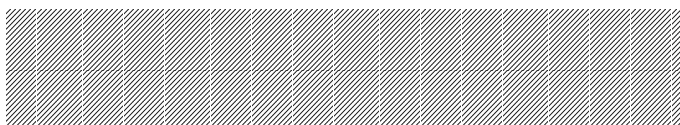
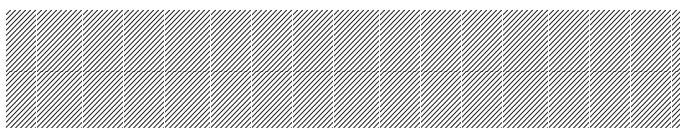


**SCREEN CREATOR 5**  
*User's Manual*



**Vol. 5**  
**CONTROL**  
**REFERENCE**



**KOMATSU**

Electronic System & Component Dept.  
Electronics Div.



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## How This Manual Is Organized

This Screen Creator 5 facilitates you to create screens by arranging parts such as lamps, switches, numeral displays, etc. Each of those parts is created by combining members having desired functions. Each of the members has a basic function which is referred to as a control. This manual explains each of those controls.

This manual is divided into the following two chapters.

### CHAPTER 1 GENERAL DESCRIPTION OF CONTROL

This chapter explains the concept of control.

Be sure to read this chapter before using this manual to understand the contents of control.

### CHAPTER 2 CONTROL REFERENCE

This chapter explains individual controls in detail.

It is also recommended to refer to the following manuals when using this equipment.

#### Vol.1 Screen Creator 5 Manual (Introduction)

This manual describes the basic operation methods of the Screen Creator 5.

#### Vol.2 Screen Creator 5 Manual (Operation)

This manual describes details of each operation of the Screen Creator 5.

#### Vol.3 Screen Creator 5 Manual (Connection to a PLC/External Devices)

This manual describes how to communicate with an PLC and a host computer and how to connect this equipment to external devices.

#### Vol.4 Screen Creator 5 Manual (Standard Parts Catalog)

This manual explains functions of the standard parts supplied by Koyo.

#### Vol.5 Screen Creator 5 Manual (Control Reference)

This is a reference manual for controls used for creating parts.

#### Vol.6 Screen Creator 5 Manual (K-Basic Program Description)

This manual explains how to describe operation programs for creating screens, as well as necessary commands for the purpose.

#### Vol.7 Screen Creator 5 Manual (Troubleshooting and List of Error Codes)

This manual describes restrictions for creating screens on the Screen Creator 5, how to process troubles, and explains error codes.

## Safety Precautions

Be sure to follow the safety precautions listed below in order to use the OIP safely. Koyo Ltd. cannot be held liable for any damages incurred if these safety precautions are not followed.



### WARNING

- Design your system so that there are sufficient countermeasures for personnel accidents and major equipment accidents. The system should have an external protection and safety circuit, so that even if the OIP should malfunction or even if there is a defect in the program the safety of the system is assured.
- Do not use the touch panel of the OIP to make switches that are related to safety or people or major damages (emergency safety switches, etc.). Be sure that the system is designed so that it can cope with any errors or malfunctions in the touch panel.
- Be sure that type 3 grounding is used for the protective-grounding terminal. There is a possibility of electrical shock if the unit is not grounded.
- If the OIP should malfunction, immediately turn off the poser and leave it alone.
- If there is direct output to external output device such as PLCs, direct output will be driven regardless of the ladder circuit interlock. Output may be used to drive motors and the like, so avoid using direct output because it is dangerous.



### CAUTION

- Use and store the OIP in the environment described in the specifications (regarding vibration, shock, temperature, humidity, etc.).
- Do not use the OIP where it is subjected to inflammable or explosive gas, or steam.
- Before turning on the power, be sure that the power voltage rating of the OIP and the voltage rating power supply match. Using a mistaken power supply can damage the unit.
- Do not disassemble or modify the OIP. Doing so can cause malfunctions and lead to other problems.
- The OIP touch panel is made of glass. Striking it with hard objects or pressing hard on it may break the glass.
- Do not push down on the OIP touch panel with mechanical pencils, screwdrivers, or other sharp objects. Doing so can damage the touch panel or cause malfunctions.

## Notations Used In This Manual

This manual uses the following symbol marks for you to use this system comfortably.



### **WARNING**

Describes a peril that may cause operator's death or serious injury in neglecting the WARNING item(s).



### **CAUTION**

Describes a peril that may cause bodily injury or serious device damage in neglecting the CAUTION items(s).



Describes general note(s) in use.

Note)

Explanations and supplements.

Glossaries used in this manual are as follows.

OIP

Stands for Advanced Intelligent Panel.

PLC

Stands for programmable controller. It is also called a sequence controller.

Link unit

A link unit is a communication equipment which connects this equipment and the PLC. The nomenclature of the communication equipment is different from each manufacture and the equipment is called a link unit in general.

Device

A device is such equipment that an input/output relay, internal relay, timer, counter, or resistor in the PLC.

---

## Notice

We have used our best efforts in preparing this manual. We make no warranties with respect to the accuracy, or completeness of the contents of this manual and purpose. We shall not be liable any loss of profit or any other commercial damages, applying this manual directly and indirectly.

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**Facsimile: 81-03-5711-1840**

## Version Up

Koyo Ltd. has upgraded Screen Creator 5 for adding new functions, operationability and so forth. Below will be introduced the updated functions.

### 1. Version 2.10

- Supporting middle size systems (GC53) of GC5x Series
- Adding the uploading editing function

To make this function effective, attach all screen data and K-Basic programs used in the project and download them to the panel. Then download the uploaded entities from the panel and restore them. Then you can edit the data and programs. Note that the data with the project attached increase their size.

- The following PLCs have been added.

Omron	SYSMAC $\alpha$
Fuji Dencki	FLEX-PC NJ-T/NS-T
Fuji Dencki	Computer-link protocol
Fuji Dencki	Loader command protocol
Toyota Koki	PC1
Toyota Koki	PC3
Matsushita Electric Industry	Panadac 7000

- Standard components, centered on the parts used for middle size systems (GC53) in the GC5x Series have drastically been added.



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# **CHAPTER 1**

## **GENERAL DESCRIPTION OF CONTROL**

## 1-1 A Control Means

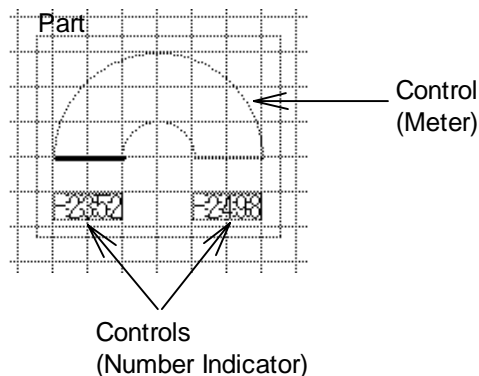
The Screen Creator 5 allows screens to be created with various parts such as lamps, switches, number indicator, etc. arranged on them. Each of those parts is created by combining members having a basic function referred to as a control individually to realize the desired function of the object part. In other words, a control means a member to realize the most basic function for forming a desired OIP screen. The member functions to display a lamp and a numeral, as well as to turn on/off a switch.

A part can be provided with two or more such controls. In addition, controls can be arranged in a part so that they are put on top of another.

Switches and lamps are often arranged side by side. To realize such a way of usage of parts, therefore, some controls are provided with an "array" function respectively. One control can thus realize the same function as that realized by two or more controls arranged in every direction. To use such an array function, it must be specified that how many controls should be arranged horizontally (X direction) and/or vertically (Y direction), as well as the spacing of those controls in each direction using the attributes.



A control was referred to as a primitive in GCSGP3.



The controls and their functions prepared for each OIP at present are as shown below.

Control Name	Function	Array
Switch	OIP touch switch realizing a switching function	
Selector switch	OIP touch switch realizing a switch array function that only one switch can be turned on.	
Number Indicator	Displays a given numeral.	
Character Indicator	Displays a given text.	
Clock Indicator	Displays the time of the OIP built-in clock.	
Figure Indicator	Displays a given texture.	
Plot graph	Plots given 2 data items on a graph as 2-dimensional coordinate values.	

Control Name	Function	Array
Bar graph	Displays each given data as a length of a vertical bar. Two or more types of bars can be displayed on the horizontal direction.	
Line graph	Displays given data on a line graph. Two or more lines can be displayed on the graph.	
Band graph	Displays percentages of given two or more data items on a band graph.	
Circle graph	Displays percentages of given two or more data items on a circle graph.	
Free graph	Displays the percentage of each given data item on a bar graph in an area set in a transparent part background figure. A level meter can be drawn in any patterns.	
Slider	Displays a texture at a position on a line according to given data. A knob, etc. can be displayed for a slide volume.	
Meter	Displays a pointer on a given fan-like meter according to given data.	
Lamp	Changes the background color according to the status of given data.	
Pipe	Displays the inside color of a pipe according to the status of given data. The flow, etc. in a pipe can be represented.	

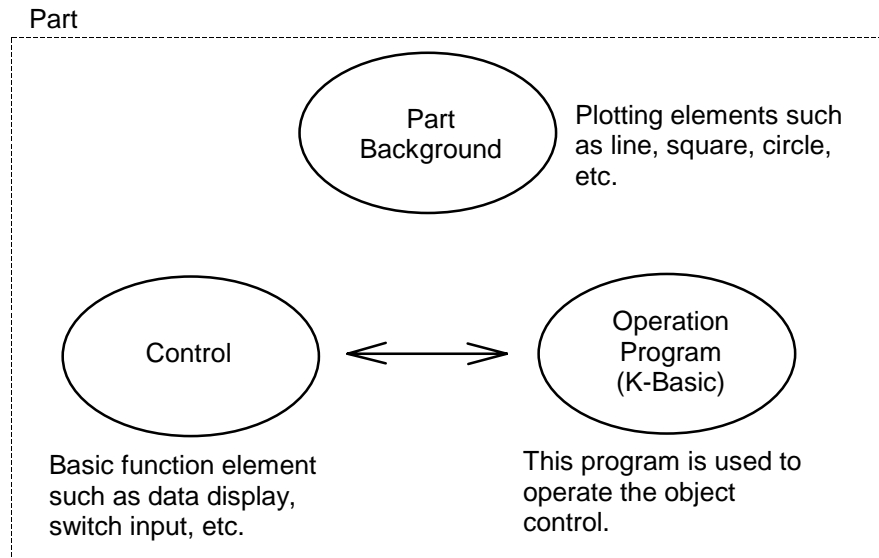
## 1-2 Control Action

There are two methods for operating each control arranged in a part; one method using an operation program and the other method using operation parameters. Hereunder, each of the methods will be explained.

### 1-2-1 Control Action by Program

First method by part operation program: A K-Base command is executed to let a control perform a desired action. In this case, the dedicated K-Base statement or function prepared for each control is called from the operation program.

The relationship among members of a part is as shown below.



The table below shows the types and functions prepared for each control. For details of each command, refer to the K-Basic program description manual.

Control Name	Command	
Switch (Selector switch)	SWFIG	Specifies a figure to be displayed at its ON/OFF time.
	SWMODE	Changes the status (normal/input inhibition/half-tone.
	SWREAD	Reads the ON/OFF status.
	SWREV	Specifies whether to display an object in the reverse video at its ON/OFF time.
	SWWRITE	Writes the ON/OFF status.
Number Indicator	NUMCOLOR	Changes the color/background.
	NUMDSP	Displays numeral data.
	NUMFORM	Changes the display format.
Character Indicator	STRCOLOR	Changes the color/background.
	STRDSP	Displays text data.
	STRFORM	Changes the display format.
Clock Indicator	None	
Figure Indicator	FIGCOLOR	Changes the color/background.
	FIGDSP	Displays a texture.
	FIGFORM	Changes the display format.
	ROTATE	Rotates and displays a texture.
Plot graph	PLTCOLOR	Changes the color/background.
	PLTDSP	Plots data.

