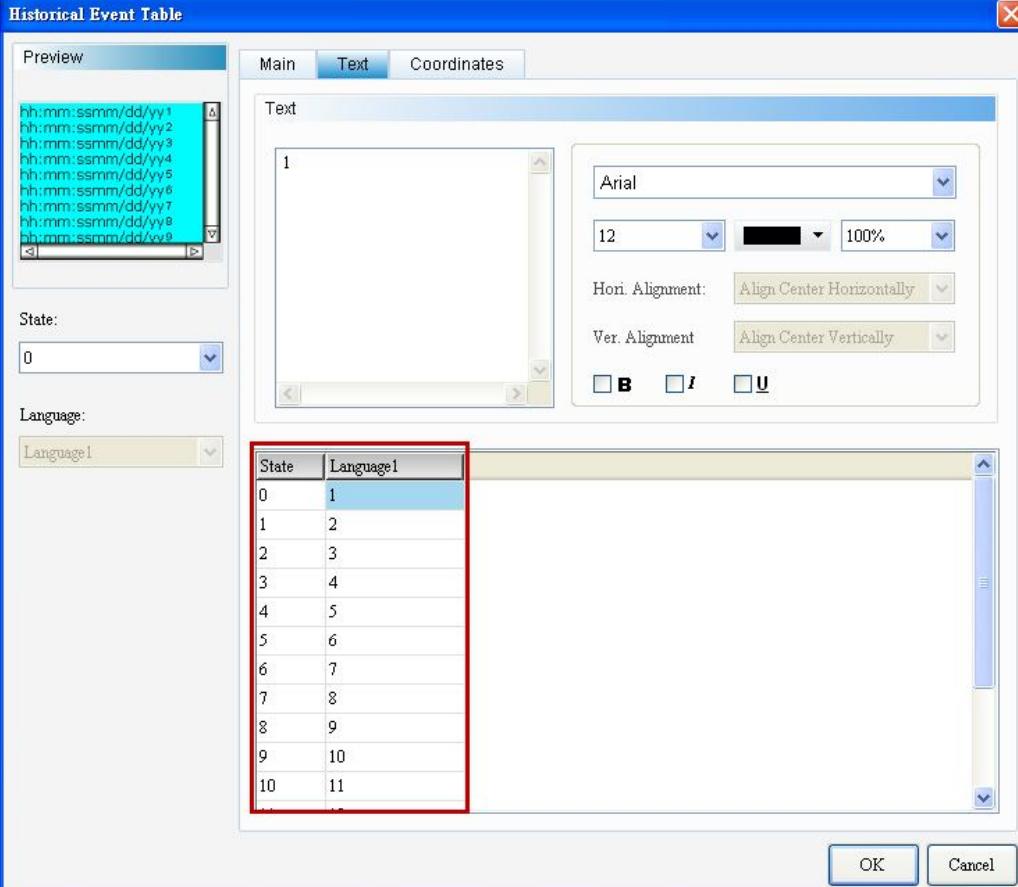
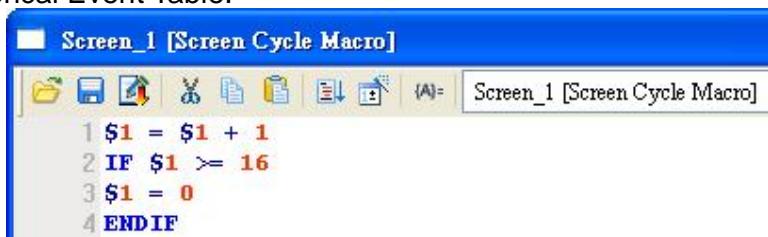
<h3 style="text-align: center;">Historical Event Table Example</h3> <p style="text-align: center;">Table 15-1-6 Historical Event Table Example</p>	
Add Historical Event Table Componen t	<p>➤ Step 1: Create the Historical Event Table component. Double click this component and click [History Setup] to create a new data buffer. Set the Address to 1 and set the Data Type to \$1. Then set the Non-volatile Data Location to HMI.</p>  

Historical Event Table Example

Table 15-1-6 Historical Event Table Example

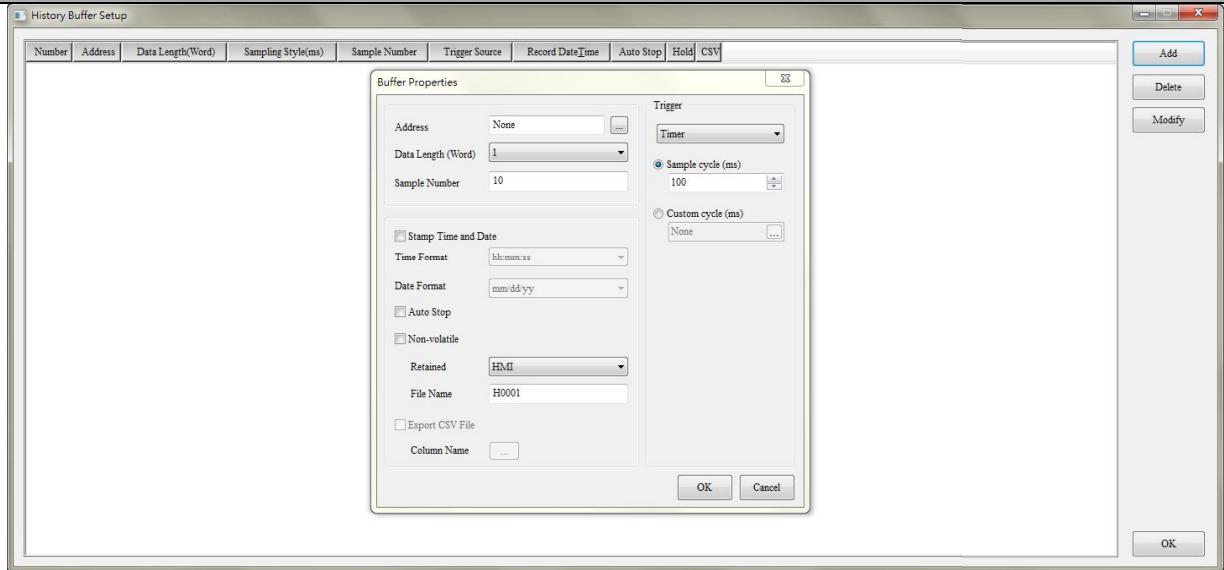
➤ Step 2: Set the Buffer Number to 2 corresponding to the number (2) of the history data buffer. Set the Data Type to Word and the State Counts to 16. Check Display Time/Date.

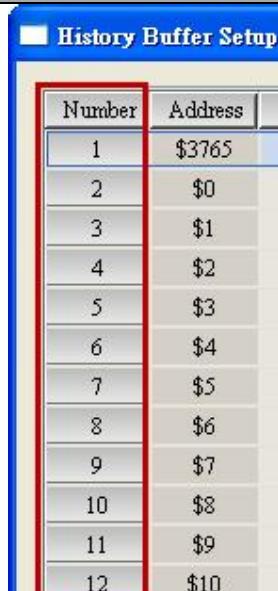
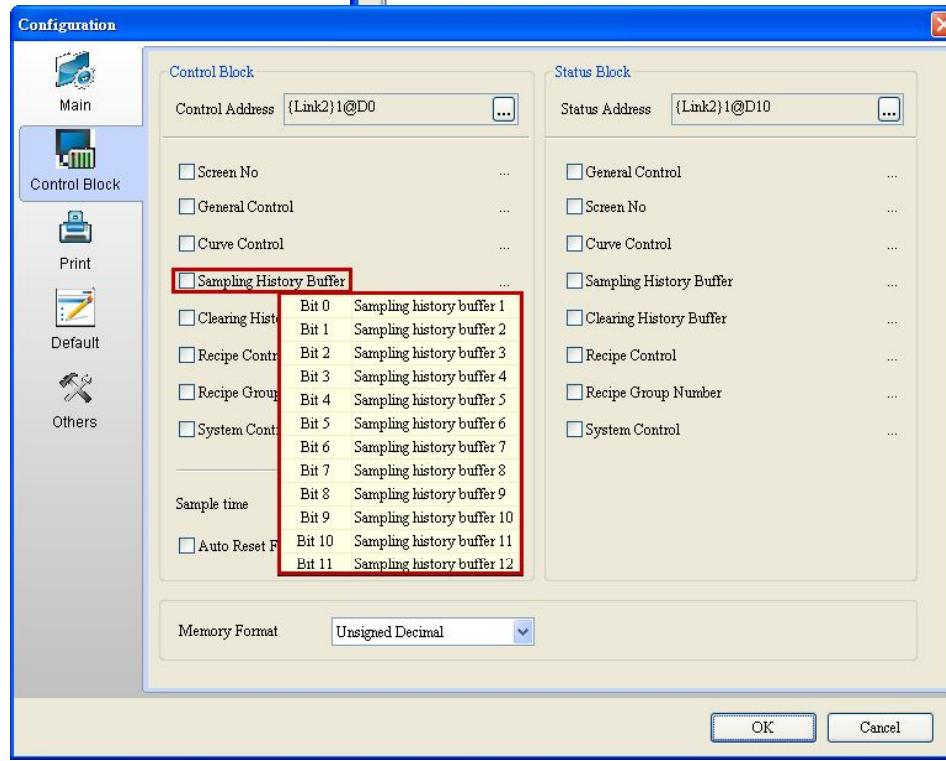
➤ Step 3: Enter the [Text] page to edit the text message to be displayed.

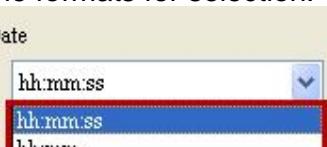
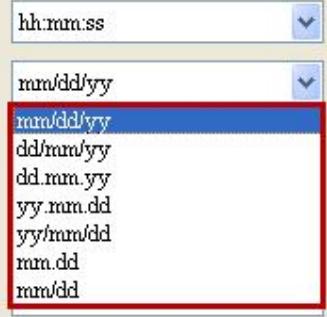
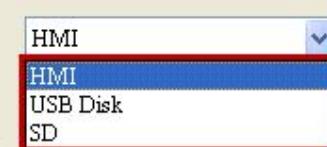
<h3 style="text-align: center;">Historical Event Table Example</h3> <p style="text-align: center;">Table 15-1-6 Historical Event Table Example</p>	
	 <p>The screenshot shows the 'Historical Event Table' dialog box. On the left, there's a preview window showing a list of dates. Below it are dropdown menus for 'State' (set to 0) and 'Language' (set to Language1). The main area contains a table component. The table has two columns: 'State' and 'Language1'. Both columns contain values from 0 to 11. The first row (State 0, Language1 1) is highlighted with a red border.</p>
Execution Results	<ul style="list-style-type: none"> ➤ Step 4: Enter [Screen] → [Screen Cycle Macro]. Edit the action to modify the data in the History and display the user-customized text message in Historical Event Table.  <pre> Screen_1 [Screen Cycle Macro] 1 \$1 = \$1 + 1 2 IF \$1 >= 16 3 \$1 = 0 4 END IF </pre> <p>The screenshot shows the 'Screen_1 [Screen Cycle Macro]' editor. It displays a series of macro commands. Line 1: \$1 = \$1 + 1. Line 2: IF \$1 >= 16. Line 3: \$1 = 0. Line 4: END IF. The code is color-coded, with \$1 in orange and the rest in blue.</p> <ul style="list-style-type: none"> ➤ After the creation of the Historical Event Table component is completed, perform the compilation and download the data to HMI. The Historical Event Table function will then execute the action in the Screen Cycle Macro to modify the data, and display the user-customized text message in this component.

Historical Event Table Example																																								
Table 15-1-6 Historical Event Table Example																																								
	<table><tbody><tr><td>13:55:08 07/12/2011</td><td>12</td><td>▲</td></tr><tr><td>13:55:08 07/12/2011</td><td>13</td><td></td></tr><tr><td>13:55:08 07/12/2011</td><td>14</td><td></td></tr><tr><td>13:55:08 07/12/2011</td><td>15</td><td></td></tr><tr><td>13:55:09 07/12/2011</td><td>16</td><td></td></tr><tr><td>13:55:09 07/12/2011</td><td>1</td><td></td></tr><tr><td>13:55:09 07/12/2011</td><td>2</td><td></td></tr><tr><td>13:55:09 07/12/2011</td><td>3</td><td></td></tr><tr><td>13:55:09 07/12/2011</td><td>4</td><td></td></tr><tr><td>13:55:09 07/12/2011</td><td>5</td><td></td></tr><tr><td>13:55:09 07/12/2011</td><td>6</td><td></td></tr><tr><td>13:55:09 07/12/2011</td><td>7</td><td></td></tr><tr><td>13:55:09 07/12/2011</td><td>8</td><td>▼</td></tr></tbody></table>	13:55:08 07/12/2011	12	▲	13:55:08 07/12/2011	13		13:55:08 07/12/2011	14		13:55:08 07/12/2011	15		13:55:09 07/12/2011	16		13:55:09 07/12/2011	1		13:55:09 07/12/2011	2		13:55:09 07/12/2011	3		13:55:09 07/12/2011	4		13:55:09 07/12/2011	5		13:55:09 07/12/2011	6		13:55:09 07/12/2011	7		13:55:09 07/12/2011	8	▼
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13:55:09 07/12/2011	7																																							
13:55:09 07/12/2011	8	▼																																						

Present all example of Sampling, the History Setup properties are described in detail below.

<h2 style="text-align: center;">History Setup Properties</h2> <p style="text-align: center;">Table 15-1-7 History Setup Properties</p>	
 <p>The screenshot shows the 'History Buffer Setup' dialog box. At the top, there are tabs: Number, Address, Data Length(Word), Sampling Style(ms), Sample Number, Trigger Source, Record Date/Time, Auto Stop, Hold, and CSV. The CSV tab is selected. A sub-dialog titled 'Buffer Properties' is open, containing fields for Address (None), Data Length (Word) (1), Sample Number (10), Stamp Time and Date (unchecked), Time Format (hh:mm:ss), Date Format (mm/dd/yy), Auto Stop (unchecked), Non-volatile (unchecked), Retained (HMI), File Name (H0001), and Export CSV File (unchecked). To the right of this is a 'Trigger' section with Timer selected, Sample cycle (ms) set to 100, and Custom cycle (ms) set to None. Buttons for OK, Cancel, Add, Delete, and Modify are visible.</p>	<p>Add ➤ [Add] can be used to create additional data buffers. This property supports up to 12 buffers and the data in these buffers correspond individually to the Sampling History Flag 1~12 and Clearing History Flag 1~12 in the Control Block area.</p>

<h3 style="text-align: center;">History Setup Properties</h3> <p style="text-align: center;">Table 15-1-7 History Setup Properties</p>																											
Delete	 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Number</th><th style="text-align: left;">Address</th></tr> </thead> <tbody> <tr><td>1</td><td>\$3765</td></tr> <tr><td>2</td><td>\$0</td></tr> <tr><td>3</td><td>\$1</td></tr> <tr><td>4</td><td>\$2</td></tr> <tr><td>5</td><td>\$3</td></tr> <tr><td>6</td><td>\$4</td></tr> <tr><td>7</td><td>\$5</td></tr> <tr><td>8</td><td>\$6</td></tr> <tr><td>9</td><td>\$7</td></tr> <tr><td>10</td><td>\$8</td></tr> <tr><td>11</td><td>\$9</td></tr> <tr><td>12</td><td>\$10</td></tr> </tbody> </table>	Number	Address	1	\$3765	2	\$0	3	\$1	4	\$2	5	\$3	6	\$4	7	\$5	8	\$6	9	\$7	10	\$8	11	\$9	12	\$10
Number	Address																										
1	\$3765																										
2	\$0																										
3	\$1																										
4	\$2																										
5	\$3																										
6	\$4																										
7	\$5																										
8	\$6																										
9	\$7																										
10	\$8																										
11	\$9																										
12	\$10																										
Modify	 <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Control Block</p> <p>Control Address: (Link2)1@D0</p> <p><input type="checkbox"/> Screen No ... <input type="checkbox"/> General Control ... <input type="checkbox"/> Curve Control ... <input checked="" 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 ...</p> <p>Sample time</p> <p><input type="checkbox"/> Auto Reset P ...</p> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Status Block</p> <p>Status Address: (Link2)1@D10</p> <p><input type="checkbox"/> General Control ... <input type="checkbox"/> Screen No ... <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 ...</p> </div> <p>Memory Format: Unsigned Decimal</p> <p style="text-align: right;">OK Cancel</p>																										

History Setup Properties		
Table 15-1-7 History Setup Properties		
Sampling Points		<ul style="list-style-type: none"> ➤ The sampling points are the number of data to be recorded. It is usually used in conjunction with the Auto Stop option. If the Auto Stop is checked, the recording stops automatically when the setting in the Sampling Points field is reached. If the Auto Stop is not checked, the recording will not stop when the setting in the Sampling Points field is reached. Instead, the recording starts from the first data again and overrides the previous data. ➤ The Sampling Points function supports up to 9999999.
Record Time/ Date	<div style="display: flex; align-items: center;"> Time format <ul style="list-style-type: none"> ➤ There are two types of time formats for selection. <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Stamp Time and Date Time Format: hh:mm:ss Date Format: hh:mm:ss hh:mm  </div> </div> <div style="display: flex; align-items: center;"> Date format <ul style="list-style-type: none"> ➤ There are seven types of date formats for selection. <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Stamp Time and Date Time Format: hh:mm:ss Date Format: mm/dd/yy <input type="checkbox"/> Auto Stop <input checked="" type="checkbox"/> Non-volatile Retained File Name  </div> </div>	
Auto Stop		<ul style="list-style-type: none"> ➤ The Auto Stop option determines whether recording stops automatically when the setting in the Sampling Points is reached. ➤ If the Auto Stop is checked, the recording stops automatically when the setting in the Sampling Points field is reached. If the Auto Stop is not checked, the recording will not stop when the setting in the Sampling Points field is reached. Instead, the recording starts from the first data again and overrides the previous data.
Hold	<div style="display: flex; align-items: center;"> Data Location <ul style="list-style-type: none"> ➤ The data location is HMI, USB Disk or SD Card. <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Non-volatile Retained File Name <input checked="" type="checkbox"/> Export CSV File  </div> </div> <div style="display: flex; align-items: center;"> File Name <ul style="list-style-type: none"> ➤ If HMI is checked, data will be recorded in HMI SRAM in case of outage. ➤ When the Output to CSV File is selected, select USB Disk or SD Card as the retained area. </div>	
Output to CSV File	Data Type	<ul style="list-style-type: none"> ➤ The supported data format will be different according to the length, 1 word or 2 words. Please refer to the followings:

