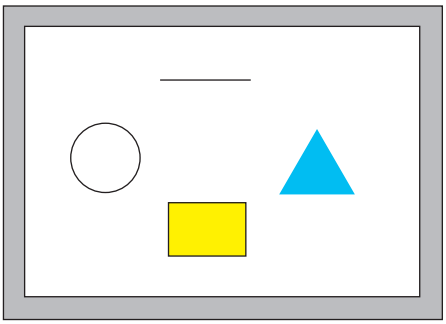
8 Draw (Figures/Text)

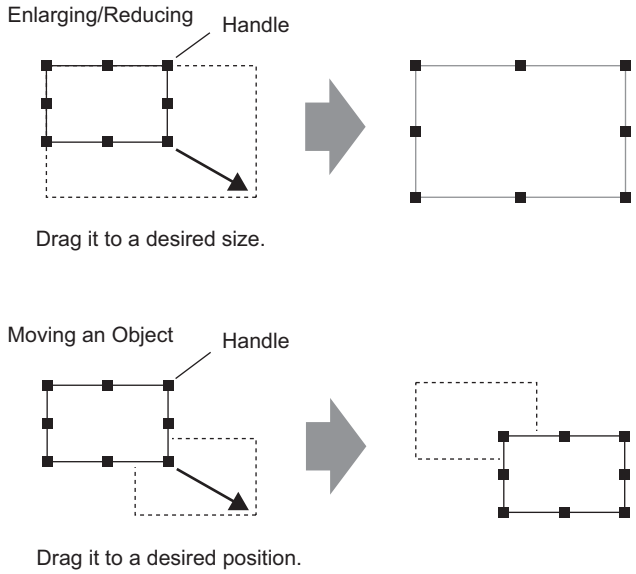
This chapter provides a basic explanation for "Draw (Figures/Text)", and how to use the draw/edit tools and the other draw features in GP-Pro EX.
Please start by reading "8.1 Settings Menu" (page 8-2), and then turn to the corresponding page.

8.1 Settings Menu

Drawing Graphics	
 Draws a line, rectangle, and other pictures.	☞ "8.2.1 List of Drawing Tools" (page 8-7)

Writing Text	
 Places text on the screen.	☞ Setup Procedure (page 8-23)

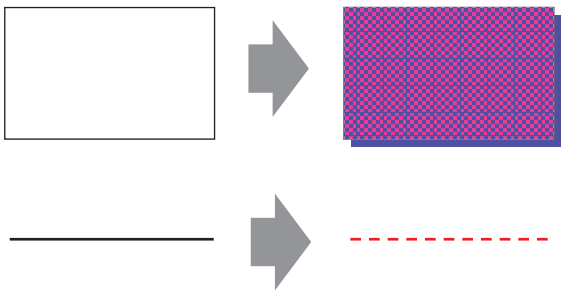
Editing



Runs screen edit operations such as enlarging, reducing or moving.

☞ "8.4.1 Introducing Edit Tools" (page 8-25)

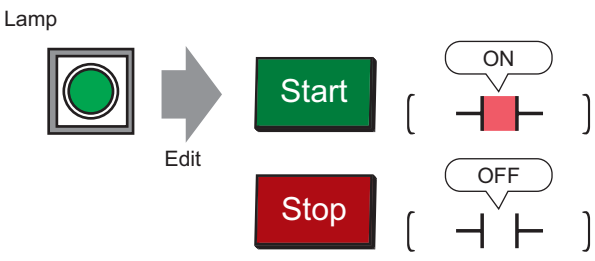
Changing Colors, Line Types and Patterns



Changes a picture's color, line type, and pattern.

☞ "8.5 Changing Colors, Line Types and Patterns" (page 8-36)

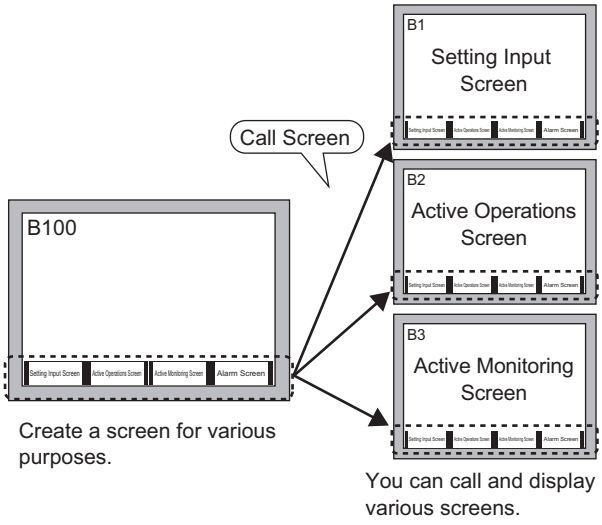
Editing a Part



Changes the shape, color, and label of a part.

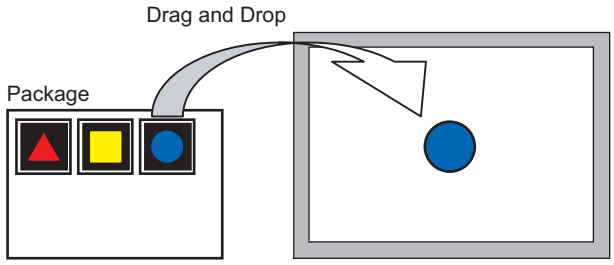
☞ "8.6.1 Editing Parts" (page 8-44)

Using a Screen Multiple Times



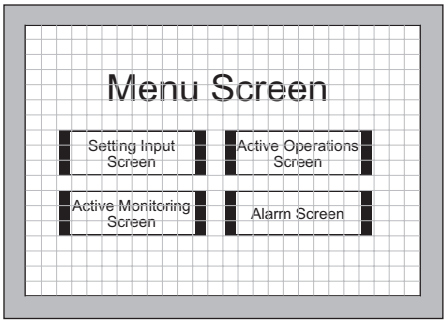
☞ Setup Procedure (page 8-56)

Editing a Picture on Another Screen



☞ "8.8.1 Placing Graphics Registered in a Package" (page 8-59)
☞ "8.8.2 Registering Pictures in the Package" (page 8-61)

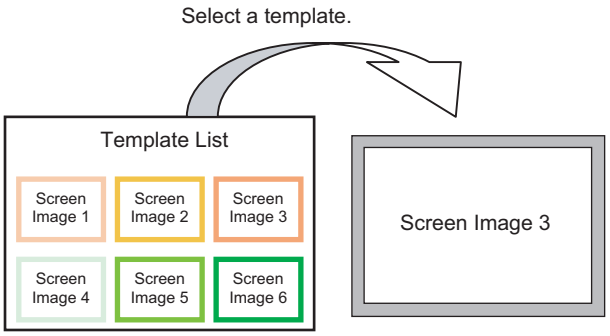
Setting up Grids



Displays an equally spaced grid on the editing screen and places parts with reference to an intersecting point.

☞ Setup Procedure (page 8-63)
☞ Introduction (page 8-63)

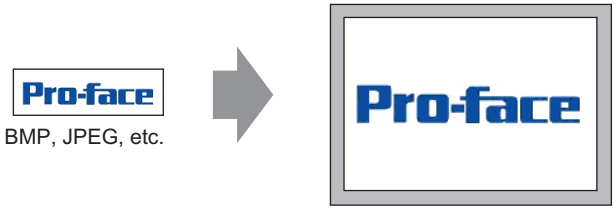
Selecting a Screen from Templates



By editing screens registered as templates, you can reduce the number of drawing processes.

☞ "8.9.2 Selecting a Screen from Templates" (page 8-66)

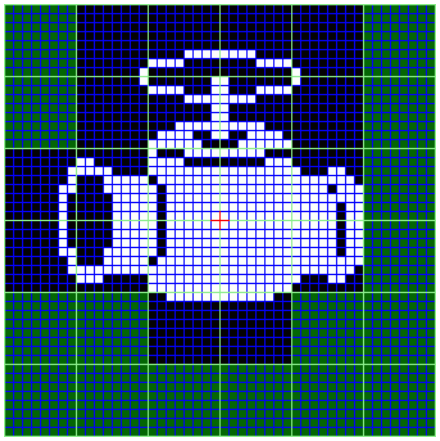
Pasting an Image



Converts image data and places it on the screen.

☞ " ■ Paste Images Directly on the Screen" (page 8-70)
☞ " ■ Registering and Using Images" (page 8-73)

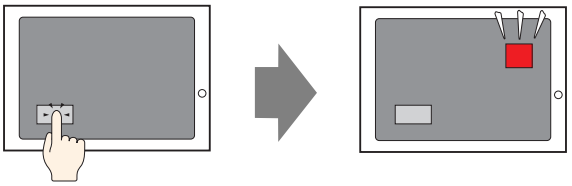
Drawing a Detailed Picture



Draws a picture dot by dot.

