Area Designer
URM-40LC-EW configuration tool
Instruction manual

Symbol	Amended Reason				Date	Amended by	NO

Approved by	Checked by	Drawn by	Designed by	Title	Area Designer Instruction Manual		
Aoki	*Hosoda*	*Hosoda*	*Hosoda*	Drawing No.	C-41-02608		1/72

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[Introduction]

Make sure to read this manual before and during operation for the correct usage.

[About Area Designer]

By using this application, it is possible to monitor the sensor and configure it. Also, it is possible to save measurement data and area configuration data.

[Before use]

Make sure to read the specification and user's manual of the sensor before operation.

[Precautions]

- Make sure to perform operations with a stable power supply listed in the product specifications and the user's manual. Operating under unstable power supply may damage the device.
- Depending on the computer's performance and load conditions, communication with the sensor may be delayed, and therefore the display may get slower than normal.
- The actual product may differ from the illustrations and figures in this document as they are used for explanatory purposes only.
- All information in this user's manual are subject to change without prior notice.
- If you have any inquiry about the product, contact our nearest distributor or sales representative.

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1. System requirement

The minimum system requirement recommended for Area Designer is as follows.

After reading the operation manual of your computer, check the operating environment.

Computer	CPU	Pentium® IV processor of 800MHz or above
	RAM	512MB or above
	Hard disk	150MB minimum free space
Compatible OS	Microsoft® Windows 7 Professional	
	Microsoft® Windows 10	
Display	High color (16bit color) or above, 800×600 dot or above	

The operation in the below system environment cannot be guaranteed.
- Other OS that is not mentioned above
- NEC PC98 series and its compatible device
- Self made PC
- Multi boot environment
- Multi monitor environment
- Upgraded OS from the standard installed OS

Caution

☐ For OS other than Windows 7, operation is not guaranteed even if the minimum
system requirements are fulfilled.

2. Installing the application

This section will explain how to install the application on Windows.

1. This application is available in our company website under the download section of the scanner page. Download it to your local folder where you can execute it.

2. Double click on the installer "Area Designer" and the following screen will be displayed. Here the language can be changed at the time of installation.
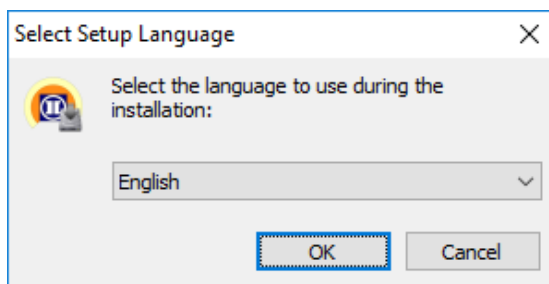

Figure 2-1 Select the language for an installer

3. As shown in figure 2.1 click "ok", then the screen of the installation location of Area Designer is displayed. If there is no particular specification then, click "next".
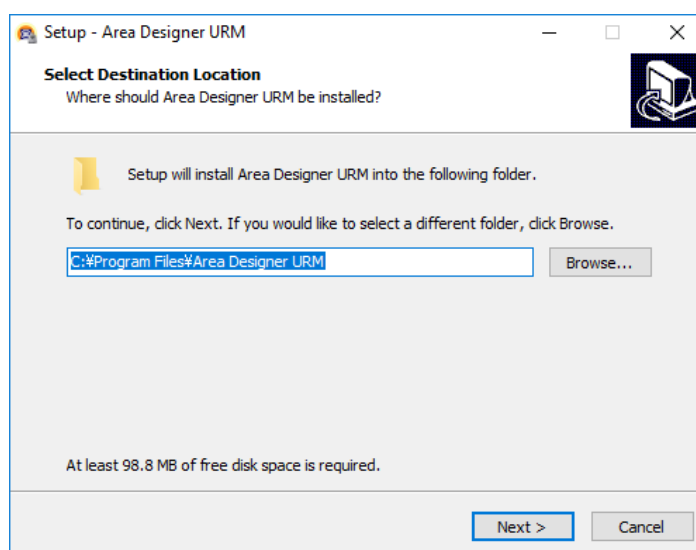

Figure 2-2 Specify the location for an installation

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4. As shown in figure 2.2, click "next", then select the component "Area Designer".
   Click "next" when there is no specific components
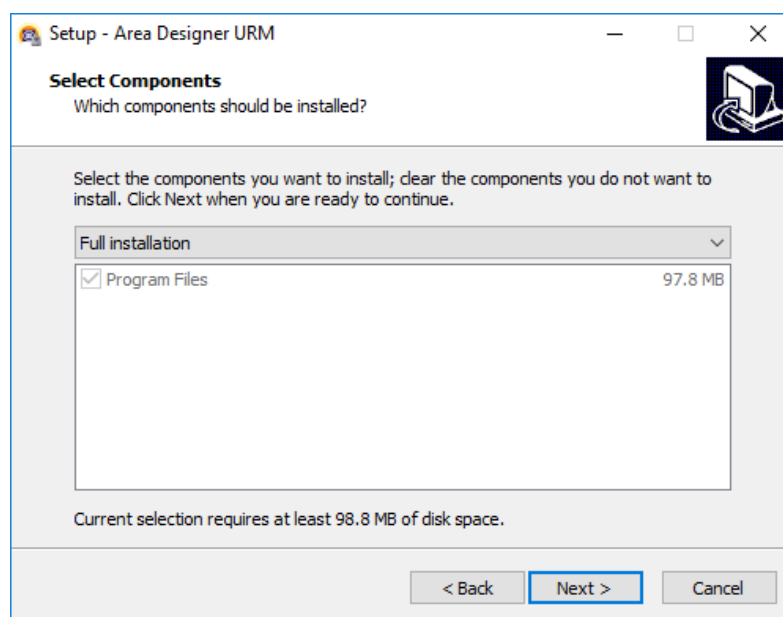

Figure 2-3 Select the component

5. As shown in figure 2-3, click "next" then select the program group "Area Designer".
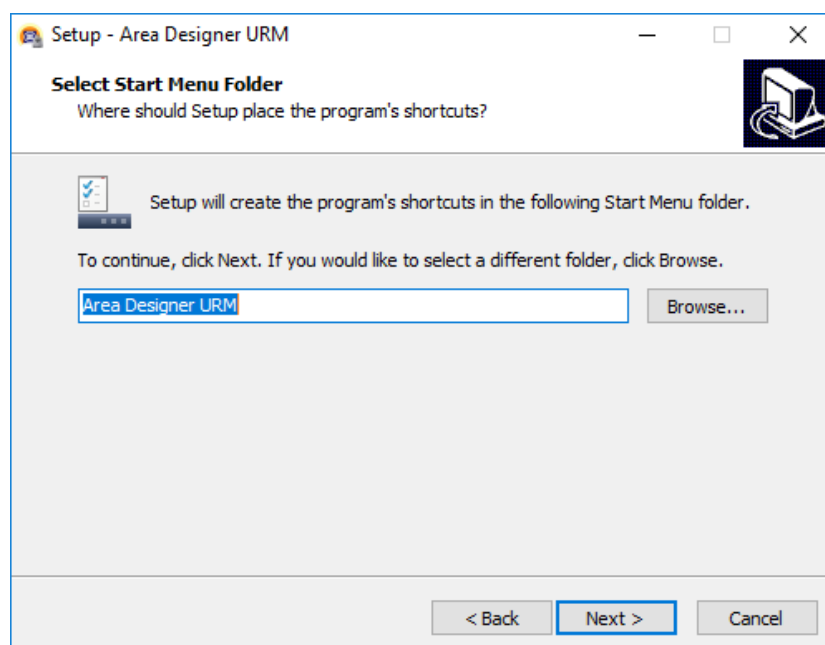   Click "next" when there is no specific components.

Figure 2-4   Select the program group

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6. Once you click "next" as shown in figure 2-4, you will move to the additional task select screen. After selecting the additional tasks to perform during the installation, click next.
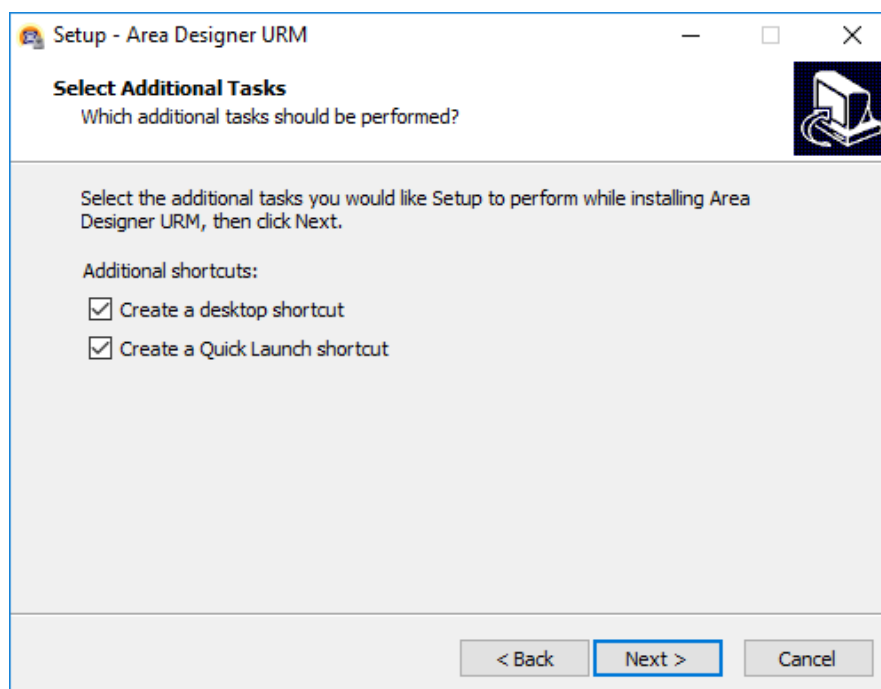

Figure 2-5 Select additional tasks

7. As shown in figure 2-5, click next then installation of "Area Designer" will start.
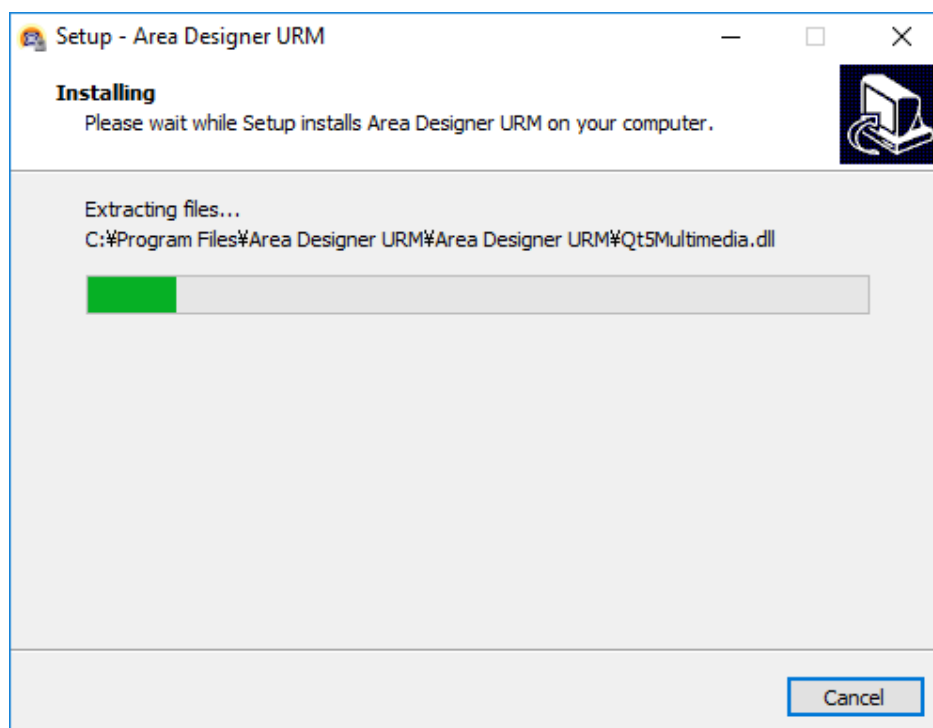

Figure 2-6 Installation in progress

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3. How to run the application

1. Click "⊞ Start menu" → "All programs" → "Area Designer" or double click on Area Designer shortcut icon on the desktop as shown in below figure 3.

Figure 3 Area Designer desktop icon

2. "Area Designer" will be launched.

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4. Main window

This section will explain about the main window, which appears when launching the application software.

4.1 Welcome to "Area Designer"

When you launch the application, the window in figure 4.1-1 will appear. The details of the three buttons on this window are described in the table 4.1-1.
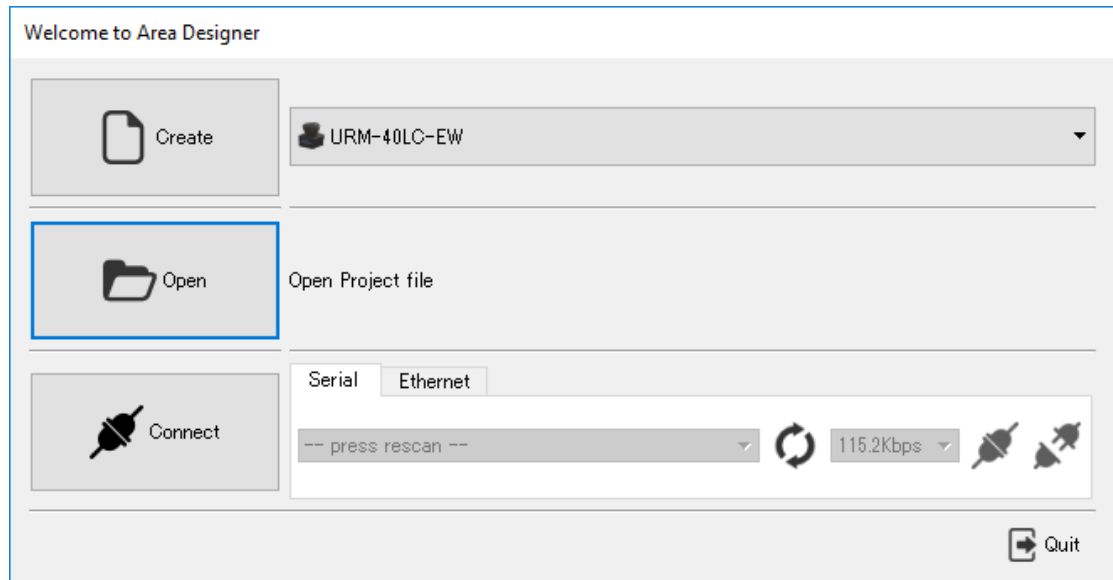

Figure 4.1-1 Welcome to "Area Designer"

Table 4.1-1 Buttons of "Welcome to Area Designer"

Button	Description
Create	Create a new project file of the selected sensor type.
Open	Open an existing project file.
Connect	Connect with the sensor. Read the settting from the sensor.

Table 4.1-2 shows the types of project file extensions that can be opened with the "Open" button in Table 4.1-1.

Table 4.1-2 File extension types of project file

Extension	Description
.arax	Project file

As shown in table 4.1-1, the details of the components that are located right to the "connect" button are explained as below.
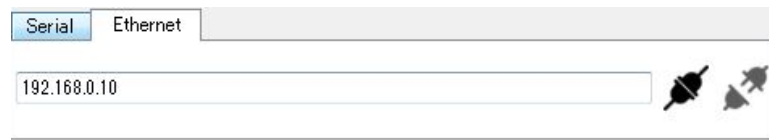

Figure 4.1-2 Ethernet connection component

Table 4.1-3 Ethernet connection component icon details

Icon	Name	Description
192.168.0.10	Input IP address	Enter the sensor IP address which you want to connect to your PC. The port number is fixed.
	Connect	Connects with the IP address and starts communication.
	Disconnect	Disconnect the communication.

Figure 4.1-3 Serial connection component

Table 4.1-4 Serial connection component

Icon	Name	Description
COM8 ▼	Serial COM Port	The icon shows the connected COM port number When using multiple sensors, select the COM port which you want to connect.
↻	Update	Update the serial device port. The number of the connected COM port is shown again.
115.2Kbps ▼	Select Baud rate value	Select the baud rate of the RS422 device connected to the PC.
	Connect	Connect to the selected COM port and start communication.
	Disconnect	Disconnect the communication.

Caution

The sensor connected to this application does not use serial connection.

Therefore, select Ethernet before connecting.

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4.2 Main screen

   This is the main window used for area configuration and monitoring. Edit mode and monitor mode can be switched by clicking "view" → "mode"," [✎ /edit]" and [💻/monitor] in the menu bar or the ✎ and 💻 icon in the toolbar. The main screen window of edit mode and monitor mode will change accordantly.

4.2.1 Edit

   In this mode, you can write area configurations to the sensor and also read and check the area configurations written in the sensor.
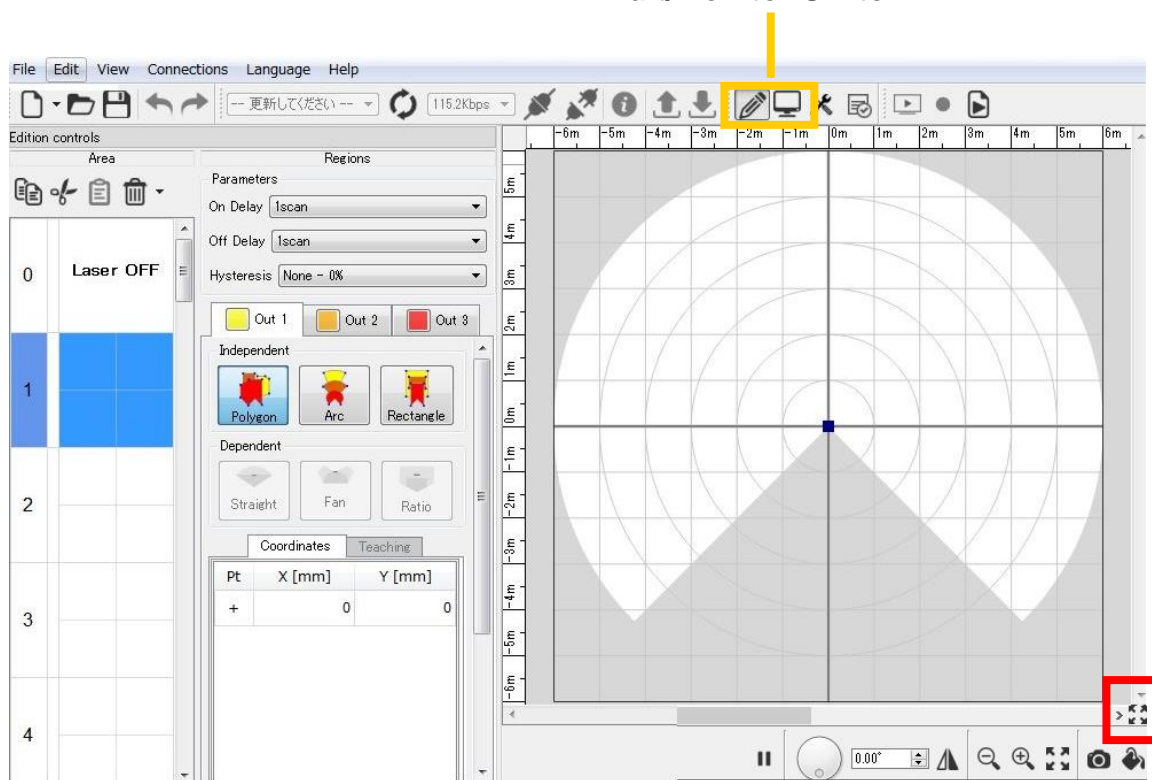
Edit/Monitor Switch

Figure 4.2.1-1 Default status in edit mode

*In factory setting [LX mode], the editing control screen for area editing will not be displayed. Select LA mode 1 or LA mode 2 in the sensor setting options. Refer to section 4.5 for the setting method.