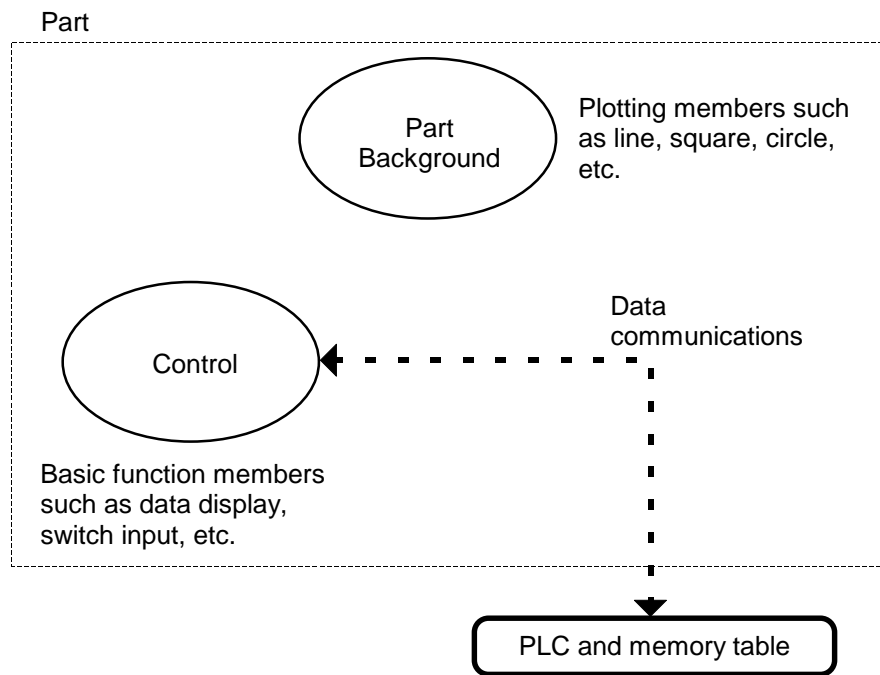
Control Name	Command	
--------------	---------	--

Bar graph	BARCOLOR	Changes the color/background.
	BARDSP	Displays data.
	BARSET	Specifies data.
	BARSHIFT	Shifts a graph to the right/left.
Line graph	LNECOLOR	Changes the color/background.
	LNEDSP	Displays data.
	LNESET	Specifies data.
	LNESHIFT	Shifts a graph to the right/left.
	LNESHIFT2	Shifts graph data to the right/left.
	SETLNEPLOT	Specifies a display range.
Band graph	BLTCOLOR	Changes the color/background.
	BLTDSP	Displays data.
	BLTSET	Specifies data.
Circle graph	CIRCOLOR	Changes the color/background.
	CIRDSP	Displays data.
	CIRSET	Specifies data.
Control name	Command	
Free graph	FRECOLOR	Changes the color/background.
	FREDSP	Displays data.
Slider	SLDDSP	Displays data.
Meter	MTRCOLOR	Changes the color/background.
	MTRDSP	Displays data.
Lamp	LAMPCOLOR	Changes the color/background.
	LAMPDSP	Displays data.
Pipe	PIPCOLOR	Changes the color/background.
	PIPDSP	Displays data.
Common to various controls	CLEAR	Clears the display.
	DSPMODE	Changes the display mode.
	EXECPRCODE	Computes control data.
	PRDSP	Displays the object again.
	PRMCTL	Changes the control attribute.
	PRMSTAT	Reads a control attribute.
	RANGE	Specifies a range.

### 1-2-2 Control Action by Parameter

The second method for operating each control is a method in which the control functions by operating a PLC device and a value in the memory table (read/write) directly by itself. When the check box of "Enable" in the control attribute is checked, controls can be operated by operation parameters. With this, a PLC device and the memory table to which a control is to be connected can be set as operation parameters of the object part.

The above relationship among members of a part is as shown below.



## **CHAPTER 2**

## **CONTROL REFERENCE**

## 2-1 Switches

**Function**

Screen Creator 5 is a piece of software that creates screens to be displayed on the OIP with a personal computer. This software provides the following features.

A switch has a function for converting an OIP touch switch to a logical input switch on a display screen.

One touch switch has a space of  $20 \times 20$  dots.

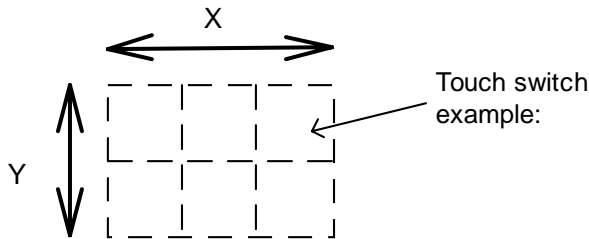
For a screen of  $640 \times 480$  dots, the screen can have  $32 \times 24$  touch switches.  
For a screen of  $640 \times 400$  dots, the screen can have  $32 \times 20$  touch switches.

One switch control can form a logical switch (switch matrix) using two or more touch switches.

One switch control also allows each of switch matrixes arranged horizontally and vertically to function as an independent switch. Such an arrangement of switch matrixes is referred to as a switch array.

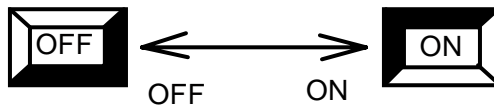
Example: Switch control area

$3 \times 2$  switch matrix



OFF texture: P\_OFF22

ON texture: P\_ON22



When both ON and OFF texture are specified, the switch texture is displayed according to the switch ON/OFF status.





- **Name**  
Enter the control name within 8 alphanumerics.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- **Type**  
Select the switch type from operation types of momentary, alternate, and auto repeat.
  - **Momentary type**  
This type switch keeps the ON status while it is held down. When the switch is released, the switch enters the OFF status.
  - **Alternate type**  
This type switch is turned ON/OFF alternately each time the switch is pressed.
  - **Auto repeat type**  
This type switch generates ON events periodically while the switch is held down. When "operation parameters" are valid, this type switch operation will be the same as that of the momentary type switch.
- **Background color mode**  
Select how to handle the background of the ON/OFF figure.
  - **Draw**  
When the switch is turned ON/OFF, the switch control area is painted with the background color, then the figure is displayed.
  - **Replace**  
When the switch is turned OFF, the figure is displayed without painting the switch control area. When the switch is turned ON, the specified OFF figure background in the part background in the switch control area is replaced with the specified ON figure background. After this, the figure is displayed. For a monochrome type OIP, when the switch is turned ON, the switch area is displayed in the reverse video.

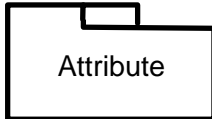


"Replace" is performed only for the part background. Even when a switch control is put on another control, the color of the bottom control does not affect the replacement.

- **Reverse video at ON**  
Specify whether to display the switch area in the reverse video when a touch panel switch is pressed.



If [REPLACE] and [REVERSE] are selected together for a monochrome type OIP, the switch display is not changed when the switch is turned ON/OFF.

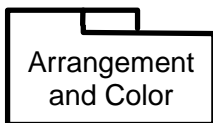


- Buzzer at ON  
Specify whether to make the buzzer sound when a touch panel switch is pressed.
- Initial status  
Specify the initial status of the switch control part (normal/input inhibition/half-tone). The attribute contents are the same as those of the part.
- PIO output  
Specify a parallel IO module in bits, which outputs "H" when the switch is turned ON.
- Ream step  
Specify the number of switches to be arranged and the switch interval in both X and Y directions.



Change of a switch array may affect the operation program. To avoid this, change the operation program description accordingly when a switch array is changed.

Note that when switches are arranged in an array, the message data format is changed. For details, refer to "3-12 Message Format" in the "K-Basic Program Description".



- Arrangement information
  - Left Top grid  
Indicates the coordinates of the touch switch positioned in the top left of the switch matrix (for a switch array, it is the upper left matrix defined as a reference) with the upper left grid coordinates of the touch switch.
  - Right Bottom grid  
Indicates the coordinates of the touch switch positioned in the bottom right of the switch matrix (for a switch array, it is the upper left matrix defined as a reference) with the upper left grid coordinates of the touch switch.
- Background  
Specify the texture and the background color to be displayed in the control area when the switch is turned ON/OFF.
  - Texture when ON  
Select the texture to be displayed when the switch is turned ON.
  - Color when ON  
Select the background color to be displayed when the switch is turned ON.
  - Texture when OFF  
Select the texture to be displayed when the switch is turned OFF.

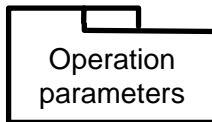
- Color when OFF  
Select the background color to be displayed when the switch is turned OFF.

The background decided for the texture is expanded/shrunk automatically according to the size of the switch matrix. When this is not specified, no texture is displayed.



When a complicated figure/bit map figure and a slower display figure (fan-shape painting, curve) is specified as a texture for ON/OFF time, the switch response speed is lowered.

- Image  
Specify the ON time image or the OFF time image to be displayed on the Screen Creator screen.



- Enable  
When the check box is checked, operation parameters of each part can be used to specify control actions. The control area is displayed in gray at this time. When operation parameters are invalid, the control area is displayed in yellow.

- Station Device  
Specify the name of the PLC device or the memory table in which the switch value is to be written when the switch is turned ON/OFF.

- Synchronized operation  
When the check box is checked, the switch ON/OFF status is displayed after the switch is pressed and values are written in parameters "station No. ~ device name".  
When the check box is not checked, the switch ON/OFF status is displayed regardless of the writing in devices.



If a device value is changed when in a synchronized operation, the OIP side switch is also turned on. Unless a normal value writing is confirmed, the switch cannot be turned ON/OFF.

- Writing when ON  
Specify the values to be written in "station No. ~ device name" when the switch is turned ON.
- Writing when OFF  
Specify the values to be written in "station No. ~ device name" when the switch is turned OFF.



If "YES" is specified for "synchronized operation", the "Writing when ON" and the "Writing when OFF" must be different from each other. If the same value is specified for both parameters, "1" is written for ON and "0" is written for OFF when the OIP begins an operation.

If, when "YES" is selected for "synchronized operation", writing in

"station No. ~ device name" fails, then the switch operation is disabled.



The OIP touch panel switch function determines all the switches of a pressed switch matrix to be ON. Thus, when two or more switch matrixes are pressed at the same time, a switch control corresponding to each of those switch matrixes is turned ON.

However, note that when 3 or more switch matrixes are turned ON at the same time, a switch matrix that is not pressed may also be turned ON because of the operation characteristics.

## 2-2 Selector Switches

### Function

A selector switch has a function for converting OIP touch switches to logical input switches on the display screen.

A selector control switch has two or more logical switches, but enables only one of them to be turned ON. This is a difference from a switch control of a switch array.

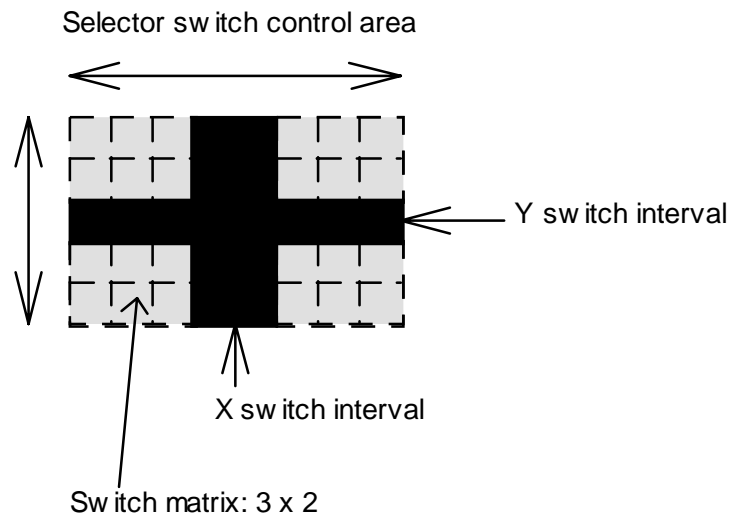
One touch switch has a space of  $20 \times 20$  dots.

For a screen of  $640 \times 480$  dots, the screen can have  $32 \times 24$  touch switches.

For a screen of  $640 \times 400$  dots, the screen can have  $32 \times 20$  touch switches.

One logical switch can use two or more adjacent touch switches arranged horizontally and vertically. Such an arrangement of switches is referred to as a switch matrix.