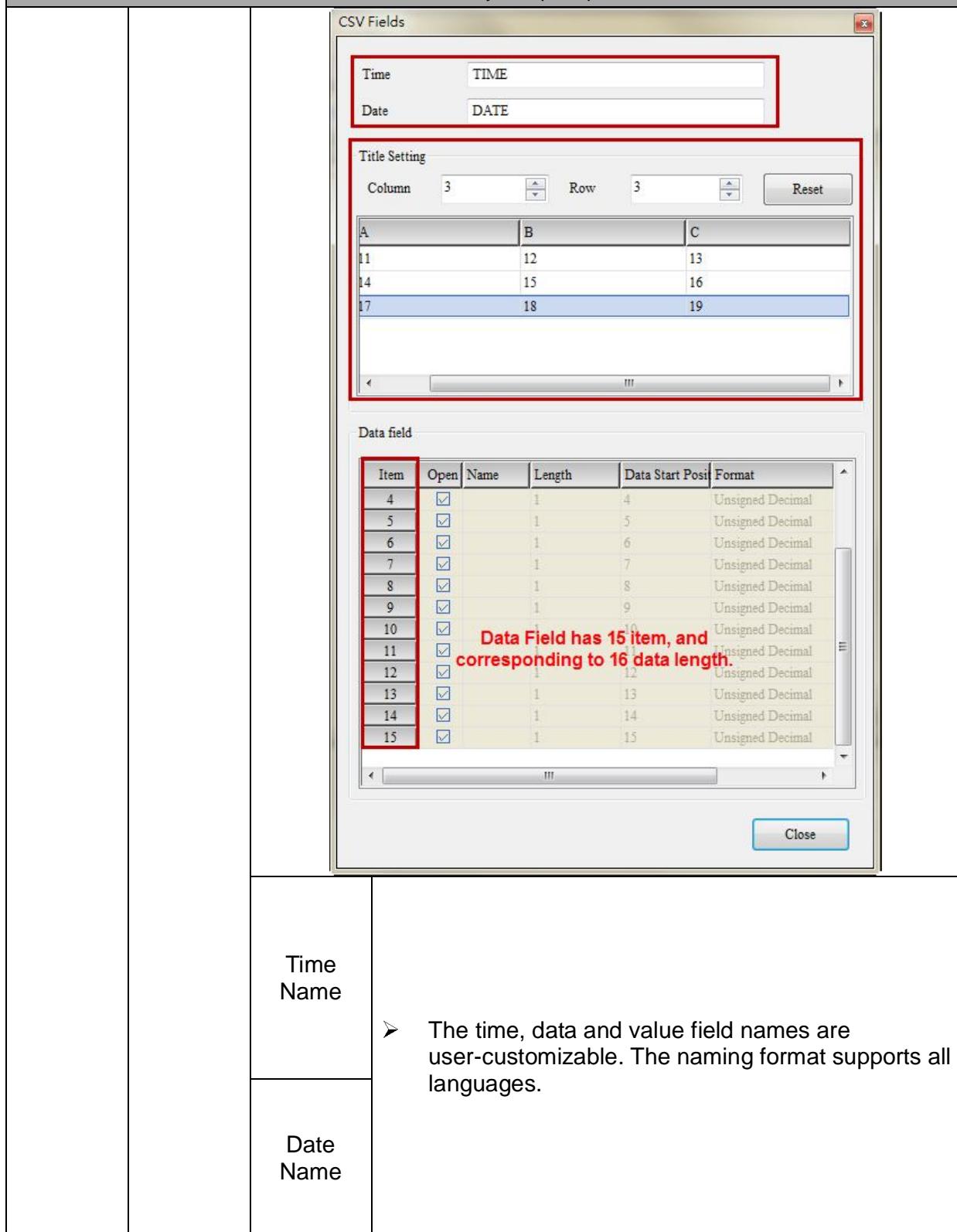
History Setup Properties

Table 15-1-7 History Setup Properties

		<ul style="list-style-type: none"> ➤ In format of Char, if the length is 1, it represents 2 Chars; if the length is 2, it represents 4 Chars. ➤ When the length is over 3, Char is the only format it supports. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Length is 1</th> </tr> <tr> <th style="text-align: center;">Data Type</th><th style="text-align: center;">Format</th><th style="text-align: center;">Permissible Range</th></tr> </thead> <tbody> <tr> <td rowspan="6" style="vertical-align: middle; text-align: center;">Word</td><td>BCD</td><td>0~9999</td></tr> <tr> <td>Signed BCD</td><td>-999 ~ 9999</td></tr> <tr> <td>Signed Decimal</td><td>-32768~32767</td></tr> <tr> <td>Unsigned Decimal</td><td>0~65535</td></tr> <tr> <td>Hex</td><td>0~0xFFFF</td></tr> <tr> <td>Char</td><td>2 words</td></tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Length is 2</th> </tr> <tr> <th style="text-align: center;">Data Type</th><th style="text-align: center;">Format</th><th style="text-align: center;">Permissible Range</th></tr> </thead> <tbody> <tr> <td rowspan="7" style="vertical-align: middle; text-align: center;">DWord</td><td>BCD</td><td>0~99999999</td></tr> <tr> <td>Signed BCD</td><td>-9999999 ~ 9999999</td></tr> <tr> <td>Signed Decimal</td><td>-2147483648~2147483647</td></tr> <tr> <td>Unsigned Decimal</td><td>0~4294697295</td></tr> <tr> <td>Hex</td><td>0~0xFFFFFFFF</td></tr> <tr> <td>Char</td><td>4 words</td></tr> <tr> <td>Floating</td><td>0~9999999</td></tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Field Name</td><td> <ul style="list-style-type: none"> ➤ The user can input the file name to be displayed to the output CSV file, including the time, date and data names. The sum of the integer and decimal places can only support 5 digits, because the length of the data type read is defined as Word. </td></tr> </table>	Length is 1			Data Type	Format	Permissible Range	Word	BCD	0~9999	Signed BCD	-999 ~ 9999	Signed Decimal	-32768~32767	Unsigned Decimal	0~65535	Hex	0~0xFFFF	Char	2 words	Length is 2			Data Type	Format	Permissible Range	DWord	BCD	0~99999999	Signed BCD	-9999999 ~ 9999999	Signed Decimal	-2147483648~2147483647	Unsigned Decimal	0~4294697295	Hex	0~0xFFFFFFFF	Char	4 words	Floating	0~9999999	Field Name	<ul style="list-style-type: none"> ➤ The user can input the file name to be displayed to the output CSV file, including the time, date and data names. The sum of the integer and decimal places can only support 5 digits, because the length of the data type read is defined as Word.
Length is 1																																												
Data Type	Format	Permissible Range																																										
Word	BCD	0~9999																																										
	Signed BCD	-999 ~ 9999																																										
	Signed Decimal	-32768~32767																																										
	Unsigned Decimal	0~65535																																										
	Hex	0~0xFFFF																																										
	Char	2 words																																										
Length is 2																																												
Data Type	Format	Permissible Range																																										
DWord	BCD	0~99999999																																										
	Signed BCD	-9999999 ~ 9999999																																										
	Signed Decimal	-2147483648~2147483647																																										
	Unsigned Decimal	0~4294697295																																										
	Hex	0~0xFFFFFFFF																																										
	Char	4 words																																										
	Floating	0~9999999																																										
Field Name	<ul style="list-style-type: none"> ➤ The user can input the file name to be displayed to the output CSV file, including the time, date and data names. The sum of the integer and decimal places can only support 5 digits, because the length of the data type read is defined as Word. 																																											

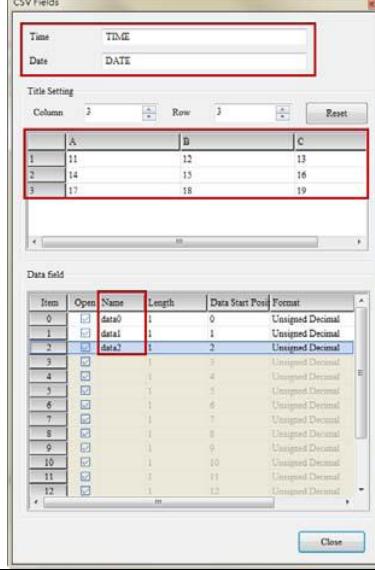
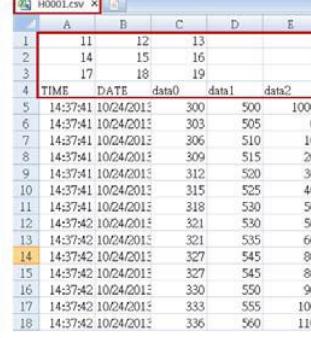
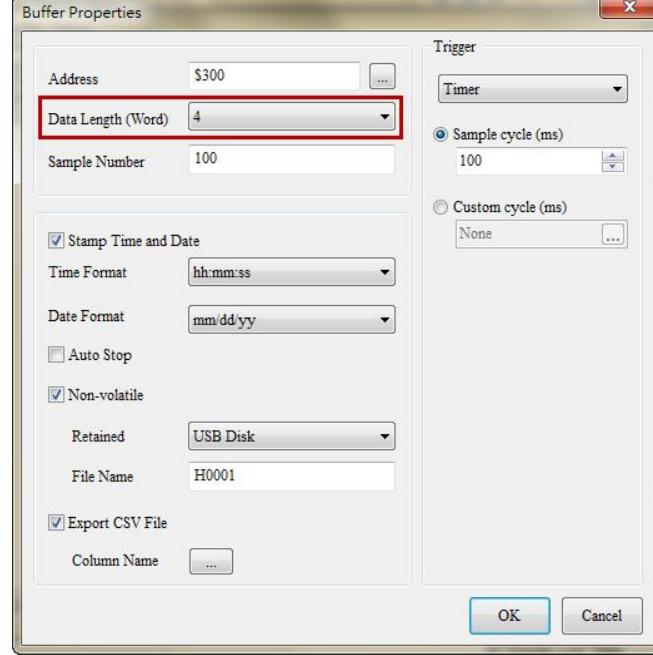
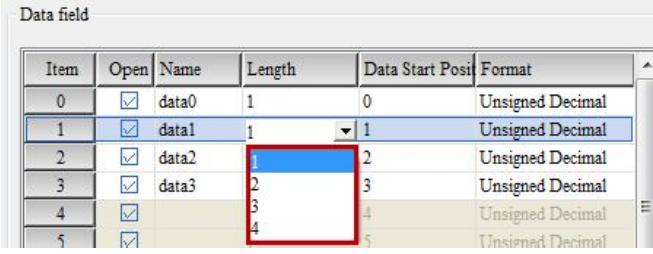
History Setup Properties

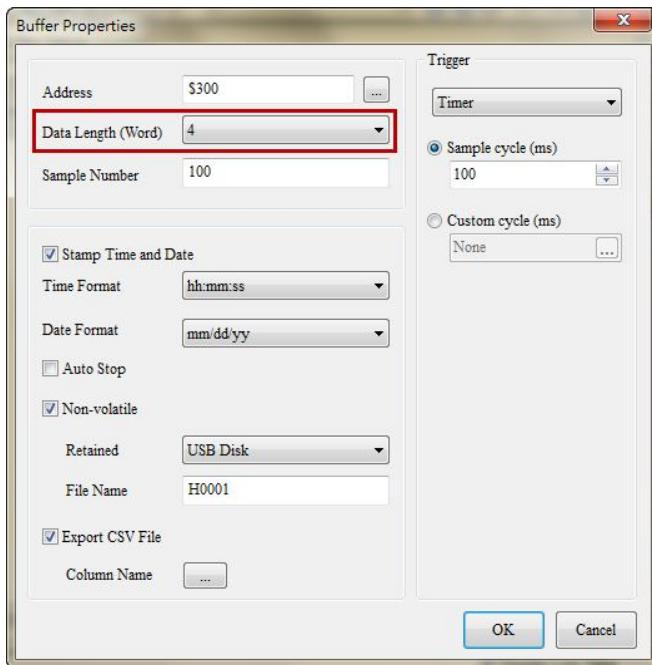
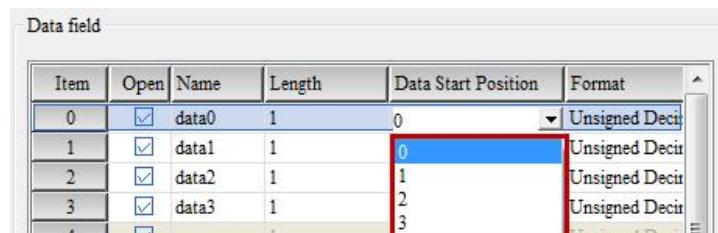
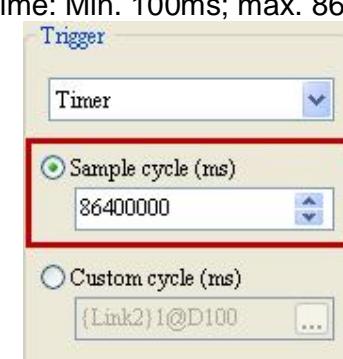
Table 15-1-7 History Setup Properties



History Setup Properties

Table 15-1-7 History Setup Properties

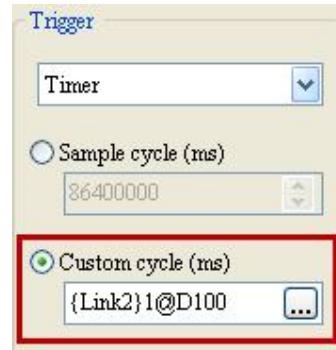
		 Column / Row Name	 <p>The data name of CSV data field after output will same as user set customize.</p>	
		 Length	<ul style="list-style-type: none"> ➤ The length corresponds to the data length (Word). If the data length is 4, the length will be 1 ~ 4. 	
	Data	<ul style="list-style-type: none"> ➤ The data start position corresponds to the data 		

<h3 style="text-align: center;">History Setup Properties</h3> <p style="text-align: center;">Table 15-1-7 History Setup Properties</p>			
		Start Position	<p>length as well. If the data length (Word) is 4, then the data start position is 0 ~ 3.</p> 
		Integer place Decimal place	<p>➤ Set the integer and decimal places for the format you need.</p> 
Trigger Source	Timer		<ul style="list-style-type: none"> ➤ Two sample times are available when Timer is selected as the trigger source: ➤ Fixed sample time: Min. 100ms; max. 86400000ms.  <ul style="list-style-type: none"> ➤ Dynamic sample time: The user can change the sample time

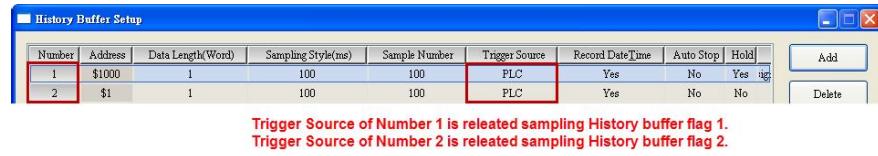
History Setup Properties

Table 15-1-7 History Setup Properties

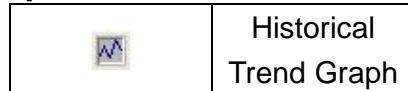
dynamically using the specified memory address to trigger the sampling action.



- When PLC is selected as the trigger source, the sampling action is triggered using the History flag in the control area. The sampling action is performed when the Bit is On. It is independent of the time cycle.
- Assuming that two Histories are set up. The trigger source PLC No. 1 corresponds to the Sampling History Flag 1, the trigger source PLC No. 2 corresponds to the Sampling History Flag 2, and so on.



15-2 Historical Trend Graph



The Historical Trend Graph is used to store and display the address values read during a specific time period. This function can display up to 16 curves and read up to 16 Words. The user can save the data presented on the Historical Trend Graph. The external devices that HMI supports are USB Disk and SD Card.

Double click the Historical Trend Graph element and the following property setting screen appears.

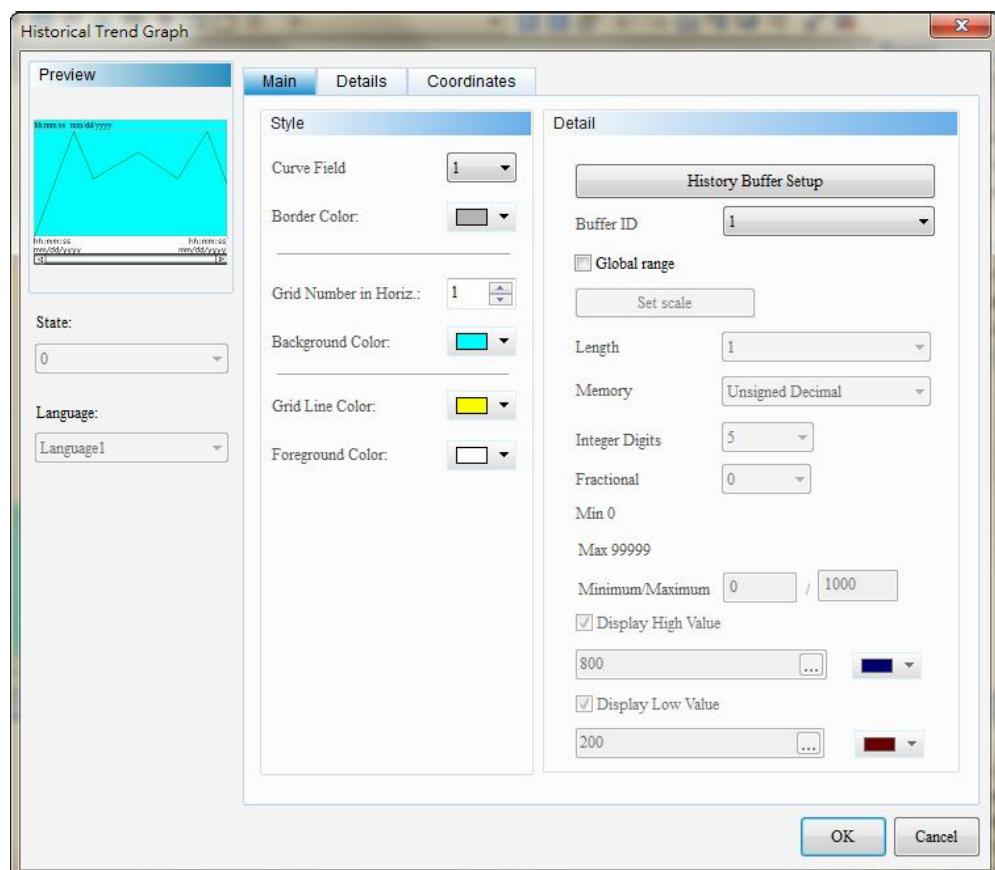


Figure 15-2-1 Historical Trend Graph property setting screen

Historical Trend Graph		
Function Page	Description	
Preview	The State and Language are not available to the Historical Trend Graph.	
Main	Data	Sets the buffer number, data format, integer digits and fractional digits.

	Global Scope Limit	Sets the scale setting, min. value/max. value, display high value, display low value, high value color, low value color.
	Scale Setting	Sets the scale display, mark display, text size, text color, scale color, main scale number, sub scale number.
	Style	Curve fields, border color, Grid number in Horizontal, Grid line Color, foreground color, Background Color.
Details	Local Scope	Sets the length of curve, start position, format, integer digits, fractional digits, line width, line color, min. value, max. value.
	Display of Time/Date	Sets the time display, number of time scale, time format, date format, display color
Position	Sets the X-Y coordinate, width and height of the component.	