Quick/Useful tips

☐ When you click "⛶"on the lower right in the corner of the main screen, the tool bar is hidden and the canvas area will be enlarged. Click "⛶",again to return.

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As shown in figure the 4.2.1-2, the icons ↩ and ↪ are used to undo or redo the operations of the icon no.2 to 6. The icon no.2 to 4 are used to configure the each areas. "Areas" refers to the regions configured with a maximum of 3 outputs which is shown in the main screen of no. 6 in figure 4.2.1-2.

The regions displayed in yellow, orange and red on the main view represent each individual output region. As shown in figure 4.2.1-2, No.5 and No.6 are used to configure the each output region.
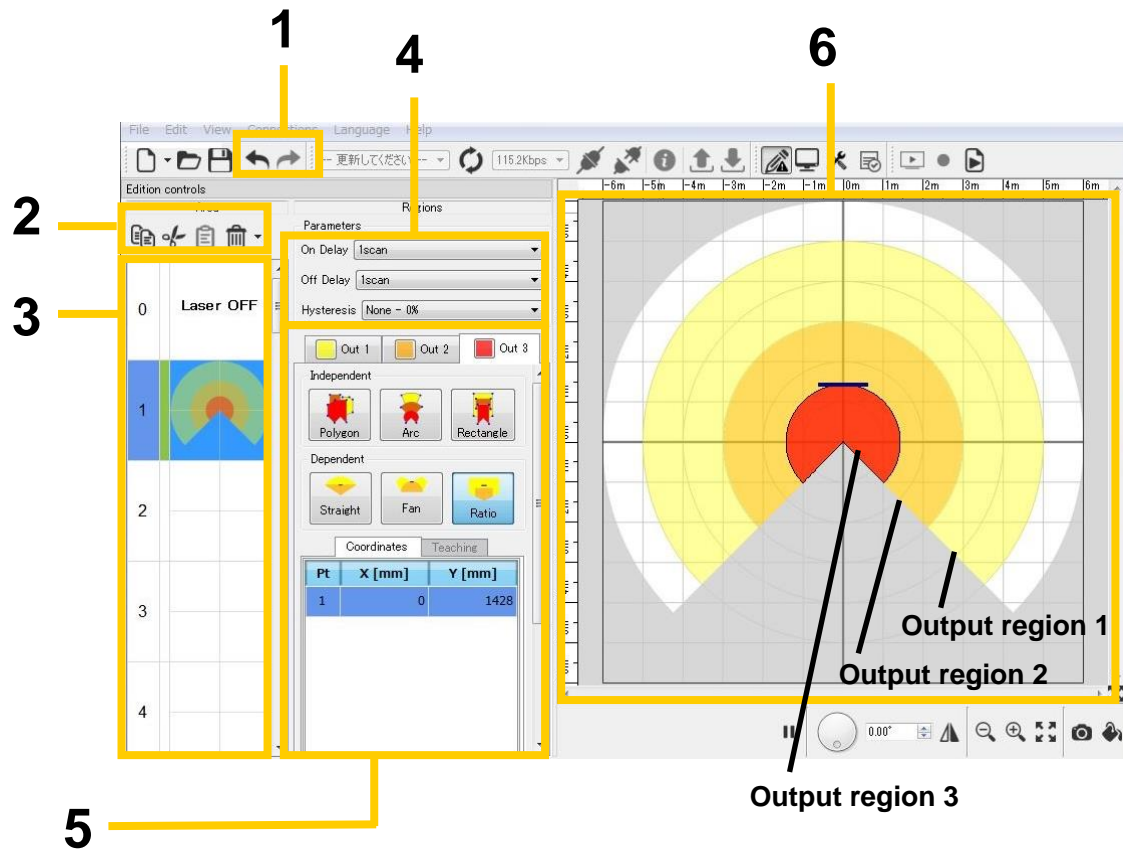

Figure 4.2.1-2 Edit tool of edit screen

4.2.1.1 Area

. Here you can set and operate the area currently being set. Operations such as "Copy", "Paste", "Write", and "Load" are performed on the selected area.

4.2.1.1.1　　Copy, Cut, Paste, Delete

Each operation are shown as in the figure 4.2.1.1.1-1 [Copy], [Cut], [Paste], [Delete].

　　[Copy] leaves the data of selected area and paste in another area. [Cut] deletes the data of selected area and pastes it in another area.

　　[Delete] eliminates the data of the selected area.

　　When you click ▼ right to 🗑, as shown in figure 4.2.1.1.1-2, you can select [Reset], [Reset All], [Delete] and [Delete All]. [Reset] is used when you want to go back to the original state before editing the data of the under configuration area. [Delete All] eliminates all data of the area. [Reset All],　go back to original state before editing the data of all area.
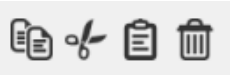
Figure 4.2.1.1.1-1 Copy, Cut, Paste, Delete
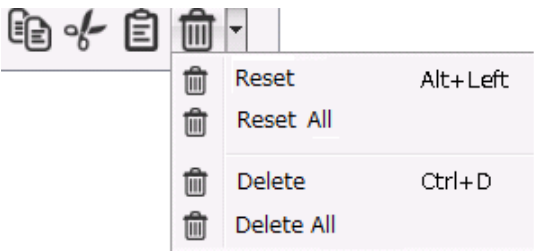
Figure 4.2.1.1.1-2　Reset, Reset All, Delete and Delete All

Caution

☐　Copy, Cut, Paste and Delete tools cannot be used for each output region.
　　In addition, these tools can be only used for each individual area; they cannot be used for multiple areas.

4.2.1.1.2 Area preview

In figure 4.2.1-2 the functions of the no. 2 and 3 are to preview the areas w. When the background color turns blue, that area becomes editable. The editable areas will be shown in the canvas

Figure 4.2.1-2. The top left number in the area preview is the area number. When changing the area configuration, the color of the editable status will turn green. When the writing operation fails, the editable status turn red.
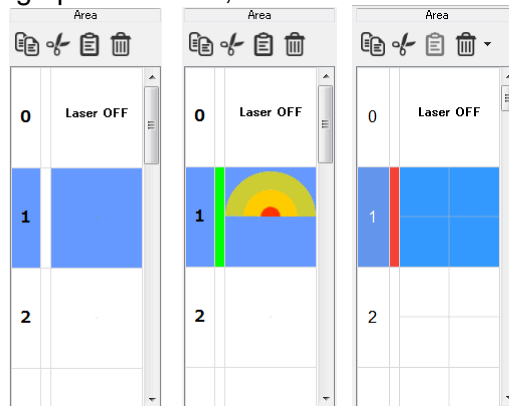
Figure 4.2.1.1.2-1 Left: Area preview of default status,

Middle: Area preview of edit status

Right: Area preview when writing error occurs

Caution

☐　In the case of an area with 2 steps or less, writing it to the scanner will succeed. However, it will be evaluated as no area is set.

By right clicking in the area preview, the background color of the selected area will turn blue and shows the sub menu shown in figure 4.2.1.1.2-2. Functions listed in this sub menu are explained in the table 4.2.1.1.2-1.

|		
📋	Copy	Ctrl+C
✂	Cut	Ctrl+X
📋	Paste	Ctrl+V
🗑	Delete	Ctrl+D
🗑	Delete All	
↻	Reset	Alt+Left
↻	Reset All	
↑	Single Read	Ctrl+R
↓	Single Write	Ctrl+W
↩	Undo	Ctrl+Z
↪	Redo	Ctrl+Y

Figure 4.2.1.1.2-2 Menu displayed by the right click of Area preview

Table 4.2.1.1.2-1   Menu detail by the right click of Area preview

Name	Description
Copy	Copy the selected area.
Cut	Cut the selected area.
Paste	Paste the selected area to another area.
Delete	Delete the selected area.
Delete All	Delete all areas.
Reset	The under configuration area will return to original state before editing.
Reset All	All area will return to original state before editing.
Single Read	Read only the selected area setting from sensor.
Single Write	Write only the selected area setting to sensor.
Undo	Undo the previous operation.
Redo	Redo the last operation.

4.2.1.1.3 ON/ OFF delay

As shown in figure 4.2.1.1.3 ON/OFF delay is configurable for each area or each region depending on application settings. ON delay setting when switching from non-detection state to detection state, and OFF delay setting when switching from detection state to non-detection state. ON/OFF delay is configurable based to the scan count. The time for one scan depends on the motor speed / angle resolution setting in the sensor settings.

・During 2400rpm / 0.25°   : 1scan / 25msec
・During 1200rmp / 0.125° : 1scan / 50msec

For Example : During 2400rpm / 0.25° and delay setting is 4 scan

25msec $\times$ 4 scan = 100msec
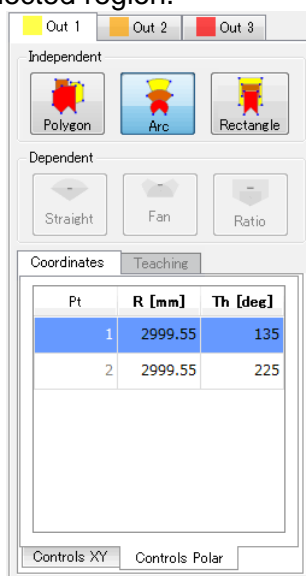
Figure 4.2.1.1.3-1 ON / OFF delay

4.2.1.2 Regions

As shown in figure 4.2.1.2-1, if you select the output tub 1 to 3, they are shown in the canvas. Clicking on any of these outputs as displayed in yellow, orange, a red. It is possible to edit the selected region.

Figure 4.2.1.2-1 Tab of output regions 1 to 3

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As shown in figure 4.2.1.2-2 menu will be displayed by clicking colored rectangles in the output 1 to 3 tub. (For example ▢). If you click "visibility", then it displays or hides the region of the main screen. While viewing the region ✔ mark will be displayed. Area edit menu is also displayed. The details of menu are explained in the table 4.2.1.2-1.
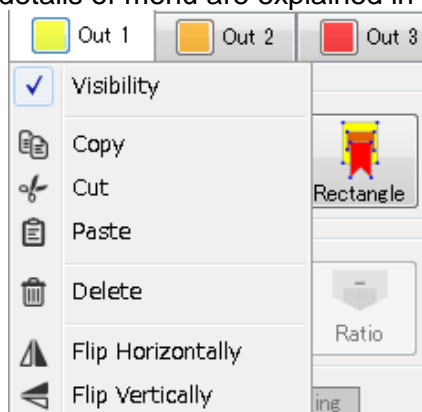

Figure 4.2.1.2-2　Menu

Table 4.2.1.2-1　Region edit menu

Icon	Name	Description
📋	Copy	Copy the under-configuration region.
✂	Cut	Cut the selected region. Delete the original region.
📋	Paste	Paste the selected region to another region.
🗑	Delete	Delete the selected region.
◭	Flip Horizontally	Flip horizontally the current region.
◁	Flip Vertically	Flip vertically the current region.

Quick/Useful tips

☐　To delete a point from a region, select the point you want to delete then right click the mouse. The backspace or delete key can be used for deleting the point. Right click the mouse while dragging over a set of points would delete them.

☐　In the case of making an adjustment to the point position, hold the Ctrl Key and move the mouse so the point moves in 10(mm) intervals. Also, if you hold the Shift Key and move the mouse, the point then moves in 100(mm) intervals. Also, by holding the Alt key, Ctrl key and Shift Key and moving the mouse will move the point moves in 1000(mm) intervals.

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4.2.1.2.1 Independent

This section explains how to configure the output of an independent shape. There are 3 types: polygon, arc and rectangle. When one of these independent shapes is selected, the point will be added to the center point of the main view (refer to figure 4.2.1.2.1-1). By moving this point, a region of the selected shape can be configured.
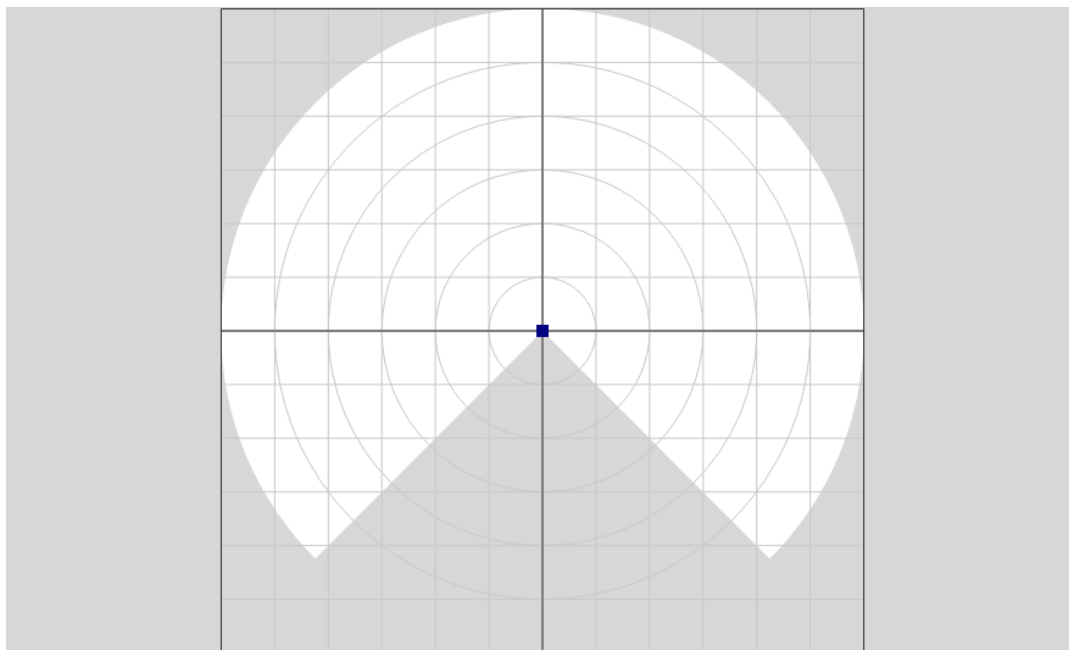
Figure 4.2.1.2.1 Default state during independent shape selection

When configuring an independent shape, there are areas where you can create regions and areas where you can not create regions As shown in figure 4.2.1.2.1-1 the configurable area region is in **white** while the un-configurable area region is in **gray**.

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4.2.1.2.1.1 Polygon

Polygons is used when the intended shape of the output region cannot be drawn by arc or rectangle mode. The information shown with a polygon configuration will have the number of points configured and X and Y coordinates of each points. As shown in figure 4.2.1.2.1.1-1 here is an example of polygon configuration.
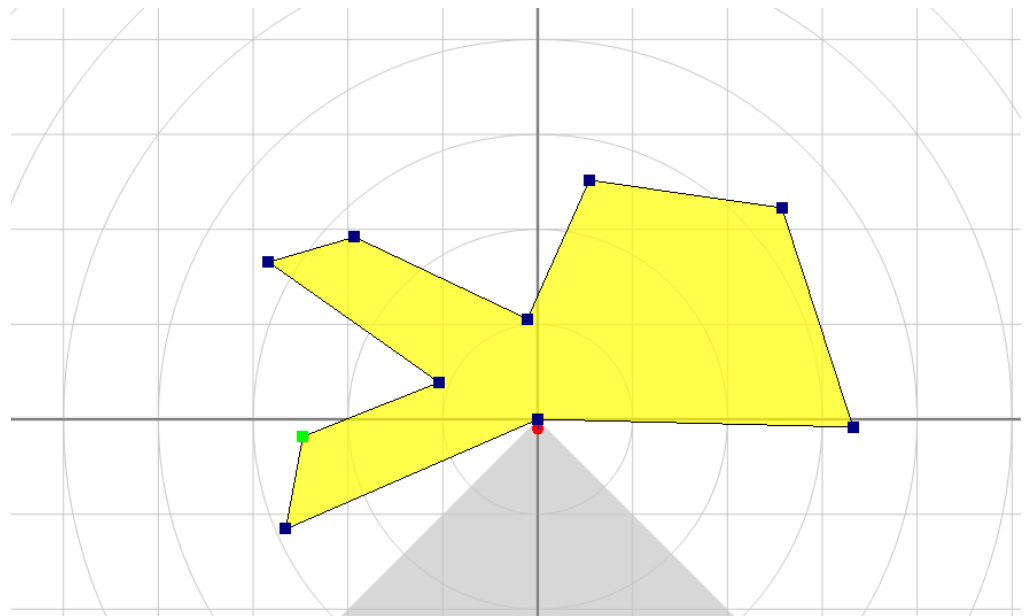
Figure 4.2.1.2.1.1-1 Example of polygon configuration

When a point between one and the other is deleted, the output region will forma straight line between one to the other point. When all the points are deleted other than the center point, the entire output region will disappear.

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Caution

☐   M The maximum number of vertices that can be set in a polygon is 30 points including the origin (Pt ++).If you configure more than 30 points, a warning as shown in figure 4.2.1.2.1.1-2 will be displayed.

☐   When a region is configured with more than 31 points and write the region to the sensor, then read the region from the sensor, the points will be displayed in all steps within the configured area as shown in figure 4.2.1.2.1.1-4;. Although, it is possible to write an area with more than 31 points to configure into the sensor, the writing of point information on the region is not guaranteed. When having more than 31 points in one region, the number of the points that can be displayed in the main canvas is + 1 point of the maximum number of sensor steps.