Example:



Switch matrix setup

Number of switch ream step: 2 x 2

X switch interval: 2

Y switch interval: 1



- Name  
Enter the control name within 8 alphanumerics.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Background color mode  
Select how to handle the background of the ON/OFF figure.
  - Draw  
When the switch is turned ON/OFF, the switch control area is painted with the background color, then the figure is displayed.
  - Replace  
When the switch is turned OFF, the figure is displayed without painting the switch control area. When the switch is turned ON, the specified OFF figure background color in the part background in the switch control area is replaced with the specified ON figure background color. After this, the figure is displayed. For a monochrome type OIP, when the switch is turned ON, the switch area is displayed in the reverse video.



"Replace" is performed only for the part background. Even when a switch control is put on another control, the color of the bottom control does not affect the replacement.

- Reverse video at ON  
Specify whether to display the switch area in the reverse video when a touch panel switch is pressed.



If [REPLACE] and [REVERSE] are selected together for a monochrome type OIP, the switch display is not changed when the switch is turned ON/OFF.

- Buzzer at ON  
Specify whether to make the buzzer sound when a touch panel switch is pressed.
- Initial status  
Specify the initial status of the switch control part (normal/input inhibition/half-tone). The attribute contents are the same as those of the part.
- Ream step  
Specify the number of switch arrays and the switch interval in both X and Y directions.



The number of switch arrays may depend on the operation program. To change the number of switch arrays, also change the operation program description as needed.


 Arrangement and Color

- Arrangement information
  - Left Top grid  
Indicates the coordinates of the touch switch positioned in the top left of the switch matrix (for a switch array, it is the upper left matrix defined as a reference) with the upper left grid coordinates of the touch switch.
  - Right Bottom grid... Indicates the coordinates of the touch switch positioned in the bottom right of the switch matrix (for a switch array, it is the upper left matrix defined as a reference) with the lower right grid coordinates of the touch switch.
- Background  
Specify the texture and the background color to be displayed in the control area when the switch is turned ON/OFF.
  - Texture when ON  
Select the texture to be displayed when the switch is turned ON.
  - Color when ON  
Select the background color to be displayed when the switch is turned ON.
  - Texture when OFF  
Select the texture to be displayed when the switch is turned OFF.
  - Color when OFF  
Select the background color to be displayed when the switch is turned OFF.

The background decided for the texture is expanded/shrunk automatically according to the size of the switch matrix. When this is not specified, no texture is displayed.



When a complicated figure/bit map figure and a slower display figure (fan-shape painting, curve) is specified as a texture for ON/OFF time, the switch response speed is lowered.


 Operation parameters

- Image  
Specify the ON time image or the OFF time image to be displayed on the Screen Creator screen.
- Enable  
When the check box is checked, operation parameters of each part can be used to specify control actions. The control area is displayed in gray at this time. When operation parameters are invalid, the control area is displayed in yellow.

- **Station Device**  
Specify the name of the PLC device or the memory table in which the switch value is to be written when the switch is turned ON/OFF.
- **Device type**
  - **Word**  
The number of a pressed selector switch is written in the device. When all elements are off, "0" is written.
  - **Bit**  
The devices specified for "station No. ~ device name" are used by the number of switch elements. "1" is written in a device separated from the "station No. ~ device name" according to the number of the pressed switch. When all the switch elements are OFF, "0" is written. (If a synchronized operation is specified, the number of elements usable for a selector switch depends on the number of devices in which values can be written continuously. Check the number of usable devices in the "Connection to a PLC/External Devices".
- **Synchronized operation**  
When the check box is checked, the switch ON/OFF status is displayed after the switch is pressed and values are written in parameters "station No. ~ device name".  
When the check box is not checked, the switch ON/OFF status is displayed regardless of the writing in devices.



If a device value is changed when in a synchronized operation, the OIP side switch is also turned on. Unless a normal value writing is confirmed, the switch cannot be turned ON/OFF.



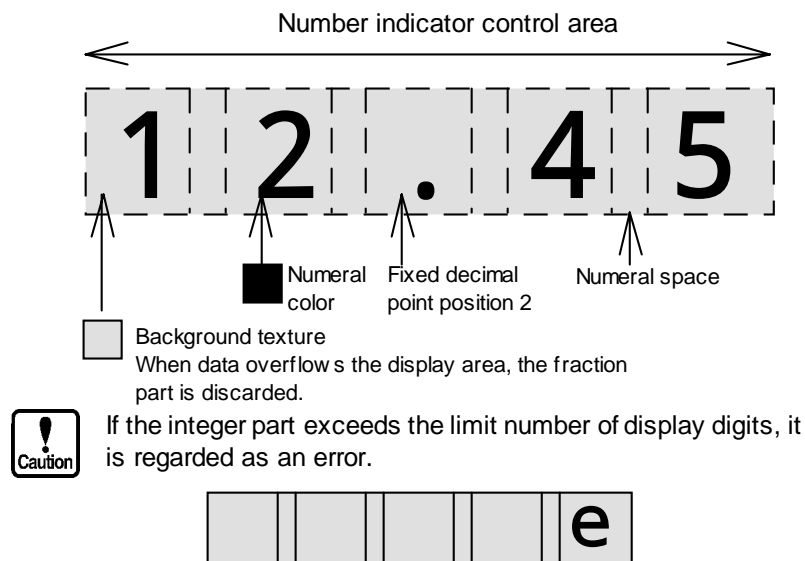
## 2-3 Number Indicator

### Function

A number indicator displays given data as a numeral. A number indicator has a rectangular area corresponding to the sizes and the number of digits of numerals.

If any data exceeds the limit number of display digits, an "e" is displayed as shown below.

Example:



### Attribute

- **Name**  
Enter the control name within 8 alphanumerics.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- **Action**  
Specify the initial status of the display type.
  - **Normal**  
Normal display type.
  - **Reverse video**  
The fore color of the background is replaced with the object display color.
  - **Blink**  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).

- Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



If transparent is specified for the fore color of the background as a reverse video display, no numeral is displayed.

- Decimal point
  - Fixed  
The decimal point is displayed at a fixed position. Unless data is an integer and "0" is set for "decimal point position", data is displayed as a real number.
  - Floating  
The decimal point is float-displayed.
  - Fixed 2  
The decimal point is displayed virtually. For integer data, the decimal point is displayed at the digit specified for "decimal point position".
- Position of point  
This attribute is valid when "Fixed" or "Fixed 2" is specified for "decimal point".  
Specify the number of decimal places (0 to 24).

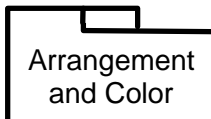
Example: If "1" is specified for "decimal point position" when the number of display digits is 5 (fixed),  
123.45 → 123.4  
If "1" is specified for "decimal point position" when the number of display digits is 6 (fixed 2),  
12345 → 1234.5



If the limit number of digits is exceeded to specify the decimal point position, an "e" is displayed.  
If the decimal point position value is too large (exceeding the accuracy of floating decimal point type data), the data is not displayed normally.  
The valid decimal point position is within 6 decimal places.

- Font  
Not use
- Not zero-suppression  
Specify zero suppression.  
If the check box is checked, "0" is displayed for the number of upper digits not included in the displayed numeral.

- Cardinal number  
Specify the data format for the display.  
For "BIN", "OCT", and "HEX", specify "0" for "decimal point position" and "Fixed" for "decimal point".
- BIN  
Data is displayed as a binary number.
- OCT  
Data is displayed as an octal number.
- DEC  
Data is displayed as a decimal number with sign.
- uDEC  
Data is displayed as a decimal number without sign.
- HEX  
Data is displayed as a hexadecimal number.
- Ream step  
Specify the number of display arrays and the display interval in both X and Y directions.  
When not arranged in arrays, specify "1" for the number of arrays in the X/Y direction.
- Arrangement information
  - Base point  
Indicates the position of the numeral display on the screen with the X and Y coordinate values of the upper left corner of the numeral display.
  - Length and interval  
Specifies the number of display digits (1 to 24) and the numeral interval (0 to 99 dots).
  - Size  
Select the sizes in the X and Y directions from 2, 4, 8, and 16 times.
  - Rotation  
Select the angle (90, 180, and 270 deg.) of the clock-wise rotation around the reference point at the upper left corner of the numeral display.
- Numeral color and background
  - Numeral color  
Select the numeral color to display.
  - Tile  
Select the tile pattern.





- Fore color  
Select the fore color. The black portion of the tile pattern becomes the fore color.
- Back color  
Select the back color. The background color becomes the back color.
- Image  
Specify the numeral to be displayed on the Screen Creator.
- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in yellow.
- Station Device  
Specify the name of the PLC device or memory table to be displayed on the numeral display.
- Device type
  - Word  
The length of the data in the PLC device or the memory table to be displayed on the numeral display is specified as a word.
  - Double words  
The length of the data in the PLC device or the memory table to be displayed on the numeral display is specified as double words.
- Endian
  - Little  
Select this type when setting word data of the upper device (having the larger number) in the upper word of the double words for display.
  - Big  
Select this type when setting the word data of the lower device (having the smaller number) in the upper word of the double words for display.
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD

BCD (binary coded decimal). No sign is used for "BCD" notation.

- Filter

Each device value can be calculated and displayed. The device value is represented by "X". Symbols, numerals (\*, /, +, -, (, ), 0 to 9), and the decimal point can be used for calculation.

If no data calculation is needed, enter no value.

Example: "X\*20+1" means that a device value is multiplied by 20, then 1 is added to the result.



When number indicator are arranged in "arrays", devices for the number of arrays are connected.

If "BCD" is selected for "data type", the result of "data calculation" is always displayed as an integer even when it has decimal places.

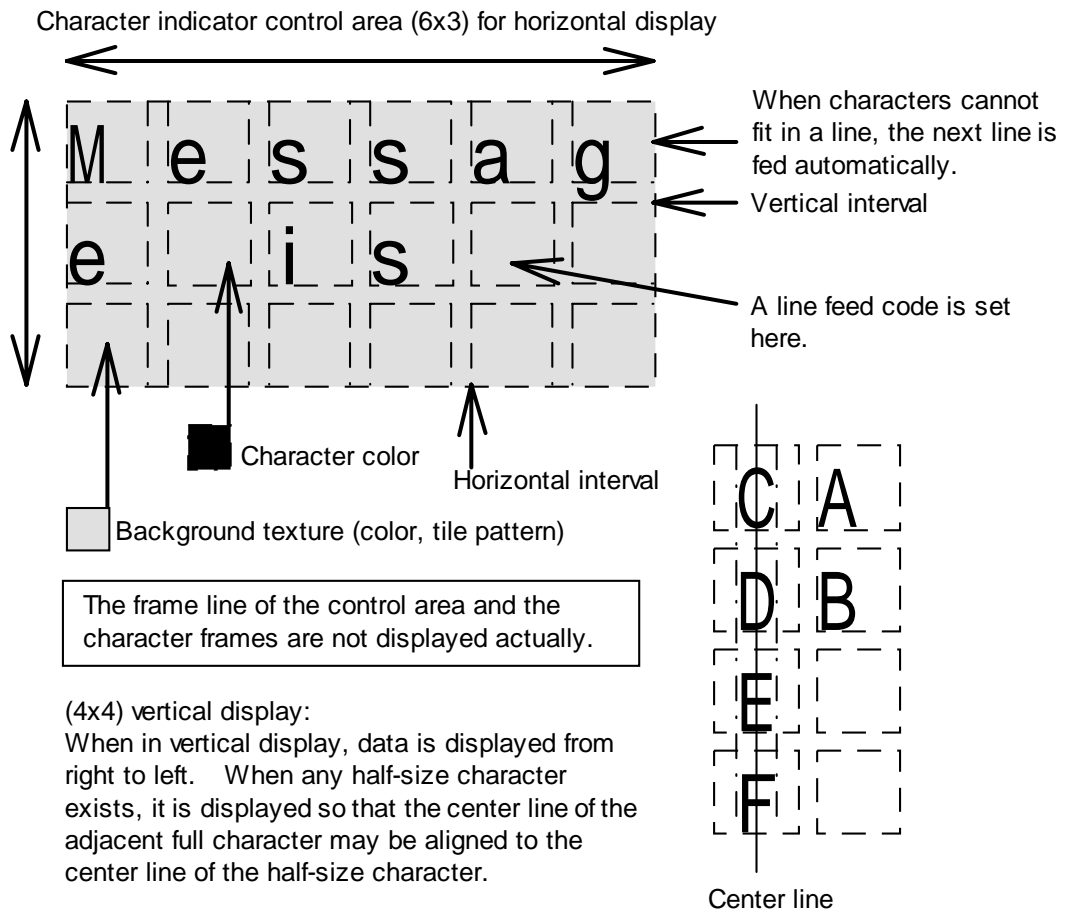
## 2-4 Character Indicator

**Function**

A character indicator displays characters corresponding to given character code data. Usable display codes are JIS and ANK. If characters overflow a line of the display area, another line is fed automatically.