☞ Setup Procedure (page 8-75)
☞ Introduction (page 8-75)

■ Show/Hide of the Drawing

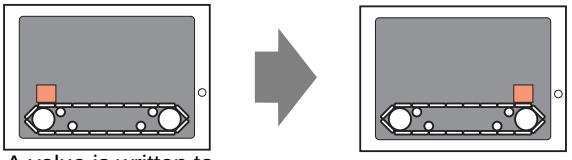


Turn on the specified Bit...

An object that was hidden appears.

☞ Setup Procedure (page 8-88)

■ Change the Position of the Drawing

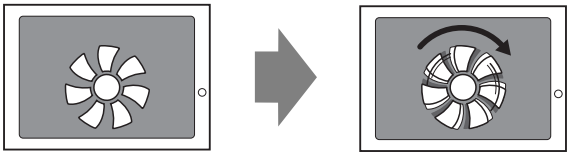


A value is written to the specified address...

The drawing moves within the specified range.

☞ Setup Procedure (page 8-88)

■ Rotating Drawings

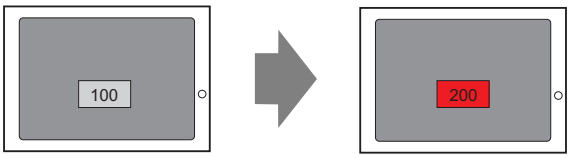


A value is written to the specified address...

The object rotates.

☞ Setup Procedure (page 8-88)

■ Change the Color of the Drawing



The value exceeds a certain value...

The color of the placed object changes.

☞ Setup Procedure (page 8-88)

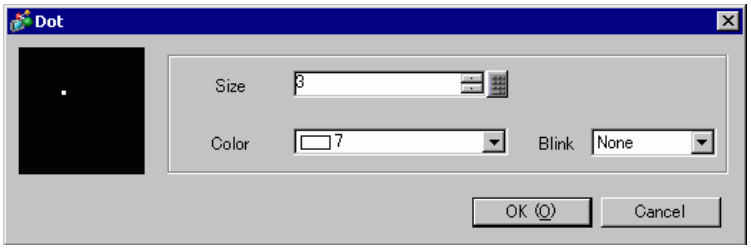
8.2 Drawing Graphics

8.2.1 List of Drawing Tools

Graphic	Description
Dot 	Draws a dot. ☞ "8.2.2 Drawing Dots" (page 8-8)
Line/ Polyline 	Draws a line/polyline. ☞ "8.2.3 Drawing Lines/Polylines" (page 8-9)
Rectangle 	Draws a rectangle. ☞ "8.2.4 Drawing Rectangles" (page 8-11)
Polygon 	Draws a polygon. ☞ "8.2.7 Drawing Polygons" (page 8-17)
Circle/Oval 	Draws a circle/oval. ☞ "8.2.5 Drawing Circles/Ovals" (page 8-13)
Arc/Pie 	Draws an arc/pie. ☞ "8.2.6 Drawing Arcs/Pies" (page 8-15)
Scale 	Draws the graph scales. ☞ "8.2.8 Drawing Scales" (page 8-19)
Table 	Draws a table. ☞ "8.2.9 Drawing Tables" (page 8-21)

8.2.2 Drawing Dots

The Dot feature can draw one to five dots at a time.
From the [Draw (D)] menu, select [Dot (D)] or click to place a dot on the screen.
Double-click the placed [Dot] to display the following dialog box.



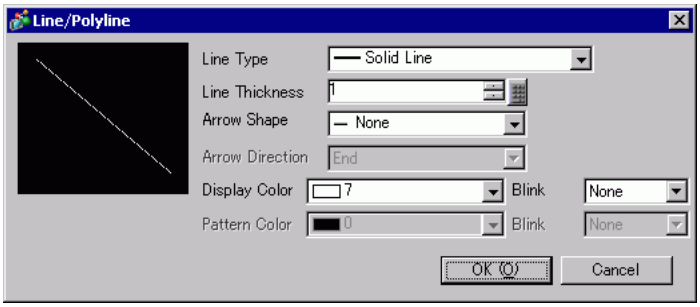
☞ For display colors, refer to"8.5.1 Setting Colors" (page 8-36)
☞ For information about blinking, refer to"8.5.2 Setting Up Blink" (page 8-43)

8.2.3 Drawing Lines/Polylines

Drag the mouse to draw a line from the start to the end. For the polyline, click to designate the start, each change of direction and the end, and right-click to set.
From the [Draw (D)] menu, select [Line (L)] or [Polyline (U)], or click or to place a line/polyline on the screen. If you double-click the placed [Line] or [Polyline], the following dialog box will appear.

NOTE

- If you press and hold the [Shift] key while placing a line, you can draw a line at an angle of 0 degrees and 90 degrees.
- If you place a line while pressing the [Ctrl] key, you can draw a line extending from the center. If you place a line while pressing the [Ctrl] and [Shift] keys at the same time, you can draw a line of 0 degrees or 90 degrees extending from the center.
- To edit after placing the line and polyline, click on the selected line to change to a yellow handle. You can drag the line to change the shape.
- For a polyline, you can left click and drag to draw, similar to handwriting.



Setting	Description
Line Type	Select the line type from [Solid Line], [Dotted Line], [Dash Line], [Chain Line], or [Two-Dot Chain Line]. ☞"8.5.3 Setting Up Line Types" (page 8-43)
Line Thickness	Set the line thickness within the range of one to nine dots. **NOTE** • When line types other than [Solid Line] are selected in [Line Type], the setting range is one to two dots.
Arrow Shape	Select the arrow shape from , , , , or .
Arrow Direction	Select the arrow direction from [Start], [End], or [Both Ends].
Display Color	Set the line color. ☞"8.5.1 Setting Colors" (page 8-36)
Pattern Color	Select the pattern color. This function can be used only when line types other than [Solid Line] are selected in [Line Type].

Continued

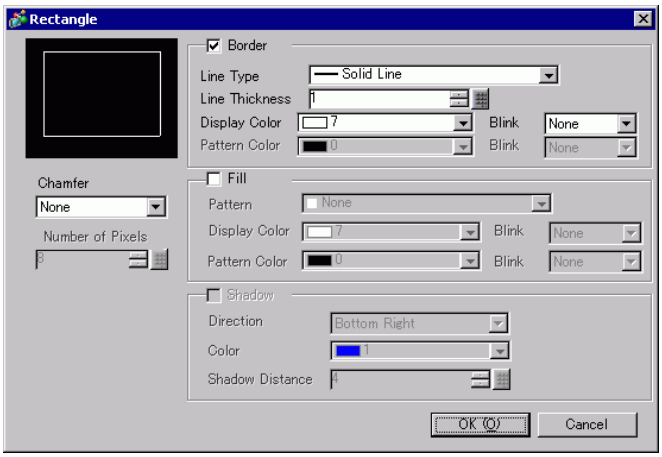
Setting	Description
Blink	Select the blink and blink speed. You can choose different blink settings for the [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors" (page 8-36)

8.2.4 Drawing Rectangles

Draw a rectangle by dragging the mouse to specify two opposite corners.
In the [Draw (D)] menu, select [Rectangle (R)] or click  to place a rectangle on the screen. Double-click the placed [Rectangle] to display the following dialog box.

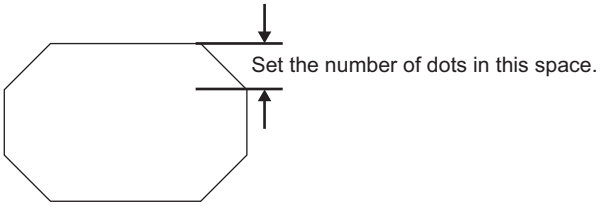
NOTE

- If you press and hold the [Shift] key while drawing a rectangle, the object is forced into a square.
- If you place a rectangle while pressing the [Ctrl] key, you can draw a rectangle spreading out from the center. If you place a rectangle while pressing the [Ctrl] and [Shift] keys at the same time, you can draw a square that spreads away from the center.