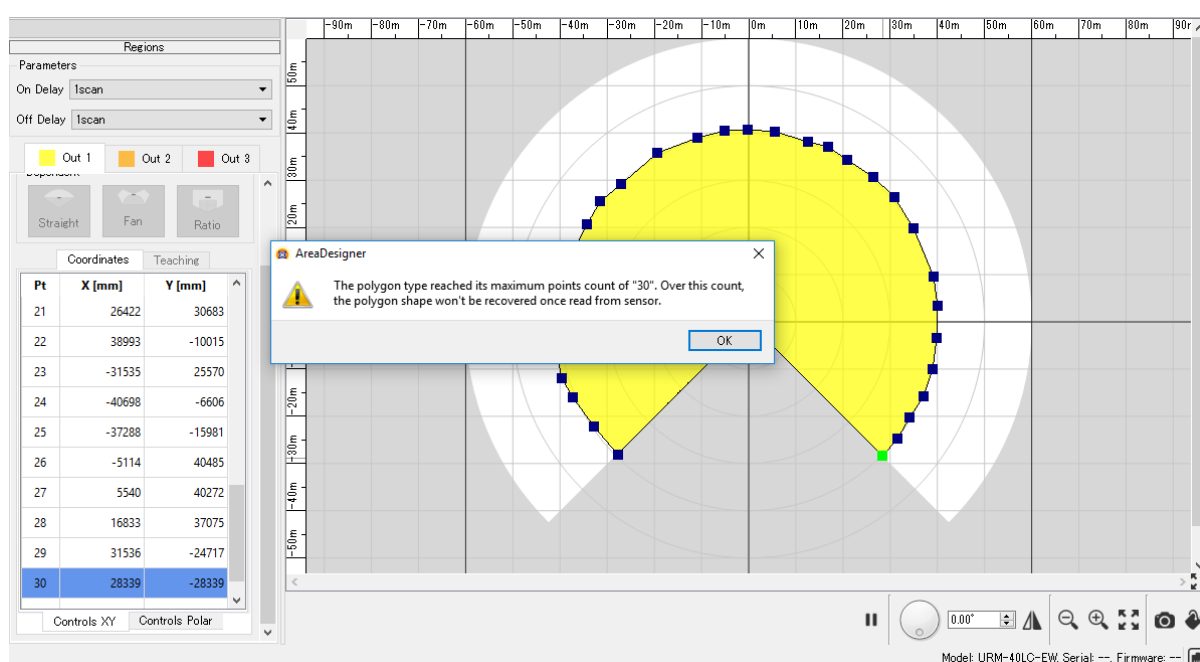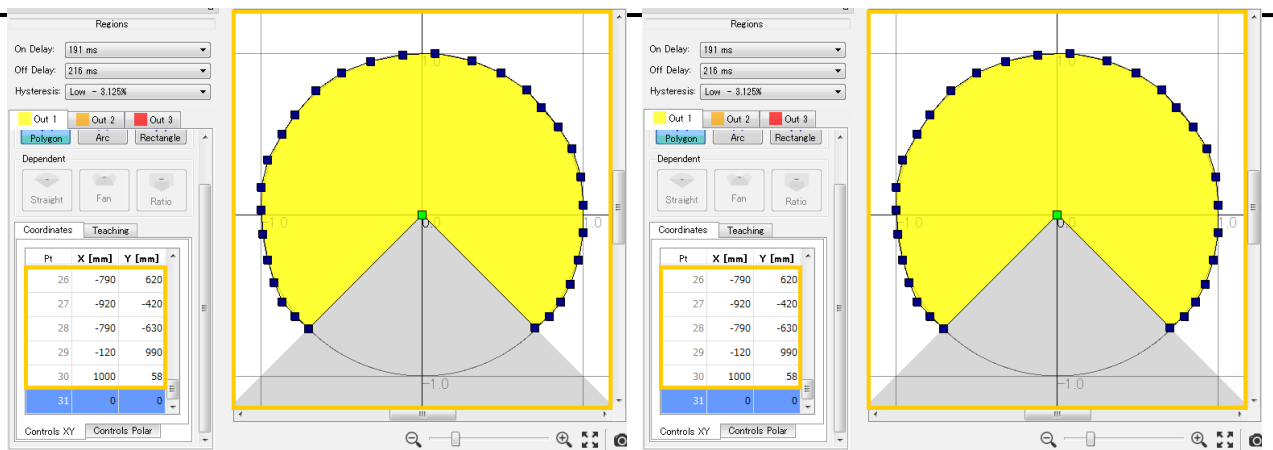Figure 4.2.1.2.1.1-2 Warning message when configuration more than 30 points

Figure 4.2.1.2.1.1-3 Left: Example of 30 points or less within the area
Right: Display an area of 30 points or less when read from the sensor
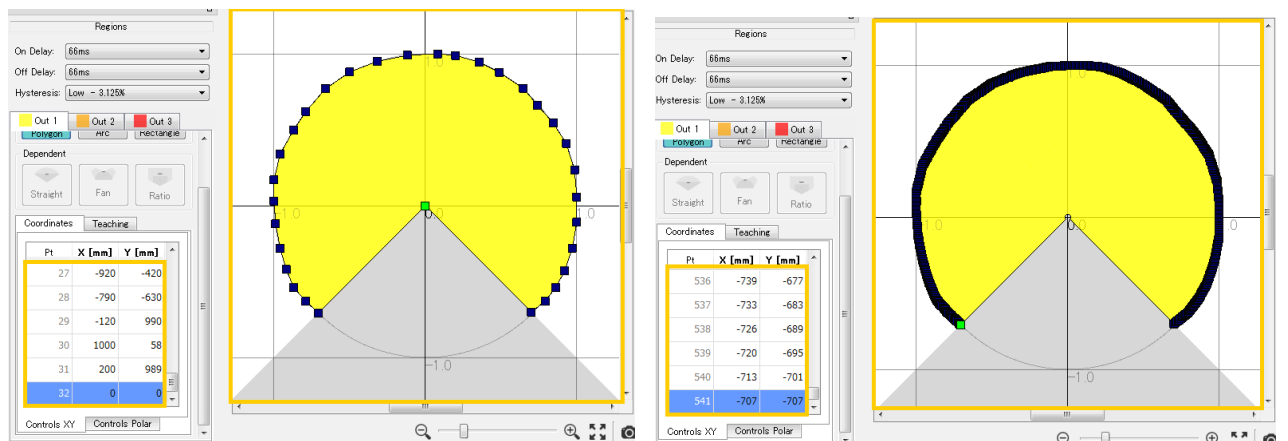
Figure 4.2.1.2.1.1-4 Left: Example of more than 31 points within the region
Right: Display an area of more than 31 points when reading from the sensor

4.2.1.2.1.2 Arc

When configuring an arc, the point information is shown below.
Figure 4.2.1.2-1.2-1 the region consists of 2 points.
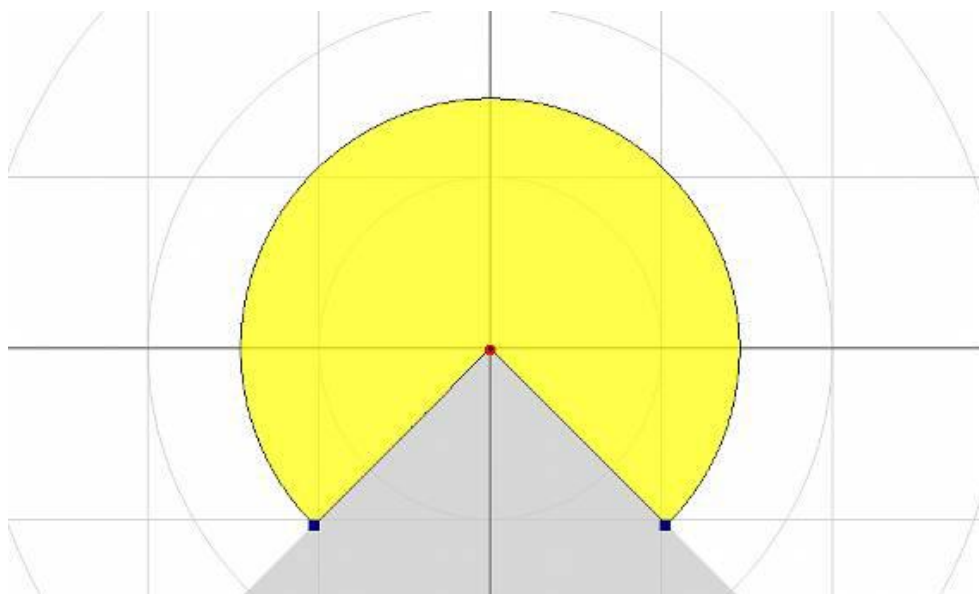
Figure 4.2.1.2.1.2-1 Example of Arc configuration

The point information of an arc shape consists of 2 angles to each point from the starting angle of 0° on the main canvas   and saves the information of the radius of arc. The output area of an arc shape is configured from these 2 angles and the radius of the arc. When the radius of one point is changed, the radius of other point is also changed at the   same value. As shown in figure 4.2.1.2.1.2-2 arc will be configured, if either of the two   points is deleted, the value of deleted point will change to the same value of other point.

Figure 4.2.1.2.1.2-2 Example of Arc configuration when a point is deleted.

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4.2.1.2.1.3 Rectangle

The output of a rectangle is configured using 4 points as shown in figure 4.2.1.2.1.3-1.
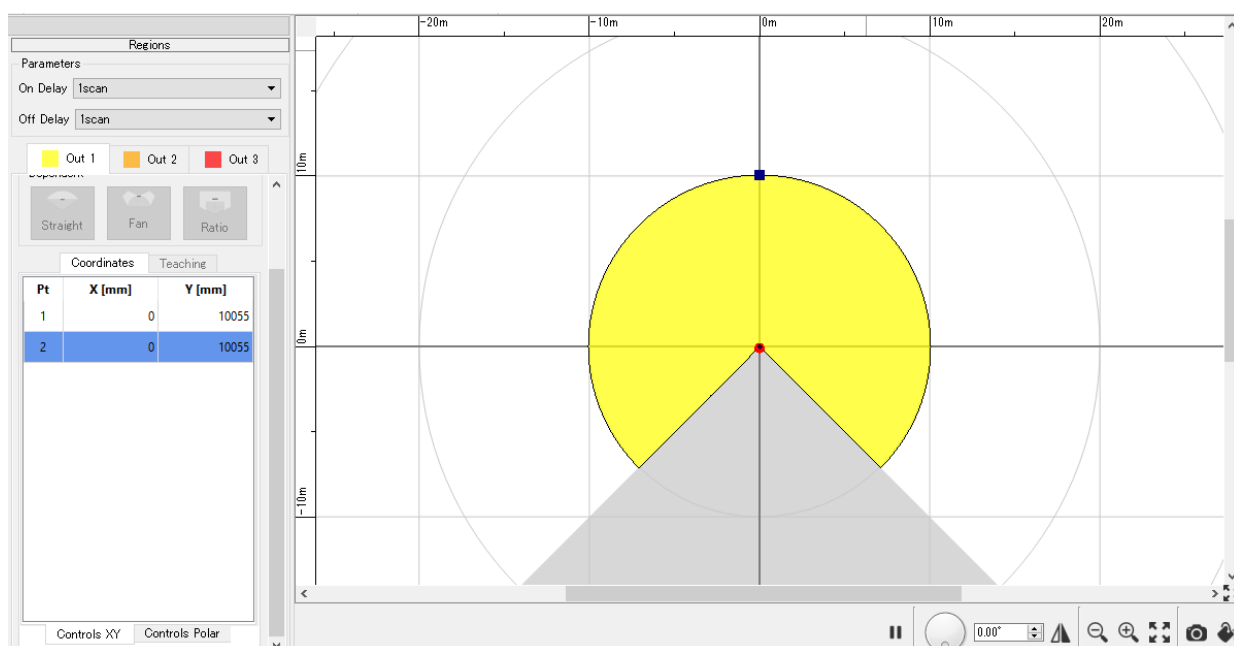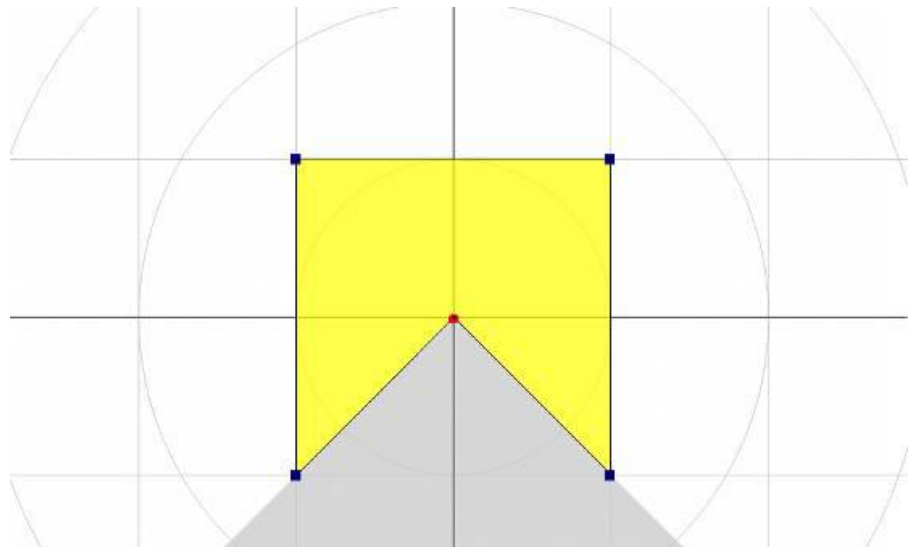

Figure 4.2.1.2.1.3-1 Example of rectangle configuration

The point information of a rectangle consists of last selected point and the opposite 2 points of selected points. Based on the relative values between these 2 points, the horizontal and vertical lengths of the rectangle are calculated. The output of a rectangle is then configured and that does not include the unconfigurable zone.

When any one of the 4 points is moved, the coordinates of adjacent points will be changed. Points will change as drawing the rectangle's 4 points and it does not include the unconfigurable zone.

It is only possible to move a point to the unavailable region while configuring a rectangle and polygon (refer to figure 4.2.1.2.1.3-2 for moving point in the unavailable region). The configured output is a region enclosed within the 4 points and that does not include the unconfigurable zone .

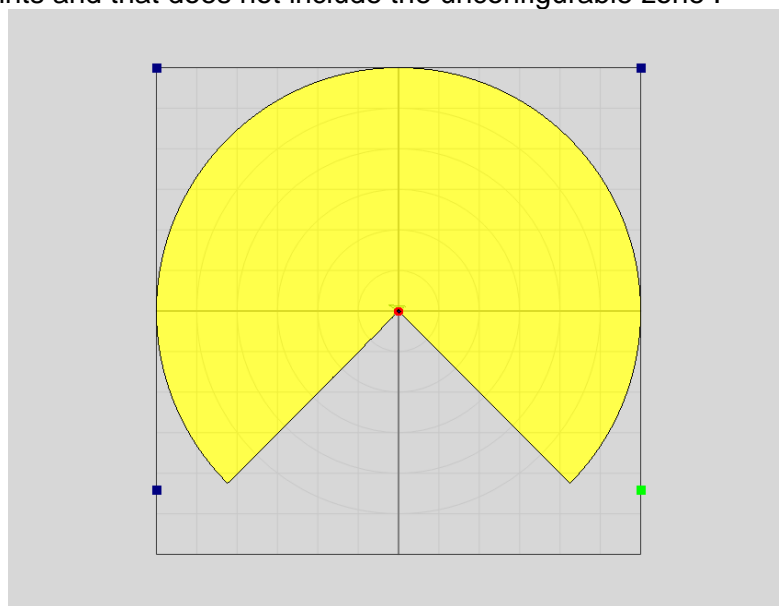Figure 4.2.1.2.1.3-2 When configuration of rectangle points moves to unconfigurable zone

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4.2.1.2.2 Dependent

This section will explain how dependent-shaped outputs of the region are changed within the range of outer most (upper) output. The outer most output refers to Output 1 (yellow) within this area is Output 2 (orange) and lastly Output 3 (red) referenced to Output 2. Since Output 1 is the outer most output, when it is changed, the regions of Output 2 and Output 3 are changed automatically.

Straight line, Fan shape, and Ratio are the types of dependent shapes. As shown in figure 4.2.1.2.2, the blue offset bar can be used for different area configuration. When the offset bar is selected, it will be displayed in a lime green (yellow- green) color.

The configurable range of the offset bar is within the range of 0 – 100%.
When selecting a dependent shape, default offset bar will be displayed as in figure 4.2.1.2.2. The value of offset bar can be set through left-clicking the mouse.

Cautions

☐ With Output 1 as the outermost shape, it is not possible to configure it as a dependent shape.

Quick/Useful tips

☐ It is possible to delete the offset value of the point by right–clicking the mouse when the offset bar is selected, or press delete or the backspace key on the keyboard. The offset bar as shown in figure 4.2.1.2.2.will be displayed in the default position of the coordinate origin.
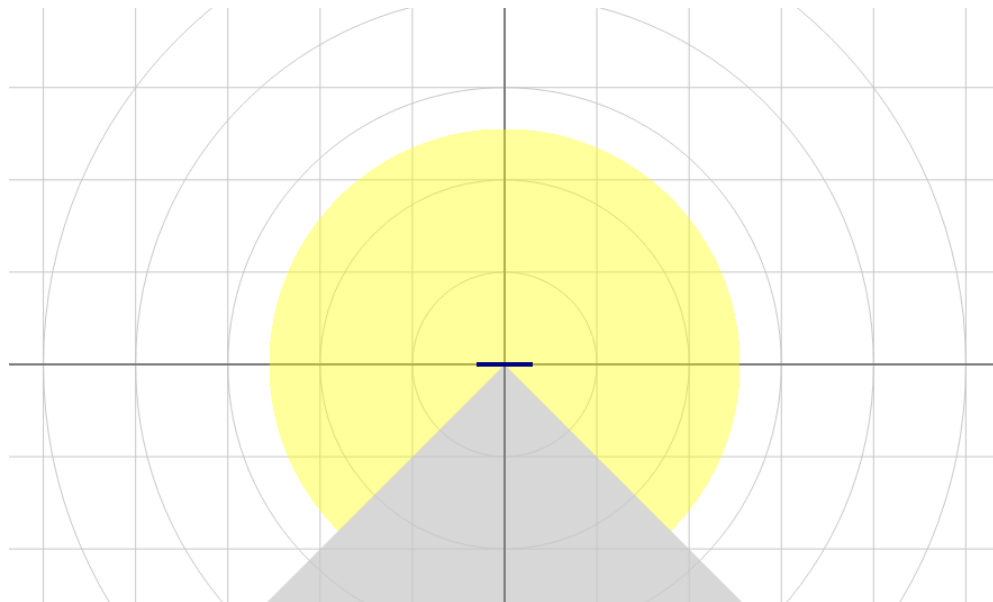

Figure 4.2.1.2.2 Default position of dependent offset bar

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4.2.1.2.2.1 Straight Line

Within outer most output, the maximum distance in the positive direction of Y-axis coordinate from the center point is considered as 100%. The coordinate origin is at the 0% position. Based on the configured position of the offset bar, calculate the Y-direction and linear distance of the straight line to configure output of a straight line that is dependent of the outer most output.
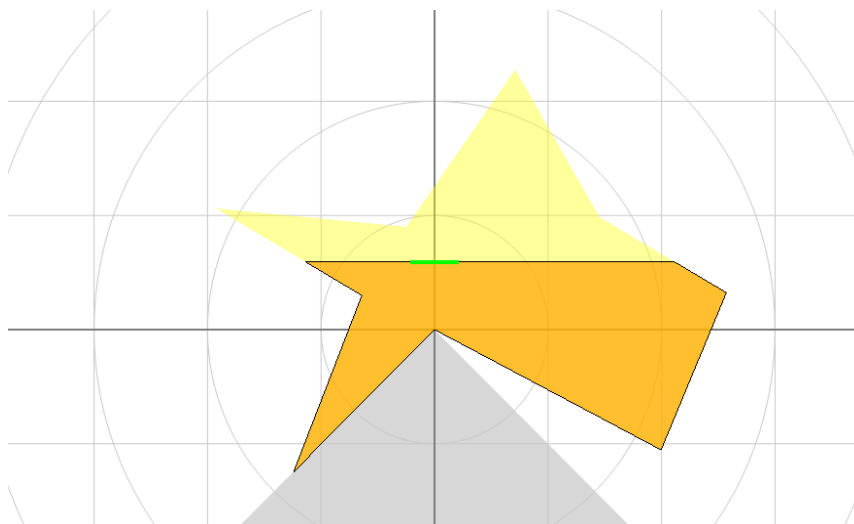

Figure 4.2.1.2.2.1 Example of straight line

Caution

☐ When outer most output region is without a point in the positive direction of the Y-axis coordinate, straight-line output that is dependent of the outer most regions cannot be configured.