When operation parameters are enabled, a registered text specified by the value of the PLC device or the memory table is displayed.

Example:



**Attribute**

- Name  
Enter the control name within 8 alphanumerics.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Action  
Specify the initial status of the display type.
  - Normal  
Normal display type.

- Reverse video  
The fore color of the background color is replaced with the object display color.
- Blink  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
- Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



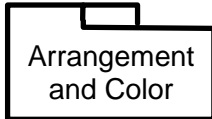
If transparent is specified for the fore color of the background as reverse video display, no numeral is displayed.

- Display direction
  - Horizontal  
Data is displayed from right to left.
  - Vertical  
Data is displayed from top to bottom.



When in "vertical display", each half-size character is displayed in the center of a full-size area. Thus, when "1" is set for "number of horizontal characters" to display half-size characters vertically, the characters cannot be displayed normally. When "vertical display" is specified, specify "number of horizontal character" to EVEN.

- Format
  - Left justification  
Characters are left-justified for display. When in vertical display, characters are top-justified.
  - Centering  
Characters are displayed in the center. Also when in vertical display, characters are displayed in the center.
  - Right justification  
Characters are right-justified for display. When in vertical display, characters are bottom-justified.
- Ream step  
Specify the number of character display arrays and the character display interval in both X and Y directions. When not arranging character displays in arrays, specify "1" for the number of arrays in the X/Y direction.



- Arrangement information
  - Base point  
Indicates the position of the character display on the screen with the X and Y coordinate values of the upper left corner of the character display.
  - Length and interval X  
Specifies the number of display characters (1 to 180). Specify the display character spacing (0 to 99 dots).
  - Length and interval Y  
Specifies the number of display characters (1 to 25). Specify the display character spacing (0 to 99 dots).
  - Size  
Select the sizes in the X and Y directions from 1, 2, 4, 8, and 16 times.
  - Rotation  
Select the angle (90, 180, and 270 deg.) of the clock-wise rotation around the reference point at the upper left corner of the character display.
- Character color and background
  - Character color  
Select the character color to display.
  - Tile  
Select the tile pattern.
  - Fore color  
Select the fore color. The black portion of the tile pattern becomes the fore color.
  - Back color  
Select the back color. The background color becomes the back color.
- Image  
Specify the characters to be displayed on the Screen Creator.



- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
- Station Device  
Specify the name of the PLC device or the memory table having the name of the registered text to be displayed on the character display.



- Continuous devices  
Specify the number of consecutive devices to be connected. The value must be "1" or over.  
If "1" is specified, the registered text number is assumed to be a value of the "station No. ~ device name" value + the "first registered text No."  
If "2" or over is specified, the registered text number is assumed to be the value 1 + the "first registered text No.". The value 1 indicates how far the device that receives a value other than "0" first of the consecutive devices is separated from "station No. ~ device name".
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.
- Head No. of Text  
Specify a value of "station No. ~ device name" + "first registered text No." as the number of the registered text to display.



When character indicator are arranged in "arrays", devices for the number of arrays are connected.

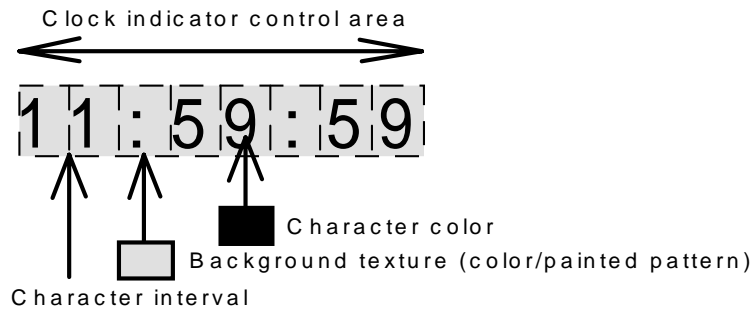
## 2-5 Clock Indicator

### Function

A clock indicator displays the time in a preset format.

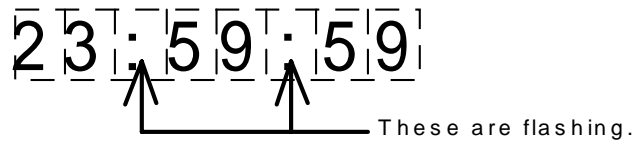
A clock indicator has a rectangular area corresponding the display format.

Example:



The frame line of the control area and character frames are not displayed actually.

Format: For %H%S %m%S %s



### Attribute

- Name
 

Enter the control name within 8 alphanumerics. This name is used to identify each control in the part from others. If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Action
 

Specify the initial status of the display type.

  - Normal
 

Normal display type.
  - Reverse video
 

A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - Blink
 

The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).

- Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



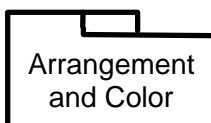
If transparent is specified for reverse video display, the background color permeating the control background is displayed in the reverse video. For a color type OIP, the color of the pallet number 15 becomes black when displayed in the reverse video.

- Font  
not use
- Format  
Specify the clock display format and the time items (hours, minutes, and seconds). Use the following parameters to specify the format.
  - Hour (2-digit integer, 0 is padded to the right.): %h (12-hour display). %H: (24-hour display)
  - Minute (2-digit integer, 0 is padded to the left.): %m
  - Second (2-digit integer, 0 is padded to the left.): %s
  - Colong flashing (1-digit symbol): %S
  - Other characters: Describe characters themselves.

Example:

[%H(hour)%m(minute)%s(second)] → 23 hours 34 minutes 54 seconds  
[%h%S%m%S%s] → 11:34:54 (The colon is flashing.)

The [Browse] button can also be used to select the format from representative ones.



- Arrangement information
  - Base point  
Indicates the position of the clock display on the screen with the X and Y coordinate values of the upper left corner of the character display.
  - Interval  
Specify the display character spacing in dots.
  - Size  
Select the sizes in the X and Y directions from 1, 2, 4, 8, and 16 times.
  - Rotation  
Select the angle (90, 180, and 270 deg.) of the clock-wise rotation around the reference point at the upper left corner of the clock display.

- Character color and background
  - Character color  
Select the character color to display.
  - Tile  
Select the tile pattern.
  - Fore color  
Select the fore color. The black portion of the tile pattern becomes the fore color.
  - Back color  
Select the back color. The background color becomes the back color.

## 2-6 Figure Indicator

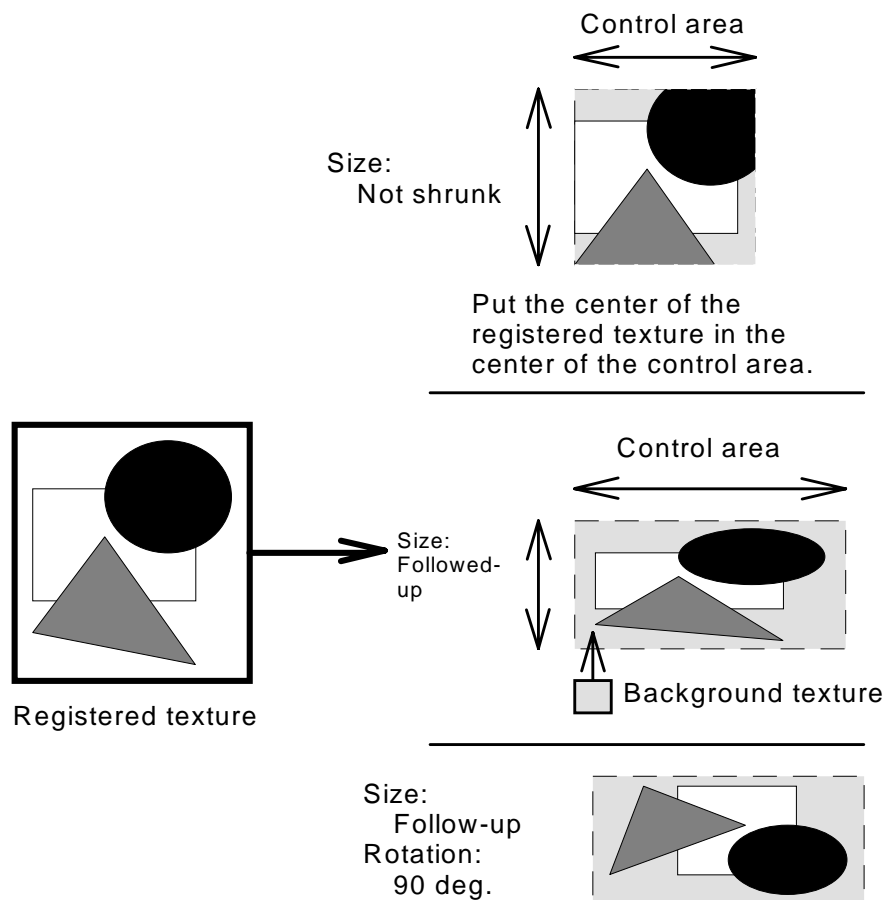
### Function

A figure indicator displays a registered texture corresponding to a given texture name or a registered texture number. A figure indicator has a given rectangular area.



A registered texture may not be displayed normally when it is too large in size (not fit in the screen). In such a case, register it again with a proper size (after it is shrunk).

Example:



### Attribute

- Name  
Enter the control name within 8 alphanumeric characters. This name is used to identify each control in the part from others. If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.

- Action  
Specify the initial status of the display type.
  - Normal  
Normal display type.
  - Reverse video  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - Blink  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
  - Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).
- Trace into frame  
Specify whether to make the display texture size follow up the figure control area. When the check box is checked, the figure size is changed automatically to match with the size of the texture control area.



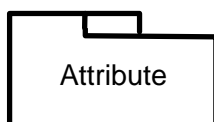
For a bit map figure/character, the follow-up specification is invalid. Even when specified, the figure is expanded/shrunk in multiple of an integer. Thus, it may be offset from other figure elements.

- Internal rotation  
Specify the clockwise rotation angle 0/90/180/270 deg. assuming 0 deg. as the registration status of the display texture.



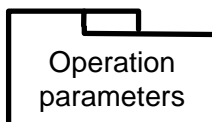
When any of the width and height of a registered texture is set with an even number of dots, the result of rotation may be offset by one dot from the coordination. If it is a problem, specify the width/height of the texture with an odd number of dots on the Screen Creator.

- Ream step  
Specify the number of character display arrays and the character display spacing in both X and Y directions. When not arranging character displays in arrays, specify "1" for the number of arrays in the X/Y direction.



- Arrangement information
  - Left Top  
Indicates both X and Y coordinates of the upper left corner of the figure display.

- Right Bottom  
Indicates both X and Y coordinates of the lower right corner of the figure display.
- Background
  - Tile  
Select the tile pattern.
  - Fore color  
Select the fore color.  
The black portion of the tile pattern becomes the fore color.
  - Back color  
Select the back color. The background color becomes the back color.
- Image  
Specify the texture to be displayed on the Screen Creator.
- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
- Station Device  
Specify the name of the PLC device or the memory table having the number of the registered texture to be displayed on the figure display.
- Continuous devices  
Specify the number of consecutive devices to be connected. The value must be "1" or over.  
If "1" is specified, the registered texture number is assumed to be a value of the "station No. ~ device name" value + the "first registered texture No.". If "2" or over is specified, the registered texture number is assumed to be the value 1 + the "first registered texture No.". The value 1 indicates how far the device that receives a value other than "0" first of the consecutive devices is separated from "station No. ~ device name".
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign



- BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.
- Head No. of Texture  
Specify a value of "station No. ~ device name" + "first registered texture No." as the number of the registered texture to display.