Setting		Description
Border	Line Type	Select the line type from [Solid Line], [Dotted Line], [Dash Line], [Chain Line], or [Two-Dot Chain Line]. ☞ "8.5.3 Setting Up Line Types" (page 8-43)
	Line Thickness	Set the line thickness within the range of one to nine dots. **NOTE** • When other line types than [Solid Line] are selected in [Line Type], the line thickness is fixed at one dot.
	Display Color	Set the border color. ☞ "8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Select the pattern color. This function can be used only when line types other than [Solid Line] are selected in [Line Type]. ☞ "8.5.4 Setting Up Patterns" (page 8-43)
	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞ "8.5.1 Setting Colors" (page 8-36)

Continued

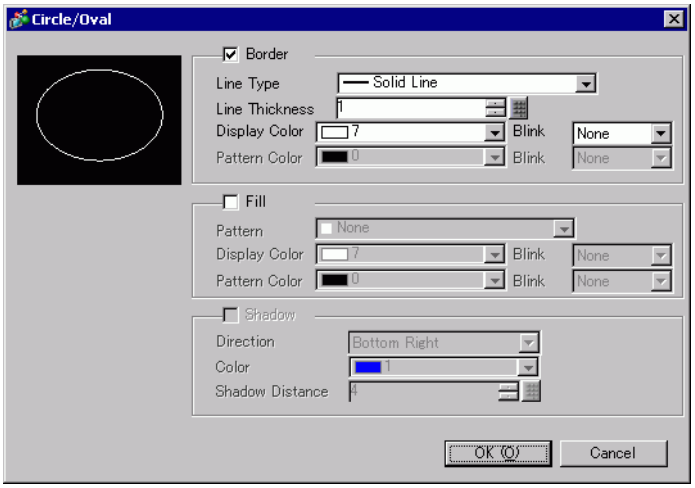
Setting		Description
Fill	Pattern	Set a background pattern for the rectangle. ☞"8.5.4 Setting Up Patterns" (page 8-43)
	Display Color	Set a color for the rectangle. ☞"8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Set the background pattern color for the rectangle. ☞"8.5.4 Setting Up Patterns" (page 8-43)
	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors" (page 8-36)
Shadow	Direction	Select the shadow direction from [Top Left], [Bottom Left], [Top Right], or [Bottom Right].
	Color	Set a color for the shadow. ☞"8.5.1 Setting Colors" (page 8-36)
	Shadow Width	Set the width of the picture and the shadow within the range of 1 to 16.
Chamfer		Select the chamfer shape from [None], [Line], or [Circle].
Number of Pixels		Designate the number of pixels for chamfer from 1 to 999. 

8.2.5 Drawing Circles/Ovals

Draw a circle or oval by dragging the mouse to specify the center point and one point on the circle.
From the [Draw (D)] menu, select [Circle/Oval (C)] or click to place a circle/oval on the screen. Double-click the placed [Circle/Oval] to display the following dialog box.

NOTE

- If you press and hold the [Shift] key while placing an object, you can draw a circle.
- If you place a circle/oval while pressing the [Ctrl] key, you can draw a circle/oval spreading out from the center.If you place a circle/oval while pressing the [Ctrl] and [Shift] keys at the same time, you can draw a circle spreading out from the center.



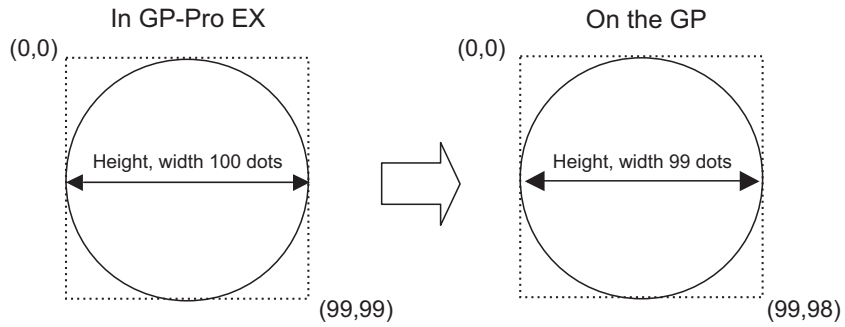
Setting		Description
Border	Line Type	Select the line type from [Solid Line], [Dotted Line], [Dash Line], [Chain Line], or [Two-Dot Chain Line]. ☞ "8.5.3 Setting Up Line Types" (page 8-43)
	Line Thickness	Set the line thickness within the range of one to nine dots. **NOTE** • When other line types than [Solid Line] are selected in [Line Type], the line thickness is fixed at one dot.
	Display Color	Set the border color. ☞ "8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Select the pattern color. This function can be used only when line types other than [Solid Line] are selected in [Line Type]. ☞ "8.5.4 Setting Up Patterns" (page 8-43)

Continued

Setting		Description
Border	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞ "8.5.1 Setting Colors" (page 8-36)
Fill	Pattern	Set the background pattern for the circle/oval. ☞ "8.5.4 Setting Up Patterns" (page 8-43)
	Display Color	Set a color for the circle/oval. ☞ "8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Set the background pattern color for the circle/oval. ☞ "8.5.4 Setting Up Patterns" (page 8-43)
	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞ "8.5.1 Setting Colors" (page 8-36)
Shadow	Direction	Select the shadow direction from [Top Left], [Bottom Left], [Top Right], or [Bottom Right].
	Color	Set a color for the shadow. ☞ "8.5.1 Setting Colors" (page 8-36)
	Shadow Width	Set the width of the circle/oval and the shadow within the range of 1 to 16.

NOTE

- You can set the width and height of a circle/oval in [Properties (P)]. However, if you set the width or height to an even number, it will be drawn with one less dot on the GP.



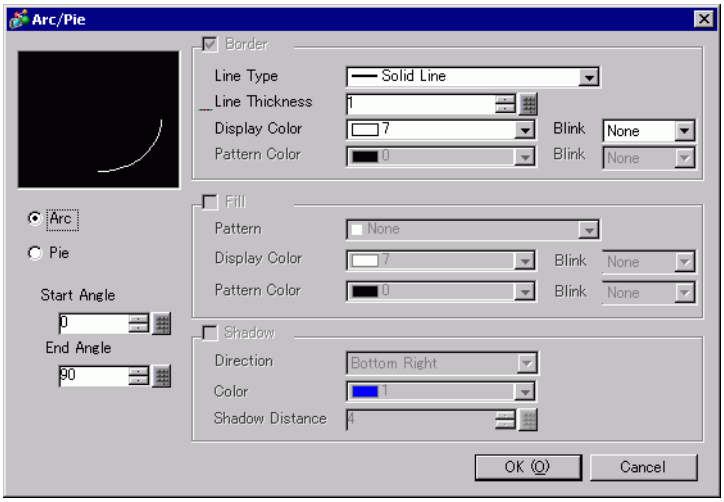
8.2.6 Drawing Arcs/Pies

Draw an arc or pie by dragging the mouse to specify the center point and one point on the circle, and specify the start angle and end angle in the dialog box. You can select an arc or pie.

From the [Draw (D)] menu, select [Arc/Pie (A)] or click to place an arc/pie on the screen. Double-click the placed [Arc/Pie] to display the following dialog box.

NOTE

- If you press and hold the [Shift] key while placing an object, you can draw a circle arc.
- If you place an arc/pie while pressing the [Ctrl] key, you can draw a circle/oval's arc spreading out from the center. If you place an arc/pie while pressing the [Ctrl] and [Shift] keys at the same time, you can draw a circle's arc spreading out from the center.
- If you edit an arc/pie after placing it, you can change the arc/pie's start angle and end angle by operating the yellow handle in the selected state.
- You can set the width and height of an arc//pie in [Properties (P)]. However, if you set the width or height to an even number, it will be drawn with one less dot on the GP.



Setting		Description
Border	Line Type	Select the line type from [Solid Line], [Dotted Line], [Dash Line], [Chain Line], or [Two-Dot Chain Line].
	Line Thickness	Set the line thickness within the range of one to nine dots. **NOTE** • When other line types than [Solid Line] are selected in [Line Type], the line thickness is fixed at one dot.
	Display Color	Set the arc/pie border color.
	Pattern Color	Select the pattern color. This function can be used only when line types other than [Solid Line] are selected in [Line Type].

Continued

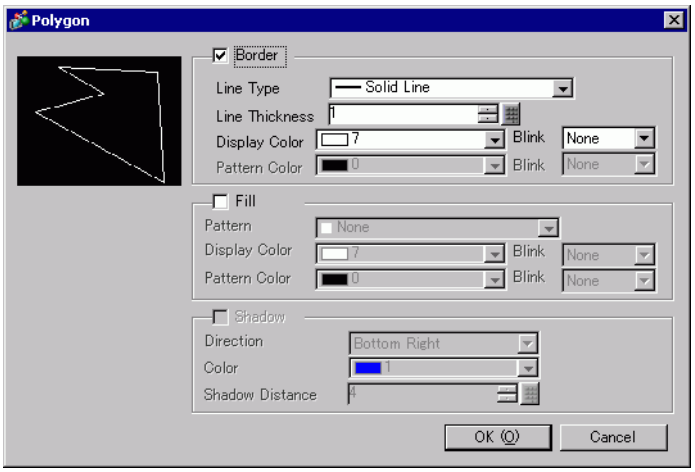
Setting		Description
Border	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. NOTE • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞ "8.5.1 Setting Colors" (page 8-36)
Fill	Pattern	Select a background pattern for the pie.
	Display Color	Set the pie's color.
	Pattern Color	Set the background pattern color for the pie.
	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. NOTE • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞ "8.5.1 Setting Colors" (page 8-36)
Shadow	Direction	Select the shadow direction from [Top Left], [Bottom Left], [Top Right], or [Bottom Right].
	Color	Set a color for the shadow.
	Shadow Width	Set the width of the arc/pie and its shadow within the range of 1 to 16.
Arc/Pie		Select from [Arc] or [Pie].
Start Angle/End Angle		Set the [Start Angle] or [End Angle].