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4.2.1.2.2.2 Fan shape

Within outer most output, the maximum distance of a point from the center point is considered as 100% and coordinate origin is considered as 0%. Based on the configured position of the offset bar, calculate the radius of the arc of the fan shape to configure fan-shaped output, that is dependent of the outer most output area.
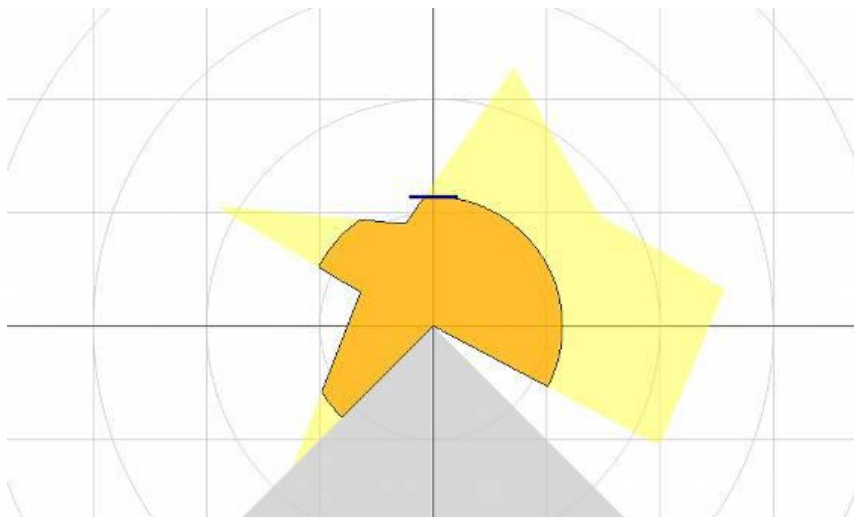
Figure 4.2.1.2.2.2 Example of fan shape

4.2.1.2.2.3 Ratio

Within outer most output, the maximum distance in the positive direction of the Y-axis coordinate from the center point is considered as 100% Calculate the ratio shape to configure ratio-shaped output that is dependent of the outer most output area.
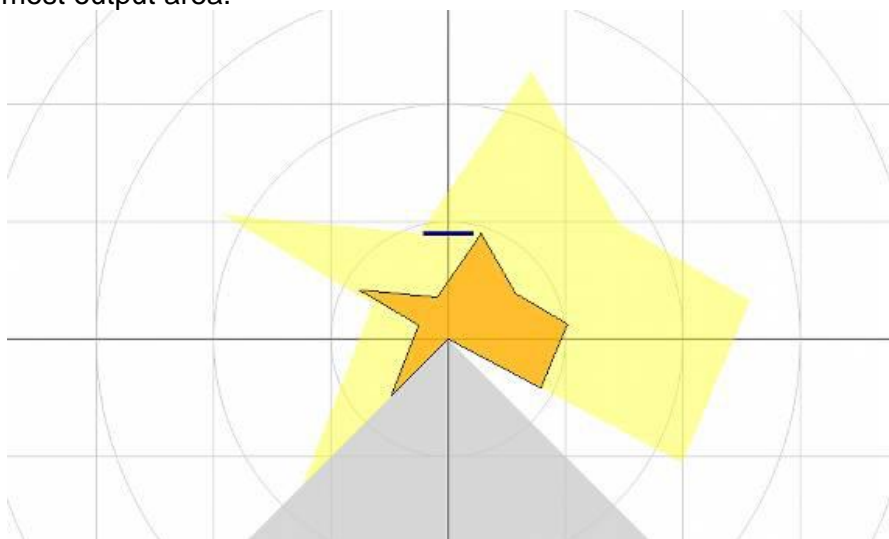

Figure 4.2.1.2.2.3 Example of ratio

Caution

☐ When outer most output region is without a point in the positive direction of the Y-axis coordinates, ratio output that is dependent of the outer most regions cannot be configured.

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4.2.1.2.3 Numerical input

This section will explain how to configure the region by numerical input of X and Y coordinates for independent   and dependent shapes .

When configuring the area, ID position information is assigned to each point coordinate. Point ID is displayed in the Pt column of numerical input. After selecting a point when the mouse is placed in the canvas, the tool tip of the selected point ID will be displayed as shown in figure 4.2.1.2.3 Displayed tool tip number is the point ID number.
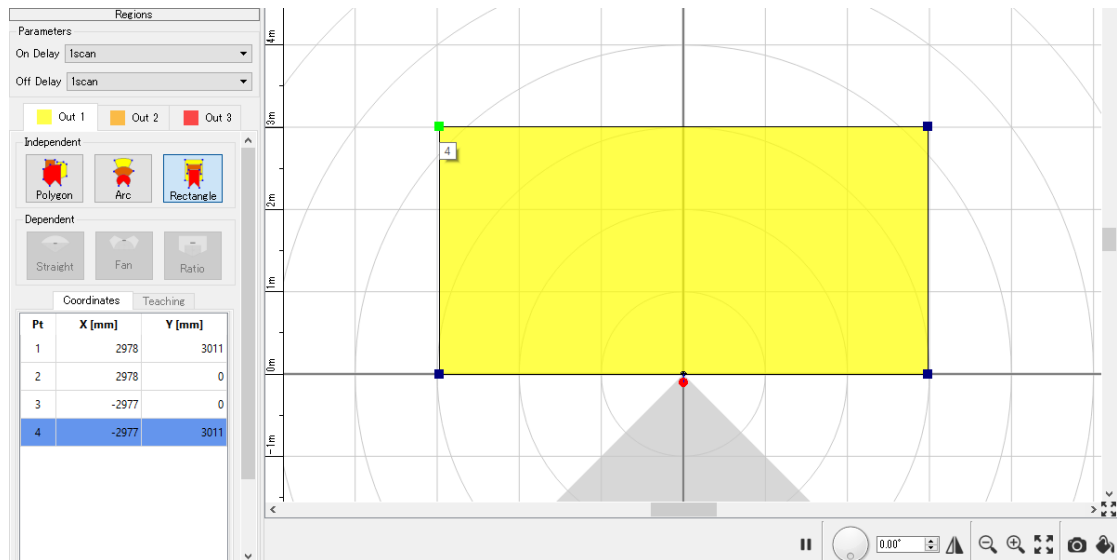

Figure 4.2.1.2.3 Point ID assigned to each point

The point ID is assigned in order to identify the coordinate position information of each point (here the coordinate position information of point will be referred to as point information). The point ID starts from 1 up to +1 maximum sensor steps. The coordinates X, Y and the radius of arc for numerical input is displayed in [mm] and the angle is displayed in [deg].

In order to edit the positions of the points coordinates, double click on the cell you want to change. After you change the value, move to other cell or press the enter key. When the change is completed, the changed output will be displayed on the main view.

Caution

☐ Polygon configuration with maximum 30 points is guaranteed. Although, it is possible to configure with more than 31 points but the point information cannot be guaranteed.

Quick/Useful tips

☐ When you press Delete key or Backspace key on the selected row displayed in blue on the numerical input field, the point information of that column is deleted.

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4.2.1.2.3.1 Numerical input of Independent

Figure 4.2.1.2.3.1-1 illustrates the default state of numerical input screen when selecting the rectangle independent shape. Output on the canvas is displayed as shown in figure 4.2.1.2.1-1.

As in figure 4.2.1.2.3.1-1, rectangle consists of four points, therefore four rows will be displayed. With using a polygon, the default state of numerical input value consists of one point and one row will be displayed. If using an arc shape, it consists of two points, and then two rows will be displayed.

Figure 4.2.1.2.3.1-1 Example of default state of Numerical input screen
during independent rectangle selection
(Left: XY Coordinates, Right: Polar Coordinates)

With using a polygon shape, when a point is deleted, the ID of that corresponding point is deleted and ID assigned after the deleted point ID is incremented by one.

By changing the values of the X and Y coordinates or the value of the polar coordinates of each point ID in numerical input screen, it is reflected on the output region in the canvas. In figure 4.2.1.2.3.1-2, it shows an example of arc configuration by numerical input.
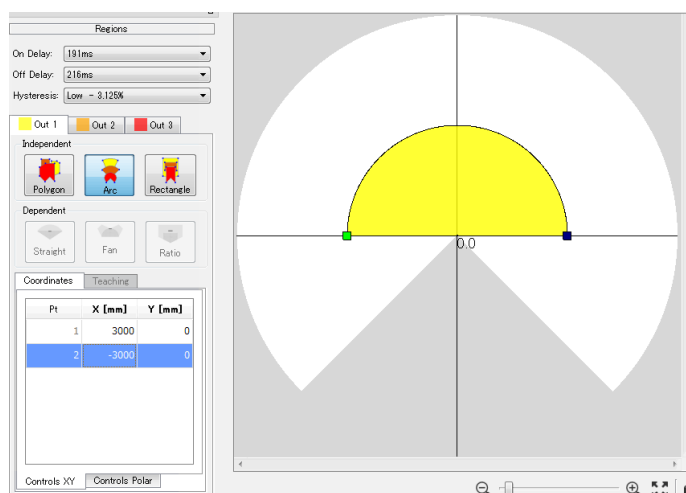

Figure 4.2.1.2.3.1-2 Example of arc configuration by numerical input

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4.2.1.2.3.2 Numerical input of dependent

When a dependent shape is selected, a single row of point information ID will be displayed in numerical input screen. Default state of numerical input is shown in figure 4.2.1.2.3.2-1. As illustrated in figure 4.2.1.2.2, it shows the default state of numerical input when fan shape, straight line or ratio of dependent is selected.

Figure 4.2.1.2.3.2-1 Default state of numerical input screen
during the selection of a dependent shape
(Left: XY coordinates, Right: Polar coordinates)

In the numerical input of X and Y coordinates, it is possible to change the value of Y coordinate only and in the numerical input of polar coordinates, it is possible to change the value of radius only. In figure 4.2.1.2.3.2-2, it shows an example of fan shape by numerical input.

When selecting the point ID in numerical input screen, if backspace or delete key is pressed, the screen will return to the default state as illustrated in figure 4.2.1.2.2.
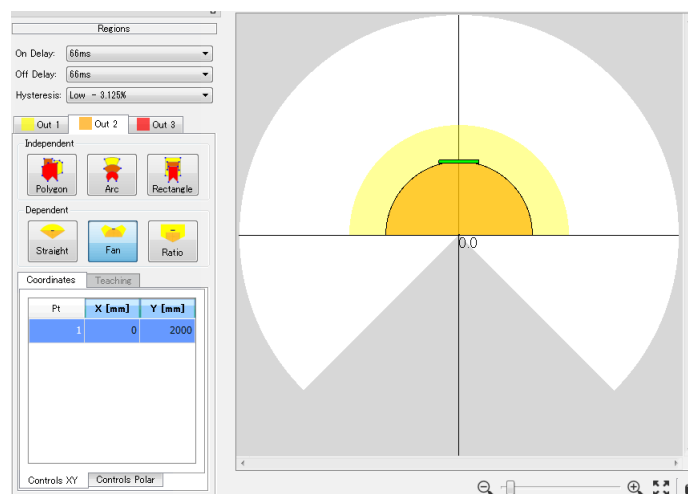

Figure 4.2.1.2.3.2-2 Example of fan shape by numerical input

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4.2.1.2.4 Teaching

. The "Teaching" tab next to the "Coordinates" tab is enabled only when a polygon of an independent shape is selected. When you select the " Teaching" tab, the configurations screen shown in the figure 4.2.1.2.4-1 is displayed and you can make settings for the teaching function. This teaching function enables an area to be configured based on a background obtained by scanning the sensor.
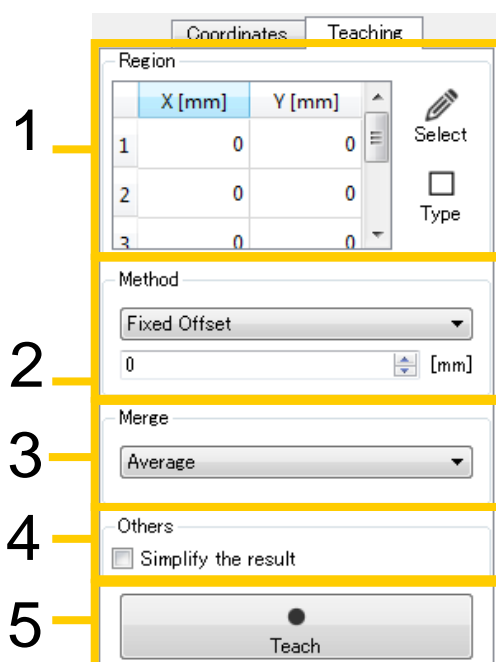

Figure 4.2.1.2.4-1 setting of teaching

Operating method is configured in the order shown in figure 4.2.1.2.4-1.

1. Specify the region to perform teaching. Click ✐ Select and the pink circle will be displayed in the center of the canvas. You can specify the region by using this round circle or by using numerical input (numerical input value on the X and Y coordinate value.)
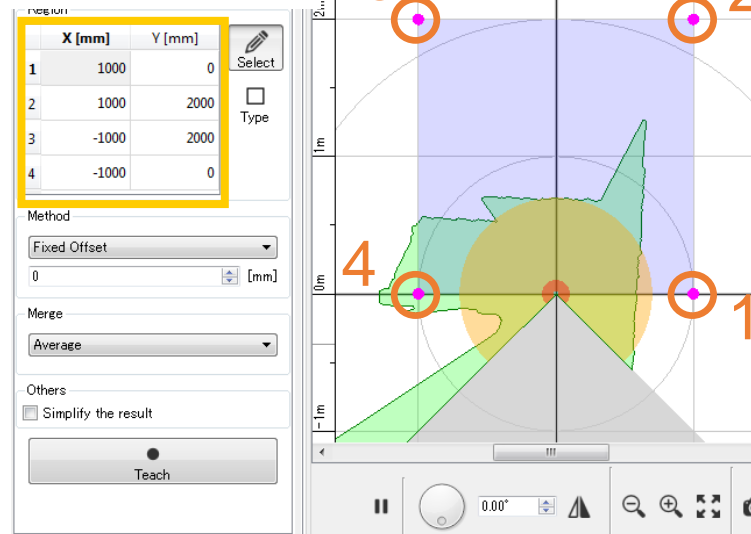
Input X and Y Coordinate

Figure 4.2.1.2.4-2 Specify the region for teaching (Rectangle Type)

There are two ways to specify the teaching region. In region selection panel, ☐ Type indicates rectangular mode and ▱ Type indicates polygon mode with 4 points each. It is possible to toggle the mode by clicking the icon. Using a rectangle mode, when one point is specified, the adjacent points adapt its positions to keep a rectangular shape. Using a polygon mode as shown in figure 4.2.1.2.4-3 , points can freely be specified.
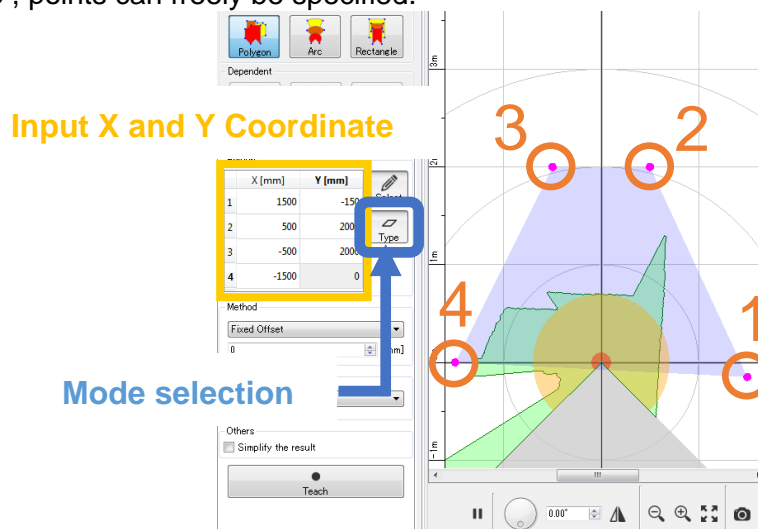
Input X and Y Coordinate

Mode selection

Figure 4.2.1.2.4-3 Specify the region for teaching (Polygon Type)

2. Set the method of teaching. Specify fixed distance offset. During teaching with distance offset 100mm, the region is reduced by 100mm from the range of each step as shown in figure 4.2.1.2.4-5. The pink waveform is the region made by teaching function with offset value 100mm and the green waveform is actual readings from the sensor.
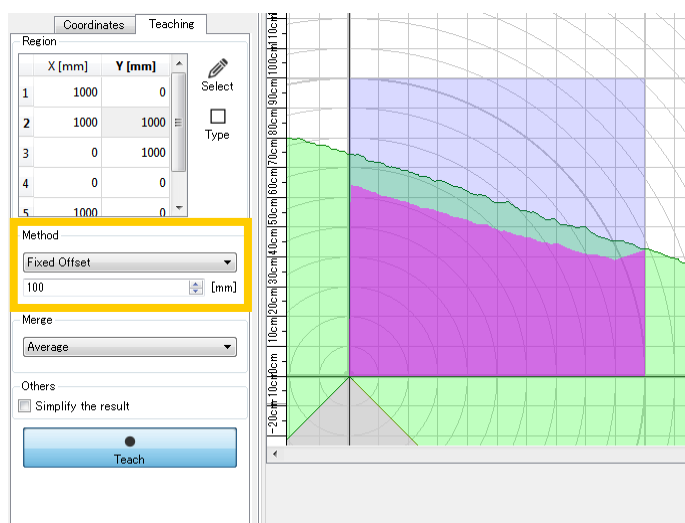

Figure 4.2.1.2.4-4 the configured teaching region (pink)
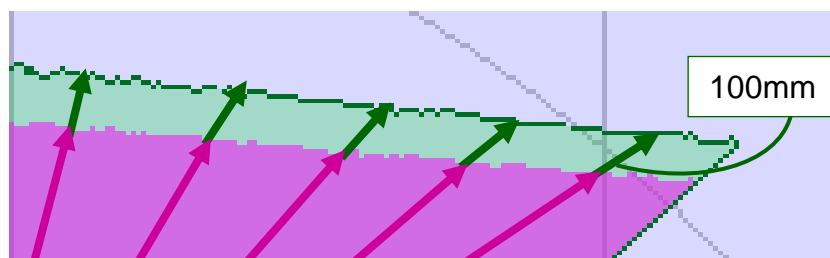the sensor readings (green)

Figure 4.2.1.2.4-5 the teaching region created with fixed offset

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Set the method to Erosion. During teaching with distance offset 100mm, the teahing region will be as shown in figure 4.2.1.2.4-7. The advantage of this method is that the distance offset applies also to the adjacent steps and as a result, the teaching region becomes parallel to the background. On the other hand, if there is an object at a short distance, the intended region may not be created as the region is cut in circle with this teaching method.
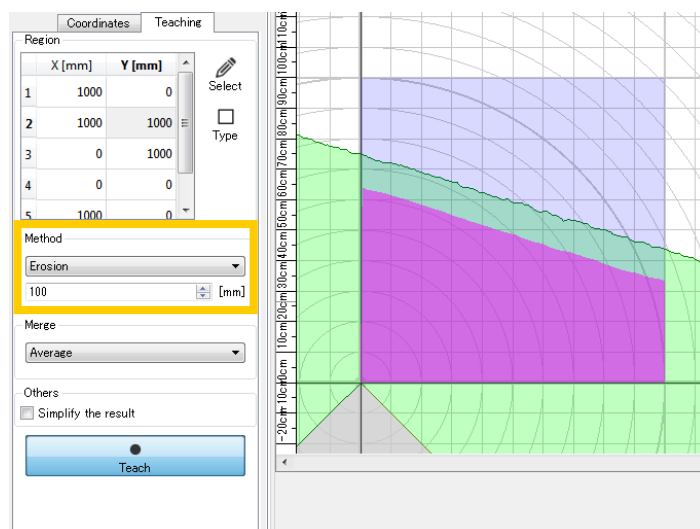
Figure 4.2.1.2.4-6   the configured teaching region (pink)
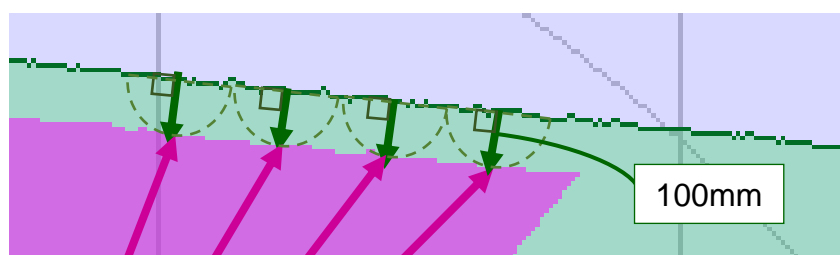the sensor readings (green)

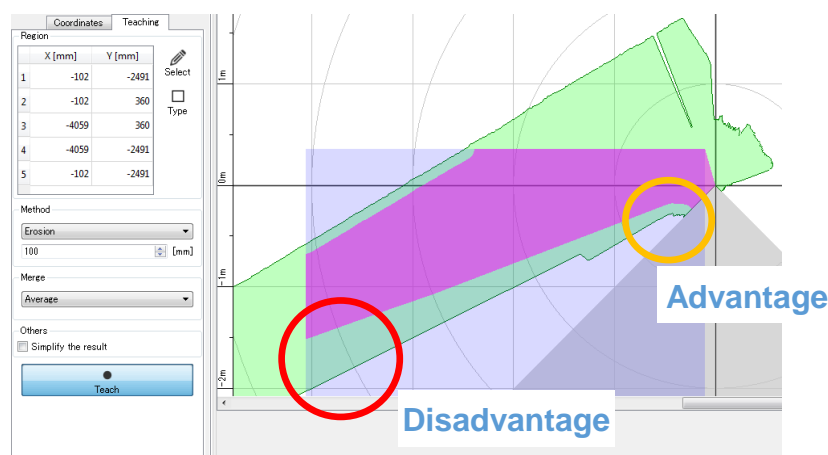Figure 4.2.1.2.4-7 the teaching region created with Erosion