Table 15-2-2 Historical Trend Graph function page

◆ General

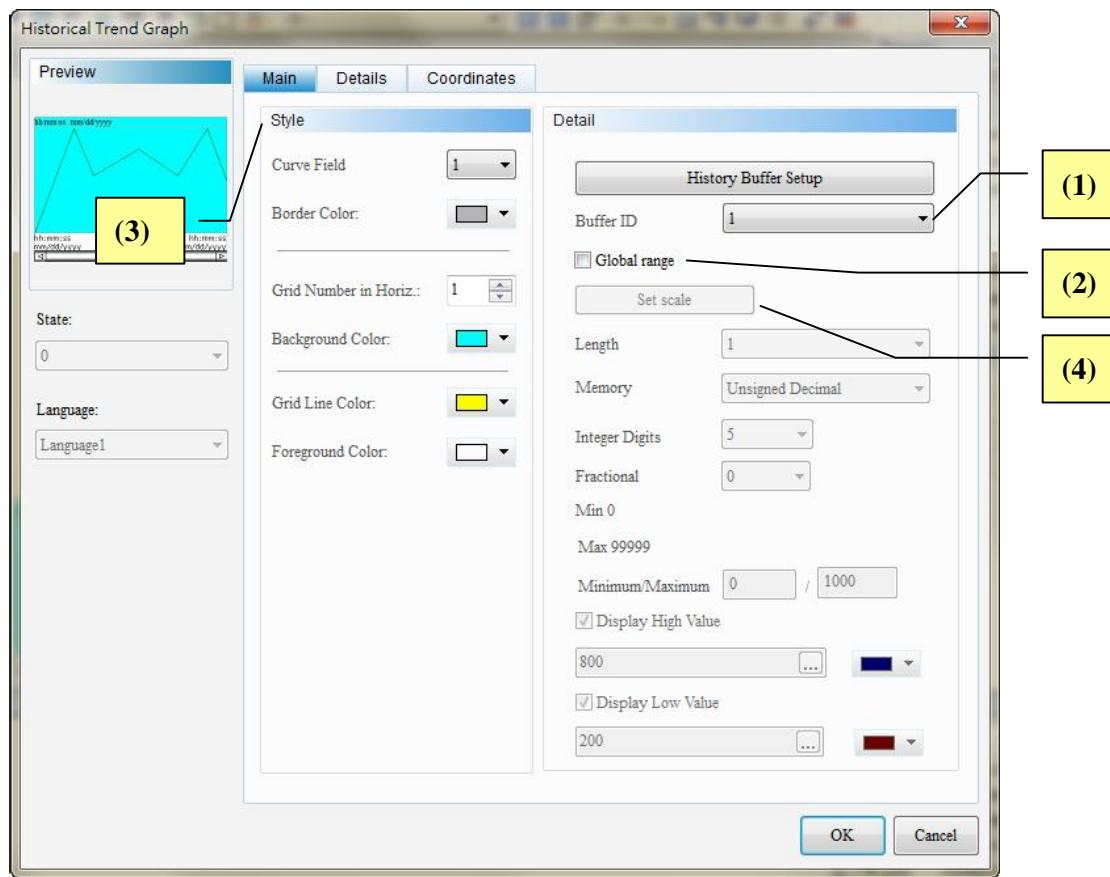
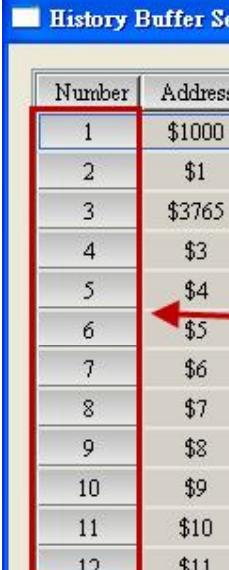
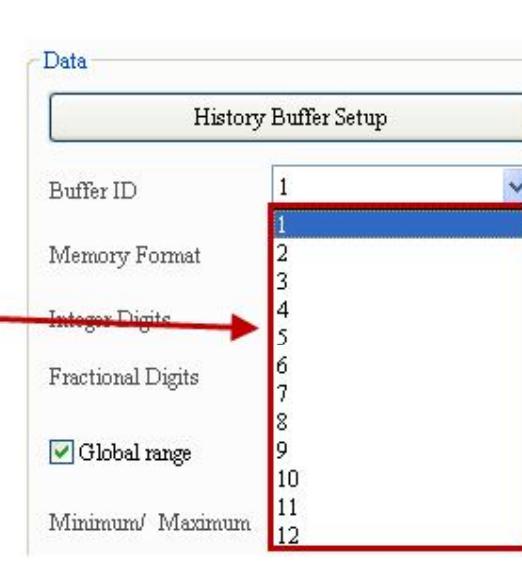
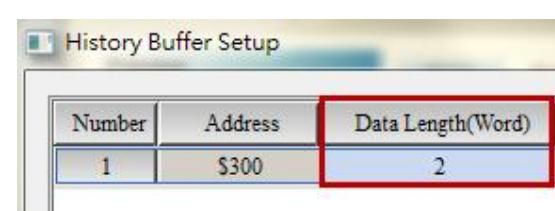
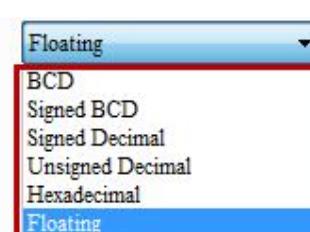
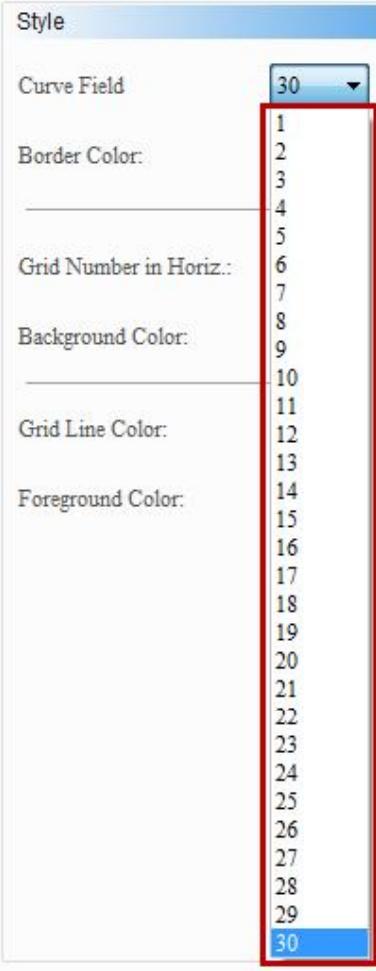
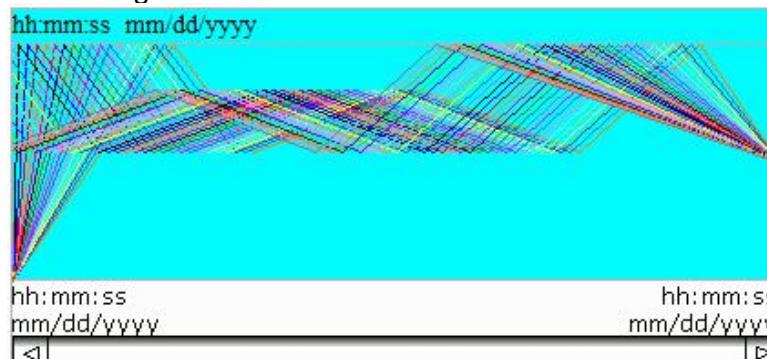


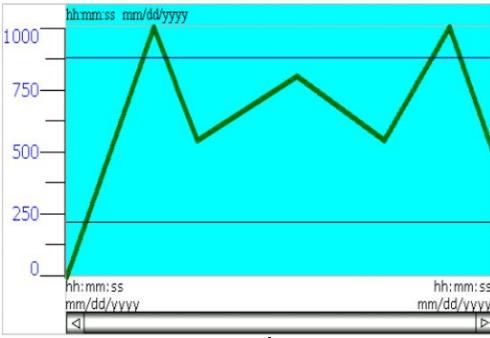
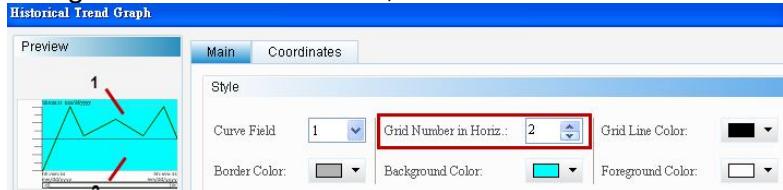
Figure 15-2-2 Historical Trend Graph General property page

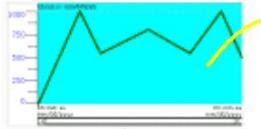
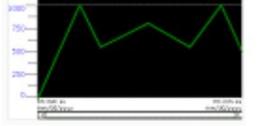
No.	Item	Function
(1)	Buffer ID	➤ The buffer number corresponds to the data number in the History Data Buffer. The History Setup function can add up to 12 history data and, thus, the buffer number supports up to 12.

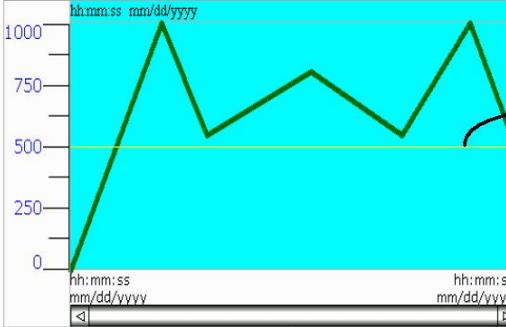
No.	Item	Function	
		 	Data History Buffer Setup Buffer ID Memory Format Integer Digits Fractional Digits <input checked="" type="checkbox"/> Global range Minimum/ Maximum
(2)	Global Scope	Data Length (Word)	<ul style="list-style-type: none"> The data length (word) can be set as 1 or 2. When the data length is 1, it means it is 1 Word; when the data length is 2, it means it is 2 Words. <p>NOTE :</p> <ul style="list-style-type: none"> When select 2 as the length, the data length(Word) should over 2. 
		Value Format	<ul style="list-style-type: none"> Historical Trend Graph supports the following format: Floating value format can be used only when the data length (Word) is 2. 
		Integer Digits / Fractional Digits	Users can setup the displayed integer digits and fractional digits.
		Min. Value/Max.	<ul style="list-style-type: none"> Choose Global Scope Setting, it will be unable to setup the curvilinear min. and max. value in details

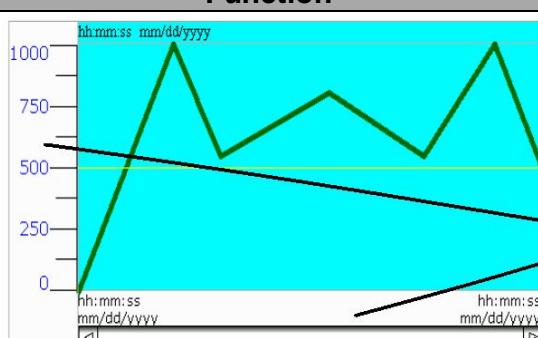
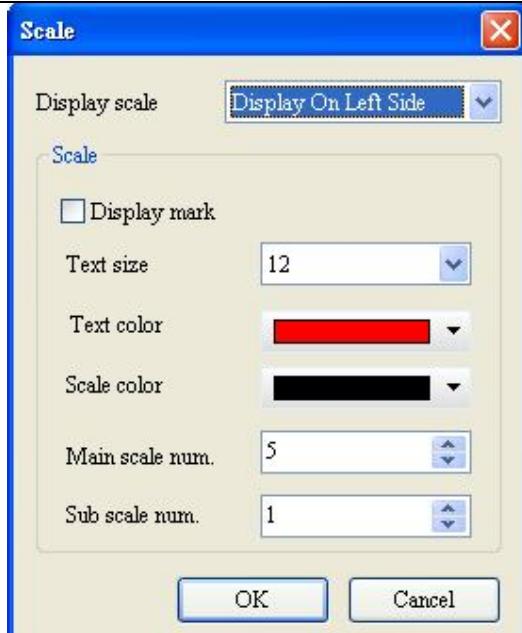
No.	Item	Function																													
		Value	<p>setting page. However, if not choose Global Scope Setting, the curvilinear min. and max. value will be able to setup.</p> <ul style="list-style-type: none"> ➤ The permissible range of min. and max. value is based on the selected data type and format. 	<table border="1"> <thead> <tr> <th>Data Type</th> <th>Format</th> <th>Permissible Range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0~9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 ~ 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768~32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0~65535</td> </tr> <tr> <td>Hex</td> <td>0~0xFFFF</td> </tr> <tr> <td rowspan="6">DWord</td> <td>BCD</td> <td>0~99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 ~ 9999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648~2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0~4294697295</td> </tr> <tr> <td>Hex</td> <td>0~0xFFFFFFFF</td> </tr> <tr> <td>Floating</td> <td>0~9999999</td> </tr> </tbody> </table>	Data Type	Format	Permissible Range	Word	BCD	0~9999	Signed BCD	-999 ~ 9999	Signed Decimal	-32768~32767	Unsigned Decimal	0~65535	Hex	0~0xFFFF	DWord	BCD	0~99999999	Signed BCD	-9999999 ~ 9999999	Signed Decimal	-2147483648~2147483647	Unsigned Decimal	0~4294697295	Hex	0~0xFFFFFFFF	Floating	0~9999999
Data Type	Format	Permissible Range																													
Word	BCD	0~9999																													
	Signed BCD	-999 ~ 9999																													
	Signed Decimal	-32768~32767																													
	Unsigned Decimal	0~65535																													
	Hex	0~0xFFFF																													
DWord	BCD	0~99999999																													
	Signed BCD	-9999999 ~ 9999999																													
	Signed Decimal	-2147483648~2147483647																													
	Unsigned Decimal	0~4294697295																													
	Hex	0~0xFFFFFFFF																													
	Floating	0~9999999																													
		Display High Value	High value is displayed in Historical Trend Graph. Users can setup the constant value, Internal memory address or the PLC address (Word). Its display color can be setup, too.																												
		Display Low Value	Low value is displayed in Historical Trend Graph. Users can setup the constant value, Internal memory address or the PLC address (Word). Its display color can be setup, too.																												
(3)	Type	Curve Counts	➤ A Historical Trend Graph component supports up to 30 curves.																												

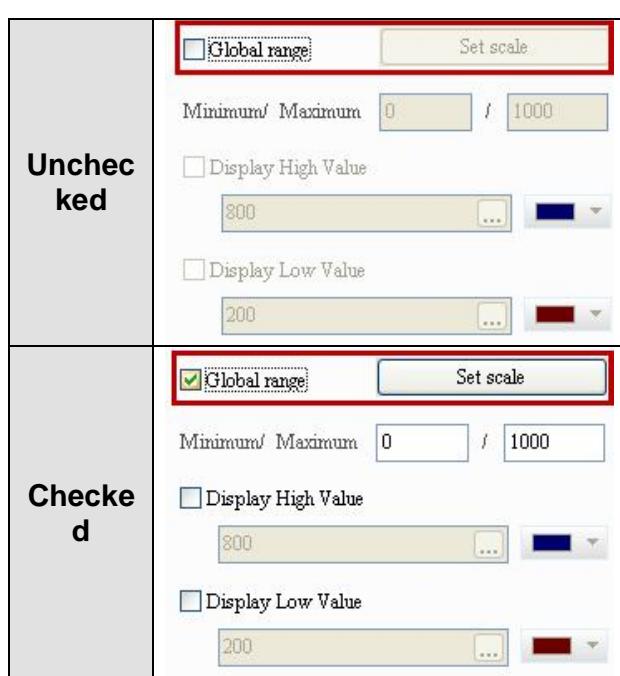
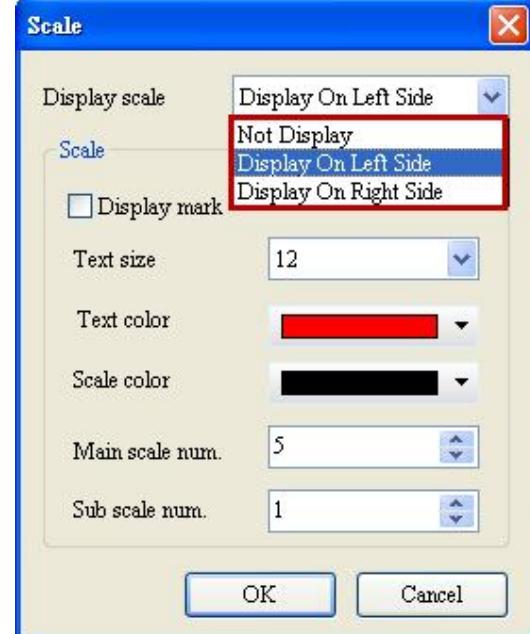
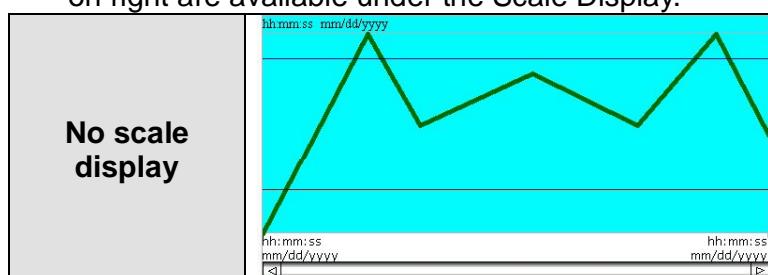
No.	Item	Function
		<p>Style</p> <p>Curve Field: 30</p> <p>Border Color:</p> <p>Grid Number in Horiz.:</p> <p>Background Color:</p> <p>Grid Line Color:</p> <p>Foreground Color:</p>  <ul style="list-style-type: none"> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 <p>➤ Up to 30 curves can be selected. The user can change the color and width of the line.</p> 
	Border Color	➤ The user can set the border color for the Historical Trend Graph component.

No.	Item	Function
		 <p style="text-align: right;">Border Color</p> 
	Horizontal Grid	<ul style="list-style-type: none"> ➤ This option is selectable up to 50. ➤ The number of Horizontal Grid Count defines the number of the blocks within the Historical Trend Graph. The default value is 1 indicating no gridlines. 2 represents 1 gridline or two blocks, 3 indicates 2 gridlines or three blocks, and so on.  
	Background d Color	<ul style="list-style-type: none"> ➤ The user can set the Background Color for the Historical Trend Graph component.

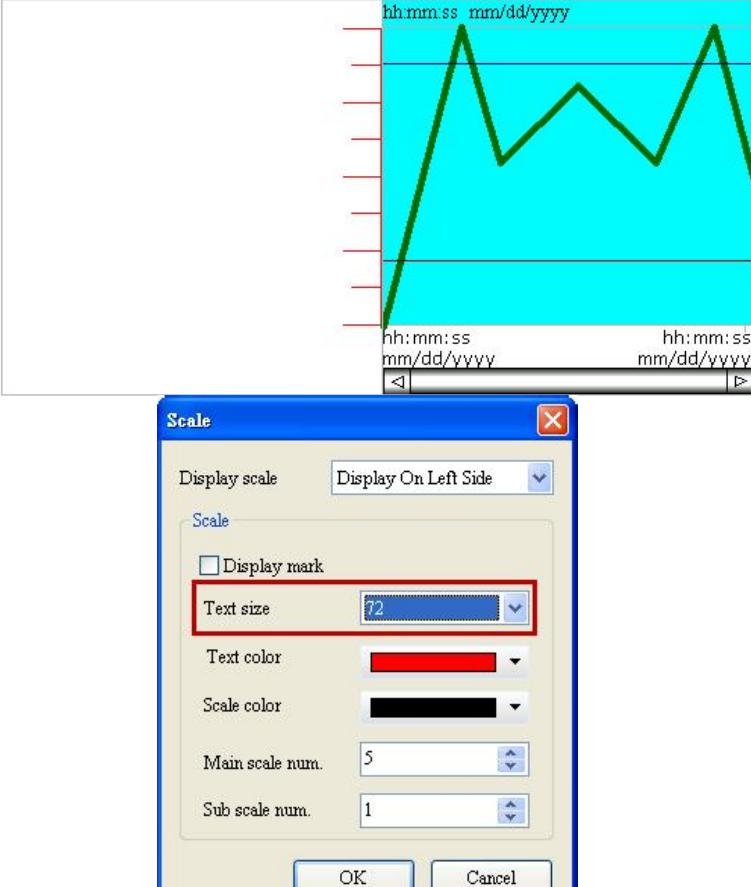
No.	Item	Function
		 
	Grid line Color	<ul style="list-style-type: none"> ➤ The user can set the color of the gridline within the Historical Trend Graph. It is  by default.  <ul style="list-style-type: none"> ➤ The user can change the color at any time.