8.2.7 Drawing Polygons

To draw a polygon, click each apex and right-click to define a polygon.
From the [Draw (D)] menu, select [Polygon (P)] or click  to place a polygon on the screen. Double-click the placed [Polygon] to display the following dialog box.

NOTE

- To edit a polygon, click on a line in the polygon to change to a yellow handle. You can drag a line on the polygon to change the shape.



Setting		Description
Border	Line Type	Select the line type from [Solid Line], [Dotted Line], [Dash Line], [Chain Line], or [Two-Dot Chain Line]. ☞ "8.5.3 Setting Up Line Types" (page 8-43)
	Line Thickness	Set the line thickness within the range of one to nine dots. **NOTE** • When other line types than [Solid Line] are selected in [Line Type], the line thickness is fixed at one dot.
	Display Color	Set the border color. ☞ "8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Select the pattern color. This function can be used only when line types other than [Solid Line] are selected in [Line Type]. ☞ "8.5.4 Setting Up Patterns" (page 8-43)
	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞ "8.5.1 Setting Colors" (page 8-36)

Continued

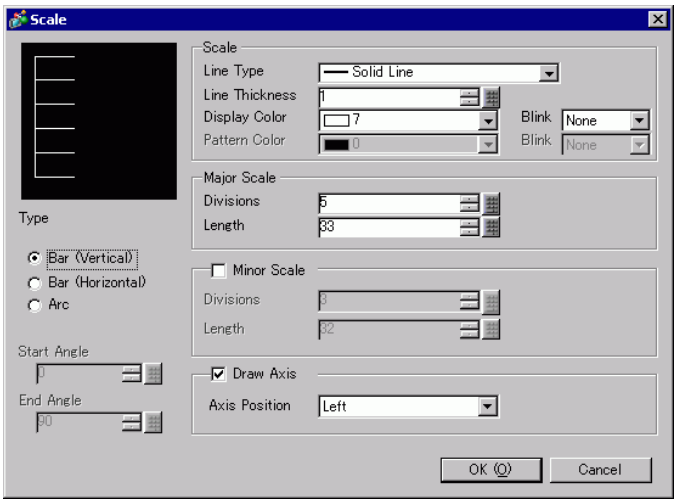
Setting		Description
Fill	Pattern	Set a background pattern for the polygon. ☞"8.5.4 Setting Up Patterns" (page 8-43)
	Display Color	Set a color for the polygon. ☞"8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Set a background pattern's color for the polygon. ☞"8.5.4 Setting Up Patterns" (page 8-43)
	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors" (page 8-36)
Shadow	Direction	Select the shadow direction from [Top Left], [Bottom Left], [Top Right], or [Bottom Right].
	Color	Set a color for the shadow. ☞"8.5.1 Setting Colors" (page 8-36)
	Shadow Width	Set the width of the polygon and its shadow within the range of 1 to 16.

8.2.8 Drawing Scales

Draw a scale by dragging to specify two opposite corners. Set the divisions of the scale in the following dialog box.
From the [Draw (D)] menu, select [Scales (M)] or click  to place a scale on the screen.
Double-click the placed [Scale] to display the following dialog box.

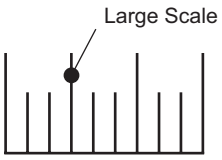
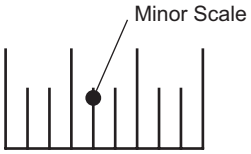
NOTE

- To edit a scale after placing it, click the line in the selected state to make it a yellow handle. You can change the scale type by operating the yellow handle axis.



Setting		Description
Scale	Line Type	Select the line type from [Solid Line], [Dotted Line], [Dash Line], [Chain Line], or [Two-Dot Chain Line]. ☞"8.5.3 Setting Up Line Types" (page 8-43)
	Line Thickness	Set the line thickness within the range of one to nine dots. **NOTE** • When line types other than [Solid Line] are selected in [Line Type], the setting range is one to two dots.
	Display Color	Select the scale color. ☞"8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Select the pattern color. This function can be used only when line types other than [Solid Line] are selected in [Line Type]. ☞"8.5.4 Setting Up Patterns" (page 8-43)

Continued

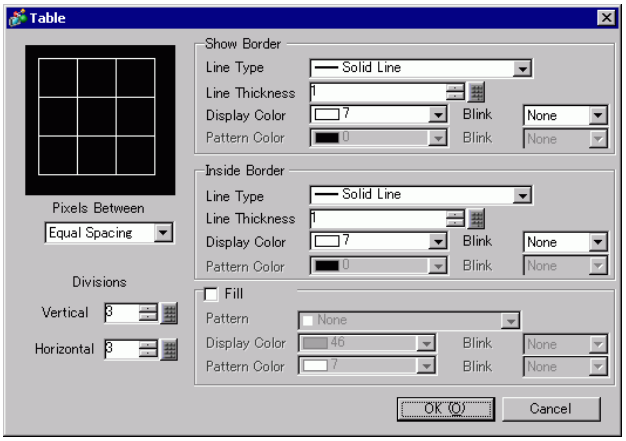
Setting		Description
Scale	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. NOTE • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞ "8.5.1 Setting Colors" (page 8-36)
Major Scale	Divisions	Select from 1 to 999 large-scale axis divisions. 
	Length	Select the large scale length from 2 to 3,072.
Minor Scale	Divisions	Select from 2 to 999 minor-scale axis divisions. 
	Length	Select the minor scale length from 1 to 3,071.
Draw Axis	Axis Position	Select the scale direction from the axis from [Left] or [Right]. Continued
Type	Bar (Vertical)	Displays the scale for a vertical bar graph.
	Bar (Horizontal)	Displays the scale for a horizontal bar graph.
	Arc	Displays the scale for a circle graph. NOTE • You can set the width and height of a scale in the [Properties (P)]. However, if you set the width or height to an even number, it will be drawn with one less dot on the GP.
Start Angle/End Angle		Set the [Start Angle] or [End Angle].

8.2.9 Drawing Tables

Draw a table by dragging to specify two opposite corners. Set the rungs and number of columns in the following dialog box.
From the [Draw (D)] menu, select [Table (T)] or click to place a table on the screen, and set the number of rows and number of columns in the following dialog box displayed by a double-click.

NOTE

- To edit the table after placing it, click a line of the table in the selected state to make it a yellow handle. You can change the inside border spacing by operating the yellow handle.
- When you click this icon, drag to select the table frame borders and move the pointer to the drawing area to place the defined table.



Setting		Description
Show Border	Line Type	Select the line type from [Solid Line], [Dotted Line], [Dash Line], [Chain Line], or [Two-Dot Chain Line]. ☞"8.5.3 Setting Up Line Types" (page 8-43)
	Line Thickness	Set the line thickness within the range of one to nine dots. **NOTE** • When line types other than [Solid Line] are selected in [Line Type], the line thickness is fixed to one dot.
	Display Color	Set the outer border color for the table. ☞"8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Select the pattern color.This function can be used only when line types other than [Solid Line] are selected in [Line Type].

Continued

Setting		Description
Show Border	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors" (page 8-36)
Inside Border	Line Type	Select the line type from [Solid Line], [Dotted Line], [Dash Line], [Chain Line], or [Two-Dot Chain Line]. ☞"8.5.3 Setting Up Line Types" (page 8-43)
	Line Thickness	Set the line thickness within the range of one to nine dots. **NOTE** • When other line types than [Solid Line] are selected in [Line Type], the line thickness is fixed at one dot.
	Display Color	Set the inside border color for the table. ☞"8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Select the pattern color. This function can be used only when line types other than [Solid Line] are selected in [Line Type]. ☞"8.5.4 Setting Up Patterns" (page 8-43)
	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors" (page 8-36)
Fill	Pattern	Select a background pattern for the table. ☞"8.5.4 Setting Up Patterns" (page 8-43)
	Display Color	Set the table color. ☞"8.5.1 Setting Colors" (page 8-36)
	Pattern Color	Set the background pattern color for the table. ☞"8.5.4 Setting Up Patterns" (page 8-43)
	Blink	Select the blink and blink speed. You can choose different blink settings for the Part's [Display Color] and [Pattern Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors" (page 8-36)
Interval		Select from [Equal Spacing] or [Free]. • Equal Spacing The row width and column width are made equal. • Free The row width and column width can be adjusted freely.
Divisions		Designate the number of rows [Vertical] and number of columns [Horizontal] in the table from 1 to 30.