Figure 4.2.1.2.4-8 advantage and disadvantage of Erosion

Select the Percent Offset method. This method allows you to specify percentages as the offset value. In the example below, the offset is set to 10% which uses the 90% of the sensor readings as the teached region as shown in figure 4.2.1.2.4-10. The advantage is that you can set region parallel to the background, as the amount of offset depends on the distance to the background. The disadvantage is that the offset is applied to each scan steps as shown in figure 4.2.1.2.4-11 and is not applied to the adjacent steps.
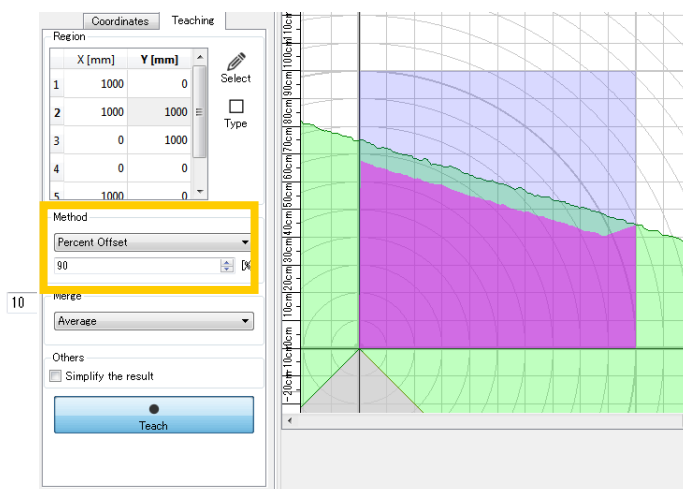

Figure 4.2.1.2.4-9 the configured teaching region (pink)
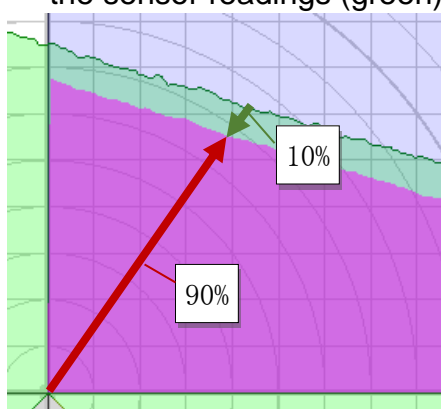the sensor readings (green)

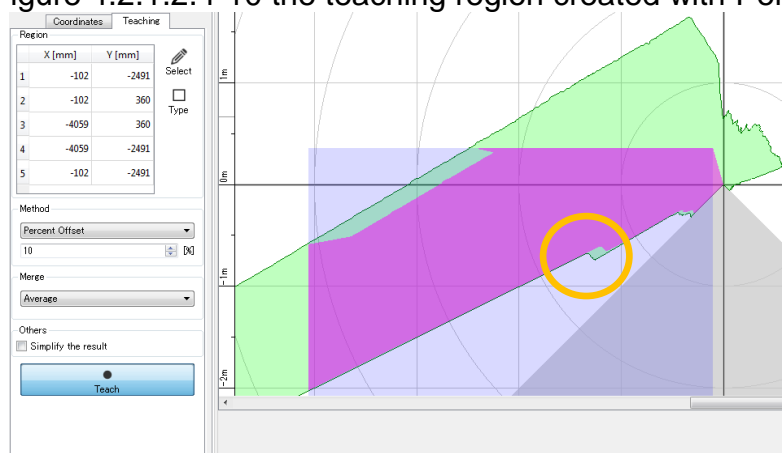Figure 4.2.1.2.4-10 the teaching region created with Percent Offset

Figure 4.2.1.2.4-11 Dthe disadvantage of Percent Offset

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3. Set "Merge" for data processing of teaching. "Average Value" calculates the average values of the distance scanned during teaching and select the value as a region. "Minimum Value" picks up the minimum value scanned during the teaching and select the value as a region. When "None" is selected, the value from the last scan is selected as a region.

4. When you want to minimize the point displayed during teaching, select "Simplify the result". If this is not selected, the point is displayed at each steps on the region.
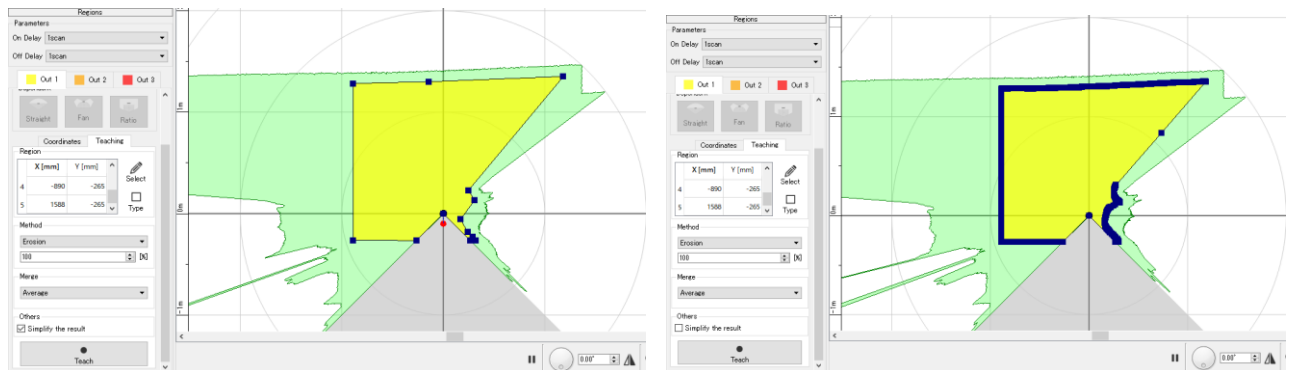

Figure 4.2.1.2.4-12 Left: When a check placed in "Simplify the result"
Right: When not check in "Simplify the result"

5. Teaching start when " ● Teach" is clicked. In order to set teaching region to the sensor, it is necessary to write the configuration to the sensor.

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Caution

☐ While performing teaching within the specified region, the boundary of teaching region will be set as the region as long as nothing is in the backgraound. In this case, difference of the offset value is not applied. (Refer to figure 4.2.1.2.4-13)
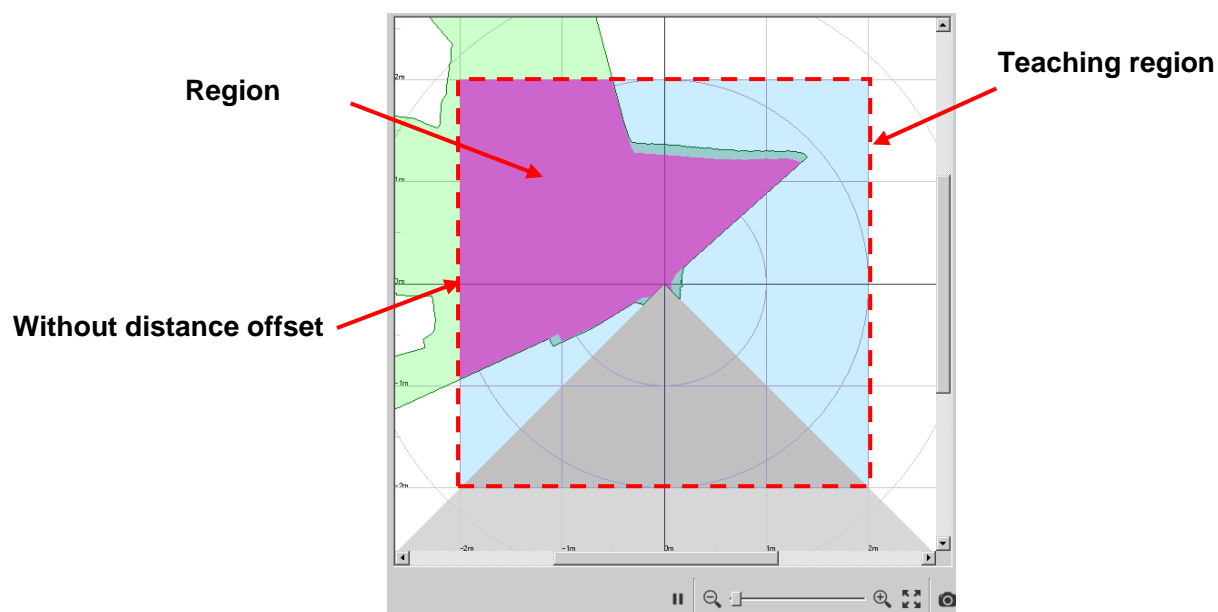

Figure 4.2.1.2.4-13 when there is no background in the configured teaching region

Quick/ Useful tips

☐ In case you want to delete the multiple points that forms the region, specify a range by right clicking on the canvas, all the points in the range will be deleted.

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4.2.1.2.5 Origin offset from the center of scanning beam

Depending on the sensor capabilities, it is possible to configure an output region to be detached from the sensor origin. As shown in the left side of figure 4.2.1.2.5, usual output region is formed from the sensor's origin. Detaching an output region is possible by moving the red point at the sensor's origin as shown in the right side of figure 4.2.1.2.5.
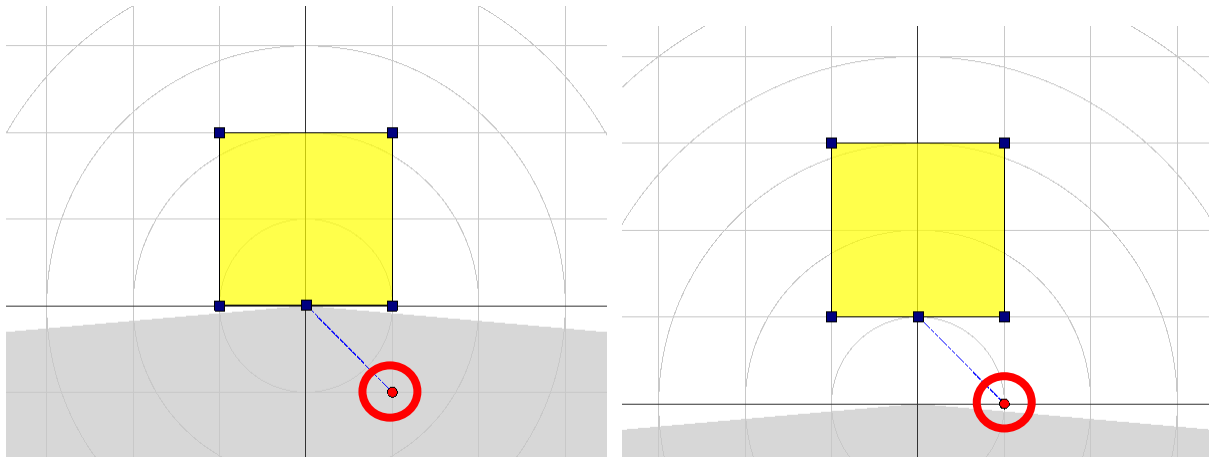
Figure 4.2.1.2.5 Left: Output including point of origin Right: Origin offset from the center of scanning beam

Quick/Useful tips

☐ When returning to the center point of origin, select the red point and then right click the mouse. The Backspace or delete key can also be used for returning to its point of origin.

☐ To adjust center point of origin offset from the center of scanning beam, hold the Alt key and make the adjustment. To make a slight adjustment to center point of origin offset from the center of scanning beam, hold Ctrl key and Alt key and move the mouse. The point moves in 10(mm) intervals. Moving the mouse while holding the Alt and Shift Key would move the point in 100(mm) intervals. In addition, by holding the Alt key, Ctrl key and Shift key and moving the mouse will move the point moves in 1000(mm) intervals.

Caution

☐ It is not possible to configure a detached region with more than 31 points.

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4.2.2 Monitor

In this screen, data measurement, record and play of log data, I/O information check and monitoring of a sensor are performed.
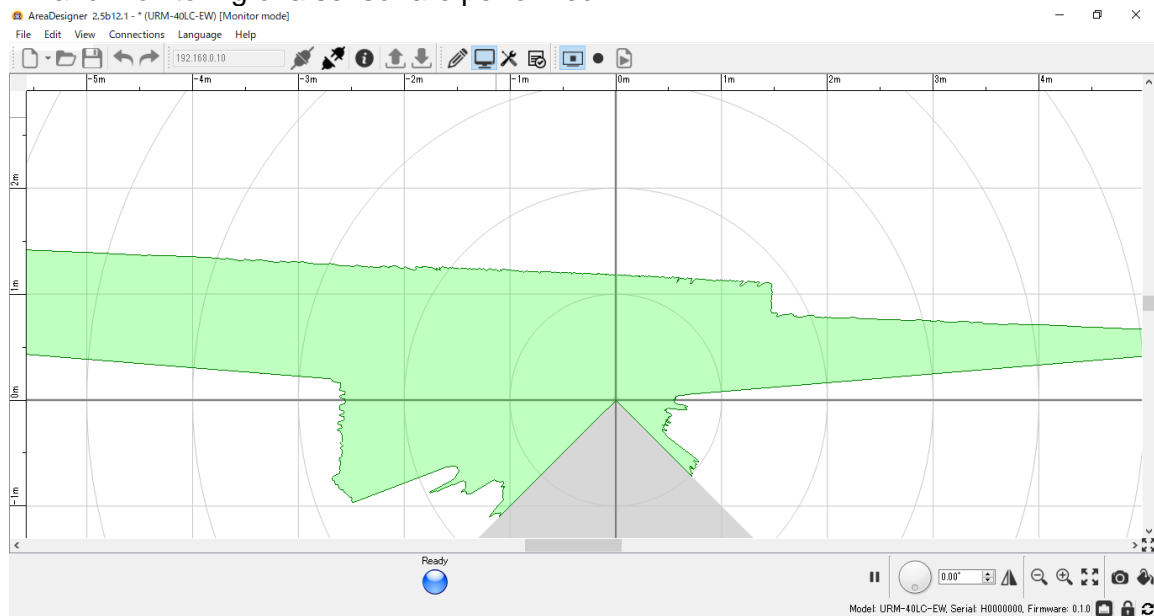

Figure 4.2.2-1 LX Mode Monitor screen

In LX mode monitor screen, waveform indicates the object detection and outputs the ready signal during normal operation of the sensor by ready lamp. Ready lamp during sensor normal operation: Blue during sensor disconnected state and gray during sensor abnormal state. Ready lamp status is explained in Table 4.2.2-2.
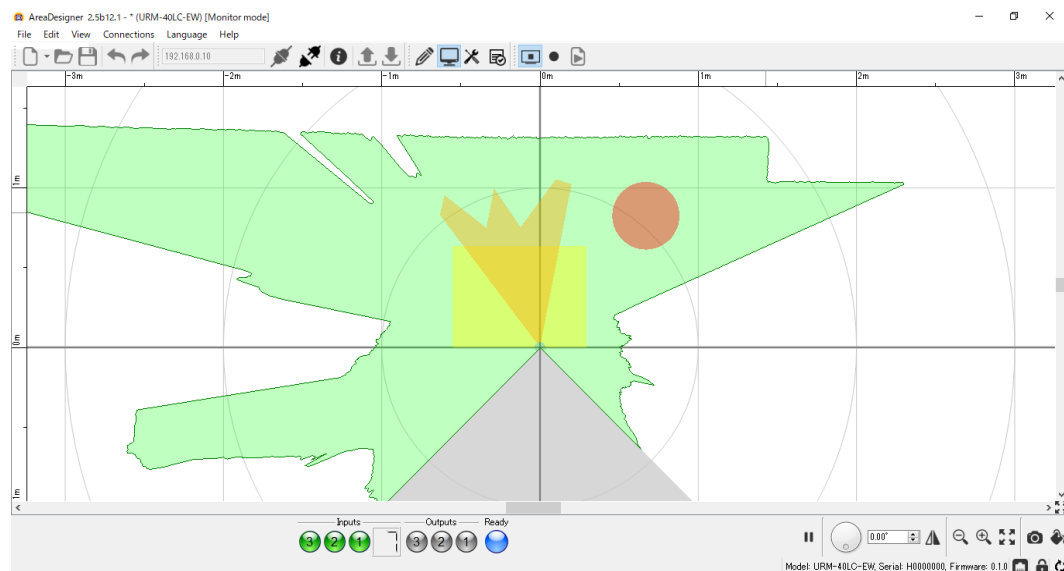

Figure 4.2.2-2 LA 1 Mode Monitor screen

In LA mode monitor screen, in addition to the information displayed in LX mode, I/O information is displayed.I/O information that is displayed in the monitor screen is configured as in illustrated in figure 4.2.2-3 and figure 4.2.2-4. The input values are binary numbers (0 indicates Gray while 1 indicates Green) and the area numbers are displayed as decimal values. Status display of the output lamp is explained in Table 4.2.2.1.

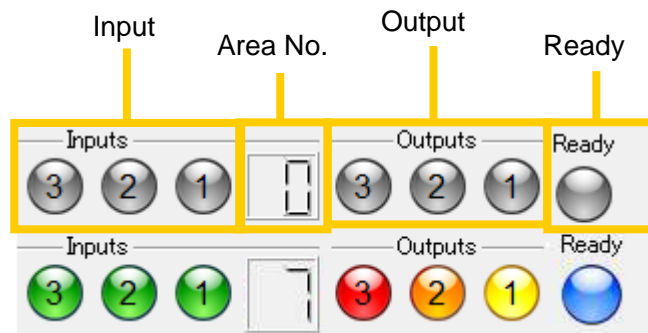| Title	Area Designer Instruction Manual	Drawing NO	C-41-02608	38／72

Figure 4.2.2-3 LA mode 1 IO lamp display in monitor screen

(Top: Display when disconnected from the sensor, Bottom: Display when connected to the sensor)
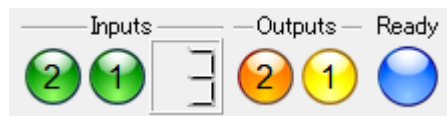

Figure 4.2.2-4 LA mode 2 IO lamp display in monitor screen

*In the sensor disconnected state, the monitor screen always will be in LA mode 1.

Table 4.2.2-1 Status display of IO lamp

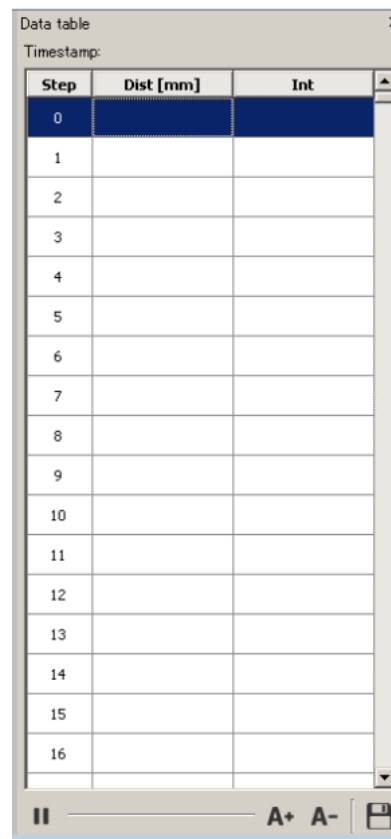| Lamp	Description
(grey lamp)	Displays when disconnect from the sensor or IO in the OFF state. Numbers on the each lamp are IO values.
(green lamp)	Display when the input is in ON state. Numbers on the each lamp are IO values.
1	Output 1 region lamp ON during object detection.
2	Output 2 region lamp ON during object detection.
3	Output 3 region lamp ON during object detection.