When figure indicator are arranged in "arrays", devices for the number of arrays are connected.

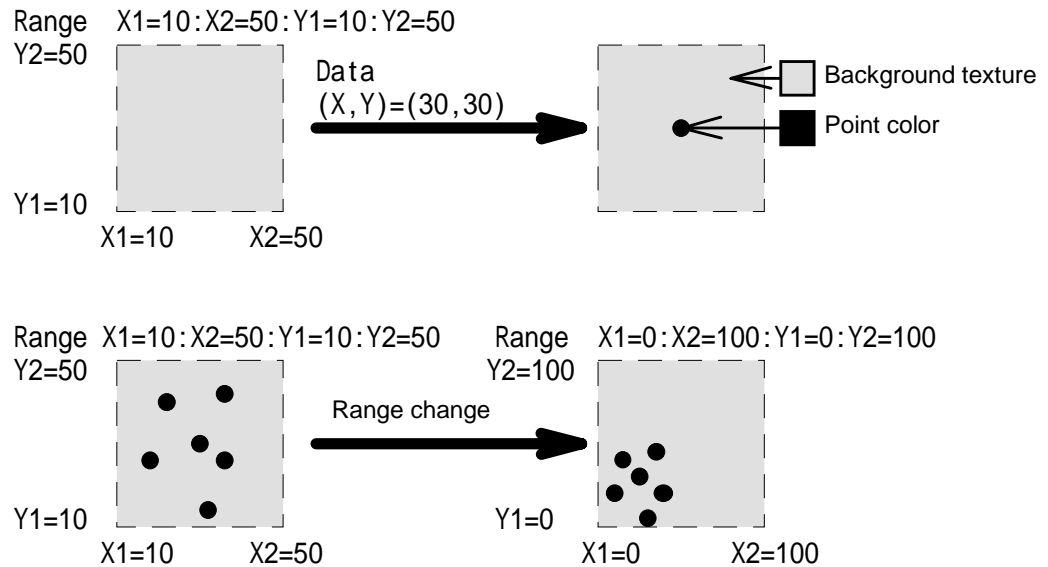


## 2-7 Plot Graphs

### Function

A plot graph displays a plot at the 2-dimensional position corresponding to given data. A plot graph has a given rectangular area.

Example:



### Attribute

- **Name**  
Enter the control name within 8 alphanumeric characters.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- **Action**  
Specify the initial status of the display type.
  - **Normal**  
Normal display type.
  - **Reverse video**  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - **Blink**  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
  - **Flashing**  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).

- Calculation format  
Specify the data format for plotting. "Integer" specification will display data faster than "floating point" specification.

- Point size  
Specify the size of the plotting point (small/medium/large).



When "large" is specified for the point size, the plot shape may be seen like a diamond or star depending on the tile pattern of the background color.

- Maximum plots  
Specify the maximum number of plots within 1 to 32767.



If, when K-Basic is used to display data, data is entered over the maximum number of plots, then an execution error will occur at the data entry.

- Range of X axis  
Specify both the maximum and minimum values of the Y axis range within -9999999 to 10000000. This range corresponds to a section between right and left.
- Range of Y axis  
Specify both the maximum and minimum values of the Y axis range within -9999999 to 10000000. This range corresponds to a section between top and bottom.



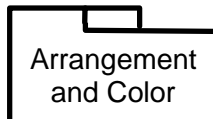
When data is over the specified range, the maximum or minimum value is displayed automatically.

When "calculation format" is "integer", "operation parameters" is "Enable", and "data type" is "BCD, do not enter decimal places. When "calculation format" is "integer" and "0" or over is specified for all ranges, data is displayed as an integer without sign.

- Internal rotation  
Specify 0/90/180/270 deg. as the clock-wise rotation angle.

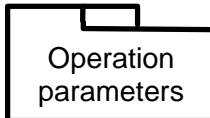


When any of the width and height of a registered texture is set with an even number of dots, the result of rotation may be offset by one dot from the coordination. If it is a problem, specify the width/height of the texture with an odd number of dots on the Screen Creator.



Arrangement  
and Color

- Arrangement information
  - Left Top  
Indicates both X and Y coordinates of the upper left corner of the plot graph.
  - Right Bottom  
Indicates both X and Y coordinates of the lower right corner of the plot graph.
- Color and background of point
  - Point color  
Select the plot color.
  - Tile  
Select the tile pattern.
  - Fore color  
Select the fore color. The black portion of the tile pattern becomes the fore color.
  - Back color  
Select the back color. The background color becomes the back color.



Operation  
parameters

- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
- Station Device  
Specify the name of the PLC device or the memory table from which the plot graph display coordinate values are read.
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.

- Sampling time  
Specify "0" to suppress sampling.  
Specify a value other than "0" to display data for the number of seconds x 0.5.

- X axis filter  
Each device X value can be computed and displayed. A device value is represented by "X". Symbols, numerals (\*, /, +, -, ( ), 0 to 9), and the decimal point can be used for computation.  
Enter nothing when no data computation is needed.

Example: "X\*20+1" means that a device value is multiplied by 20, then 1 is added to the result.

- Y axis filter  
Each device Y value can be computed and displayed. A device value is represented by "Y". Symbols, numerals (\*, /, +, -, ( ), 0 to 9), and the decimal point can be used for computation.  
Enter nothing when no data computation is needed.

Example: "X\*20+1" means that a device value is multiplied by 20, then 1 is added to the result.



When any control is arranged so that sampling is executed for the object part, a message is issued for the part program at each "sampling time". For details, refer to "INPUT" in the "Screen Creator 5 K-Basic Program Description".

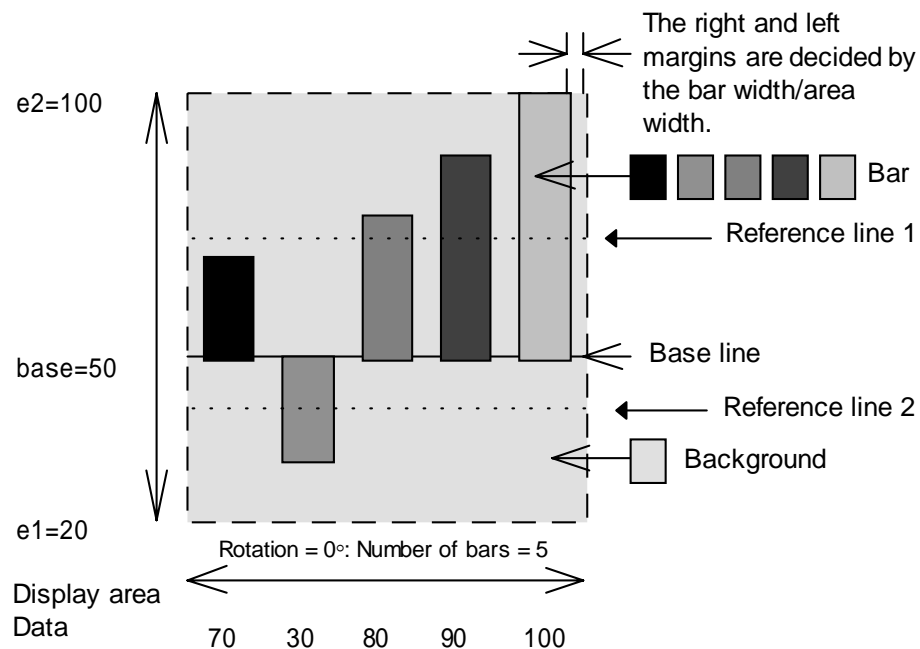
When "integer" and "BCD" are specified for "calculation format" and "data type" respectively, decimal places are ignored and the "calculation format" result is converted to an integer.

## 2-8 Bar Graphs

### Function

A bar graph displays given data as a bar length and has a given rectangular area.

Example:



### Attribute

- **Name**  
Enter the control name within 8 alphanumeric.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- **Action**  
Specify the initial status of the display type.
  - **Normal**  
Normal display type.
  - **Reverse video**  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - **Blink**  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
  - **Flashing**

The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).

If transparent is specified for reverse video display, the permeated control background color is displayed in the reverse video. For a color type OIP, the reverse video color of pallet No.15 becomes black.



- Calculation format  
Specify the data format for plotting. "Integer" specification will display data faster than "floating point" specification.
- Bars  
Specify the number of bars (1 to 127).

The number of bars may depend on the operation program. To change the number of bars, therefore, change the program description as needed.



- Bar width  
Specify the bar width within 1 to 640 dots.
- Range  
Specify both maximum and minimum values of the range within -9999999 to 10000000.  
This range corresponds to a section between top and bottom.

When data is over the specified range, the maximum or minimum value is displayed automatically.

When "computation type" is "integer", "operation parameters" is "valid", and "data type" is "BCD", do not enter decimal places. When "computation type" is "integer" and "0" or over is specified for all ranges, data is displayed as an integer without sign.



- Level of Base line  
Specify the position of the base line in the range.
- Level of line 1  
Specify the position of the reference line 1 in the range.
- Level of line 2  
Specify the position of the reference line 2 in the range.

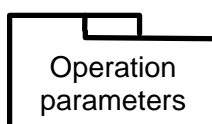
To suppress display of a reference line, specify transparent for the line color or specify the position of the reference line outside the range.



- Intrenal rotation  
Specify 0/90/180/270° as the clock-wise rotation angle.



- Arrangement information
  - Left Top  
Indicates both X and Y coordinates of the upper left corner of the bar graph control area.
  - Right Bottom  
Indicates both X and Y coordinates of the lower right corner of the bar graph control area.
- Base line(Color, style)  
Select the color and style of the base line.
- line 1(Color, style)  
Select the color and style of the reference line 1.
- line 2(Color, style)  
Select the color and style of the reference line 2.
- Bar  
Select the bar number and specify the bar tile, the bar fore color, and the bar back color.
  - Bar tile  
Select the tile pattern.
  - Bar fore color  
The black portion of the tile pattern becomes the fore color.
  - Bar back color  
Select the back color. The background color becomes the back color.



- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.  
When a value other than "0" is specified for "sampling time", sampling processing is executed. Sampling processing is also executed on the back screen. Sampling processing means an operation mode in which a device value specified for "station No. and device name" is read at each "sampling time" and the value is represented by the rightmost bar and the older values are moved to the left bars sequentially.
- Station Device  
Specify the name of the PLC device or the memory table from which the bar graph display data is read.  
When "0" is specified for "sampling time", the devices corresponding to the "number of bars" are used so that one bar corresponds to one device.

When a value other than "0" is specified for "sampling time", one device is used. In this case, the "number of bars" indicates the number of bars displayed concurrently on a bar graph as the device values from past to present.

- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.
- Sampling time  
Specify "0" to suppress sampling.  
Specify a value other than "0" to display data for the number of seconds x 0.5.
- filter  
Each device value can be computed and displayed. A device value is represented by "X". Symbols, numerals (\*, /, +, -, (, ), 0 to 9), and the decimal point can be used for computation.  
Enter nothing when no data computation is needed.

Example: "X\*20+1" means that a device value is multiplied by 20, then 1 is added to the result.



When any control is arranged so that sampling is executed for the object part, a message is issued for the part program at each "sampling time". For details, refer to "INPUT" in the "Screen Creator 5 K-Basic Program Description".

When "integer" and "BCD" are specified for "calculation format" and "data type" respectively, decimal places are ignored and the "filter" result is converted to an integer.