8.3 Writing Text

Draw text on the drawing screen.
To draw text that changes depending on the selected display language on the GP, use the text table. For settings, refer to "17.4 Changing a Text's Language (Multilanguage)" (page 17-15).

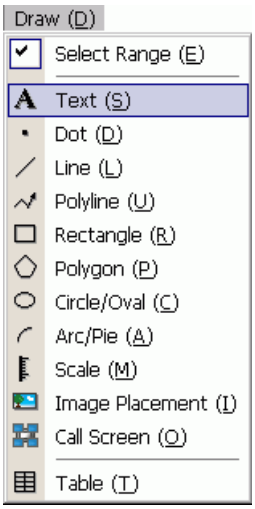
8.3.1 Setup Procedure

NOTE

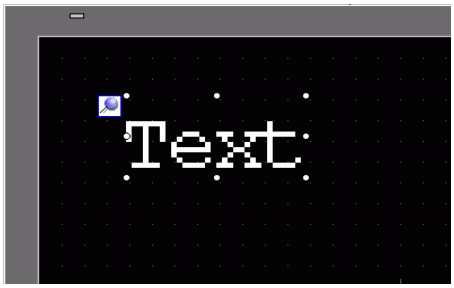
- Please refer to the Settings Guide for details.
☞"8.13.1 Text Settings Guide" (page 8-91)

To place the text "Production Inventory" on the drawing screen.

1 From the [Draw (D)] menu, select [Text (S)] or click A to place text on the screen.



2 Click the placed text. When the text border appears, drag to adjust its size and position.

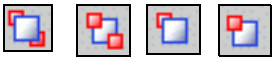


3 Double-click the placed text and the [Text] dialog box will appear.
Designate the font and size and input text to place in the Input Text border.(For example, Production Inventory)

4 Click [OK] and the input text "Production Inventory" will be placed.

8.4 Editing

8.4.1 Introducing Edit Tools

Setting	Description
Cut 	Cut the object (Parts, Text, Figure). Use [Paste (P)] to place the object back on the screen. Operating Procedure You can cut an object by selecting a desired object and click [Cut] in the [Edit] menu.
Copy 	Copies the selected object. Place it on the screen by using the [Paste]. Operating Procedure You can copy by selecting a desired object and click [Copy] in the [Edit] menu.
Paste 	Pastes the copied or cut object onto a screen. Operating Procedure You can paste the object you copied or cut by clicking [Paste] in the [Edit] menu. NOTE • When pasting from one screen to another, you can paste the object to the same position as the other screen.
Duplicate 	Copies multiple pictures at a time. When duplicating parts, you can automatically assign the next consecutive address after the source part's address to the destination part. ☞ "8.4.5 Duplicate" (page 8-28)
Delete 	Deletes an object. Operating Procedure You can delete by selecting the desired object and clicking [Delete (D)] in the [Edit] menu.
Select All	Selects all the objects on the screen. You can also specify the range to drag multiple objects. ☞ "8.4.2 Selection Method" (page 8-26)
Edit Vertex 	You can edit, delete or insert each vertex coordinate of a polyline or polygon. ☞ " ■ Edit Vertex" (page 8-30)
Group 	You can group multiple objects together and treat them as one unit. ☞ "8.4.7 Grouping (Ungrouping)" (page 8-31)
Order 	When the placed objects are overlapping, you can change the placement order. ☞ "8.4.8 Order" (page 8-33)

Continued

Setting	Description
Place/ Align 	Using Align Right, Align Left, Align Center, and so on, you can adjust the positions of multiple objects. ☞ "8.4.9 Aligning" (page 8-33)
Rotate/ Flip 	• Rotate Rotates the object by 90 degrees. ☞ "8.4.10 Rotating Right or Left" (page 8-34) • Flip Flips the object horizontally or vertically. ☞ "8.4.11 Reversing X-Axis (Vertical)/Y-Axis (Horizontal)" (page 8-34)
Others	Sets a grid and guidelines to align a part with another one. ☞ "8.9 Creating a Screen from a Template" (page 8-63)

8.4.2 Selection Method

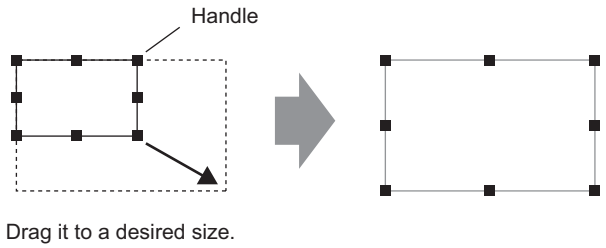
There are two ways to select an object: click the object directly or specify the range to drag multiple surrounding objects.

NOTE

- To select one of the overlapping objects, click the object while pressing the [Ctrl] key. Each object becomes in the selective state in turn, and you can select the target object.
- To release a particular object from the selected objects, click the target object while pressing the [Shift] key.
- To add a particular object to the selected objects, click the target object while pressing the [Shift] key.

8.4.3 Enlarging and Reducing the Size

Select the target object and hover the cursor on the handle. When the cursor turns to ↔, you can zoom in or out and drag the object to the appropriate size.



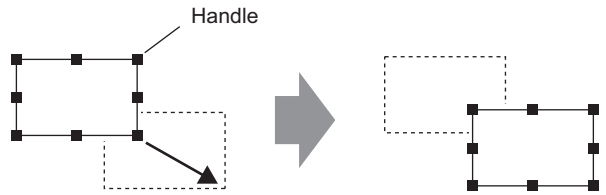
Drag it to a desired size.

NOTE

- If you select an object and move the four-cornered handles while pressing the [Shift] key, you can enlarge/reduce it with the same horizontal to vertical ratio.
- With the cursor on an object handle, you can use the [↑], [→], [←], and [↓] keys to increase or decrease the object's size by one dot.

8.4.4 Moving Objects

Select the target object and hover the cursor on the object. When the cursor turns to ✣, you can drag the object to the appropriate location.



Drag it to a desired position.

NOTE

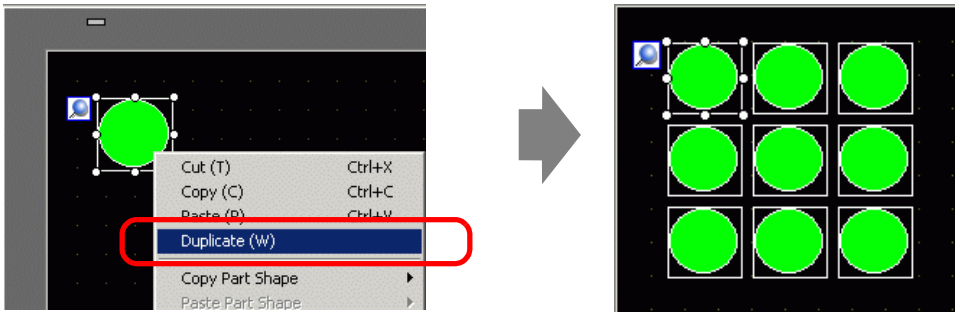
- If you move while pressing the [Shift] key, you can move the object horizontally or vertically.
- If you use the [↑], [→], [←], and [↓] keys with the object selected, you can move the object a dot at a time.

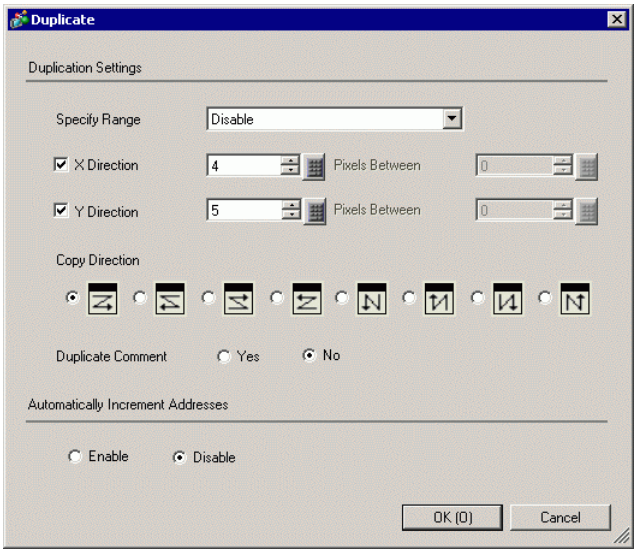
8.4.5 Duplicate

Copies multiple pictures at a time.
Right-click the object and click [Duplicate (W)]. [Duplicate] dialog box appears. Set the number of copies and copy direction.

NOTE

- You can automatically assign the next consecutive address after the source part's address to the destination part.





Setting	Description
Specify Range	Select how to specify the area from [Disable], [Set Up Using the Mouse] and [Set Up Interval]. • Disable Make copies without spacing. • Set Using the Mouse Using the defined interval, makes copies that fit into the range. • Setting Intervals Set the number of pixels between objects, from 1 to 99.
X Direction	Set the number of display positions in the X direction from 1 to 99. • Interval Set the number of pixels between objects, from 1 to 99.