Table 4.2.2-2 Status display of Ready lamp

Lamp	Description
(grey lamp)	Displays when disconnected from the sensor or displays when Ready signal is not output from the sensor. Displays immediately after power supply to the sensor or sensor becomes stable after restarting and contamination detection state.
(blue lamp)	Displays when normal operation of the sensor

4.3 Data table

Click [View] → [Data table] of the menu, the window illustrated as in figure 4.3-1 will be displayed. Also, it is possible to display this same table by shortcut keys of "Ctrl + T". This window is used for displaying the measured distance, confirms the information of the output data and saves the displayed numerical values into a CSV file. When the display of the measured data is started, a time stamp [units: us (micro seconds)] is displayed in the top of the data table. Also, the distance and intensity is displayed in the data table.

Explain the details of the display tools in table 4.3-1.

Figure 4.3-1 Data table

Table 4.3-1 Data table

Icon	Name	Description
II	Pause	Stops the update of the numerical value information. Refresh starts if clicked again.
▶	Start update	Starts the update of the numerical value information.
A+	Increase the character size	Increase the character size of the table.
A-	Decrease the character size	Decrease the character size of the table.
💾	Save	1 scan of the displayed measured data is saved as CSV file.

When the numerical value information of the output data is checked on the data table, there are cases when a row is displayed in red. This indicates measurement error has occurred during measurement of those steps.

When the row of data table is clicked, it is inverted and displayed in blue. At this time, a blue line will be displayed at the step position corresponding to the clicked row. A blue line will be displayed as illustrated in figure 4.3-2.

Also, when the main view is clicked, a blue line will be displayed on that area. During this, the row of the corresponding step on the data table will be inverted and displayed in blue.
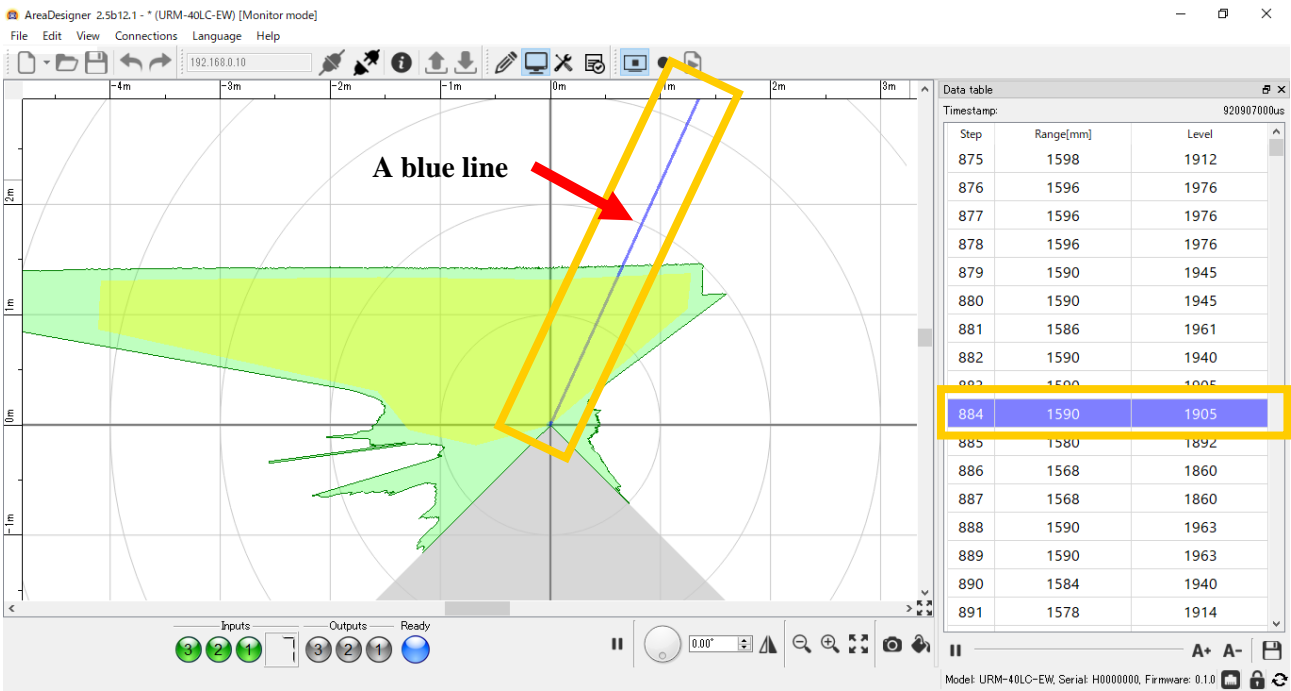

Figure 4.3-2 Display with blue line in the monitor screen

Quick/ Useful tips

☐ If you click ⛶ the lower right corner of main view, deletes the tool bar, I/O lamp and increase the area of main view. Click ⛶, returns to the original state.

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4.4 Application settings

The application settings are used for communications and setting the displays of the application. Click [Edit] of the menu bar → [Application settings], illustrated as in figure 4.4-1 will be displayed.
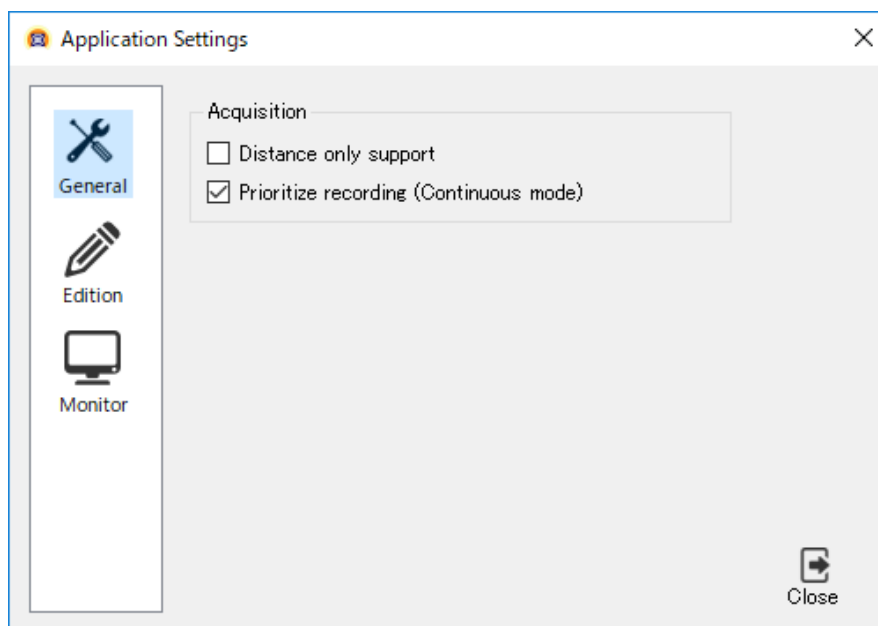

Figure 4.4-1 Application settings (General tab)

The general tab settings related to acquisition of log data. In default setting, prioritize recording (continuous mode) only will be ON. While comparing with handshake mode, skip of log data acquisition in this mode will be minimized. As acquired distance data only in distance only support mode; therefore minimize the skip of data acquisition.
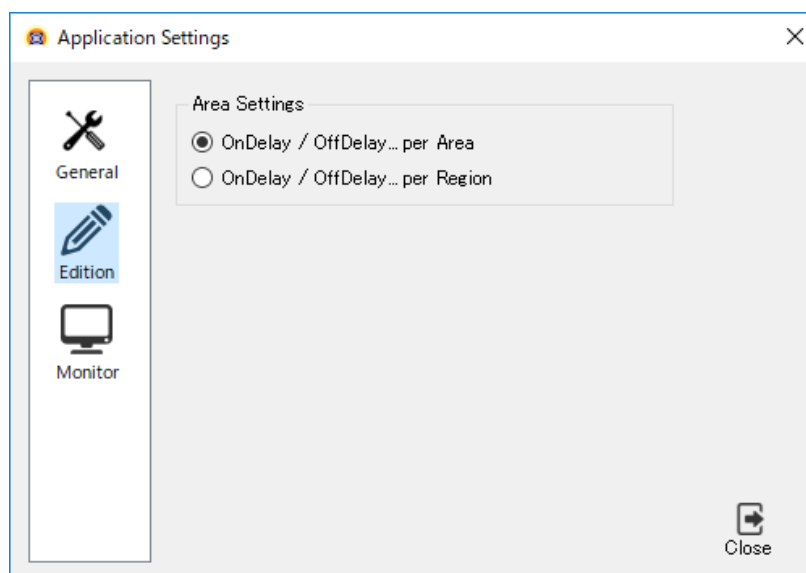
Figure 4.4-2 Edit tab

In edit mode, as shown in figure 4.4-3 can change the setting of region parameter (ON/OFF delay, hysteresis) in edit control panel.

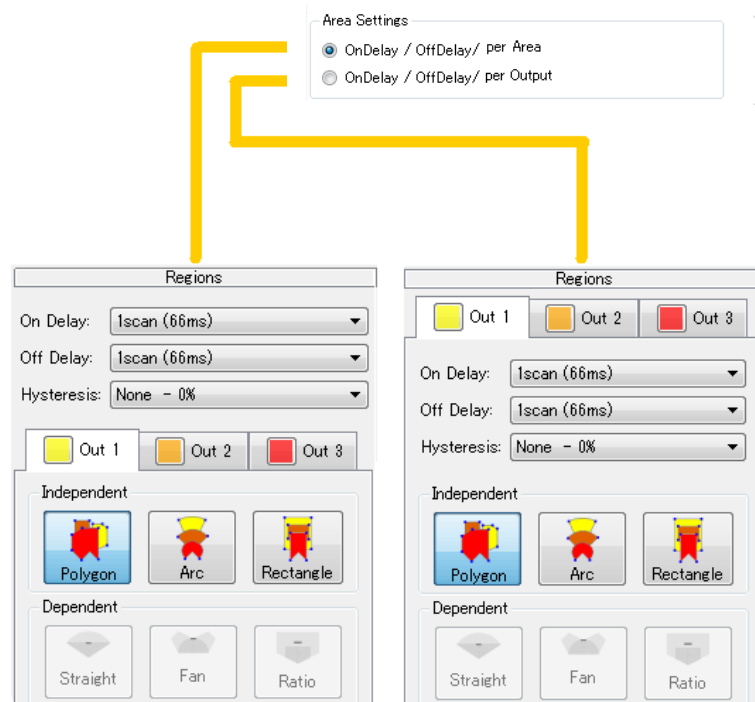| Title	Area Designer Instruction Manual	Drawing NO	C-41-02608	42／72

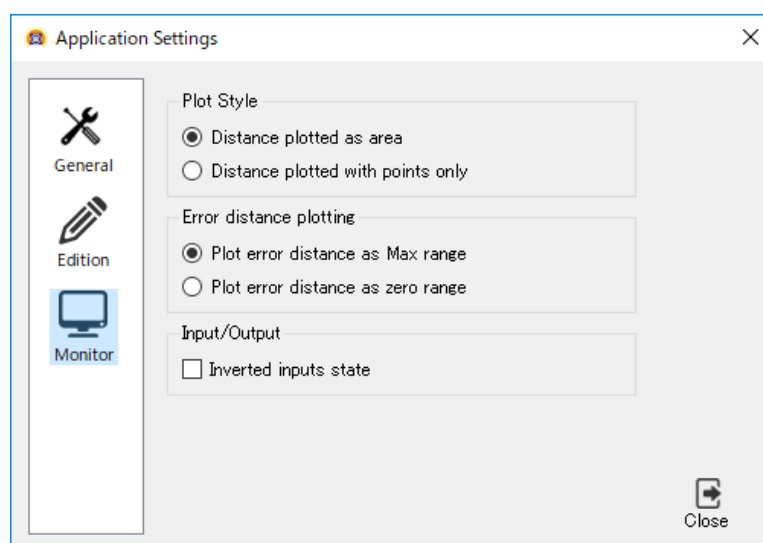Figure 4.4-3 Changing configuration of the region parameters

Figure 4.4-4 Monitor mode

In the monitor mode tab, as illustrated in figure 4.4-5, when displaying measurement data (distance and intensity) it is possible to change the displaying method of the measurement data.

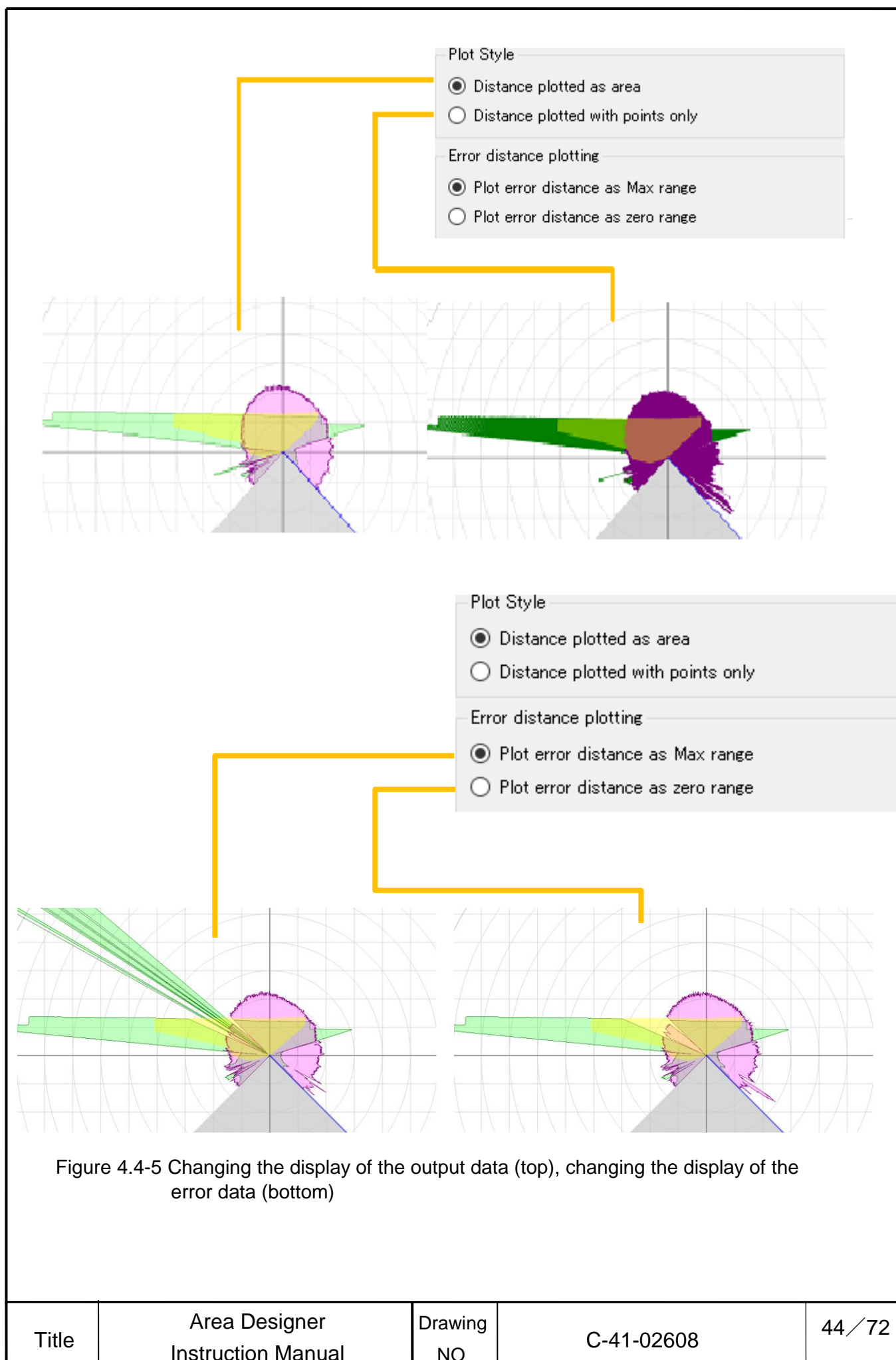| Title	Area Designer Instruction Manual	Drawing NO	C-41-02608	43／72

Plot Style
- ◉ Distance plotted as area
- ◯ Distance plotted with points only

Error distance plotting
- ◉ Plot error distance as Max range
- ◯ Plot error distance as zero range

Plot Style
- ◉ Distance plotted as area
- ◯ Distance plotted with points only

Error distance plotting
- ◉ Plot error distance as Max range
- ◯ Plot error distance as zero range

Figure 4.4-5 Changing the display of the output data (top), changing the display of the error data (bottom)

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If you select Inverse the input, it is possible to inverse the input display.
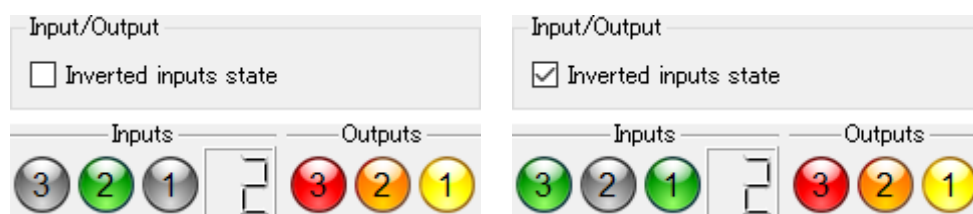
Figure 4.4-6 Display of I/O lamp without inverted input setting (Left)
Display of I/O lamp with inverted input setting (Right)

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4.5 Sensor settings

　　This window is used to set parameters of the sensor. Click [View] in the menu bar →
[Mode] → [✖ / Sensor settings] or the ✖ icon in the tool bar, and the window illustrated
in figure 4.5 will be displayed. By using shortcut keys of "Ctrl + Alt + S" also the below
window can be displayed. The details of the tools displayed will be explained in table 4.5.1.
In table 4.5.1 [Read] and [Write] can only be used when there is connection with the
Sensor.

Figure 4.5 Sensor setting

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Table 4.5-1 Display of sensor setting

Icon	Name	Description
⬇	Write	Write the configured parameter in to sensor.
↶	Reset	Returns the parameter to before edit state
1:1	Default	Returns the parameter to default setting
⬆	Read	Read the parameter from sensor.

In the case of changing the internal parameter of the sensor, from the sensor setting the user need to change the value of parameter then click write to sensor. When you want to return default state of the parameter then click reset.

When you want to return the item independently, click ↶ right of the item.

And if you want to set all items to default, click default in the top of the window and in the case of item no. click 1:1 on right of the item. In the case of reading the internal parameter, click read.

Cautions

□ When the parameters have changed, the background display will be yellow and inverted because the parameter in the sensor settings is different from the internal settings of the sensor. By clicking read or write if the sensor settings and internal setting of the sensor are same, then it will return to its original color.

In table 4.5-2, explains the details of parameter settings. It is necessary to write setting in the sensor to display the setting.

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Table 4.5-2 Parameter settings

Parameter	Description
Motor sync angle	To prevent mutual interference between the sensors, motor synchronize angle can be set by delaying the rotation. *Motor synchronous angle setting is only valid during LX mode and LA mode 2. | Setting			| |---|---|---|---| | 0 deg | 90 deg | 180 deg | 270 deg |
Motor Speed / Angular Resolution	Set the motor speed (scanning cycle) and angular resolution. 	Setting		 |---|---| | 1200rpm/0.125° | 2400rpm /0.25° |
Output logic	Inverting outputs logic of detection output 1 to 3 can be set. Select From below setting. 	Setting	Description	 |---|---| | Active High | During object detecting, detection output is High. | | Active Low | During object detecting, detection output is Low. |
Mode selection	Select the operation mode 	Setting	Description	 |---|---| | LX Mode | Data output type. Cannot use detection output is not available and cannot switch edit mode. | | LA Mode 1 | Area No.7 , Regions 3, Cannot use Synchronization master input. | | LA Mode 2 | Area No.3 , Regions 2, Can use Synchronization master input. | *If you switch to another mode while editing the area, discards the edited area. Reloads the saved area in the changed mode. If necessary, save the area before changing the operation mode.