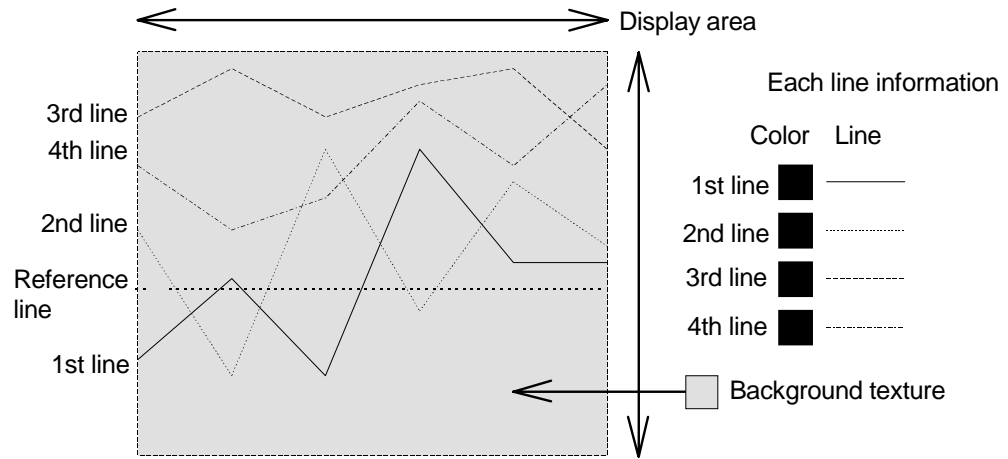


## 2-9 Line Graphs

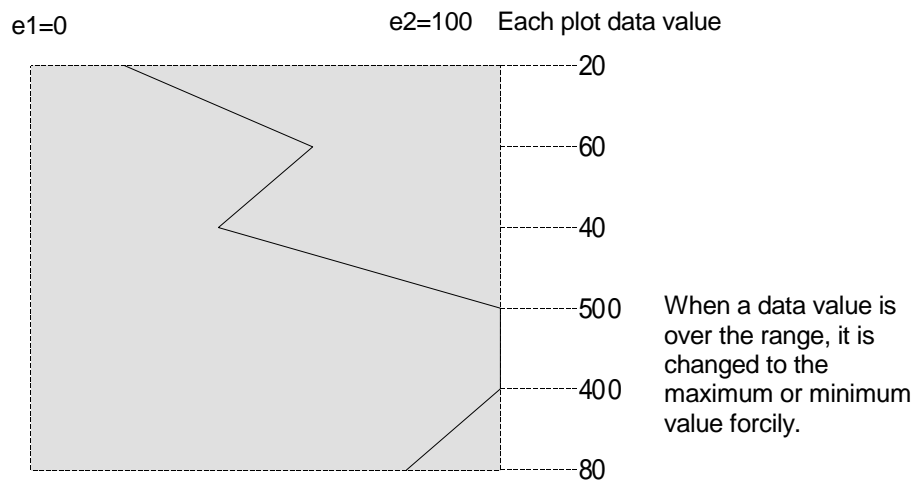
**Function**

A line graph displays points corresponding to given data and has a given rectangular area.

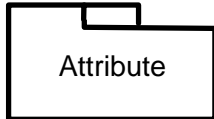
Example:



Number of lines = 4: Number of points = 6 Rotation = 0 °



Number of lines = 1: Number of points = 6 Rotation = 90 °



- **Name**  
Enter the control name within 8 alphanumerics.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- **Action**  
Specify the initial status of the display type.
  - **Normal**  
Normal display type.
  - **Reverse video**  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - **Blink**  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
  - **Flashing**  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



If transparent is specified for reverse video display, the permeated control background color is displayed in the reverse video. For a color type OIP, the reverse video color of pallet No.15 becomes black.

- **Calculation format**  
Specify the data format for plotting. "Integer" specification will display data faster than "floating point" specification.
- **Lines**  
Specify the number of lines (1 to 127).



The number of lines may depend on the operation program. To change the number of lines, therefore, change the program description as needed.

- **Plot number of line**  
Specify the number of points (1 to 640) to plot for a line.
- **Range**  
Specify both maximum and minimum values of the range within -9999999 to 10000000.  
This range corresponds to a section between right and left.



When data is over the specified range, the maximum or minimum value is displayed automatically.

When "computation type" is "integer", "operation parameters" is "valid", and "data type" is "BCD", do not enter decimal places. When "computation type" is "integer" and "0" or over is specified for all ranges, data is displayed as an integer without sign.

- Level of line 1  
Specify the position of the reference line 1 in the range.
- Level of line 2  
Specify the position of the reference line 2 in the range.



To suppress display of a reference line, specify transparent for the line color or specify the position of the reference line outside the range.

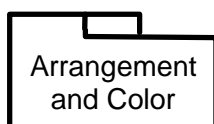
- Display start plot  
Specify the plot at which an actual line display is started.
- Display end plot  
Specify the plot at which an actual line display is ended.



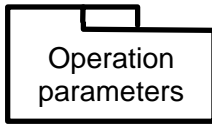
The display start plot and the display end plot must satisfy the following relationship.

0    display start plot    display end plot    number of plots

- Internal rotation  
Specify 0/90/180/270° as the clock-wise rotation angle.



- Arrangement information
  - Left Top  
Indicates both X and Y coordinates of the upper left corner of the line graph control area.
  - Right Bottom  
Indicates both X and Y coordinates of the lower right corner of the line graph control area.
- line 1(color, style)  
Select the color and style of the reference line 1.
- line 2(color, style)  
Select the color and style of the reference line 2.
- Line  
Select the line number and specify the color and type of the line.
  - Line color  
Select the line color.



- Line type  
Select the line type.
- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.  
When a value other than "0" is specified for "sampling time", sampling processing is executed. Sampling processing is also executed on the back screen. Sampling processing means an operation mode in which a device value specified for "station No. and device name" is read at each "sampling time" and the value is represented by the rightmost bar and the older values are moved to the left bars sequentially.
- Station Device  
Specify the name of the PLC device or the memory table from which the line graph display data is read.  
When "0" is specified for "sampling time", the devices corresponding to the "number of lines" × "number of plots" are used so that devices for consecutive "number of lines" are assigned to the first plot and devices for the subsequent consecutive "number of lines" are assigned to the next plot. When a value other than "0" is specified for "sampling time", devices corresponding to the "number of lines" are used. One device corresponds to one line. In this case, the "number of lines" indicates the number of plots displayed concurrently on a line graph as the device values from past to present.
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.
- Sampling time  
Specify "0" to suppress sampling.  
Specify a value other than "0" to display data for the number of seconds x 0.5.
- Flowing direction  
Specify the display direction.

- <-  
Displays data by shifting it to the left and the latest data is displayed on the right end.
- ->  
Displays data by shifting it to the right and the latest data is displayed on the left end.
- filter  
Each device value can be computed and displayed. A device value is represented by "X". Symbols, numerals such as \*, /, +, -, (), 0 to 9, and the decimal point can be used for computation.  
Enter nothing when no data computation is needed.

Example: "X\*20+1" means that a device value is multiplied by 20, then 1 is added to the result.



When any control is arranged so that sampling is executed for the object part, a message is issued for the part program at each "sampling time". For details, refer to "INPUT" in the "Screen Creator 5 K-Basic Program Description".

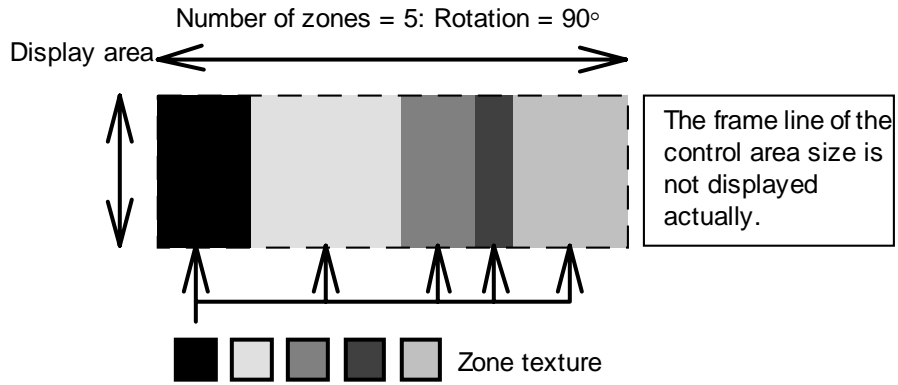
When "integer" and "BCD" are specified for "Calculation format" and "data type" respectively, decimal places are ignored and the "filter" result is converted to an integer.

## 2-10 Band Graphs

**Function**

A band(belt) graph displays a percentage of each of two or more given data items as a belt-like zone. It has a given rectangular area.

Example:



Number of zones = 5: Rotation = 0°



**Attribute**

- Name  
Enter the control name within 8 alphanumeric.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Action  
Specify the initial status of the display type.
  - Normal  
Normal display type.

- Reverse video  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
- Blink  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
- Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



If transparent is specified for reverse video display, the permeated control background color is displayed in the reverse video. For a color type OIP, the reverse video color of pallet No.15 becomes black.

- Calculation format  
Specify the data format for display. "Integer" specification will display data faster than "floating point" specification.
- Zones  
Specify the number of zones (1 to 127).



The number of zones may depend on the operation program. To change the number of lines, therefore, change the program description as needed.

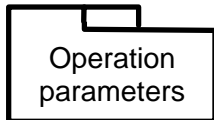
When the number of zones is great, smaller value zones may not be displayed.

- Internal rotation  
Specify 0/90/180/270° as the clock-wise rotation angle.



- Arrangement information
  - Left Top  
Indicates both X and Y coordinates of the upper left corner of the band graph control area.
  - Right Bottom  
Indicates both X and Y coordinates of the lower right corner of the band graph control area.
- Color of each zone  
Select the zone number and specify the tile, fore color, and back color of the zone.
  - Zone tile  
Select the tile pattern

- Zone fore color  
Select the fore color. The black portion of the tile pattern becomes the fore color.
- Zone back color  
Select the back color. The background color becomes the back color.



- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
- Station Device  
Specify the name of the PLC device or the memory table from which the band graph display data is read.  
Consecutive devices corresponding to "number of zones" started at the specified device are used.
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.

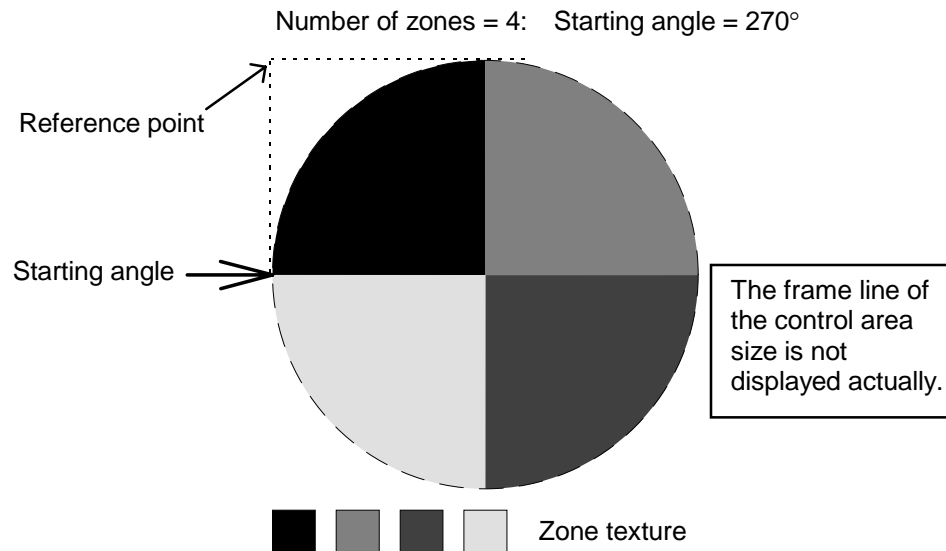


## 2-11 Circle Graphs

### Function

A circle graph displays a percentage of each of two or more given data items as a fan-like zone. It has a given circular area. Painting a zone begins at the start point clockwise.

Example:



### Attribute

- Name  
Enter the control name within 8 alphanumeric characters. This name is used to identify each control in the part from others. If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Action  
Specify the initial status of the display type.
  - Normal  
Normal display type.
  - Reverse video  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - Blink  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).

- Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



If transparent is specified for reverse video display, the permeated control background color is displayed in the reverse video. For a color type OIP, the reverse video color of pallet No.15 becomes black.

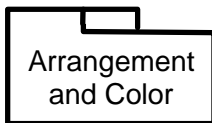
- Calculation format  
Specify the data format for display. "Integer" specification will display data faster than "floating point" specification.
- Zones  
Specify the number of zones (1 to 127).