Continued

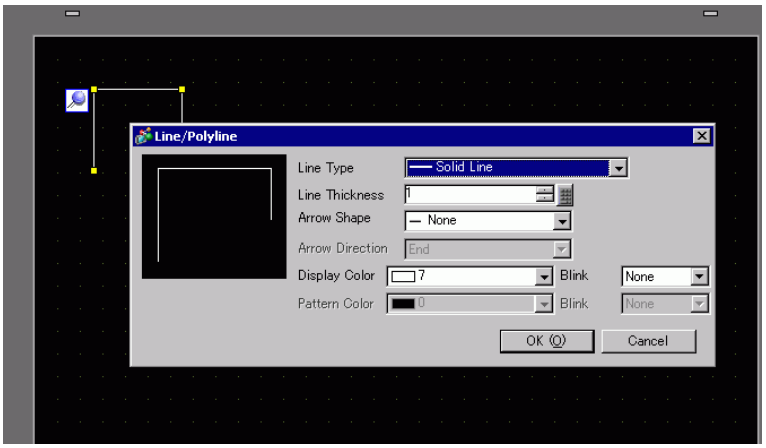
Setting	Description
Y Direction	Set the number of display positions in the Y direction from 1 to 99. • Interval Set the number of pixels between objects, from 1 to 99.
Copy Direction	Select the display direction from  ,  ,  ,  ,  ,  ,  or  . **NOTE** • When you add addresses, sequential addresses are assigned in the specified direction according to the address addition width.
Duplicate Comment	The copy source comment is reflected in the copy destination.
Automatically Increment Addresses	You can assign sequential addresses from the copy-from addresses according to the [Increment Each Address by]. • Enable Designates an address interval. When the copy-from addresses are Bit addresses, addresses are added by the Bit. When the copy-from addresses are Word addresses, addresses are added by the Word. • Disable Addresses are not assigned automatically.

8.4.6 Changing Attributes

You can change object attributes such as color or address.
To change attributes, double-click the object while selecting it or select [Change Attributes (M)] from the [Edit] menu.

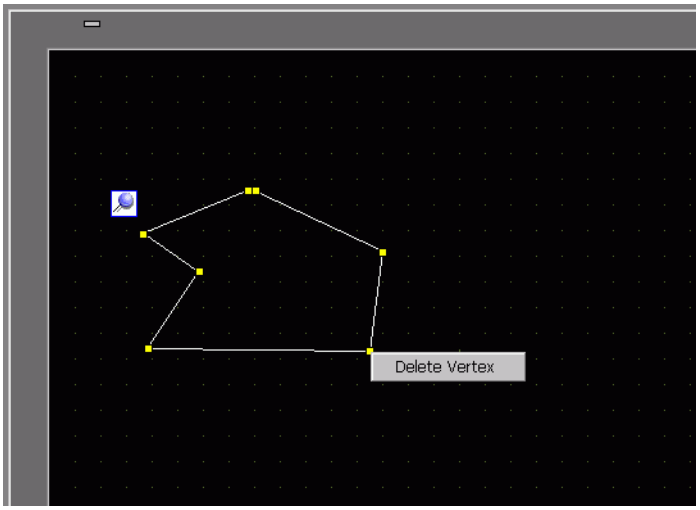
NOTE

- When multiple objects are selected, you cannot change attributes.



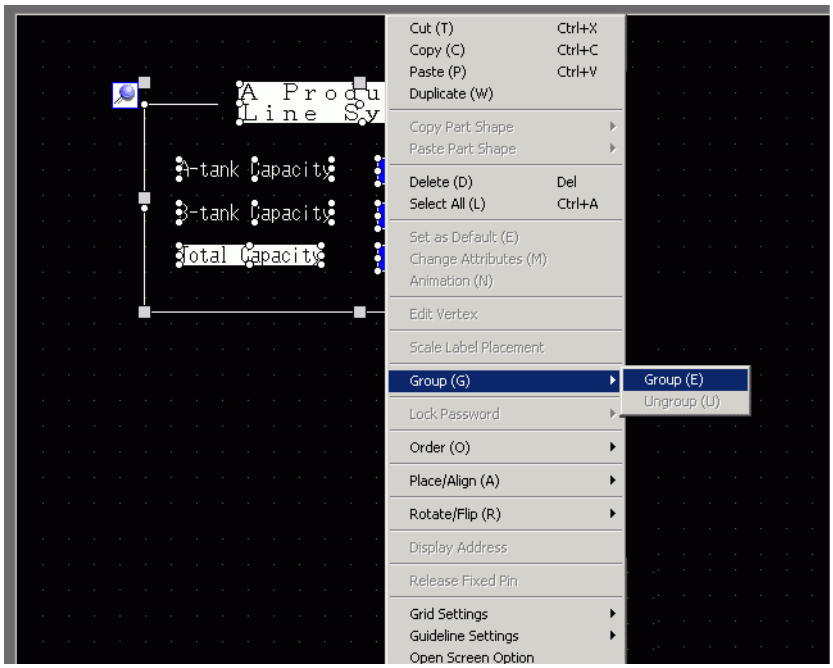
■ Edit Vertex

You can edit, delete, or insert each vertex coordinate of a polyline or polygon.
To edit the object's vertex, click a line in the selected state to change it to a yellow handle. Change the shape of the object by clicking an arbitrary line. To delete the vertex, right-click on the vertex and select [Delete Vertex].



8.4.7 Grouping (Ungrouping)

You can group multiple objects and handle them as one object. To do so, select multiple objects, right-click, and click [Group (E)]. To ungroup, click [Ungroup (U)].

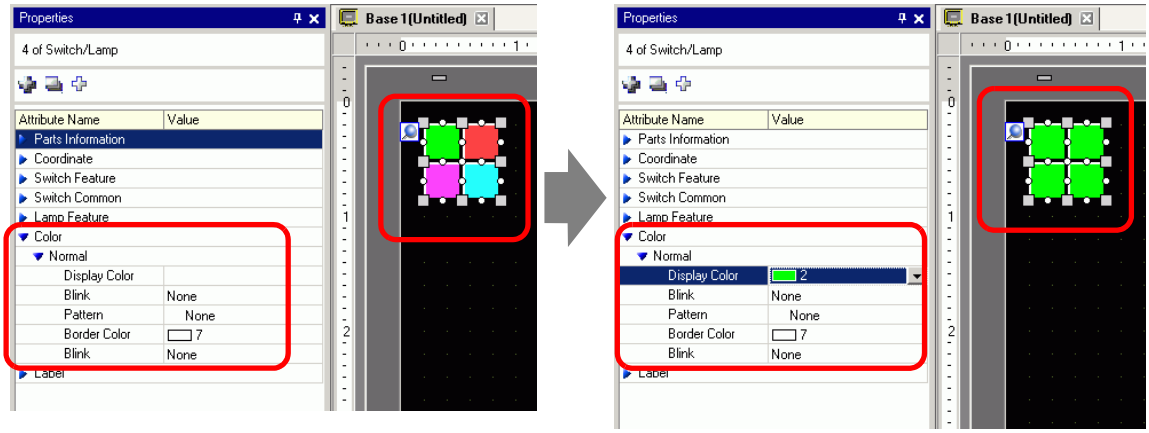


NOTE

- When Animation is set for a group, Animation Settings will be reflected in all the parts belonging to the group. However, Animation that can be set is limited to Animation supported by all parts belonging to the group.
☞"Chapter 20 Animating Screen Objects", page 20-1

■ Batch Conversion of Parts and Objects

Select multiple objects or parts of the same type and use the [Properties (P)] window to change attributes of the selected objects in one step.

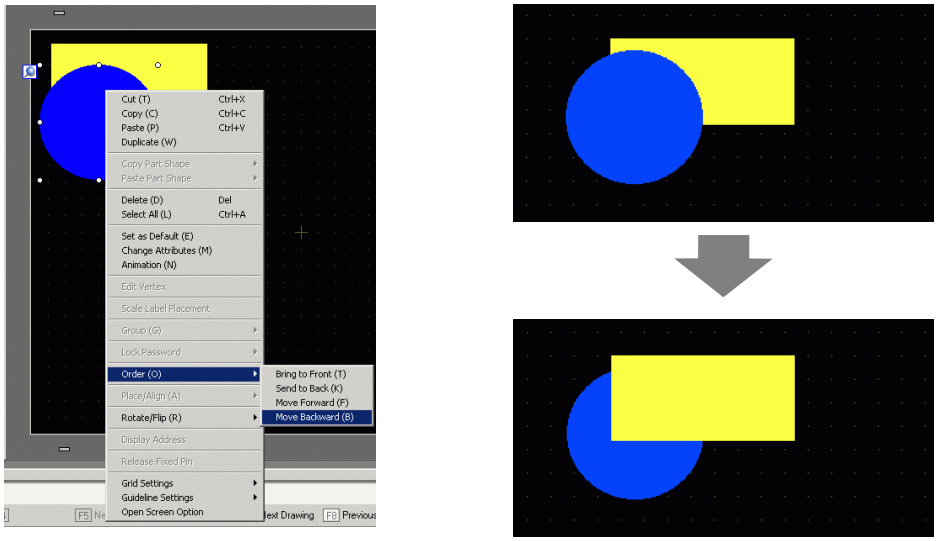


NOTE

- When you select grouped objects, only parts information and coordinates are displayed.
- When you select multiple types of parts, you can change coordinates only.
- When multiple switch operations are added to a single switch (Multi-function feature), you cannot change the [Switch Feature].