Parameter		Description
Filters	Rain	This filter is used to remove the object if the object is not detected stably at the same place. This filter is effective to remove rain and snow. Select from below setting. | Setting	Reference value while using rain filter
---	---
OFF	Filter not used.
Low	Used to remove rain maximum up to Approx.100mm/h.
High	However, the effect depends upon the installation environment	 Caution: By setting the rain filter, it becomes difficult to detect moving object.
	Fog	This filter is used to remove reflectivity (echoes) from the fog. Select from below setting. | Setting	Reference value while using fog filter
---	---
OFF	Filter not used.
Low	Used in fog when the visibility is approx.100m.
Medium	However, the effect depends upon the installation
High	environment	 Caution: When this filter is enabled, it may not detect thin or low refrectance objects. Also, if filter setting is high, short distance error will occur when fog or objects detected at 1.5m or below.
	Sensitivity	Sensitivity filter is used to remove the objects with low reflectivity. This filter is effective to remove light interference and rain. Select from below setting. | Setting	Reference value while using sensitivity filter
---	---
OFF	Filter not used.
Low	
Medium	Difficult to detect object with maximum 1.8% reflectivity
High		 Caution: By using the sensitivity filter, detection capability for objects with low reflectivity will decrease.
	Echo	Echo filter is used in the environment with multiple echoes from the rain, fog, dust, edges of the object or transparent object. Echo filter can be selected first or last. If using a cover on the front part of the sensor, select last therefore, it does not detect the object. Caution: When last is set, it may not detect the object smaller the laser beam size. | Setting
---
First
Last	

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Parameter		Description
Hysteresis	Upper limit	Hysteresis upper limit can be set in the range of 0 to 250mm. Hysteresis upper limit cannot be lower the lower limit. Refer to section 4.5.1 for Hysteresis of detection area.
	Lower limit	Hysteresis lower limit can be set in the range of 0 to 250mm. Hysteresis lower limit cannot exceed the upper limit. Refer to section 4.5.1 for Hysteresis of detection area.
Minimum detectable size		Width of minimum detectable size can be set in the range of 10 to 1000mm. It is effective for removing light interference, rain or snow etc.
Limited detection capacity zone		Limited detection capacity zone can be set in the range of 60 to 3000mm. The sensor cannot detect the object which enters at a limited detection capacity zone. This limited detection capacity is used when using a cover on the front part of the sensor.
Contamination Warning (Partial)	Sensitivity	To detect contamination near sensor's optical window. In partial setting, judgment is performed within the specified step angle range.
	Detection delay	Can set the time from contamination detection to detection state in the range of 0 to 60s.
	Detection range	Set the contamination detection distance in the range of 35 to 100 mm.
	Detection start angle	Set detection start angle during contamination detection in the range of -45 to 225 °.*Cannot input greater value than detection end angle.
	Detection end angle	Set detection end angle during contamination detection in the range of -45 to 225 °. *Cannot input a smaller value than detection start angle.
Contamination Warning (Whole)	Sensitivity	Can set the time from contamination detection to detection state in the range of 0 to 60s.
	Detection delay	Can set the time from contamination detection to detection state in the range of 0 to 60s.

Within the Contamination Warning (Partial) Sensitivity cell:

Setting	Description
OFF	Function not used.
Low	When contamination near optical window is
Medium	detected, the Ready signal is switched
High	OFF.

4.5.1 Hysteresis of detection area

When a sensor detects an object near the boundary of the detection area, outputs 1 to 3 may oscillate (Changing of ON/OFF state) repeatedly. To prevent such oscillation, sensor has a hysteresis function that temporarily increases the area size. If the object is not detected in the temporarily increased area, then it will return to the original detection area.

Hysteresis changes according to the set detection area distance. The minimum and the maximum temporarily increased detection area size can be specified using Area Designer. Minimum detection value will be used if the value is 5000mm or less. Also, maximum detection value will be used if the value is 30000mm or more. For distances between 5000mm to 30000mm; the value is computed using the linear interpolation method from the minimum and maximum values.

Hysteresis = (Max value – Min value) / (25000) × Distance ＋ (6 × Min value －Max value) / 5
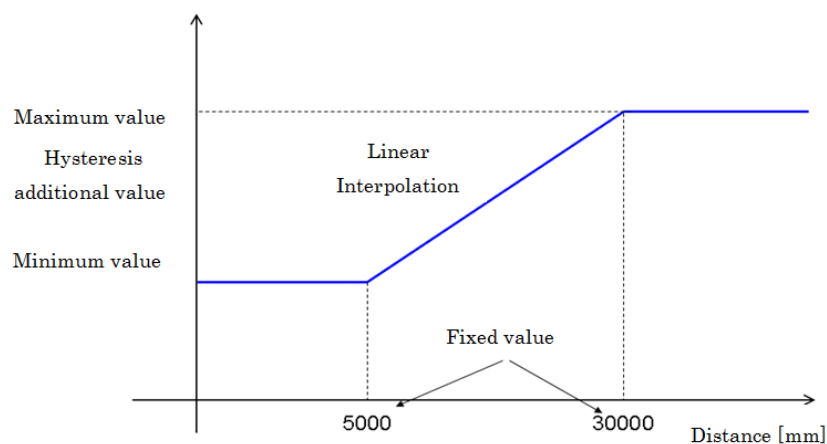

Figure 4.5.1-1 Hysteresis additional value

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4.6 I/O Simulation

This simulation is used to tests the I/O information of the sensor. While sensor is connected, change into monitor screen, in the menu bar View → Mode→ [⬛/ I/O Simulation] and the ⬛ icon in the toolbar switch will be active. Click the icon or the shortcut keys of "Ctrl + Alt + I" and the window illustrated in figure 4.6-1 will be displayed. The "⬇ / Apply" icon is used to apply the configurations of the simulation to the sensor and starts test.

*In LX mode, only the fault simulation button is valid

Figure 4.6-1 I/O Simulation

[In case of input/output simulation test]

1. This shows when a check mark is placed in the input simulation checkbox or the output simulation for which to perform the test. When check mark is placed, as illustrated in figure 4.6-3, the numerical input checkbox and the buttons will be active.
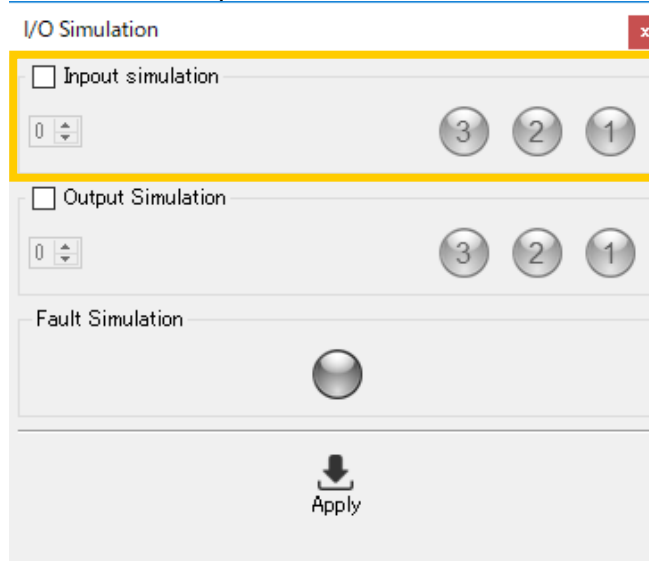
Figure 4.6-2 Display when the check box of input simulation is active

2. Specify the IO value by changing the numerical value on the left or click on the IO lamp on the right to configure the details of specific IO state. When the numerical value of the left is changed, the lamp on the right will automatically switch ON /OFF such that they are in the same IO state. Also, when the IO state of the lamps on the right are changed, the numerical values on the left will also change automatically.
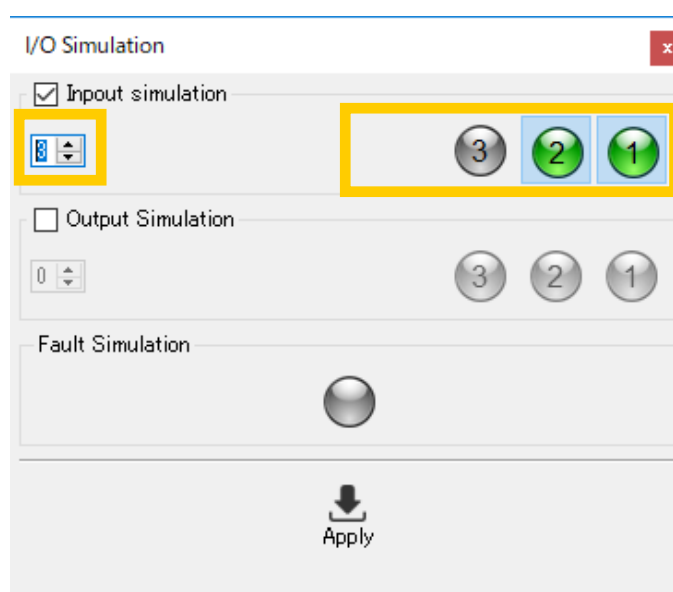
Figure 4.6-3 Input simulation numerical input and lamps

3. If Apply is clicked, and then I/O test starts.
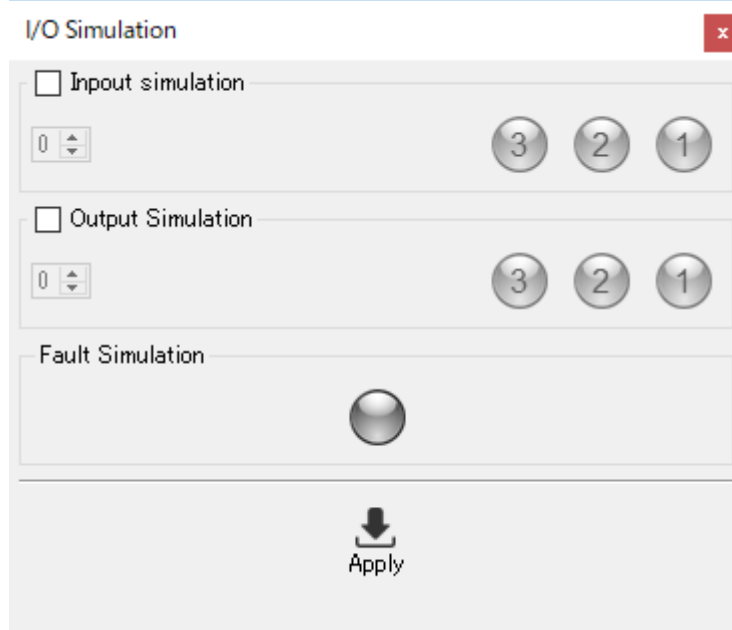
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[In case of fault simulation test]

1. Click Fault simulation, confirm the lamp turns red.
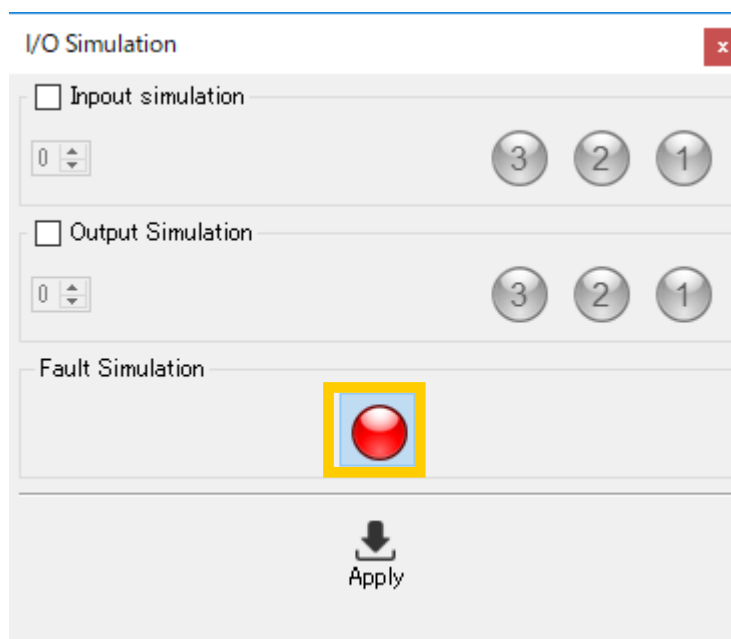
Figure 4.6-4 In the state of fault simulation lamp is led.

2. If Apply is clicked, and then starts test.

Caution

☐ After fault simulation test is done, the sensor will be in fault state temporarily. In order to return to the normal state from the test, restart the sensor and it is necessary to reconnect.

4.7 Sensor information

When the sensor is connected this internal information of the sensor will be displayed.

Click connections in the menu bar → [ⓘ/ sensor information] and the ⓘ icon in the tool bar will be active. When you click on the icon or press to the shortcut keys of "Ctrl + Shift + I", the window illustrated in figure 4.7 will be displayed.
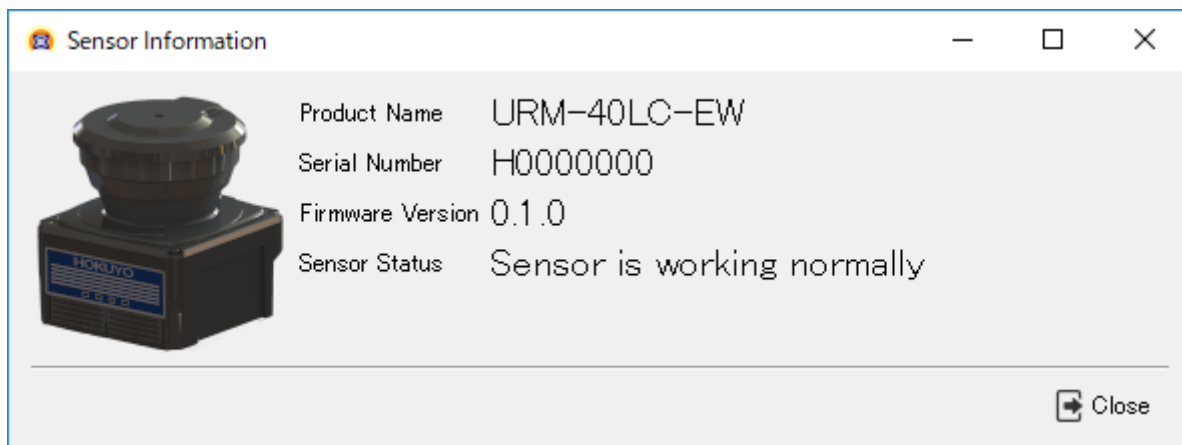

Figure 4.7 Sensor information

The details of the sensor information will be explained in table 4.7-1. In regard to the sensor status explained in table 4.7-1, the sensor status list is in table 4.7-2.

Table 4.7-1 Display of sensor information

Name	Description
Sensor model	The product name of sensor model will be displayed.
Serial number	Serial number of the sensor will be displayed.
Firmware version	Firmware version of the sensor will be displayed.
Sensor status	Sensor status will be displayed.

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Table 4.7-2 Sensor status

Status	Description
Sensor is working normally	The sensor is in normal operation.
Sensor is booting	The sensor is in process. Please wait for a while.
Waiting for motor	Wait until the internal motor of the sensor becomes stable.
Sensor is in simulation mode	I/O simulation operation is in progress.
Sensor error condition by fault simulation	Displays error state due to fault simulation. After restarting the sensor, it can return to normal operation.
Timeout waiting for master device for motor synchronization	Could not find master sensor. Check synchronize wiring or motor synchronize mode of sensor setting to see if it is suitable or not.
CPU firmware is incorrect	Failure of sensor firmware update. Update the firmware again.
System is being reset	Sensor is restarting. Please wait for a while
FLASH erase/write operation failed	Error is detected while updating firmware. In the event the status is displayed after the sensor is restarted, contact to our nearest distributor.
FPGA is not responding	FPGA of the sensor might have been damaged. In the event the status is displayed after sensor is restarted, contact to our nearest distributor.
Laser is not responding	Laser of the sensor might have been damaged. In the event the status is displayed after sensor is restarted, contact to our nearest distributor.
Motor is not responding or speed is not stable	The inner motor of sensor is in unstable state. In the event the status is displayed after the sensor is restarted, contact to our nearest distributor.
Unhandled CPU exception error	Error is detected in the CPU of the sensor. In the event the status is displayed after sensor is restarted, contact to our nearest distributor.
FLASH memory damaged critical error	ROM of the sensor might have been damaged. In the event the status is displayed after sensor is restarted, contact to our nearest distributor.
Contamination(Partial) detected	The optical window may be contaminated. Please clean the optical window. Refer to Homepage for cleaning method. https://www.hokuyo-aut.co.jp/products/data.php?id=5
Contamination(Whole) detected	
Contamination(Partial, Whole) detected	Also, error may occur if there is an object near optical window.
Other status	If other status is displayed in addition to the above listed status, contact to our nearest distributor.

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4.8　Log data

　　This window is used to save the scanned data of the sensor. File extension is *.ubh. When sensor is connected, the ● icon in the toolbar will be active. Click the icon or press the shortcut keys of "Ctrl + 1", and the window illustrated in figure 4.8 will be displayed. The details of this window will be explained in table 4.8-1.
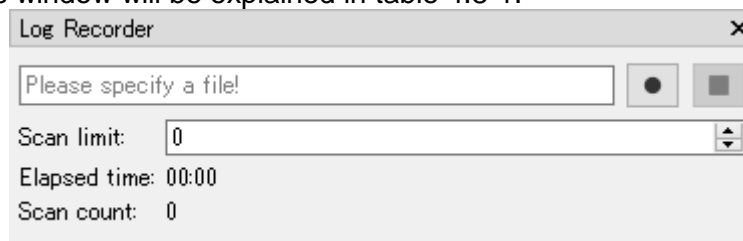

Figure 4.8 Data logging

Table 4.8-1 Display of data logging

Icon	Name	Description
●	Starts recording	Specify the location to record the scanned data and starts recording.
■	Stops recording	Stops recording the log data.

　　When specifying the number of scans, enter the number of scans you want to record in the scan limit box and click the ● icon start recording to log file. After clicking the ● icon start recording to log file, then select the location. After location is selected, starts recording. If the scan limit is 0, it records until icon ■ is clicked to stop. Explain the content of the log data window in table 4.8-2.

Table 4.8-2　Display Content

Content	Description
Elapsed time	Total played time of log data
Scan count	Scan count of log data

Caution

☐ Depending on the computer load and connection quality, measurement data reception speed can get affected. Therefore, real-time log recording is not guaranteed.

Quick /Useful tips

☐ When file name is specified during log recording, you can select the file extension. In the case when playing log data in Area Designer, select log file in *.ubh format. When CSV file is *csv format is selected, displays the coordinate data. Also, if scan count is specified when recording, it is possible to display MS Excel in *xls format.

4.9 Playing log data

This window is used for playing log data. (file extension: *.ubh). While sensor is disconnected, or when the measured distance display is stopped while connected to the sensor, play the log data and the ▶ icon in the tool bar will be active. Click play using the log data icon or use the shortcut keys of "Ctrl + 2", and the window illustrated in figure 4.9-1 will be displayed.

The details of the cursor that is displayed within the "progress" of this window will be explained in figure 4.9-2. Also, the details of log player will be explained in table 4.9-1.
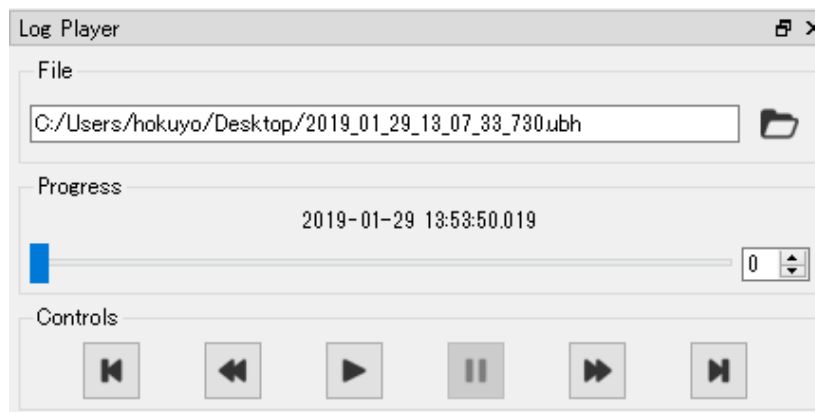

Figure 4.9-1 Log player

Cursor which operates play time of log data   **Displays the scan number**

Figure 4.9-2 Cursor which operates play time of the Log data

Table 4.9-1 Log player

Icon	Name	Description
📂	Open	Open and select the log data which you want to play. (file extension: *.ubh).File path will be displayed on the left when the file is selected.
◄	First	Moves to the initial position of log data.
◄◄	Replay	Moves up to the position where output changes.
►	Play	Starts playing the log data.
❚❚	Pause	Pause/ Stops the log data for a while.
►►	Fast	Moves up to the position where output changes.
►❚	Last	Moves to the end of log data.