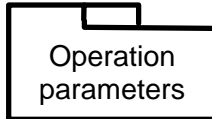


The number of zones may depend on the operation program. To change the number of lines, therefore, change the program description as needed.

When the number of zones is great, smaller value zones may not be displayed.

- Start angle  
Specify the starting angle (0 to 359) for displaying a circle.
- Arrangement information
  - Left Top  
Indicates both X and Y coordinates of the upper left corner of the circle graph control area.
  - Diameter  
Specify the diameter of the circle.
- Color of each zone  
Select the zone number and specify the tile, fore color, and back color of the zone.
  - Zone tile  
Select the tile pattern.
  - Zone fore color  
Select the fore color. The black portion of the tile pattern becomes the fore color.
  - Zone back color  
Select the back color. The background color becomes the back color.





- **Enable**  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
  
- **Station Device**  
Specify the name of the PLC device or the memory table from which the circle graph display data is read.  
Consecutive devices corresponding to "number of zones" started at the specified device are used.
  
- **Data type**  
Specify the type of data to be received from the PLC device or the memory table.
  - **BIN**  
Binary data without sign
  
  - **BIN with sign**  
Binary data with sign
  
  - **BCD**  
BCD (binary coded decimal). No sign is used for "BCD" notation.

## 2-12 Free Graphs

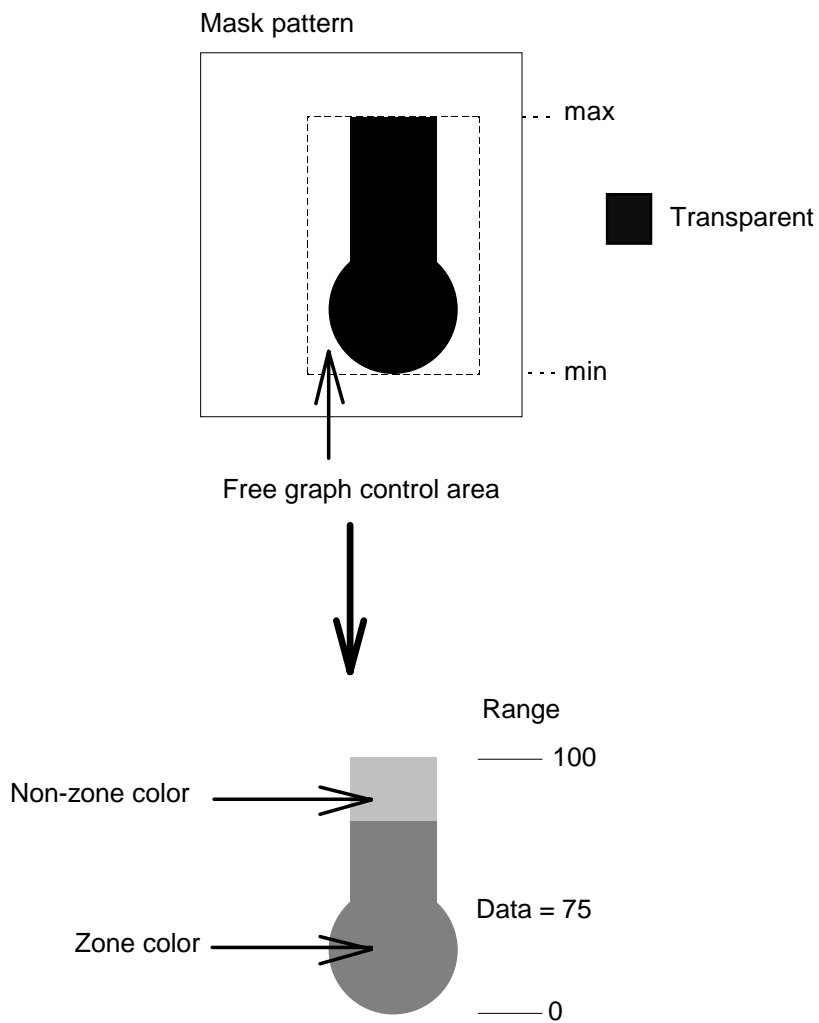
Function

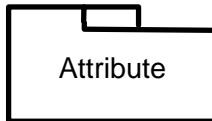
A free graph displays a two-divided transparent area included in a freely set rectangular area of a part background with the zone color and the non-zone color according to the percentage of the range data.



Be sure to use "PUT" for drawing a bit map pattern.  
 Be sure to arrange a mask pattern in the background of a part.  
 When using the transparent for painting, be sure to put the painting points inside the control.

Example:





- Name  
Enter the control name within 8 alphanumerics.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Action  
Specify the initial status of the display type.
  - Normal  
Normal display type.
  - Reverse video  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - Blink  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
  - Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



If transparent is specified for reverse video display, the permeated control background color is displayed in the reverse video. For a color type OIP, the reverse video color of pallet No.15 becomes black.

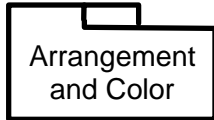
- Calculation format  
Specify the data format for plotting. "Integer" specification will display data faster than "floating point" specification.
- Range  
Specify the maximum and minimum values for the range within -9999999 to 10000000.  
This range corresponds to a section between top and bottom.



When data is over the specified range, the maximum or minimum value is displayed automatically.

When "Calculation format" is "integer", "operation parameters" is "Enable", and "data type" is "BCD", do not enter decimal places. When "Calculation format" is "integer" and "0" or over is specified for all ranges, data is displayed as an integer without sign.

- Internal rotation  
Specify 0/90/180/270° as the clock-wise rotation angle.



- Arrangement information
  - Left Top  
Indicates both X and Y coordinates of the upper left corner of the free graph control area.
  - Right Bottom  
Indicates both X and Y coordinates of the lower right corner of the free graph control area.
- Color of each zone  
Select zone or non-zone and specify the tile, fore color, and back color of the zone.
  - Zone tile  
Select the tile pattern.
  - Zone fore color  
Select the fore color. The black portion of the tile pattern becomes the fore color.
  - Zone back color  
Select the back color. The background color becomes the back color.
- Image  
Specify the value to be displayed on the Screen Creator.



- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
- Station Device  
Specify the name of the PLC device or the memory table from which the free graph display data is read.
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.
- filter

Each device value can be computed and displayed. A device value is represented by "X". Symbols and numerals such as \*, /, +, -, (, ), 0 to 9, and the decimal point can be used.

Enter nothing when no data computation is needed.

Example: "X\*20+1" means that a device value is multiplied by 20, then 1 is added to the result.



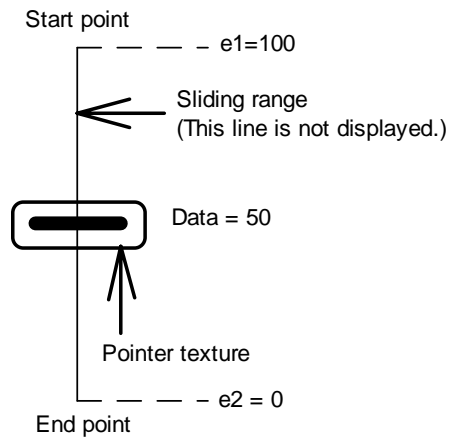
When "integer" and "BCD" are specified for "Calculation format" and "data type" respectively, decimal places are ignored and the "filter" result is converted to an integer.

## 2-13 Sliders

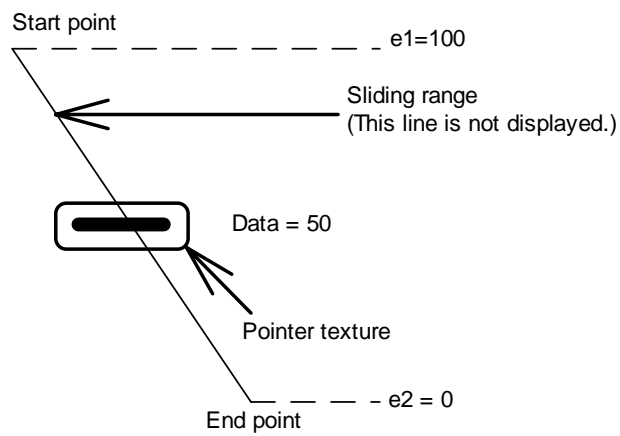
Function

A slider displays a specified pointer pattern at a position on a line, corresponding to given data. It has a line-like moving area. The center of the pointer pattern corresponds to the position on the line.

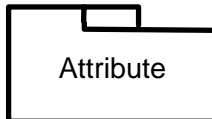
Example:



The following case is possible.







- Name  
Enter the control name within 8 alphanumerics.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Action  
Specify the initial status of the display type.
  - Normal  
Normal display type.
  - Reverse video  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - Blink  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
  - Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



If transparent is specified for reverse video display, the permeated control background color is displayed in the reverse video. For a color type OIP, the reverse video color of pallet No.15 becomes black.

- Calculation format  
Specify the data format for plotting. "Integer" specification will display data faster than "floating point" specification.
- Range  
Specify the maximum and minimum values for the range within -9999999 to 10000000.



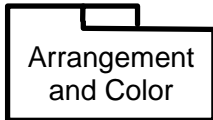
When data is over the specified range, the maximum or minimum value is displayed automatically.  
When "Calculation format" is "integer", "operation parameters" is "Enable", and "data type" is "BCD", do not enter decimal points. When "Calculation format" is "integer" and "0" or over is specified for all ranges, data is displayed as an integer without sign.

- Pointer texture  
Select the name of the texture to be displayed as a pointer from the texture library and enter the name.  
Click "SELECT" to display the list of texture libraries.

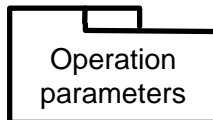
- Internal rotation  
Specify 0/90/180/270° as the clockwise rotation angle of the pointer texture.



Only the pointer texture is rotated. The moving position is not rotated. If any of the width/height of the pointer texture is set with an even number dots, the pointer may be offset by one dot from the coordinate after rotation. If it becomes a problem, change the width/height of the texture to an odd number of dots on the Screen Creator.



- Arrangement information
  - Start point  
Indicates both X and Y coordinates of the starting point of the slider.
  - End point  
Indicates both X and Y coordinates of the ending point of the slider.



- Image  
Specify the value to be displayed on the Screen Creator.
- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
- Station Device  
Specify the name of the PLC device or the memory table from which the slider position data is read.
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.
- Filter  
Each device value can be computed and displayed. A device value is represented by "X". Symbols and numerals such as \*, /, +, -, ( ), 0 to 9, and the decimal point can be used for computation. Enter nothing when no data computation is needed.

Example: "X\*20+1" means that a device value is multiplied by 20, then 1 is added to the result.



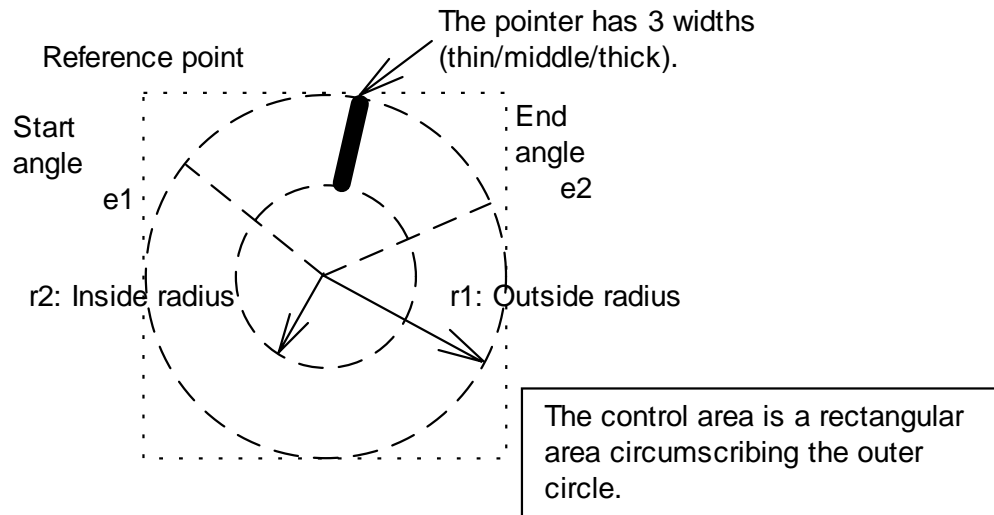
When "integer" and "BCD" are specified for "Calculation format" and "data type" respectively, decimal places are ignored and the "Filter" result is converted to an integer.