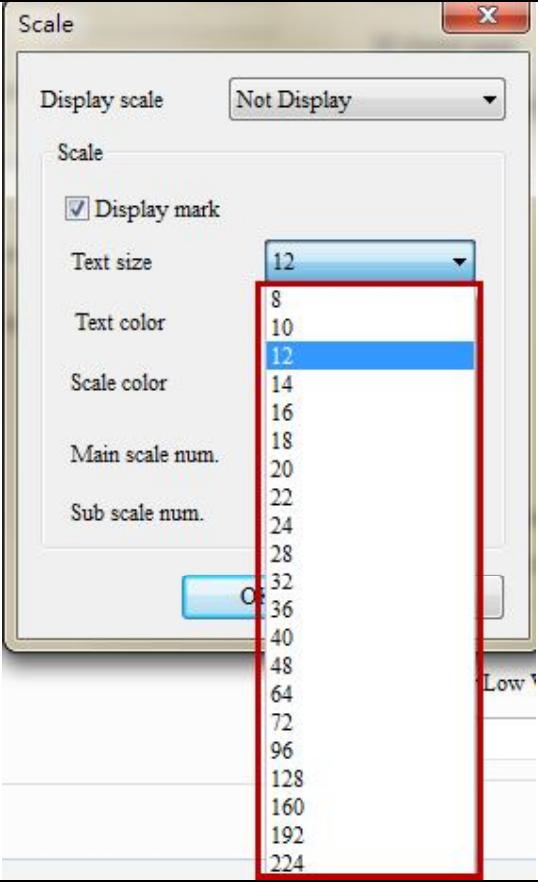
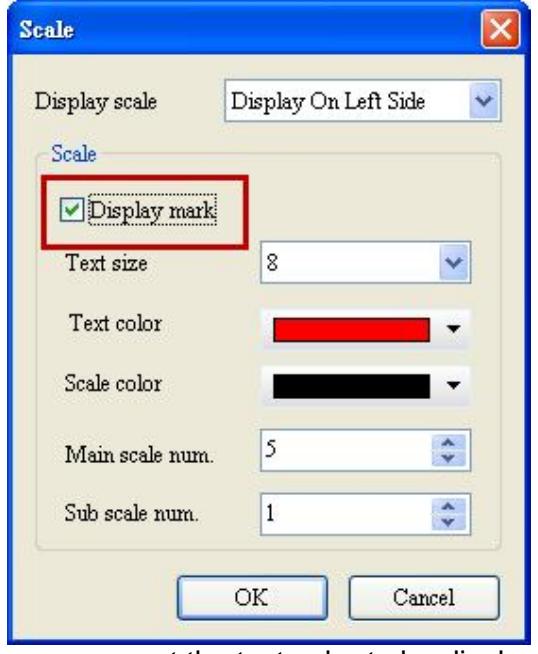
No.	Item	Function
		 <p style="text-align: right;">Grid Color</p>
	Foreground Color	<p>➤ The user can set the foreground color of the Historical Trend Graph component.</p>

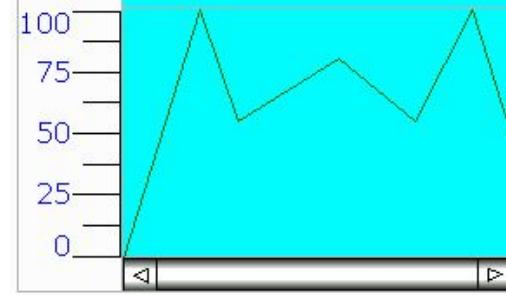
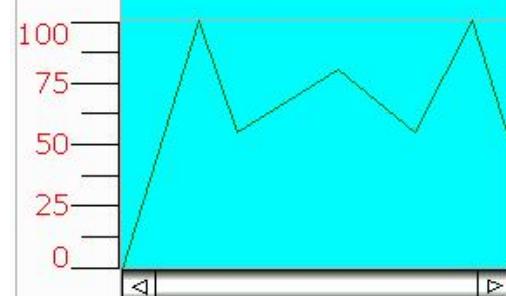
No.	Item	Function
		 
(4)	Scale Setting	

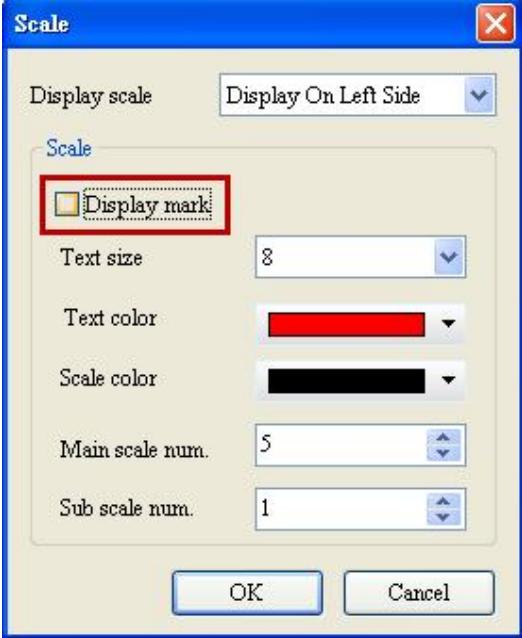
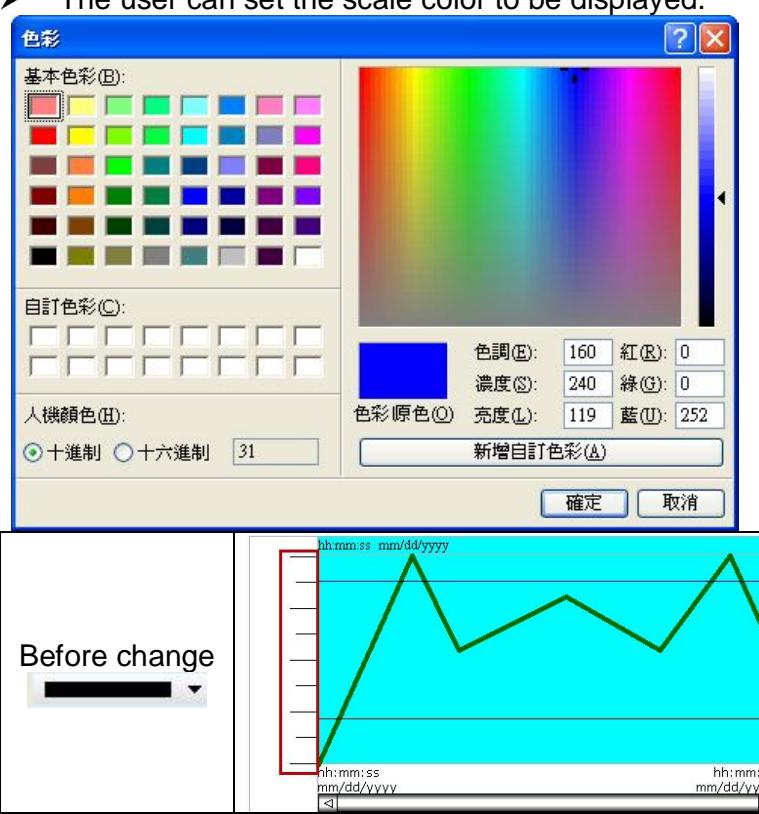
No.	Item	Function
	<p>➤ The Global Scope Limit must be checked to perform the Scale Setting.</p> 	
	Scale Display	 <p>➤ No scale display, Show scale on left and Show scale on right are available under the Scale Display.</p> 

No.	Item	Function
	Show scale on left	
	Show scale on right	
Mark Display	Unchecked	➤ The Mark Display option defines the display of the figure on the scale.
	Checked	
	Text Size	➤ The Text Size allows the scale to reserve a width corresponding to the size of the text if the Mark Display is not checked. The reserved width will be expanded when the typeface 72 is selected.

No.	Item	Function
		 <p>The text size is the size of the figure on the scale. Typefaces 8~224 are available for selection.</p>

No.	Item	Function
		 <p>The screenshot shows the 'Scale' dialog box. In the 'Text size' section, a dropdown menu is open, displaying various font sizes from 8 to 224. The option '12' is highlighted with a blue selection bar and a red rectangular border around the entire dropdown menu.</p>
	Text Color	<ul style="list-style-type: none"> ➤ The Mark Display must be checked to set the Text Color.  <p>The screenshot shows the 'Scale' dialog box again. This time, the 'Display scale' dropdown is set to 'Display On Left Side'. In the 'Scale' section, the 'Display mark' checkbox is checked, indicated by a red rectangular border around the checkbox area. Other settings include Text size 8, Text color red, Scale color black, Main scale num. 5, and Sub scale num. 1.</p> <ul style="list-style-type: none"> ➤ The user can set the text color to be displayed.

No.	Item	Function
		
	<p>Before change</p> 	
	<p>After change</p> 	
	Scale Color	➤ Checking the Mark Display is not needed to change the color of the scale.

No.	Item	Function
		 <p>➤ The user can set the scale color to be displayed.</p>  <p>Before change</p>

No.	Item	Function
		<p>After change</p>
	<p>Main Scale number</p> <p>Sub Scale number</p>	<ul style="list-style-type: none"> ➤ Checking the Mark Display is not needed to change the primary and secondary scale counts to be displayed. <ul style="list-style-type: none"> ➤ Both the primary and secondary scale counts can be set between 1 (min.) and 99 (max.). ➤ When the Primary Scale Counts is set to 5, the Secondary Scale Counts is set to 1 as shown in the figure below.

◆ Details Setting

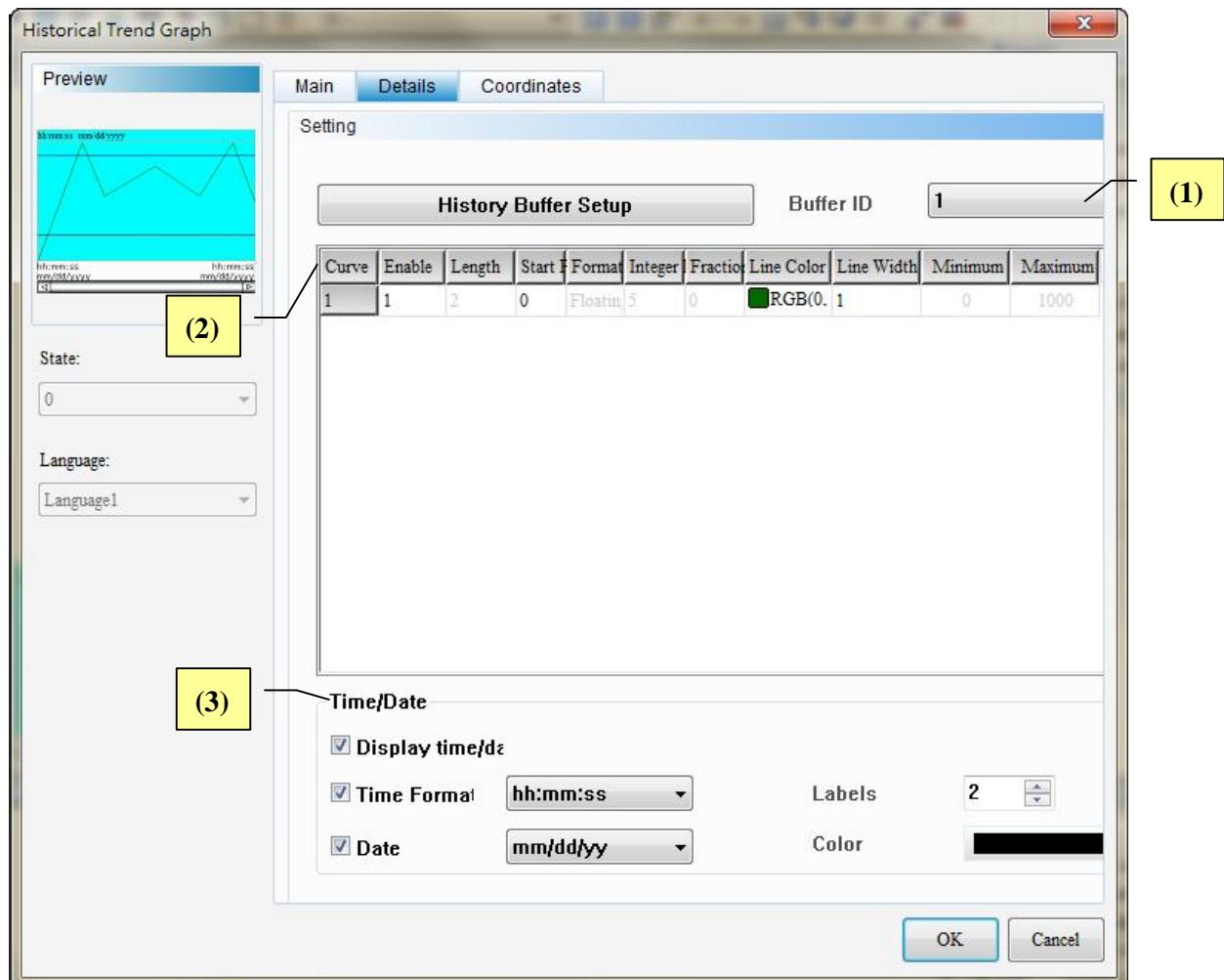
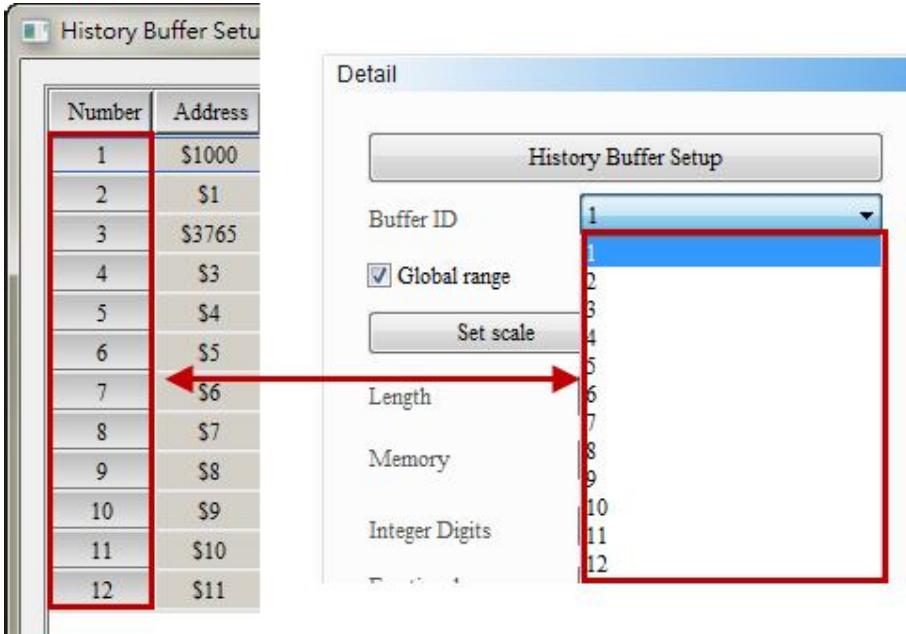
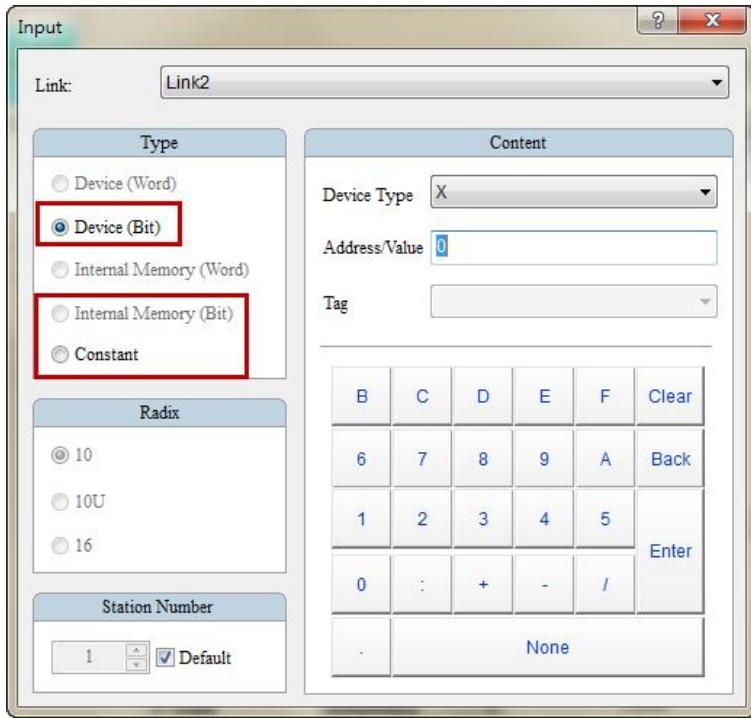
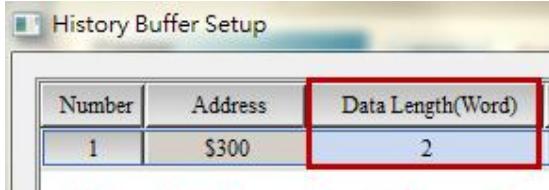
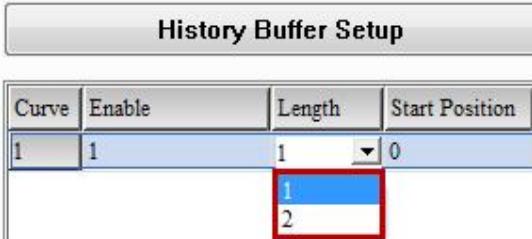
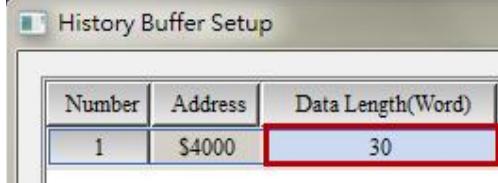


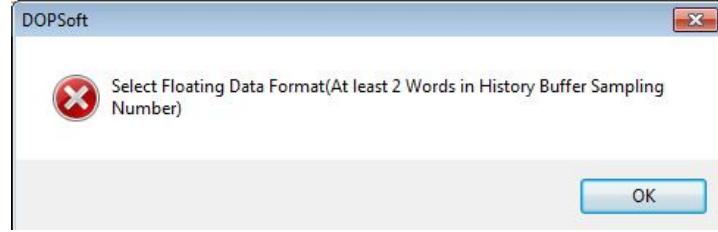
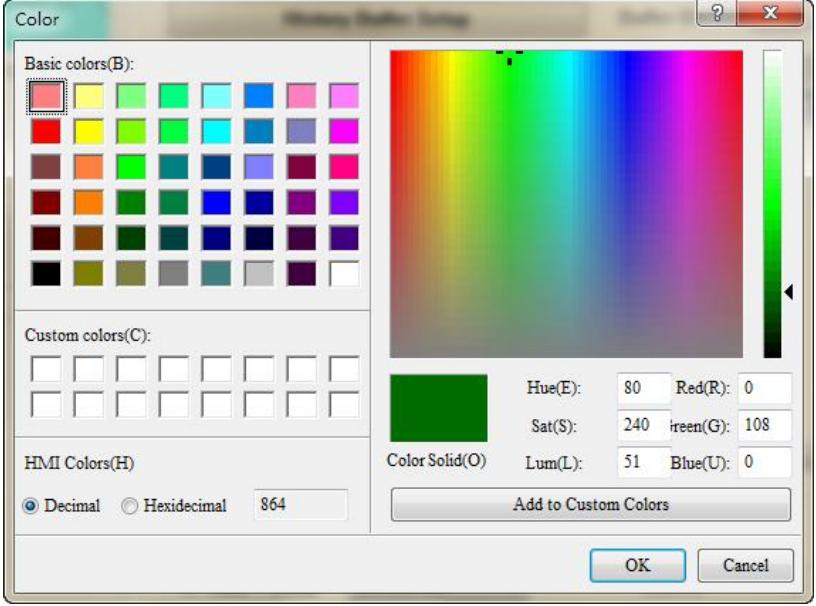
Figure 15-2-3 Historical Trend Graph Details property page

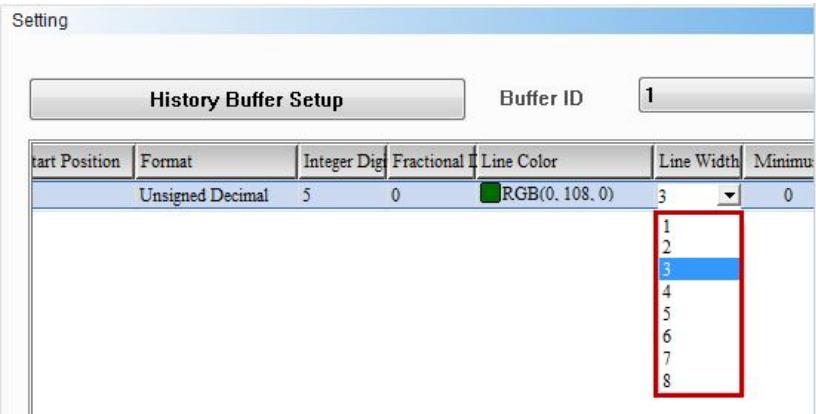
No.	Item	Function
(1)	Buffer ID	➤ The buffer number corresponds to the data number in the History Data Buffer. The History Setup function can add up to 12 history data and, thus, the buffer number supports up to 12.