When you start to play log, displays waveform in the main screen as well details of log data as shown in figure 4.9-3. In table 4.9-2, explains the details of log player screen.

Figure 4.9-3 Displays the details of log data

Table 4.9-2 Log player screen

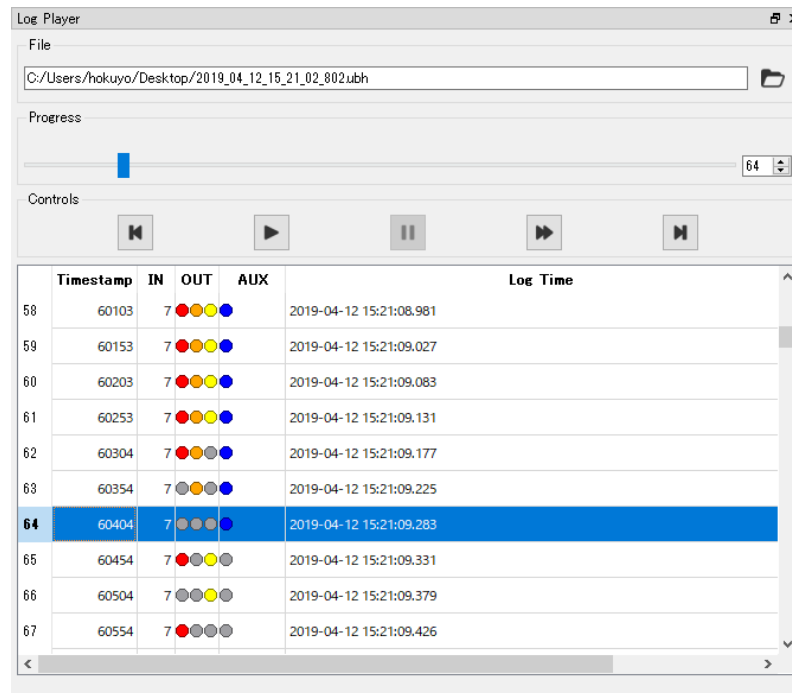| Content	Description
Time stamp	Elapsed time after power supply to the sensor (ms)
Input	Selected area
Output	Detection output status Detection 1 :Yellow Detection 2 : Orange Detection 3 : Red
AUX	Ready status
Log time	PC time during Log acquisition

Caution

☐ It is not possible to play log data and measurement display at the same time.
☐ If you stop the distance measurement display when connected with the sensor.

    While playing the log data, it may not play the log data if the connected sensor and

    log data play mode is different. Make sure to play log data with sensor disconnected.

☐ In case you want to confirm the detection judgment of the area when playing log

    data, it is necessary to open the original project file used while recording the log data.

    Make sure to open the saved project file.
☐ Plays all log data in LA 1 mode. Therefore, the log data acquired in LA 2 mode and LX mode is displayed in three input and output lamp each. During this, unused input and output lamps will switch OFF.

4.10 About the application

    This is used to confirm release information of the application. Click Help in the menu bar → [ℹ/ About this application] or press the shortcut keys of "Ctrl + A", as illustrated in figure 4.10 will be displayed.

    Version indicates time and date when the application was released. Update details in each version of the application are listed in the update history.
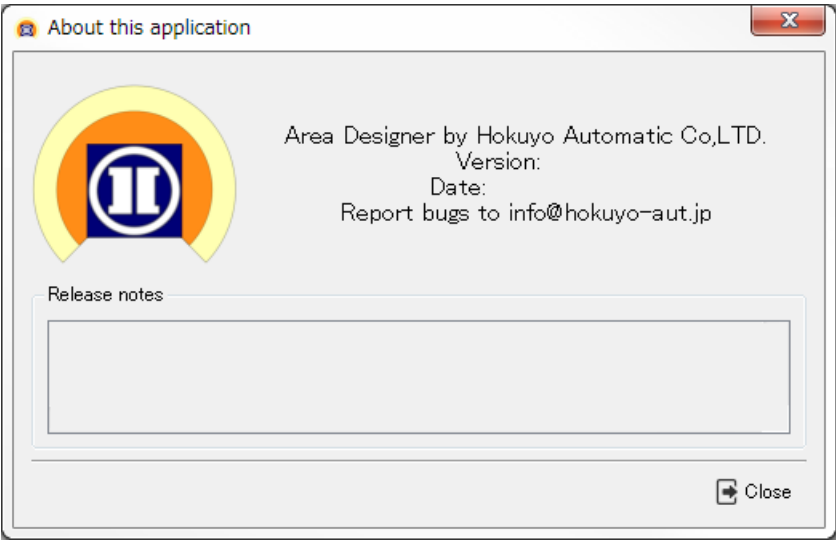

Figure 4.10 About this application

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5. Function of main screen window

5.1. Menu bar

The menu of this application is as displayed in figure 5.1. The details of each item of the menu are explained in the following chapters.
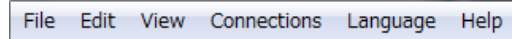

Figure 5.1   Menu bar

5.1.1 File

This menu is used for operating of project files and closing the application. This menu is displayed in figure 5.1.1. Also, the details of this menu are explained in table 5.1.1-1.
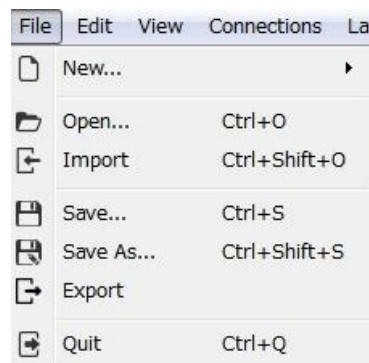

Figure 5.1.1   File

Table 5.1.1-1   File

Icon	Name	Shortcut	Description
	New		Create a new project file.
	Open	Ctrl+O	Open an existing file.
	Import	Ctrl+Shift+O	Opens project files created in UBG or PBS.
	Save	Ctrl+S	Saves the project file. When the file exists it overwrites the file.
	Save As	Ctrl+Shift+S	Save the project file after selecting name.
	Export		Displays the setting in PDF file.
	Quit	Ctrl+Q	Close the application.

Import can open the project file of extension as shown in table 5.1.1-2. Specify the extension of file type selection and select the file. The information of area settings each area or each output will not be shown. Make sure to confirm the area and settings. (Such as on delay, off delay, hysteresis etc)

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Table 5.1.1-2 File extension types of project file

Extension	Description
.ara	UBG,PBS project files
.arax	Project files of Area Designer

5.1.2 Edit

This menu is used for editing the area and application settings in edit mode. The edit menu is displayed as in figure 5.1.2. Also, the details of edit menu are explained in table 5.1.2.
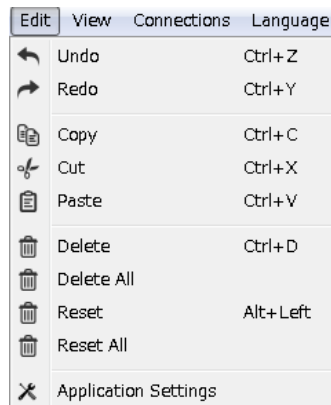
Figure 5.1.2 Edit

Table 5.1.2 Edit

Icon	Name	Shortcut	Description
←	Redo	Ctrl+Z	It will undo the previous operation.
→	Undo	Ctrl+Y	It will redo the last operation that was undone.
(copy)	Copy	Ctrl+C	Copy the under configuration area.
(cut)	Cut	Ctrl+X	Cut the selected area. Delete the original area.
(paste)	Paste	Ctrl+V	Paste the selected area in other area
(trash)	Delete	Ctrl+D	Deletes the selected area.
(trash)	Delete All		Deletes all the area.
(trash)	Reset	Alt+Left	The under configuration area will return to original state before editing.
(trash)	Reset All		All area will return to original state before editing.
(tools)	Application settings		Displays the application settings.

5.1.3 View

This menu is used to switch modes to edit or monitor and to display log data. This menu list is displayed in figure 5.1.3-1. Also, the details of this menu list will be explained in table 5.1.3-1.
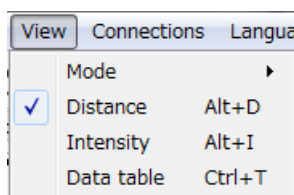
Figure 5.1.3-1 View

Table 5.1.3-1 View

Name	Shortcut	Function
Mode		Change/Switch the mode.
Distance	Alt+D	Displays distance data as the measurement output data.
Intensity	Alt+I	Displays intensity data as the measurement output data.
Data table	Ctrl+T	Displays data table.

In figure 5.1.3-1 displays the mode selection menu. In figure 5.1.3-2, it displays operation menu after the mode selection. Also, the details of this menu list are explained in table 5.1.3-2.
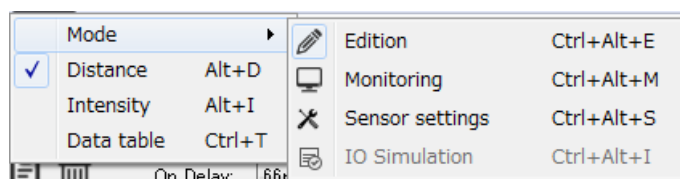
Figure 5.1.3-2 Mode selection

Table 5.1.3-2 Mode selection

Icon	Name	Shortcut	Description
	Edit	Ctrl+Alt+E	Changes to edit mode.
	Monitor	Ctrl+Alt+M	Changes to monitor mode.
	Sensor settings	Ctrl+Alt+S	Opens sensor setting.
	IO Simulation	Ctrl+Alt+I	Displays IO Simulation.

5.1.4 Connections

This menu establishes communication with the connected sensor. The menu is displayed in figure 5.1.4-1. Also, the details of this menu are explained in table 5.1.4-1.
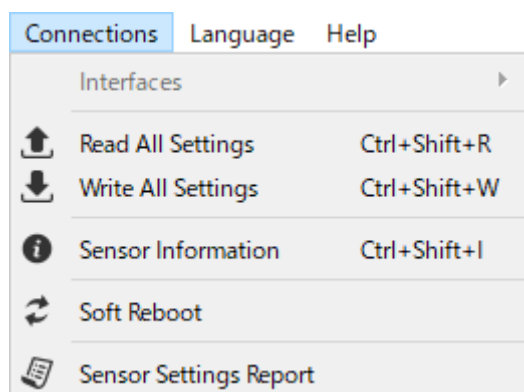
Figure 5.1.4-1 Connections

Table 5.1.4-1Connections

Icon	Name	Shortcut	Description
	Interfaces		Change connection interfaces.
⬆	Read all settings	Ctrl+Shift+R	Read all setting from sensor.
⬇	Write all settings	Ctrl+Shift+W	Write all setting to sensor.
❶	Sensor information	Ctrl+Shift+I	Displays sensor information.
⟳	Soft reboot		Sensor restarts.
📄	Sensor setting report		Displays the sensor setting in PDF file.

The Interface explained in figure 5.1.4-1 is displayed in figure 5.1.4-2. Also, the details of this menu will be explained in table 5.1.4-2.
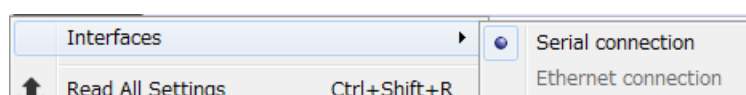
Figure 5.1.4-2 Interfaces

Table 5.1.4-2 Interfaces

Name	Description
Serial connection	Connect to serial connection.
Ethernet connection	Connect to Ethernet connection.

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5.1.5 Language

This menu used to change the displayed language of the application to English or Japanese. This menu list is displayed in figure 5.1.5. Also, the details of this menu are explained in table 5.1.5.
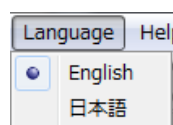
Figure 5.1.5 Language

Table 5.1.5 Language

Name	Description
English	Display in English language
日本語	Display in Japanese language

5.1.6 Help

This menu displays the instruction manual and application information. The Help menu is as shown in figure 5.1.6.In table 5.1.6 explain about this menu.
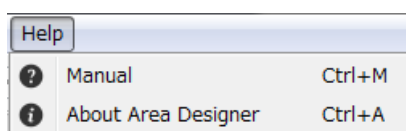
Figure 5.1.6 Help

Table 5.1.6 Help

Icon	Name	Shortcut	Description
?	Manual	Ctrl+M	Displays the application manual.
i	About Area Designer	Ctrl+A	Displays about this application.

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5.2. Toolbar

In figure 5.2, it displays the toolbar of the application. This toolbar consists of four toolbars sections and the details of each of the toolbars are explained in table 5.2. The details of each individual toolbar section are explained in the following chapters.

Figure 5.2 Toolbar

Table 5.2 Toolbar

| No.	Name of tool bar	Description
1	Basic tool	For the operation of project file and Redo/Undo operation.
2	Connection tool	Establish communication with the connected sensor.
3	Mode selection tool	Display mode selection and setting of each mode.
4	Measurement tool	Measurement display, record and play of log data.
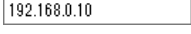
5.2.1 Basic tool

Table 5.2.1 Basic tool

Icon	Name	Shortcut	Description
	New		Create new a project file.
	Open	Ctrl+O	Opens the existing project file.
	Save	Ctrl+S	Saves the edited project file. When a file is already specified, overwrite data and saves.
	Undo	Ctrl+Z	It will undo the previous operation.
	Redo	Ctrl+Y	It will redo the last operation that was done.

5.2.2 Connection tool

Table 5.2.2 Connection tool

Icon	Name	Shortcut	Description
192.168.0.10	IP Address setting		Set the IP address of sensor connected to the application.
	Connect device	Ctrl+Shift+C	Connects to COM port and communication takes place.
	Disconnect device	Ctrl+Shift+D	Disconnect the communication.
	Sensor information	Ctrl+Shift+I	Displays sensor's information.
	Read from sensor	Ctrl+Shift+R	Read the setting from the sensor.
	Write to sensor	Ctrl+Shift+W	Write settings to the sensor.

5.2.3 Mode selection tool

Table 5.2.3 Mode selection tool

Icon	Name	Shortcut	Description
	Edit	Ctrl+Alt+E	Change/Switch to edit mode.
	Monitor	Ctrl+Alt+M	Change/Switch to monitor mode.
	Sensor settings	Ctrl+Alt+S	Displays the sensor's setting.
	IO Simulation	Ctrl+Alt+I	Displays IO Simulation.

5.2.4 Measurement display tool

Table 5.2.4 Measurement display tool

Icon	Name	Shortcut	Description
	Play	Ctrl+0	Displays the measurement data.
	Hide	Ctrl+0	Hide the measurement data.
	Record	Ctrl+1	Record log data.
	Replay	Ctrl+2	Play log data.

Caution

☐ In the event you want to confirm the detection judgment order of the area when playing a log, it is necessary to open the original project file used while recording the log data. Make sure to save the project file.

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5.3. Main view toolbar

This toolbar is displayed in the bottom right of the main window. This toolbar is used for main view operations. The toolbar is as illustrated in figure 5.3-1. The details displayed in this toolbar are explained in table 5.3.

Figure 5.3-1 Main view toolbar

Table 5.3 Display of Main view toolbar

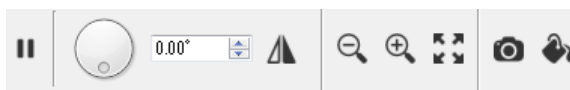| Icon	Name	Description
❙❙	Pause	Stops the update of the distance and level plot. Refresh starts if clicked again.
▶	Start update	Starts the update of the distance and level plot.
◯	Rotate	Rotates the main view.
0.00°	Angle of rotation	Displays the rotation angle of main view. Main view can be also rotated to desired angle through numeric input
◮	Flip Horizontally	Flip horizontally the current region.
⊖	Zoom out	Zoom out the main view screen. Same operation can be done by scrolling mouse down.
⊕	Zoom in	Zoom In the main view screen. Same operation can be done by scrolling mouse up.
⤢	Zoom fit	Adjust the zoom so that the entire main view can be seen.
◎	Screen capture	Capture the main view, saves in PNG file.
🖌	Canvas Settings	Shows the canvas settings windows

The color of the measurement plot is configurable using the Canvas setting panel. The panel shows up when pushing on the 🖌 button on the lower right corner of the screen. The setting panel is shown in figure 5.3-2. The color option is split in 2 categories: Color settings for the range and for the level plot. The line color corresponds to the outer line of the plot. The fill color corresponds to the fill of the plot.
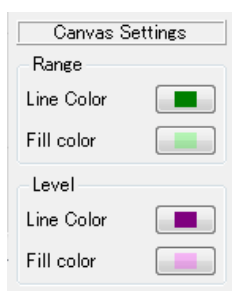

Figure 5.3-2 Canvas settings panel

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5.4. Status bar

The status bar is displayed at the bottom of the main window. This status bar displays the sensor information and status display. The status bar is as illustrated in figure 5.4-1. Details displayed in this status bar and sensor information is explained in table 5.4-1. Communication status and recording status of display tools are explained in table 5.4-2
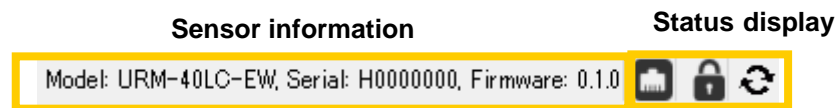
Sensor information   **Status display**

Model: URM-40LC-EW, Serial: H0000000, Firmware: 0.1.0

Figure 5.4-1 Status bar

Table 5.4-1 Sensor information

Display	Description
Model	Model of the sensor will be displayed.
Serial	Serial number of the sensor is displayed.
Firmware	Firmware version of the sensor is displayed.

Table 5.4-2 Status display

Icon	Name	Description
	Sensor connected	Application displayed is connected with the sensor.
	Sensor disconnected	Application displayed is disconnected with the sensor.
	Protection state	When disconnected from the sensor or when switching to the monitoring screen while connected with the sensor.
	Non protection state	When connected to the sensor, switch to the editing screen
	Error state	Displays during fault simulations as it is not possible for data logging output.
	Data logging	Displays during data logging.
	During communication	Displays during communication processing.

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6. Revision history

Document No.	Amended No.	Revision date	Details
C-41-02608	---	Jan 2019	First release

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Appendix A Network address

URM starts communication when Area Designer is connected with Ethernet. The default setting of sensor's IP address is 192.168.0.10. No need for special instruction as port number is fixed. Also, IP address can be changed using other address changing tool.

Appendix B Troubleshooting

While using this application if a problem occurs, refer to the following table.

In case a problem cannot be resolved with any of the following methods listed, please note the situation and issues as well as when the problem occurred and contact our nearest distributor or sales representative.

Situation	Issue	Possible reason	Solution suggestion
When installing the application	Cannot install the application	Non-supported OS is used	Install in the OS supported computer.
		Free space of Hard disk is not sufficient	Free space of Hard disk must be more than 150MB.
		All windows program have not been closed	Close all the windows programs except installer.
	Installation process seems as stopped.	Installation process continuous	Please wait for a while. Depending on the computer, the installation process may require some time.
		A message dialogue is displayed behind the displayed screen	Any hidden messages will be displayed by pressing the "Alt key" + the "Tab key", operate according to the message.
When Sensor and PC connected	Could not find the sensor	Power supply is OFF	Make sure the power supply is ON.
		IP address of PC is not set	Please refer to the following URL for IP address setting method. https://www.hokuyo-aut.co.jp/products/data.php?id=4

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