## 2-14 Meters

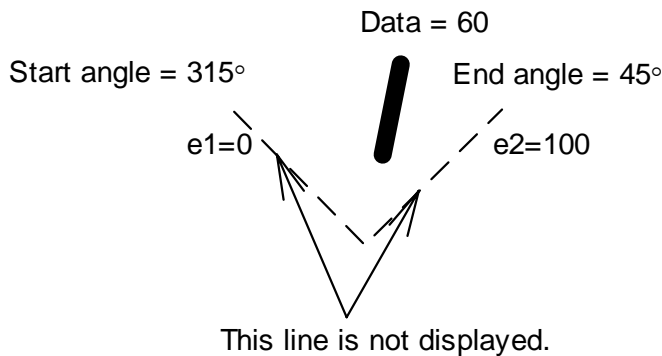
**Function**

A meter displays a linear meter pointer(needle) at a position on a circumference clockwise corresponding to given data. It has a given fan-like or donut-like area.

Example:



Display example:



**Attribute**

- Name  
Enter the control name within 8 alphanumeric.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Action  
Specify the initial status of the display type.
  - Normal  
Normal display type.

- Reverse video  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
- Blink  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
- Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



If transparent is specified for reverse video display, the permeated control background color is displayed in the reverse video. The color of the pallet No.15 (16 colors) is black.

- Calculation format  
Specify the data format for plotting. "Integer" specification will display data faster than "floating point" specification.
- Range  
Specify the maximum and minimum values for the range within -9999999 to 10000000.

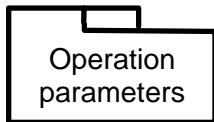


When data is over the specified range, the maximum or minimum value is displayed automatically.  
When "Calculation format" is "integer", "operation parameters" is "Enable", and "data type" is "BCD", do not enter decimal points. When "Calculation format" is "integer" and "0" or over is specified for all ranges, data is displayed as an integer without sign.

- Thickness of needle  
Select the thickness of the pointer to be displayed from thin/medium/thick.



- Arrangement information
  - Left Top  
Indicates both X and Y coordinates of the upper left reference point of the slider.
  - Diameter of outside  
Specify the diameter of the outer circle of the meter.
  - Diameter of inside  
Specify the inner diameter of the meter.
  - Start angle  
Specify the starting angle of the circle display.



- End angle  
Specify the ending angle of the circle display.  
When both starting and ending angles are the same, the meter is displayed 360° clockwise.
- Needle color  
Specify the color of the pointer to display.
- Image  
Specify the value of the meter pointer to be displayed on the Screen Creator.
- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
- Station Device  
Specify the name of the PLC device or the memory table from which the meter position data is read.
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.
- Filter  
Each device value can be computed and displayed. A device value is represented by "X". Symbols and numerals such as \*, /, +, -, ( ), 0 to 9, and the decimal point can be used for computation.  
Enter nothing when no data computation is needed.

Example: "X\*20+1" means that a device value is multiplied by 20, then a is added to the result.



When "integer" and "BCD" are specified for "Calculation format" and "data type" respectively, decimal places are ignored and the "Filter" result is converted to an integer.

## 2-15 Lamps

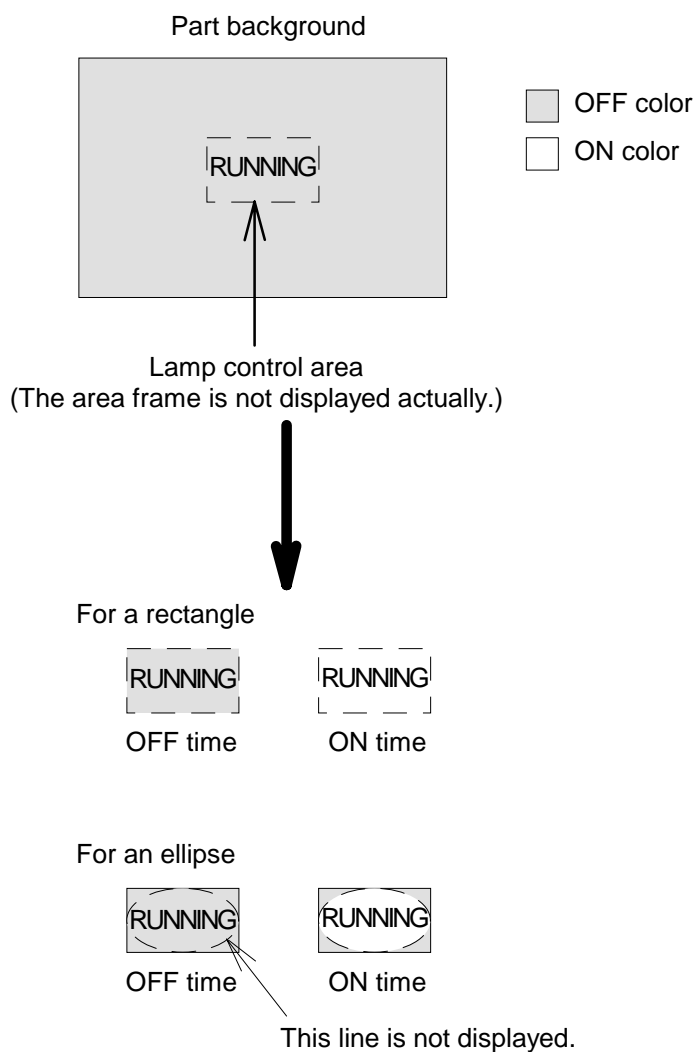
### Function

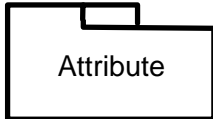
A lamp replaces the background color of a part specified in the lamp control area according to the change of the given data status. A rectangular or ellipse shape can be selected for the lamp control area.



For a color OIP, the OFF color must be registered for the background of the part beforehand. For a monochrome OIP, the area is displayed in the reverse video when the part is turned on.

Example:





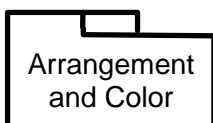
- Name  
Enter the control name within 8 alphanumerics.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Action  
Specify the initial status of the display type.
  - Normal  
Normal display type.
  - Reverse video  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - Blink  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
  - Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



If transparent is specified for reverse video display, the permeated control background color is displayed in the reverse video. The color of the pallet No.15 (16 colors) is black.

The display remains the same even when the lamp display flashes when it is OFF. When the lamp display is ON, the ON and OFF colors are displayed alternately.

- Shape  
Select rectangle or ellipse as the lamp shape.
- Initial phase  
Select ON or OFF as the initial phase of the lamp.
- Ream step  
Specify the number of arrays and the lamp display spacing in both X and Y directions.  
When not arranging lamp displays in arrays, enter "1" for the number of arrays in the X/Y direction.
- Arrangement information
  - Left Top  
Indicates both X and Y coordinates of the upper left corner of the lamp control area.



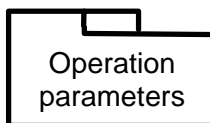


- Right Bottom  
Indicates both X and Y coordinates of the lower right corner of the lamp control area.
- Color  
This parameter is valid only for color OIP.
  - When ON  
Specify the color of the part background specified for "OFF time color" in the lamp control area to be replaced when the lamp is turned on.
  - When OFF  
Specify the color to be replaced when the lamp is turned on. Select the color from the colors used for the part background in the lamp control area to be replaced when the lamp is turned on.



For a color OIP, note that "When ON" and "When OFF" are not displayed when the lamp display is turned on and off. Unless the "When OFF" must be included in the color of the part background, the display is not changed even when the lamp is turned on.

- Image  
Specify the status of the lamp to be displayed on the Screen Creator.
- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
- Station Device  
Specify the name of the PLC device or the memory table from which the lamp status is read. When the value is not 0, the lamp is turned on. When the value is 0, the lamp is turned off.
- Data type  
Specify the type of data to be received from the PLC device or the memory table.
  - BIN  
Binary data without sign
  - BIN with sign  
Binary data with sign
  - BCD  
BCD (binary coded decimal). No sign is used for "BCD" notation.

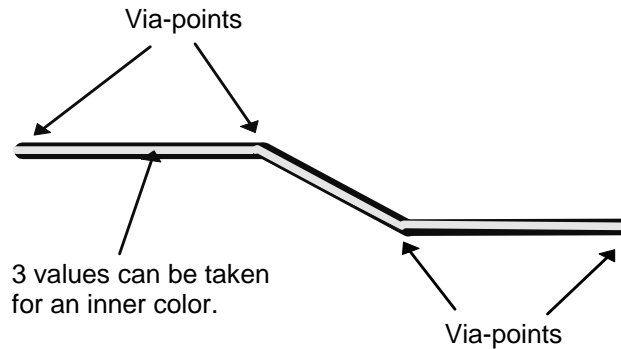


## 2-16 Pipes

### Function

A pipe displays the inner color of a pipe according to the change of the given data status. Up to 8 points can be specified for via-points of a pipe.

Example:

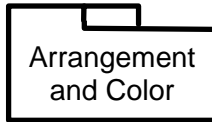


### Attribute

- Name  
Enter the control name within 8 alphanumerics.  
This name is used to identify each control in the part from others.  
If the part operation program is already created, the control name is referenced by the program. Thus, be careful not to change any control name unnecessarily. Otherwise, the change will affect the program badly.
- Action  
Specify the initial status of the display type.
  - Normal  
Normal display type.
  - Reverse video  
A pallet number is taken so that when it is added to the pallet number of the color displayed in the control area, the result may become 15. For example, 0 is taken to assume 15 and 3 is taken to assume 12.
  - Blink  
The reverse video display and the normal display are alternated repetitively at a fixed interval. The cycle is fixed by the system (1 sec).
  - Flashing  
The object display is turned ON/OFF at a fixed interval while the background is kept as is. The cycle is fixed by the system (1 sec).



If transparent is specified for reverse video display, the permeated control background color is displayed in the reverse video. For a color OIP, the color of the pallet No.15 (16 colors) is black.



- Thickness of pipe  
Select the thickness of the pipe from 1/3/5/7 (dots).
- Initial phase  
Select the initial phase of the lamp from OFF/ON1/ON2.
- Arrangement information
  - Passed point  
Specify the number of via-points for the pipe. Up to 8 points including the starting and ending points can be specified.
  - 1st point to 8th point  
Specify the coordinates of the via-points for the pipe for up to the number of points specified for "number of via-points".
- Color
  - Pipe color  
Specify the color of the pipe.
  - When OFF  
Specify the inner color of the pipe to be displayed when the pipe is turned off.
  - When ON1  
Specify the inner color of the pipe to be displayed when the pipe is turned on (ON1).
  - When ON2  
Specify the inner color of the pipe to be displayed when the pipe is turned on (ON2). When ON2 is not used, specify transparent (pallet No.0) for the ON2 color.



The pipe color is not displayed when "1" is specified for thickness of the pipe.



- Image  
Specify the status of the pipe to be displayed on the Screen Creator.
- Enable  
When the check box is checked, each control action can be specified with operation parameters of the object part. At this time, the control area is displayed in red. When operation parameters are invalid, the control area is displayed in green.
- Station Device  
Specify the name of the PLC device or the memory table from which the pipe status is read.
- Device type

Specify the type of the device from which the pipe status is read.

- **Word**  
The word device type is assumed. When the value is 0, 1, or 2, the pipe is regarded to be OFF, ON1, or ON2.
- **Bit**  
The bit device type is assumed. 3 consecutive devices started at the specified one are used (when the ON2 color is the pallet No.2 one, 2 devices are used). How far the first device whose value becomes other than 0 (among the consecutive devices) is separated from the specified one is found and when the value is 0, 1, or 2, the status of the pipe is regarded to be OFF, ON1, or ON2.
- **Data type**  
Specify the type of data to be received from the PLC device or the memory table.
  - **BIN**  
Binary data without sign
  - **BIN with sign**  
Binary data with sign
  - **BCD**  
BCD (binary coded decimal). No sign is used for "BCD" notation.