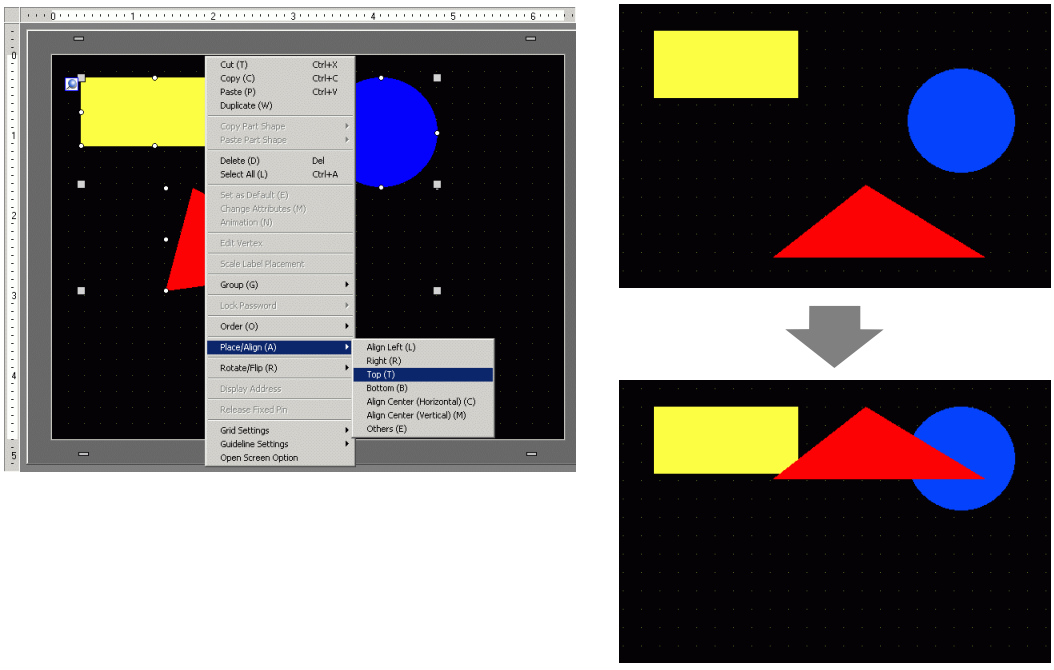
8.4.8 Order

When the placed objects are overlapping, you can change the placement order. Select and right-click the object whose order you want to change, click [Order (O)], and select the object order from [Bring to Front], [Send to Back], [Move Forward], or [Move Backward]. In the following example, the oval is moved backward.



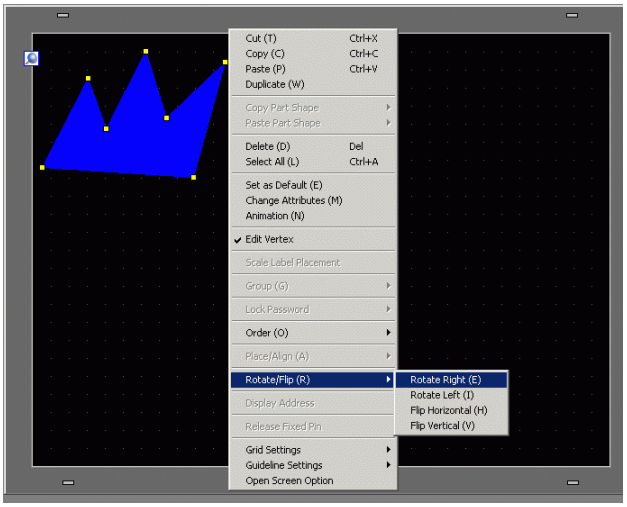
8.4.9 Aligning

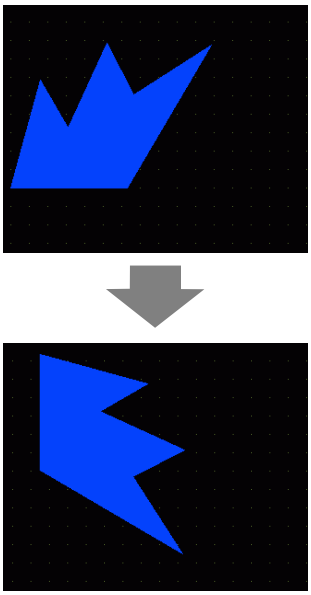
You can align the position of multiple objects. Select the objects that you want to align, right-click, and then select [Align Left (L)], [Right (R)], [Top (T)], [Bottom (B)], [Align Center (Horizontal) (C)], [Align Center (Vertical) (M)], or [Others (E)] from [Place/Align (A)]. In the following example, the rectangle, polygon, and circle are all aligned to the top.



8.4.10 Rotating Right or Left

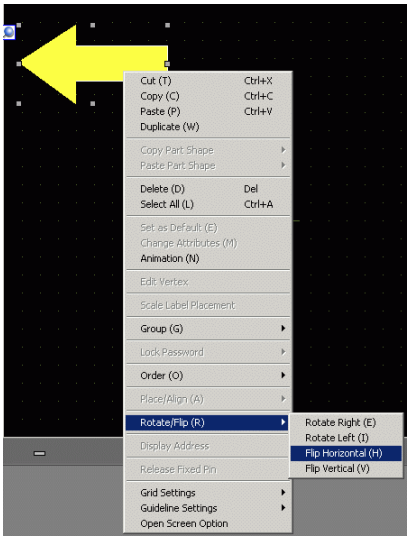
You can rotate the object to the right and left 90 degrees at a time. Right click to select the object you want to rotate, select [Rotate Right (E)] or [Rotate Left (I)] in [Rotate/Flip]. The following example describes placement of a right-rotated polygon.

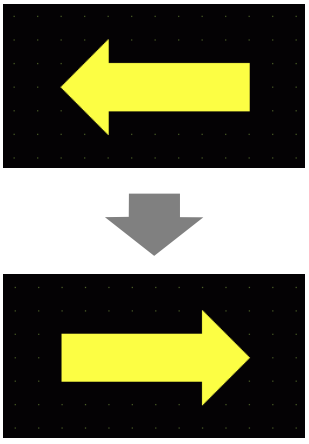




8.4.11 Reversing X-Axis (Vertical)/Y-Axis (Horizontal)

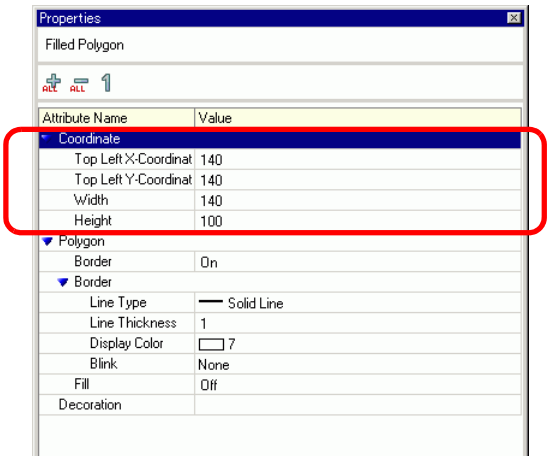
From the object's center, you can flip objects vertically (X-axis) or horizontally (Y-axis). Select the object to flip, and from the right-click menu point to [Rotate/Flip (R)] and click [Flip Horizontal (H)] or [Flip Vertical (V)]. The following example shows a polygon flipped horizontally. Please note that when you flip screens, marks, parts, and text that are called into the screen, only the display position is reflected.





8.4.12 Changing Coordinates

You can change the position and size of an object by designating a coordinate in the [Properties (P)]. The reference of the coordinate is the top left of an object.