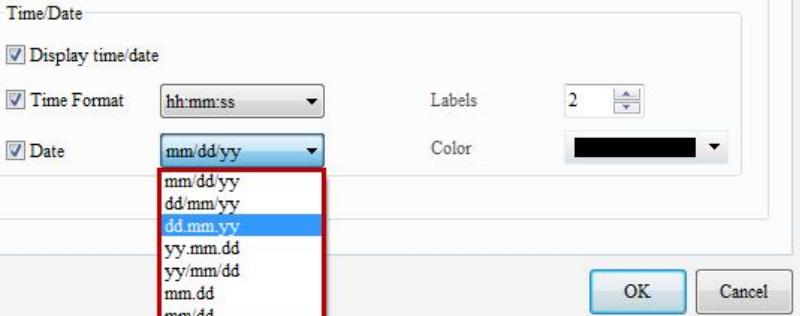
No.	Item	Function
		
(2)	Curve Setting	<ul style="list-style-type: none"> ➤ Enable / Disable data accessing in buffer area. ➤ If constant is set as the type: Set the value to 1 as enable; set the value to 0 as disable. If Bit is set as the type: BitON means to enable; BitOFF means to disable. ➤ Sets up the bit supported by value, the one in Internal Memory and constant. 

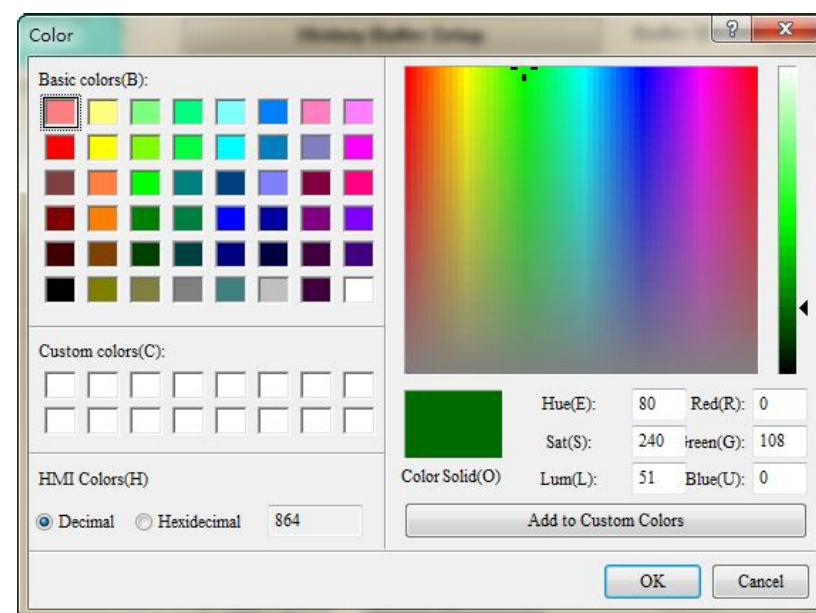
No.	Item	Function
	Length	<ul style="list-style-type: none"> ➤ Two selections are provided for length 1 and length 2. Only when the data length is set above 2, can the user choose 2 as the curve length.  <p style="color: red; text-align: center;">When Data Length set above 2 then Curve Length could set 2</p>  <ul style="list-style-type: none"> ➤ If it is set to global scope, this function is invalid.
	Start Position	<ul style="list-style-type: none"> ➤ Data length (Word) determines the start position of data. ➤ When the data length (Word) is 30, the data start position can be 0 ~ 29. 

No.	Item	Function																																																																																																																								
		<p>Setting</p> <p style="text-align: right;">History Buffer Setup B</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Curve</th><th>Enable</th><th>Length</th><th>Start Position</th></tr> </thead> <tbody> <tr><td>1</td><td>1</td><td>1</td><td>0</td></tr> <tr><td>2</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>3</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>4</td><td>0</td><td>1</td><td>2</td></tr> <tr><td>5</td><td>0</td><td>1</td><td>3</td></tr> <tr><td>6</td><td>0</td><td>1</td><td>4</td></tr> <tr><td>7</td><td>0</td><td>1</td><td>5</td></tr> <tr><td>8</td><td>0</td><td>1</td><td>6</td></tr> <tr><td>9</td><td>0</td><td>1</td><td>7</td></tr> <tr><td>10</td><td>0</td><td>1</td><td>8</td></tr> <tr><td>11</td><td>0</td><td>1</td><td>9</td></tr> <tr><td>12</td><td></td><td></td><td>10</td></tr> <tr><td>13</td><td></td><td></td><td>11</td></tr> <tr><td>14</td><td></td><td></td><td>12</td></tr> <tr><td>15</td><td></td><td></td><td>13</td></tr> <tr><td>16</td><td></td><td></td><td>14</td></tr> <tr><td>17</td><td></td><td></td><td>15</td></tr> <tr><td>18</td><td></td><td></td><td>16</td></tr> <tr><td>19</td><td></td><td></td><td>17</td></tr> <tr><td>20</td><td></td><td></td><td>18</td></tr> <tr><td>21</td><td></td><td></td><td>19</td></tr> <tr><td>22</td><td></td><td></td><td>20</td></tr> <tr><td>23</td><td></td><td></td><td>21</td></tr> <tr><td>24</td><td></td><td></td><td>22</td></tr> <tr><td>25</td><td></td><td></td><td>23</td></tr> <tr><td>26</td><td></td><td></td><td>24</td></tr> <tr><td>27</td><td></td><td></td><td>25</td></tr> <tr><td>28</td><td></td><td></td><td>26</td></tr> <tr><td>29</td><td></td><td></td><td>27</td></tr> </tbody> </table> <p>Time/Date</p> <p><input type="checkbox"/> Display time/date</p> <p><input type="checkbox"/> Time Format hh:mm:ss</p> <p><input type="checkbox"/> Date mm/dd/yy</p>	Curve	Enable	Length	Start Position	1	1	1	0	2	0	1	0	3	0	1	1	4	0	1	2	5	0	1	3	6	0	1	4	7	0	1	5	8	0	1	6	9	0	1	7	10	0	1	8	11	0	1	9	12			10	13			11	14			12	15			13	16			14	17			15	18			16	19			17	20			18	21			19	22			20	23			21	24			22	25			23	26			24	27			25	28			26	29			27
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	Format	<ul style="list-style-type: none"> ➤ Followings are the supported format: <p>Setting</p> <p style="text-align: right;">History Buffer Setup Buffer ID 1</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Curve</th><th>Enable</th><th>Length</th><th>Start Position</th><th>Format</th><th>Integer Digits</th><th>Fractional Digits</th></tr> </thead> <tbody> <tr><td>1</td><td>1</td><td>1</td><td>0</td><td>Unsigned Decimal</td><td>5</td><td>0</td></tr> </tbody> </table> <p style="margin-left: 20px;">BCD Signed BCD Signed Decimal Unsigned Decimal Hexadecimal Floating</p> <ul style="list-style-type: none"> ➤ If it is set to global scope, this function is invalid. <p>NOTE :</p>	Curve	Enable	Length	Start Position	Format	Integer Digits	Fractional Digits	1	1	1	0	Unsigned Decimal	5	0																																																																																																										
Curve	Enable	Length	Start Position	Format	Integer Digits	Fractional Digits																																																																																																																				
1	1	1	0	Unsigned Decimal	5	0																																																																																																																				

No.	Item	Function
		<ul style="list-style-type: none"> ➤ If the format is floating, please set the length to 2. ➤ When the format is floating, if the length only sets to 1 Word, one prompt message will pop and ask the users to set it to 2 Words at least. 
	Integer Digits / Fractional Digits	<ul style="list-style-type: none"> ➤ Users can setup the displayed integer digits and fractional digits. ➤ If it is set to global scope, this function is invalid.
	Line Color	<ul style="list-style-type: none"> ➤ The user can set the line color as desired. 
	Line Width	<ul style="list-style-type: none"> ➤ Line width can set from 1 to 8.

No.	Item	Function																											
		 <p>The screenshot shows the 'History Buffer Setup' dialog box. In the 'Line Color' section, a dropdown menu is open, displaying indices 1 through 8. Index 3 is highlighted with a blue selection bar and a red border around the entire menu.</p>																											
	Min. / Max. Value	<ul style="list-style-type: none"> ➤ Choose Global Scope Setting, it will be unable to setup the curvilinear min. and max. value. However, if not choose Global Scope Setting, the curvilinear min. and max. value will be able to setup. ➤ The permissible range of min. and max. value is based on the selected data type and format. <table border="1" data-bbox="687 931 1383 1649"> <thead> <tr> <th>Data Type</th> <th>Format</th> <th>Permissible Range</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Word</td> <td>BCD</td> <td>0~9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 ~ 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768~32767</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0~65535</td> </tr> <tr> <td>Hex</td> <td>0~0xFFFF</td> </tr> <tr> <td rowspan="6">DWord</td> <td>BCD</td> <td>0~99999999</td> </tr> <tr> <td>Signed BCD</td> <td>-9999999 ~ 99999999</td> </tr> <tr> <td>Signed Decimal</td> <td>-2147483648~2147483647</td> </tr> <tr> <td>Unsigned Decimal</td> <td>0~4294697295</td> </tr> <tr> <td>Hex</td> <td>0~0xFFFFFFFF</td> </tr> <tr> <td>Floating</td> <td>0~99999999</td> </tr> </tbody> </table>	Data Type	Format	Permissible Range	Word	BCD	0~9999	Signed BCD	-999 ~ 9999	Signed Decimal	-32768~32767	Unsigned Decimal	0~65535	Hex	0~0xFFFF	DWord	BCD	0~99999999	Signed BCD	-9999999 ~ 99999999	Signed Decimal	-2147483648~2147483647	Unsigned Decimal	0~4294697295	Hex	0~0xFFFFFFFF	Floating	0~99999999
Data Type	Format	Permissible Range																											
Word	BCD	0~9999																											
	Signed BCD	-999 ~ 9999																											
	Signed Decimal	-32768~32767																											
	Unsigned Decimal	0~65535																											
	Hex	0~0xFFFF																											
DWord	BCD	0~99999999																											
	Signed BCD	-9999999 ~ 99999999																											
	Signed Decimal	-2147483648~2147483647																											
	Unsigned Decimal	0~4294697295																											
	Hex	0~0xFFFFFFFF																											
	Floating	0~99999999																											
(3)	Time / Date	Display Time / Date																											
		<ul style="list-style-type: none"> ➤ The selection of display time / date. Check this function, Historical Trend Graph will display time / date below. If the function is unchecked, then nothing will be shown. 																											

No.	Item	Function
		 <ul style="list-style-type: none"> ➤ Check “Time/Date” to setup the number of time scale. The number can up to 9999. The above figure displays two time scales.
	Time Format	<ul style="list-style-type: none"> ➤ It supports the following two formats: 
	Date Format	<ul style="list-style-type: none"> ➤ It supports the following seven formats: 
	Color	<ul style="list-style-type: none"> ➤ Users can change the displayed color or time and data, including the one shown in Historical Trend Graph and the number of time scale shown in Time/Date. The default color is .

No.	Item	Function
	Line Color	 <p>➤ The user can set the line color as desired.</p> 

◆ Location

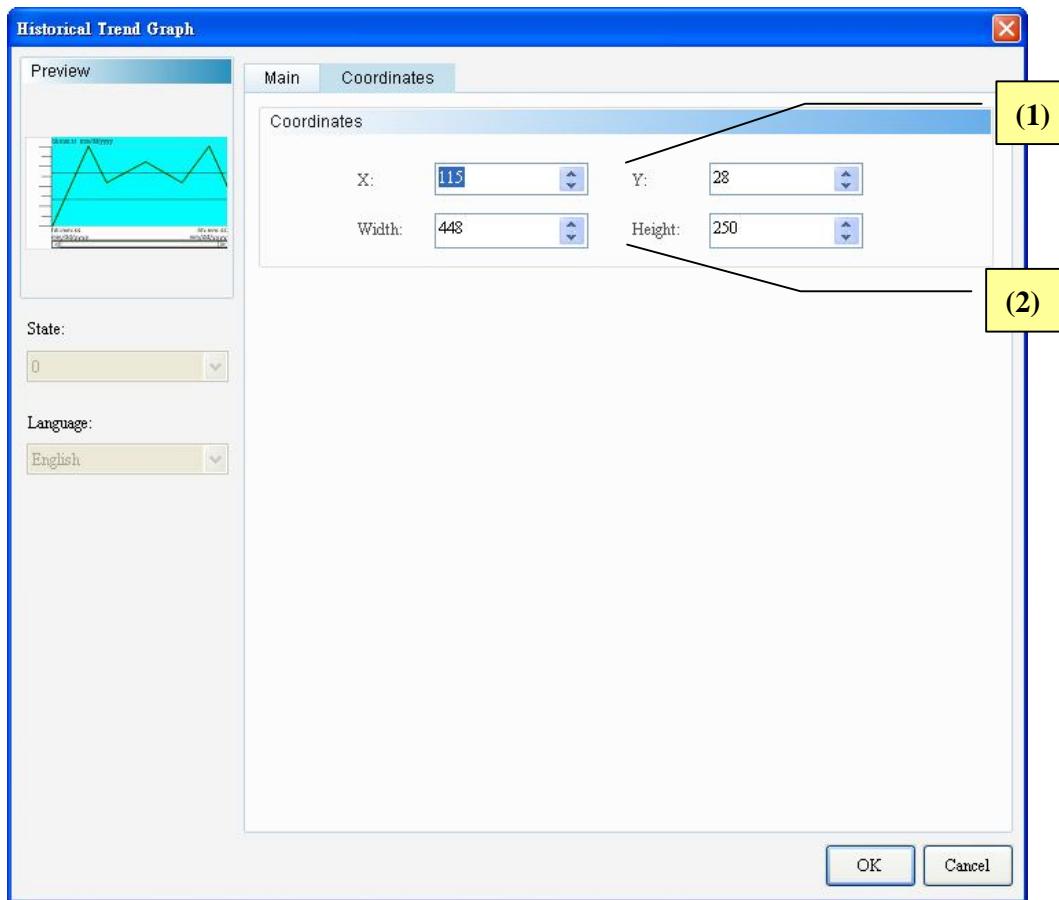


Figure 15-2-4 Historical Trend Graph Location property page

No.	Item	Function
(1)	X-value and Y-value	➤ Sets the upper left X-coordinate and Y-coordinate of elements.
(2)	Width and Height	➤ Sets element width and height.

15-3 Historical Data Table



The data read from the History are converted to values and displayed in the Historical Data Table. The 30 columns of the history value data correspond individually to the 30 Word lengths of the data type in the Historical Trend Graph.

Double click the Historical Data Table icon and the following property setting screen appears.

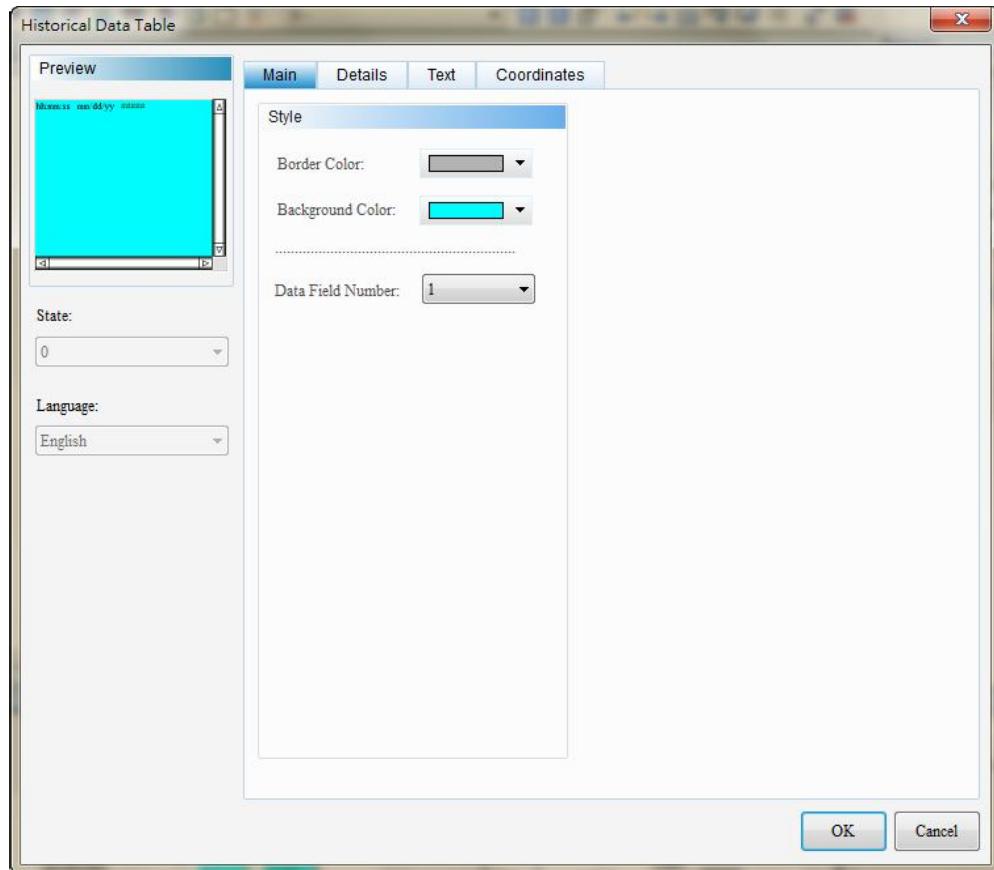


Figure 15-3-1 Historical Data Table property setting screen

Historical Data Table	
Function Page	Description
Preview	The State and Language are not available to the Historical Data Table.
Main	Sets the border color, Background Color, Data Field number
Details	Sets Buffer ID. Sets time / date display. Sets length, start position, value format, integer digits, fractional digits, color, field width and leading zero.

Chapter 15 Sampling

Text	Sets the text size of the value data to be displayed.
Position	Sets the X-Y coordinate, width and height of the component.

Figure 15-3-2 Historical Data Table function page

◆ General

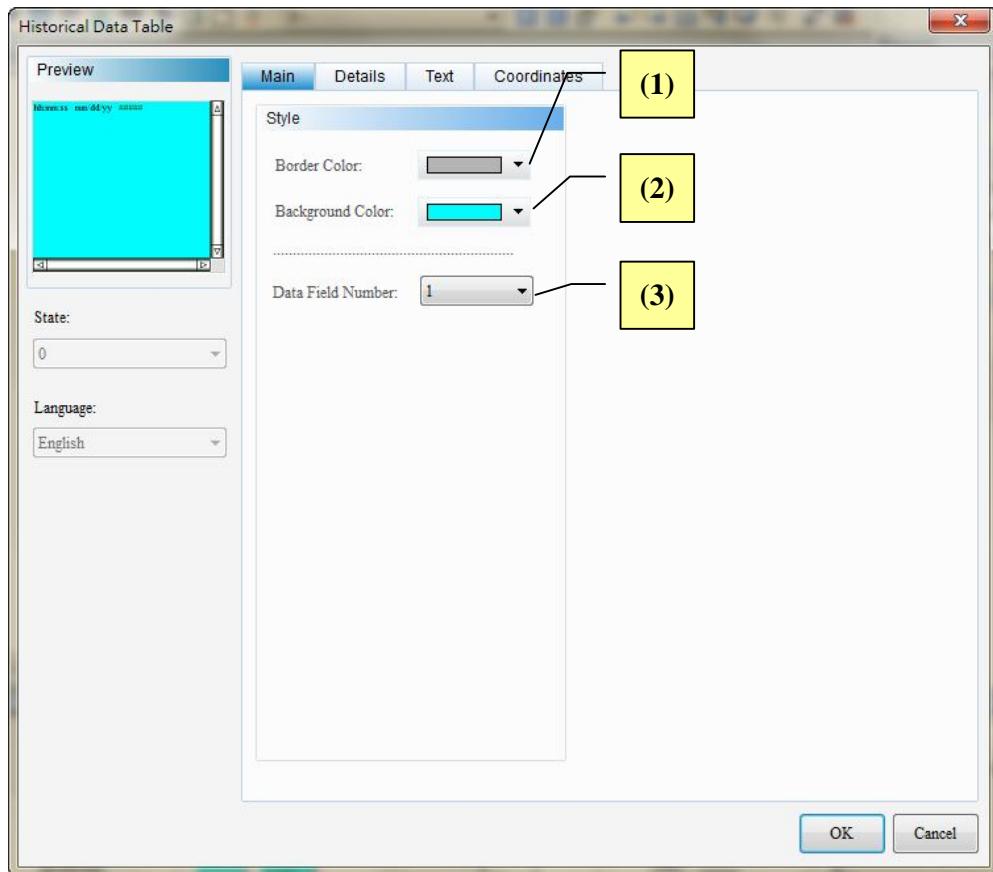
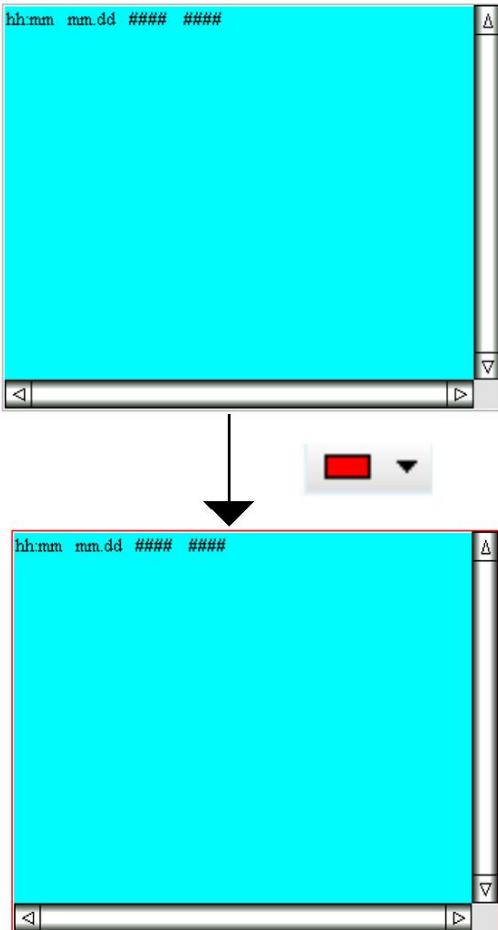
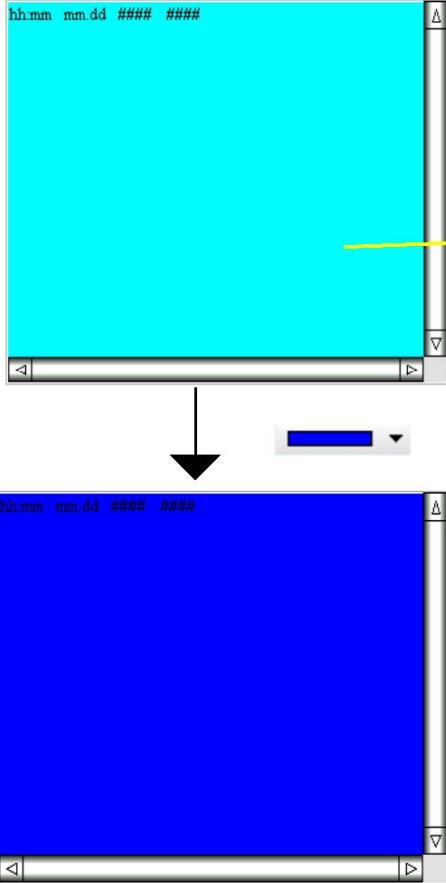
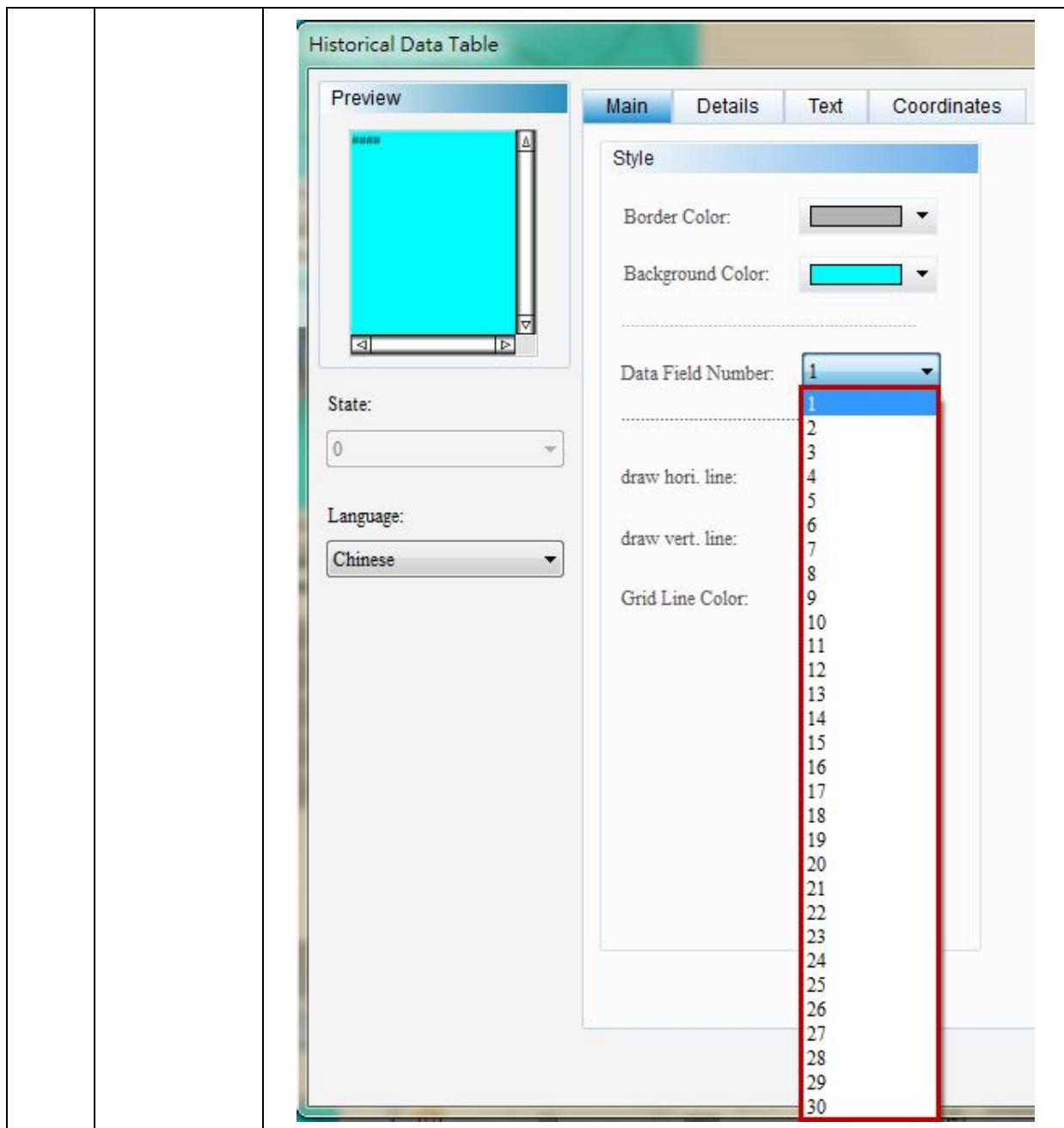


Figure 15-3-2 Historical Data Table General property page

(1)	Border Color	➤ The user can set the border color for the Historical Data Table.
-----	--------------	--

		
(2)	Background Color	➤ The user can set the Background Color for the component.

		
(3)	Column Counts	<ul style="list-style-type: none">➤ The Column Counts option supports up to 30 columns. They correspond individually to the 30 Word lengths of the data type in the History Data Buffer.



◆ Details

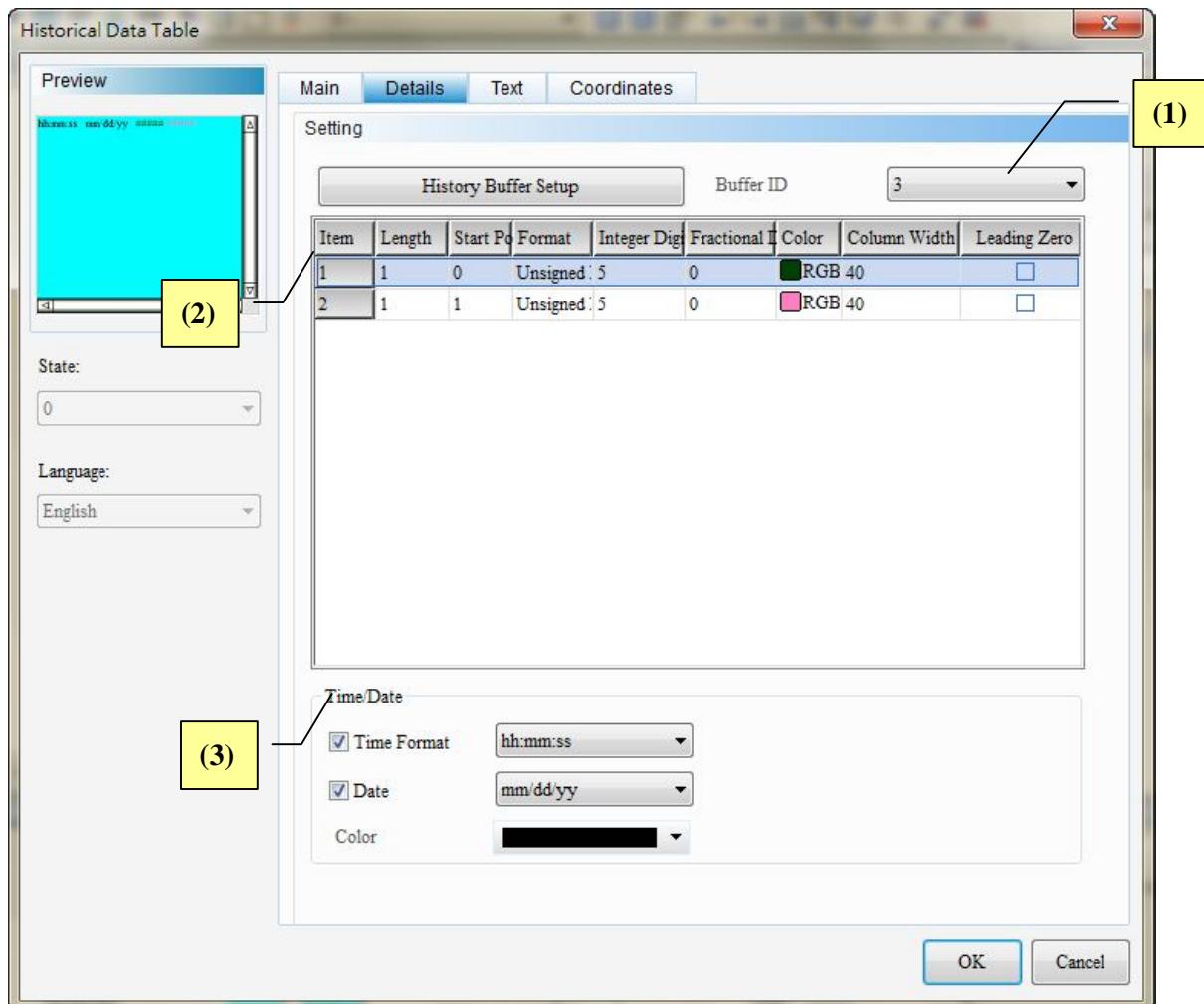
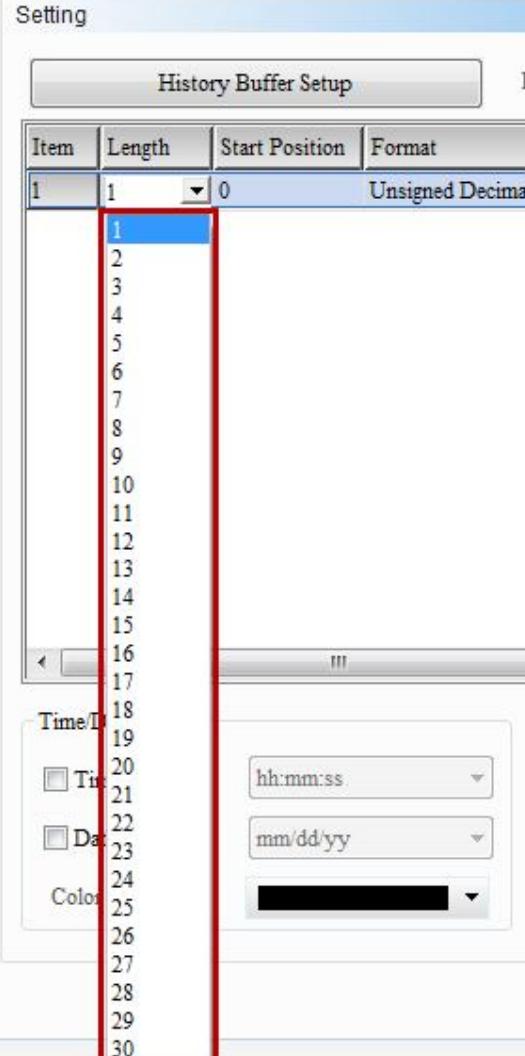
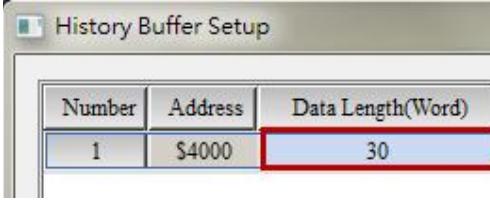
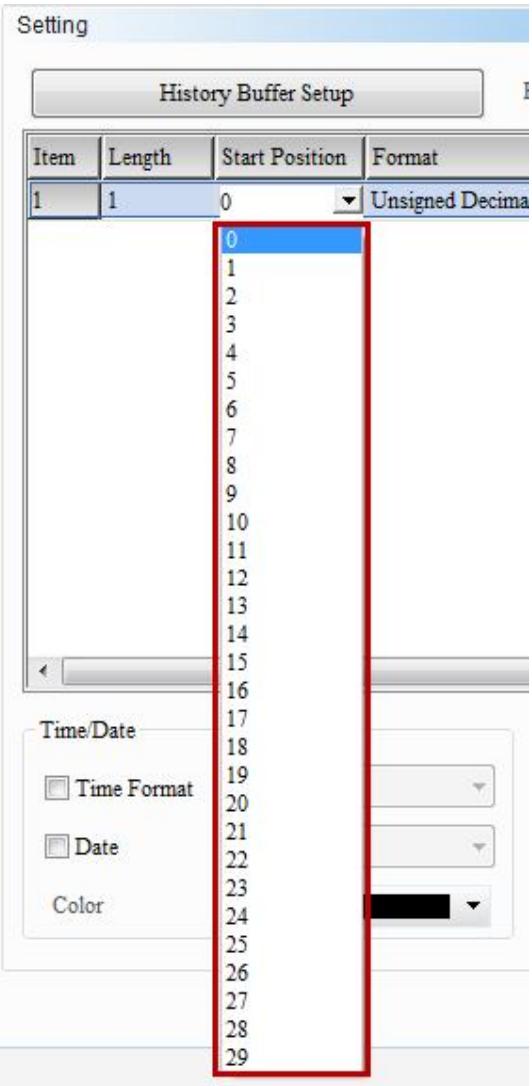


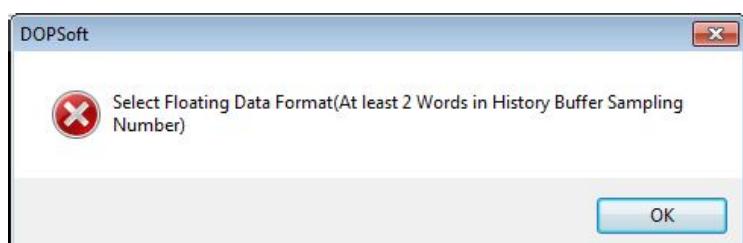
Figure 15-3-3 Historical Trend Graph Details property page

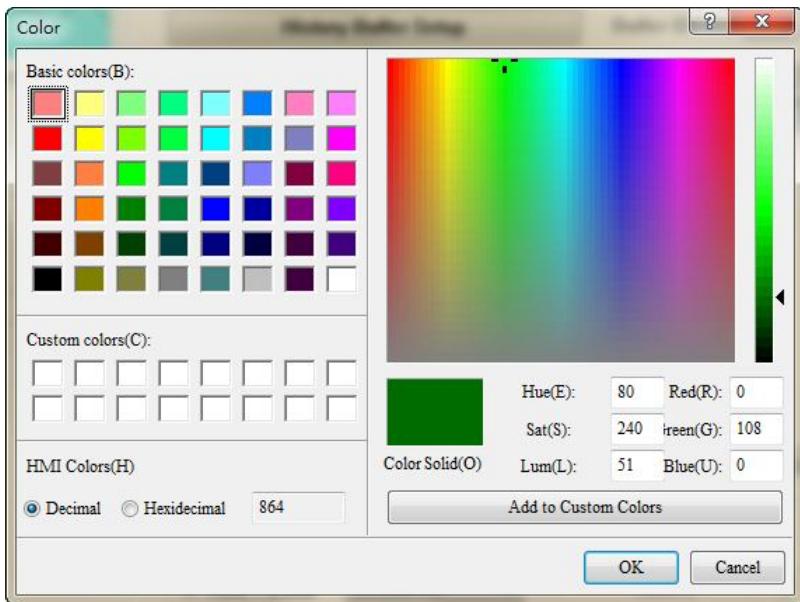
No.	Item	Function
(1)	Buffer ID	<ul style="list-style-type: none"> ➤ The buffer number corresponds to the data number in the History Data Buffer. The History Setup function can add up to 12 history data and, thus, the buffer number supports up to 12.

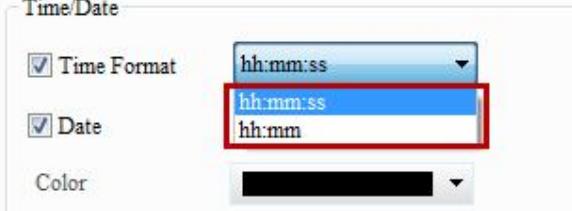
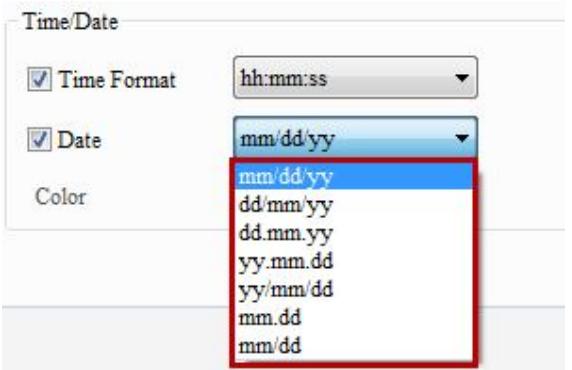
No.	Item	Function
(2)	Item Setting	<p>➤ The length corresponds to the data length (Word). If the data length is 30, then the length would be 1 ~ 30.</p>

No.	Item	Function
		 <p>The screenshot shows the 'History Buffer Setup' dialog box with the 'Setting' tab selected. A dropdown menu for 'Start Position' is open, displaying a list of values from 0 to 30. The value '1' is highlighted with a red box. Other options include 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, Time/D, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30. To the right of the dropdown, there are fields for 'Format' (set to 'Unsigned Decimal'), 'Time/Date' (with dropdowns for hh:mm:ss, mm/dd/yy, and color), and a scroll bar.</p>
	Start Position	<ul style="list-style-type: none"> ➤ Data length (Word) determines the data start position. ➤ When the data length (Word) is 30, the start position is from 0 to 29.  <p>The screenshot shows the 'History Buffer Setup' dialog box with the 'Number' and 'Address' fields filled. The 'Data Length(Word)' field is highlighted with a red box and contains the value '30'.</p>

No.	Item	Function													
															
	Format	<ul style="list-style-type: none"> ➤ The supported format of 1 Word is different from 2 Words. Please see the following table. ➤ For the format of Char, if the length is 1, it represents 2 Chars; if the length is 2, it represents 4. ➤ When the length is above 3, Char is the only format it supports. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3">Length is 1</th> </tr> <tr> <th>Data Type</th> <th>Format</th> <th>Permissible Range</th> </tr> </thead> <tbody> <tr> <td rowspan="3" style="text-align: center;">Word</td> <td>BCD</td> <td>0~9999</td> </tr> <tr> <td>Signed BCD</td> <td>-999 ~ 9999</td> </tr> <tr> <td>Signed Decimal</td> <td>-32768~32767</td> </tr> </tbody> </table>	Length is 1			Data Type	Format	Permissible Range	Word	BCD	0~9999	Signed BCD	-999 ~ 9999	Signed Decimal	-32768~32767
Length is 1															
Data Type	Format	Permissible Range													
Word	BCD	0~9999													
	Signed BCD	-999 ~ 9999													
	Signed Decimal	-32768~32767													

No.	Item	Function		
			Unsigned Decimal	0~65535
			Hex	0~0xFFFF
			Char	2 words
		Length is 2		
		Data Type	Format	Permissible Range
		DWord	BCD	0~99999999
			Signed BCD	-9999999 ~ 99999999
			Signed Decimal	-2147483648~2147 483647
			Unsigned Decimal	0~4294697295
			Hex	0~0xFFFFFFFF
			Char	4 words
			Floating	0~99999999
		NOTE:		
		<ul style="list-style-type: none"> ➤ If Floating is selected as the data format, select an even number from Data Location. ➤ If Floating is selected as the data format and 1 Word is set as the length of the data type, the software will remind the user to set to at least 2-word length. 		
				
	Integer digits/ Fractional digits	<ul style="list-style-type: none"> ➤ The user can set the digits of the integer and decimal places to be displayed. ➤ When it is set to global scope, this function is invalid. 		
	Color	<ul style="list-style-type: none"> ➤ The user can set the line color as desired. 		

No.	Item	Function																																																																
																																																																		
	<p>Colum Width</p> <p>Leading Zero</p>	<ul style="list-style-type: none"> ➤ The Colum Width is used to set the distance between the value 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. ➤ The column width is 40 by default. The range of the column width to be set is 0~999. <p>➤ Additional digits will be supplemented according to the integer digit setting when the Leading Zero is selected. Refer to the following figure.</p> <p style="color: red; font-weight: bold;">Integer set to 4</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <input checked="" type="checkbox"/> Leading Zero <input type="checkbox"/> Leading Zero </div> <div style="display: flex; justify-content: space-around;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>10:25 07.12</td><td>0009 0009</td></tr> <tr><td>10:25 07.12</td><td>0012 0012</td></tr> <tr><td>10:25 07.12</td><td>0015 0015</td></tr> <tr><td>10:25 07.12</td><td>0018 0018</td></tr> <tr><td>10:25 07.12</td><td>0021 0021</td></tr> <tr><td>10:25 07.12</td><td>0024 0024</td></tr> <tr><td>10:25 07.12</td><td>0027 0027</td></tr> <tr><td>10:25 07.12</td><td>0030 0030</td></tr> <tr><td>10:25 07.12</td><td>0033 0033</td></tr> <tr><td>10:25 07.12</td><td>0036 0036</td></tr> <tr><td>10:25 07.12</td><td>0039 0039</td></tr> <tr><td>10:25 07.12</td><td>0042 0042</td></tr> <tr><td>10:25 07.12</td><td>0045 0045</td></tr> <tr><td>10:25 07.12</td><td>0048 0048</td></tr> <tr><td>10:25 07.12</td><td>0051 0051</td></tr> <tr><td>10:25 07.12</td><td>0054 0054</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>10:27 07.12</td><td>129 129</td></tr> <tr><td>10:27 07.12</td><td>132 132</td></tr> <tr><td>10:27 07.12</td><td>135 135</td></tr> <tr><td>10:27 07.12</td><td>138 138</td></tr> <tr><td>10:27 07.12</td><td>141 141</td></tr> <tr><td>10:27 07.12</td><td>144 144</td></tr> <tr><td>10:27 07.12</td><td>147 147</td></tr> <tr><td>10:27 07.12</td><td>150 150</td></tr> <tr><td>10:27 07.12</td><td>153 153</td></tr> <tr><td>10:27 07.12</td><td>156 156</td></tr> <tr><td>10:27 07.12</td><td>159 159</td></tr> <tr><td>10:27 07.12</td><td>162 162</td></tr> <tr><td>10:27 07.12</td><td>165 165</td></tr> <tr><td>10:27 07.12</td><td>168 168</td></tr> <tr><td>10:27 07.12</td><td>171 171</td></tr> <tr><td>10:27 07.12</td><td>174 174</td></tr> </table> </div>	10:25 07.12	0009 0009	10:25 07.12	0012 0012	10:25 07.12	0015 0015	10:25 07.12	0018 0018	10:25 07.12	0021 0021	10:25 07.12	0024 0024	10:25 07.12	0027 0027	10:25 07.12	0030 0030	10:25 07.12	0033 0033	10:25 07.12	0036 0036	10:25 07.12	0039 0039	10:25 07.12	0042 0042	10:25 07.12	0045 0045	10:25 07.12	0048 0048	10:25 07.12	0051 0051	10:25 07.12	0054 0054	10:27 07.12	129 129	10:27 07.12	132 132	10:27 07.12	135 135	10:27 07.12	138 138	10:27 07.12	141 141	10:27 07.12	144 144	10:27 07.12	147 147	10:27 07.12	150 150	10:27 07.12	153 153	10:27 07.12	156 156	10:27 07.12	159 159	10:27 07.12	162 162	10:27 07.12	165 165	10:27 07.12	168 168	10:27 07.12	171 171	10:27 07.12	174 174
10:25 07.12	0009 0009																																																																	
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10:25 07.12	0039 0039																																																																	
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10:27 07.12	174 174																																																																	

No.	Item	Function
(3)	Time / Date	<ul style="list-style-type: none"> ➤ The following two time formats are supported:  <p>The screenshot shows a 'Time/Date' configuration dialog. Under 'Time Format', the option 'hh:mm:ss' is selected. Below it, under 'Date', the option 'hh:mm:ss' is also present in a dropdown menu, with 'hh:mm' highlighted by a red box.</p>
		<ul style="list-style-type: none"> ➤ The following seven date formats are supported:  <p>The screenshot shows a 'Time/Date' configuration dialog. Under 'Date', the option 'mm/dd/yy' is selected. Below it, a dropdown menu lists several date formats: mm/dd/yy, dd/mm/yy, dd.mm.yy, yy.mm.dd, yy/mm/dd, mm.dd, and mm/dd. The option 'mm/dd/yy' is highlighted by a red box.</p>

◆ Text

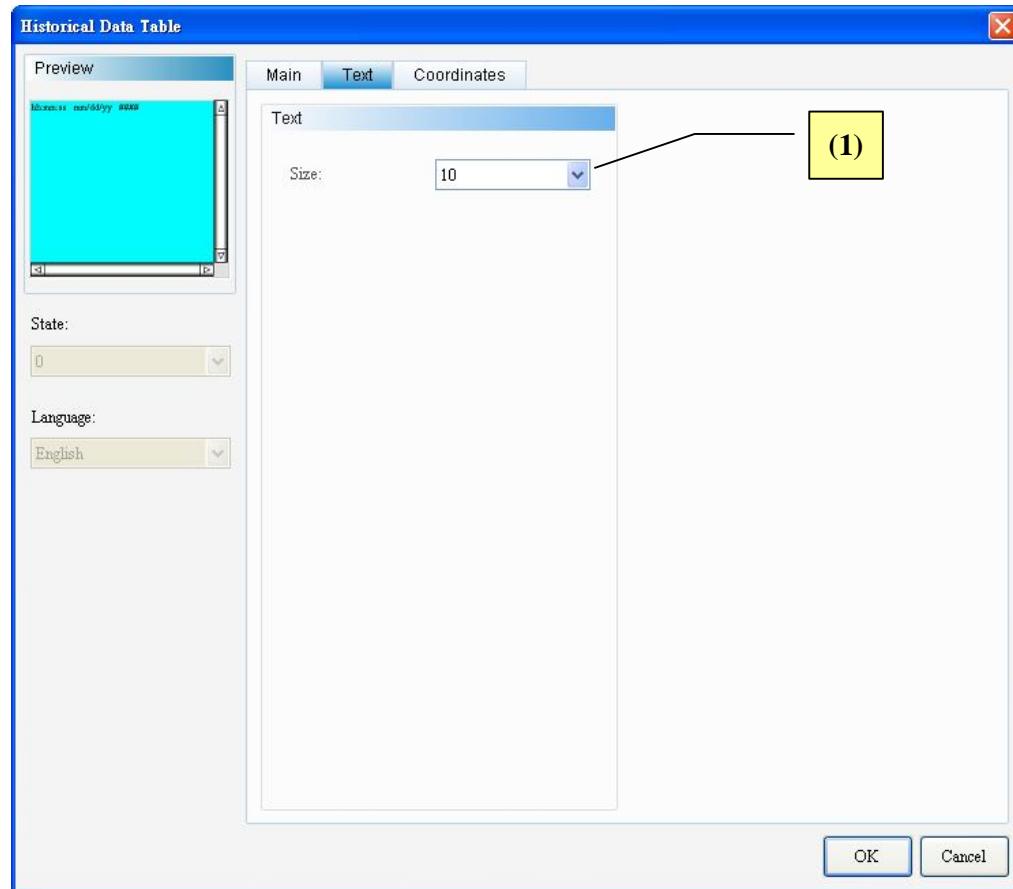


Figure 15-3-4 Historical Data Table Text property page

No.	Item	Function
(1)	Text	<p>➤ Set the text size of the value data to be displayed.</p> <p>The image shows a zoomed-in view of the 'Text' property page. It focuses on the 'Size:' dropdown menu. The menu is open, showing a list of font sizes: 8, 10, 12, 14, 16, 18, 20, 22, 24, 28, 32, 36, 40, 48, 64, and 72. The size '10' is highlighted with a red rectangle. The rest of the dialog is visible in the background.</p>

◆ Location

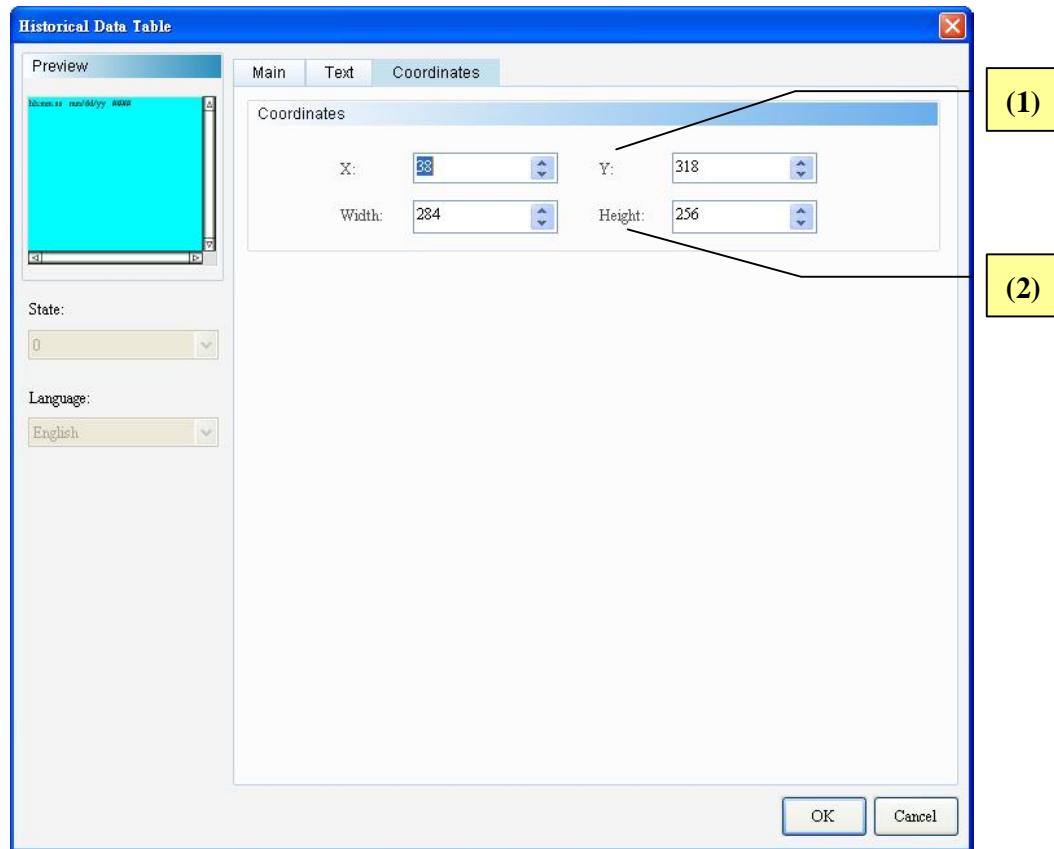


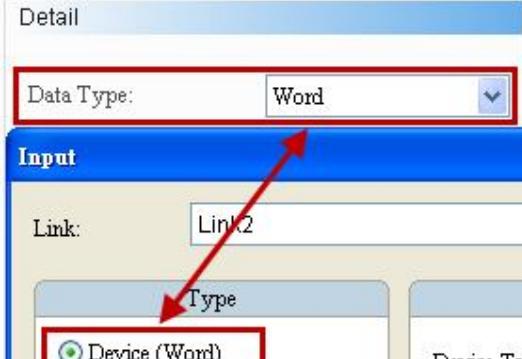
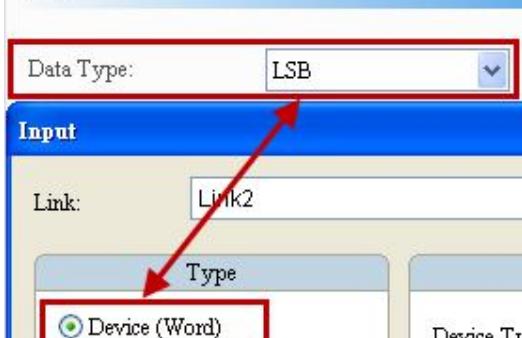
Figure 15-3-4 Historical Data Table Location property page

No.	Item	Function
(1)	X-value and Y-value	➤ Sets the upper left X-coordinate and Y-coordinate of elements
(2)	Width and Height	➤ Sets element width and height.

15-4 Historical Event Table

	Historical Event Table
---	------------------------

The Historical Event Table supports three data types. Refer to Table 15-4-2 for more information. The user only needs to increase or reduce the state count value on the property page to add or delete the status counts.

Historical Event Table														
Table 15-4-2 Data Type of the Historical Event Table														
Data Type	State Counts	Memory Address												
Word	<p>If data type is "Word", users can select 1-256 states.</p> <p>Detail</p> <p>Data Type: Word</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 256</p>	<p>If data type is "Word", "Word" is the data type of memory address.</p> 												
LSB / LSB (Support State 0)	<p>If the data type is "LSB", the data in the register are first converted into binary data. Next, the present object state is determined according to the element with the lowest non-zero bit.</p> <p>If the data type is "LSB", users can select 1-16 states, except "State 0".</p> <p>Detail</p> <p>Data Type: LSB</p> <p>Data Format: Unsigned Decimal</p> <p>State Counts: 16</p> <p>If the data type is "LSB", users can select 1-16 states, except "State 0".</p> <p>Others</p> <table border="1"> <tr><td>Border Color</td><td>RGB(180, 180, 180)</td></tr> <tr><td>Background Color</td><td>RGB(0, 252, 252)</td></tr> <tr><td>Data Type</td><td>Word</td></tr> <tr><td>Data Format</td><td>Word</td></tr> <tr><td>State Counts</td><td>LSB</td></tr> <tr><td>Detail...</td><td>LSB (Support State 0)</td></tr> </table> <p>If users select "LSB", the element will display "?" when State=0.</p> 	Border Color	RGB(180, 180, 180)	Background Color	RGB(0, 252, 252)	Data Type	Word	Data Format	Word	State Counts	LSB	Detail...	LSB (Support State 0)	<p>If the data type is "LSB" or LSB (Support State 0), "Word" is the data type of memory address.</p>
Border Color	RGB(180, 180, 180)													
Background Color	RGB(0, 252, 252)													
Data Type	Word													
Data Format	Word													
State Counts	LSB													
Detail...	LSB (Support State 0)													

Historical Event Table		
Table 15-4-2 Data Type of the Historical Event Table		
	Numeric Displayed with the lowest bit when the decimal values are 3 and 7.	
Decimal	Binary	State Value
0	<u>0000000000000000</u>	<u>State=0 when all bits are “0”</u> <u>[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.
3	<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.
7	<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	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	00000000100000000	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.

Double click the Historical Event Table icon and the following property setting screen appears

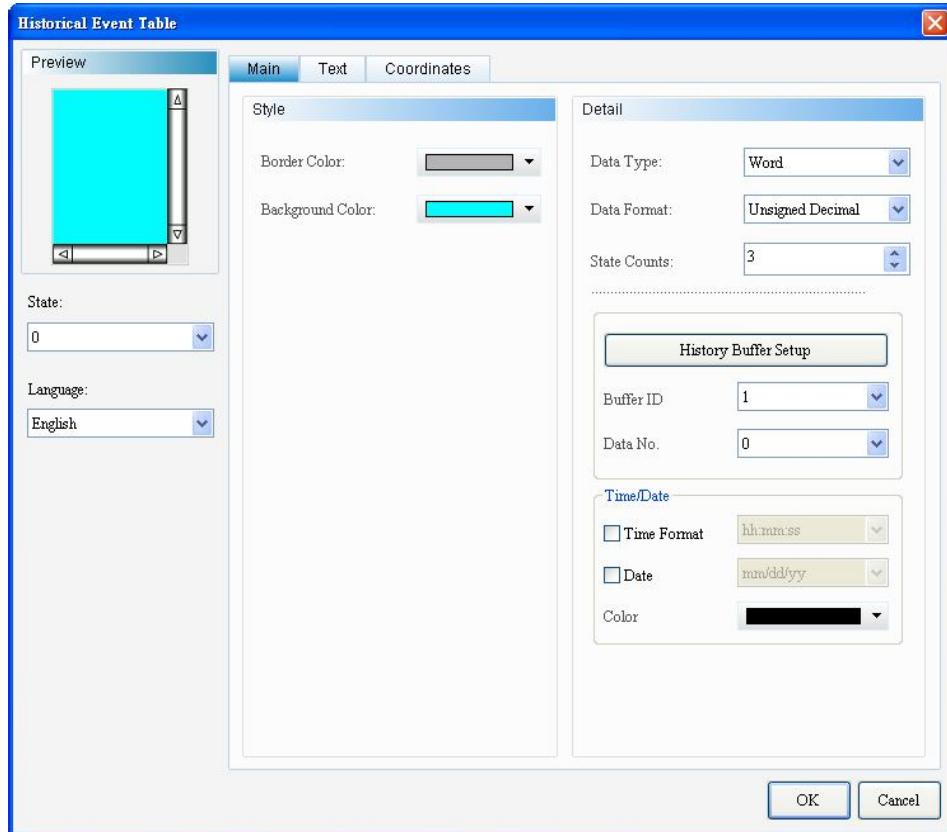


Figure 15-4-1 Historical Event Table property setting screen

Historical Event Table	
Function Page	Description
Preview	The State and Language are available to the Historical Event Table.
Main	Sets the Border color, Background Color. Sets the Data type, Data format, State counts, Buffer ID, Data No.. Sets the Time/Date display.
Text	Sets the content/font/size/color/format/zoom/alignment of the text to be displayed.
Position	Sets the X-Y coordinate, width and height of the component.

Table 15-4-3 Historical Event Table function page

◆ General

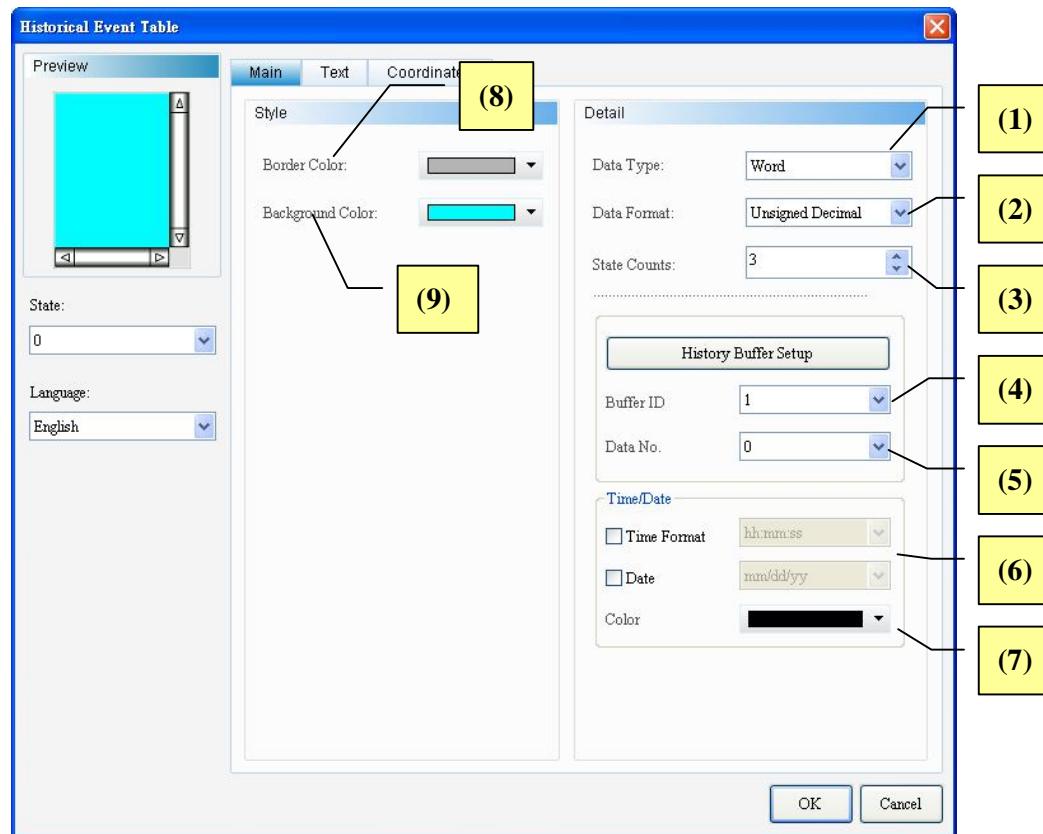
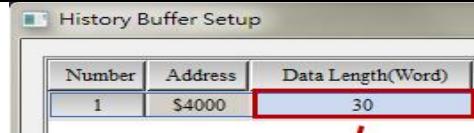
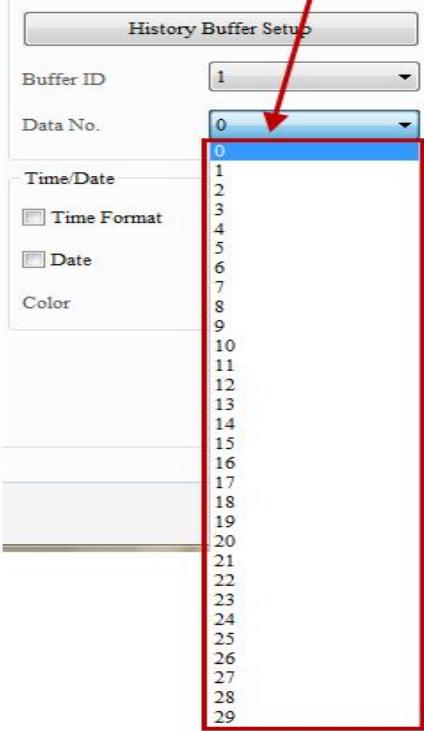
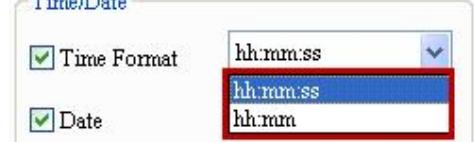
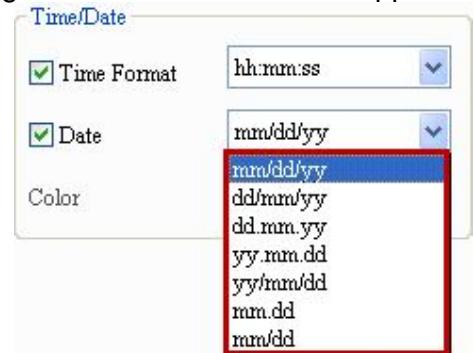


Figure 15-4-2 Historical Event Table General property page

No.	Item	Function
(1)	Data Type	<ul style="list-style-type: none"> ➤ The Data Type supports three formats: Word, LSB and LSB (Support State 0). <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>Detail</p> <p>Data Type: <input style="border: 1px solid #ccc; padding: 2px; width: 150px; height: 25px; background-color: #fff; color: #000; font-size: 10px; font-weight: bold; text-decoration: none; text-align: center; outline: none; border-radius: 3px;" type="button" value="Word"/> <input style="border: 1px solid #ccc; padding: 2px; width: 150px; height: 25px; background-color: #fff; color: #000; font-size: 10px; font-weight: bold; text-decoration: none; text-align: center; outline: none; border-radius: 3px;" type="button" value="LSB"/> <input style="border: 1px solid #ccc; padding: 2px; width: 150px; height: 25px; background-color: #fff; color: #000; font-size: 10px; font-weight: bold; text-decoration: none; text-align: center; outline: none; border-radius: 3px;" type="button" value="LSB (Support State 0)"/></p> <p>Data Format:</p> <p>State Counts: <input style="border: 1px solid #ccc; padding: 2px; width: 50px; height: 25px; background-color: #fff; color: #000; font-size: 10px; font-weight: bold; text-decoration: none; text-align: center; outline: none; border-radius: 3px;" type="button" value="3"/></p> </div>
(2)	Data Format	<ul style="list-style-type: none"> ➤ The Data Format can be selected only when the data type is Word. ➤ The Data Format supports BCD, Signed Decimal, Unsigned Decimal, and Hexadecimal formats.

No.	Item	Function																										
		<p>Detail</p> <p>Data Type: Word</p> <p>Data Format: Unsigned Decimal BCD Signed Decimal Unsigned Decimal Hexadecimal</p>																										
(3)	State Counts	<ul style="list-style-type: none"> Set the state counts for the Historical Event Table. The state counts can be set between 1 and 256 with Word as the data type, 16 states can be set with LSB as the data type, and 17 states can be set with LSB Support State 0 as the data type. Refer to 15-4-2 for more information. 																										
(4)	Buffer Number	<ul style="list-style-type: none"> The buffer number corresponds to the data number in the History Data Buffer. The History Setup function can add up to 12 history data and, thus, the buffer number supports up to 12. <table border="1"> <thead> <tr> <th>Number</th> <th>Address</th> </tr> </thead> <tbody> <tr><td>1</td><td>\$1000</td></tr> <tr><td>2</td><td>\$1</td></tr> <tr><td>3</td><td>\$3765</td></tr> <tr><td>4</td><td>\$3</td></tr> <tr><td>5</td><td>\$4</td></tr> <tr><td>6</td><td>\$5</td></tr> <tr><td>7</td><td>\$6</td></tr> <tr><td>8</td><td>\$7</td></tr> <tr><td>9</td><td>\$8</td></tr> <tr><td>10</td><td>\$9</td></tr> <tr><td>11</td><td>\$10</td></tr> <tr><td>12</td><td>\$11</td></tr> </tbody> </table> <p>History Buffer Setup</p> <p>Buffer ID: 1</p> <p>Data No.: 1</p> <p>Time/Date</p> <p>Time Format</p> <p>Date</p> <p>Color</p>	Number	Address	1	\$1000	2	\$1	3	\$3765	4	\$3	5	\$4	6	\$5	7	\$6	8	\$7	9	\$8	10	\$9	11	\$10	12	\$11
Number	Address																											
1	\$1000																											
2	\$1																											
3	\$3765																											
4	\$3																											
5	\$4																											
6	\$5																											
7	\$6																											
8	\$7																											
9	\$8																											
10	\$9																											
11	\$10																											
12	\$11																											
(5)	Data No.	<ul style="list-style-type: none"> The data location indicates the length of the data type to be read from the History Data Buffer. The Data No. is 0 when the data length is 1; the Data No. is 0 or 1 when the data length is 2. When 30 Words are read, the Data No. is 0~29. 																										

No.	Item	Function
		 
(6)	Time Format	<ul style="list-style-type: none"> ➤ The following two time formats are supported: 
	Date Format	<ul style="list-style-type: none"> ➤ The following seven date formats are supported: 
(7)	Show Color	<ul style="list-style-type: none"> ➤ The Show Color option is used to change the display color of the time and date. The color is  by default.

No.	Item	Function
		 A screenshot of a historical event table. The entire table has a thick red border. The table contains 12 rows of text: "hh:mm:ssmm/dd/yy" repeated 12 times. The table has scroll bars on the right and bottom.
(8)	Border Color	<p>➤ The user can set the border color for the Historical Event Table.</p>  <p>A screenshot of a historical event table with a black border. The table contains 12 rows of text: "hh:mm:ssmm/dd/yy" repeated 12 times. The table has scroll bars on the right and bottom. To the right of the table, there is a "Border Color" label with an arrow pointing to a color selection dropdown menu. The dropdown menu shows a red square, indicating the current border color.</p>
(9)	Background Color	<p>➤ The user can set the Background Color for the Historical Event Table.</p>  <p>A screenshot of a historical event table with a red background. The table contains 12 rows of text: "hh:mm:ssmm/dd/yy" repeated 12 times. The table has scroll bars on the right and bottom. To the right of the table, there is a color selection dropdown menu, which is currently displaying a red square.</p>

◆ Text

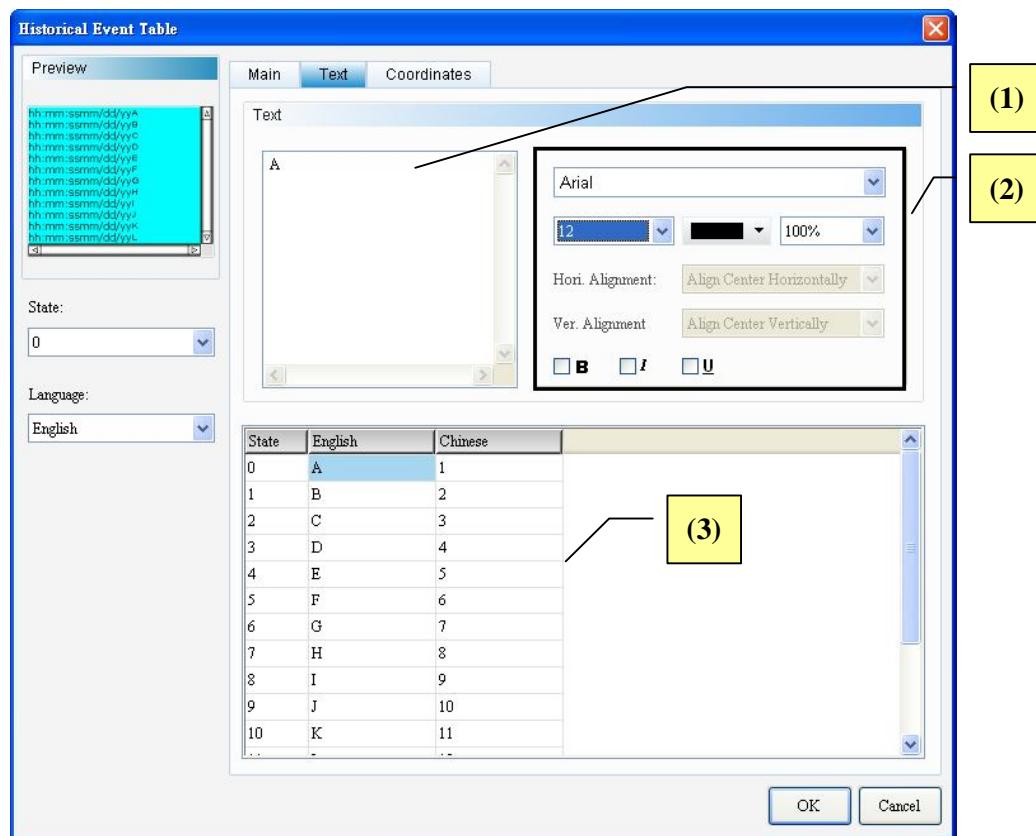
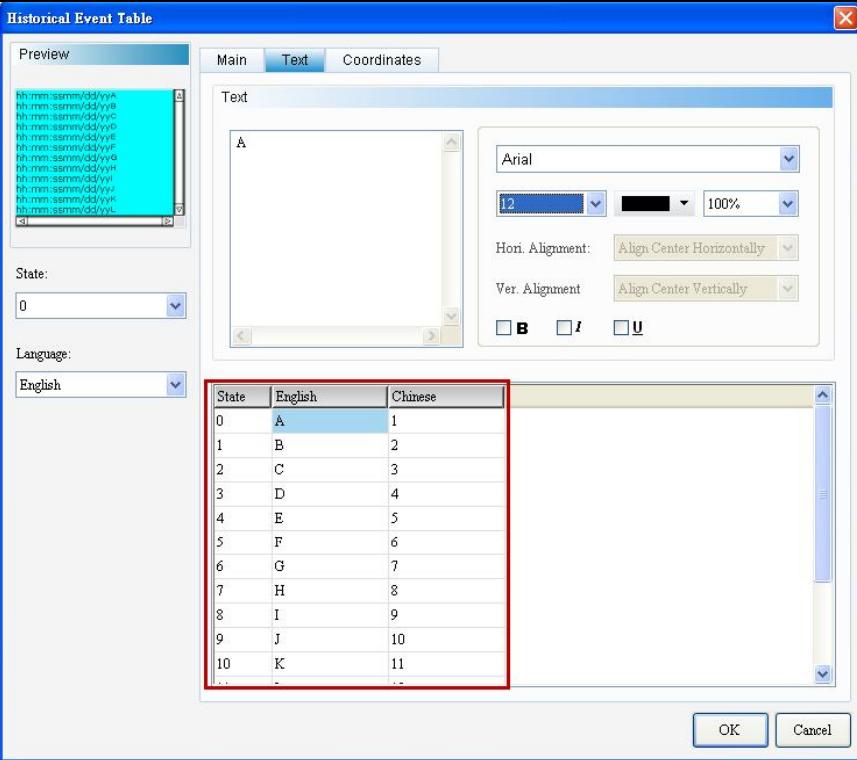


Figure 15-4-3 Historical Event Table Text property page

No.	Item	Function
(1)	Text	➤ Users can input the text to be displayed in the text box.

No.	Item	Function																																							
		 <table border="1"> <thead> <tr> <th>State</th> <th>English</th> <th>Chinese</th> </tr> </thead> <tbody> <tr><td>0</td><td>A</td><td>1</td></tr> <tr><td>1</td><td>B</td><td>2</td></tr> <tr><td>2</td><td>C</td><td>3</td></tr> <tr><td>3</td><td>D</td><td>4</td></tr> <tr><td>4</td><td>E</td><td>5</td></tr> <tr><td>5</td><td>F</td><td>6</td></tr> <tr><td>6</td><td>G</td><td>7</td></tr> <tr><td>7</td><td>H</td><td>8</td></tr> <tr><td>8</td><td>I</td><td>9</td></tr> <tr><td>9</td><td>J</td><td>10</td></tr> <tr><td>10</td><td>K</td><td>11</td></tr> <tr><td>..</td><td>..</td><td>..</td></tr> </tbody> </table>	State	English	Chinese	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	11
State	English	Chinese																																							
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	11																																							
..																																							
(2)	Text Properties	<ul style="list-style-type: none"> ➤ Sets text properties, including font type, font size, font color, scaling, text alignment, and bold/italic/underline of font. Please refer to the above figure for details about the results of text properties. 																																							
(3)	Multilingual Text Data	<ul style="list-style-type: none"> ➤ Users can add multilingual text data from the Multi-Language Text Page. As shown in the Text Properties Figure, users can input English text in the English field. 																																							

◆ Location

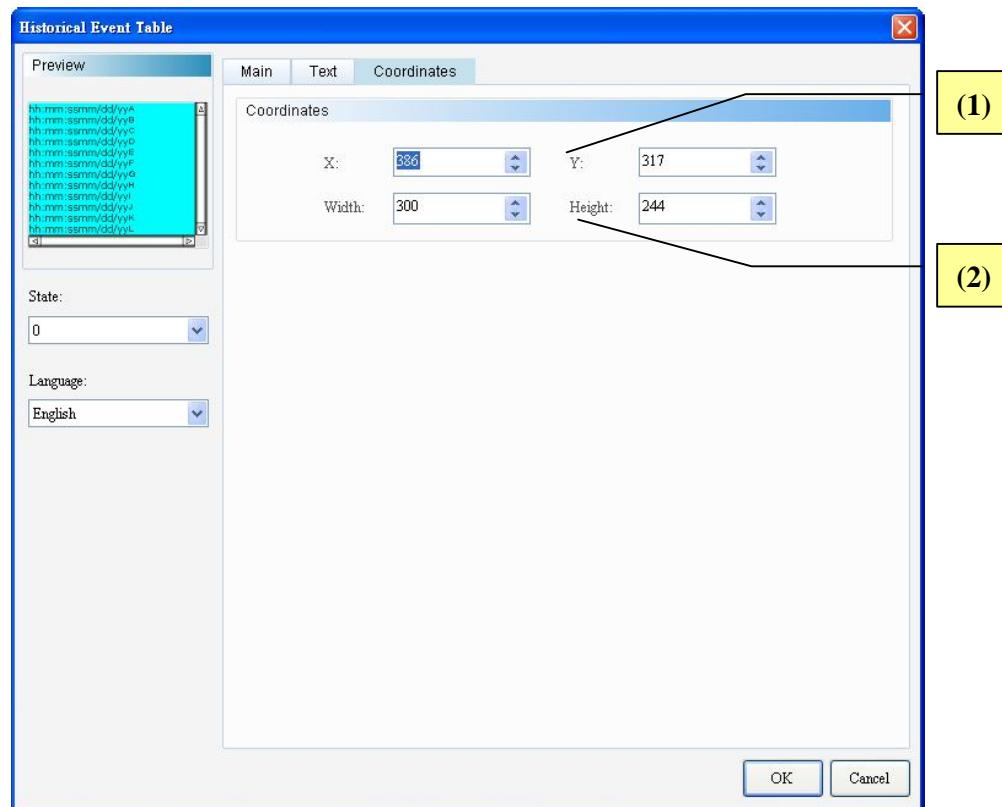


Figure 15-4-4 Historical Event Table Location property page

No.	Item	Function
(1)	X-value and Y-value	➤ Sets the upper left X-coordinate and Y-coordinate of elements.
(2)	Width and Height	➤ Sets element width and height.