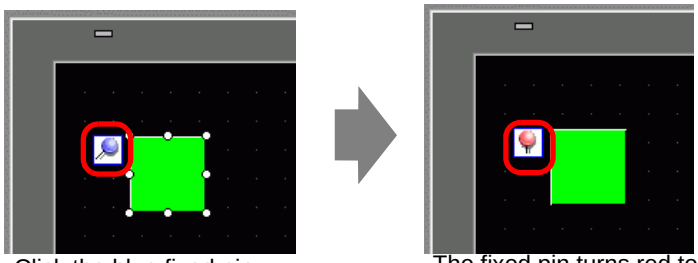
NOTE

- If the [Properties] tab is not displayed in either the work space or the screen drawing area, from the [View (V)] menu, point to [Work Space (W)] and select [Properties Window (P)].

8.4.13 Protecting Objects That You Do Not Want to Edit

◆ Fixing Objects

Place drawings and parts, and a blue fixed pin appears at the top-left corner of the object on the screen. If you click the pin, it turns red and the object cannot be selected or edited. When you put the cursor over the object, a "lock" mark appears to the right, indicating that the placement position is fixed.



Click the blue fixed pin

The fixed pin turns red to indicate the part is locked

◆ Releasing Fixed Pins

- Releasing individual objects
  Double-click a drawing or part, click and the pin turns blue.
- Releasing all fixed pins on the screen
  From the [Edit (E)] menu, select [Release All Fixed Pins (K)].

NOTE

- Click the pin marks in the list of drawings and parts displayed in the [Screen Data List] window, and the fixed pins can be set/released.

8.5 Changing Colors, Line Types and Patterns

8.5.1 Setting Colors

■ List of Compatible Colors

Model	Display Device	Display Color	Number of Colors in Drawing
AGP-3200T	TFT Color LCD	256 Colors, No Blink 64 Colors, 3-Speed Blink	256 Colors 64 Colors
AGP-3200A	Monochrome LCD	8 Levels, 1-Speed Blink	Monochrome 8 Levels
AGP-3302B	Blue-mode Monochrome LCD	16 Levels, 3-Speed Blink	16 Levels
AGP-3301L	Monochrome LCD	Monochrome 16 Levels 3-Speed Blink	Monochrome 16 Levels
AGP-3301S	STN Color LCD	4096 Colors, 3-Speed Blink	256 Colors
AGP-3300L	Monochrome LCD	Monochrome 16 Levels 3-Speed Blink	Monochrome 16 Levels
AGP-3300S	STN Color LCD	4096 Colors, 3-Speed Blink	256 Colors
AGP-3300T	TFT Color LCD	65536 Colors, No Blink 16384 Colors, 3-Speed Blink	256 Colors
AGP3300HL	Monochrome LCD	4096 Colors, No Blink	256 Colors
AGP3300HS	STN Color LCD	16 Levels of Monochrome Shading, No Blink	Monochrome 16 Levels
AGP3310HT	TFT Color LCD	65536 Colors, No Blink	256 Colors
AGP-3400S	STN Color LCD	4096 Colors, 3-Speed Blink	256 Colors
AGP-3400T	TFT Color LCD	65536 Colors, No Blink 16384 Colors, 3-Speed Blink	256 Colors
AGP-3500T	TFT Color LCD	65536 Colors, No Blink 16384 Colors, 3-Speed Blink	256 Colors
AGP-3500L	Monochrome LCD	Monochrome 16 Levels 3-Speed Blink	Monochrome 16 Levels
AGP-3500S	STN Color LCD	4096 Colors, 3-Speed Blink	256 Colors

Continued

AGP-3510T	TFT Color LCD	65536 Colors, No Blink 16384 Colors, 3-Speed Blink	256 Colors
AGP-3560T			
AGP-3600T			
AGP-3450T			
AGP-3550T			
AGP-3650T			
AGP-3750T			
AST-3201A	Monochrome LCD (Amber)	8 Levels, 1 Speed Blink	Monochrome 8 Levels
AST-3211A			
AST-3301B	Blue-mode Monochrome LCD	8 Levels, 1 Speed Blink	Monochrome 8 Levels
AST-3301S	STN Color LCD	256 Colors, No Blink 64 Colors, 3-Speed Blink	256 Colors 64 Colors
AST-3401T	TFT Color LCD	256 Colors, No Blink 64 Colors, 3-Speed Blink	256 Colors 64 Colors
AST-3501C	LCD Color	16 Colors, 1-Speed Blink	16 Colors
AST-3501T	TFT Color LCD	256 Colors, No Blink 64 Colors, 3-Speed Blink	256 Colors 64 Colors
LT-3201A	Monochrome LCD (Umber)	8 Levels, No Blink	Monochrome 8 Levels
LT-3300S	STN Color LCD	4096 Colors, 3-Speed Blink	256 Colors
LT-3301L	Monochrome LCD	Monochrome 16 Levels 3-Speed Blink	Monochrome 16 Levels
LT-3300L			
PS-3,651A	TFT Color LCD	65536 Colors, No Blink 16384 Colors, 3-Speed Blink	256 Colors
PS-3,650A			
PS-3,700A			
PS-3,451A			
PS-3,450A			
PS-3711A			
PS-3710A			
PS-2000B			
PL-3000B			

NOTE

- Objects set up with the blink option will blink ON and OFF on the display unit. You can define three different blinking speeds.

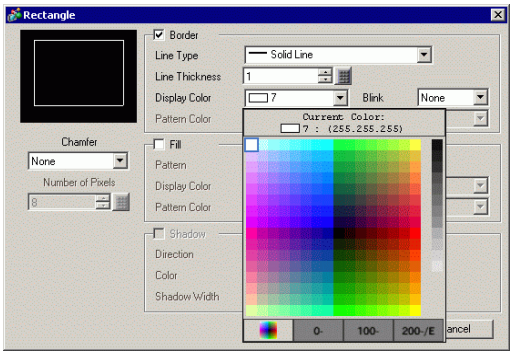
☞"8.5.2 Setting Up Blink" (page 8-43)

- On monochrome LCD models and STN Color LCD models, when you set a tiling pattern in the background settings to use the blink setting, some drawing components that do not have the blink setting may blink. Please confirm the display in advance.

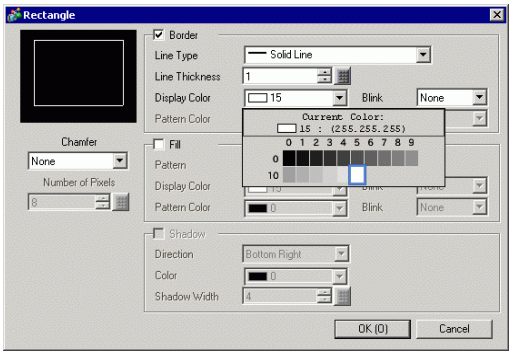
■ Specifying Colors

Set the object colors. Depending on part type, setting items such as colors of a border, fill, shadow or label, differ depending on the part type.

For a 256-color supported model



For a monochrome 16-level supported model



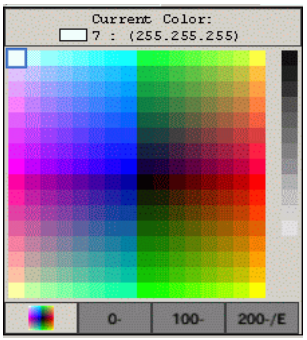
NOTE

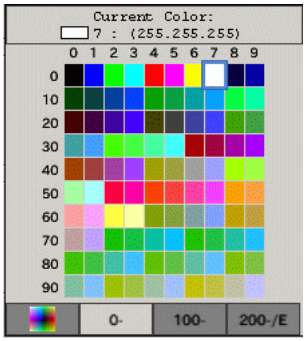
- For a 256-color compatible model, change the palette with the color code order button under the color palette, and colors can be selected with the color code number.
- You can only select [Transparent] for the [Pattern Color] for a Switch Lamp that does not use the [Lamp Feature] or for a Key that has a [Pattern] set in the settings dialog box.
- When you change from a model that supports more than 16 colors to a model that supports only 16 colors, colors inside the 16 color range remain as is. Colors outside the 16 color range are converted to one of the 16 colors.
- When using AGP-3200T or ST3000 Series, some specified colors may appear more bluish than in the drawing software.

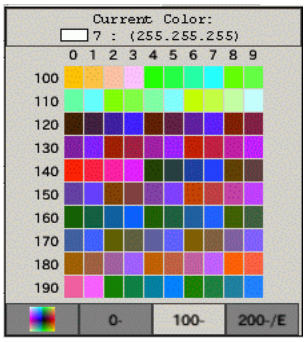
IMPORTANT

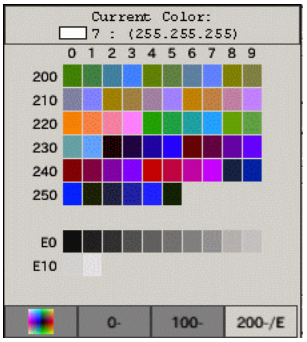
- For a monochrome 16-level model, there are some cases where color distinction is difficult or where flicker is caused. Use the color designation above after confirming the colors.

◆ Color Palette





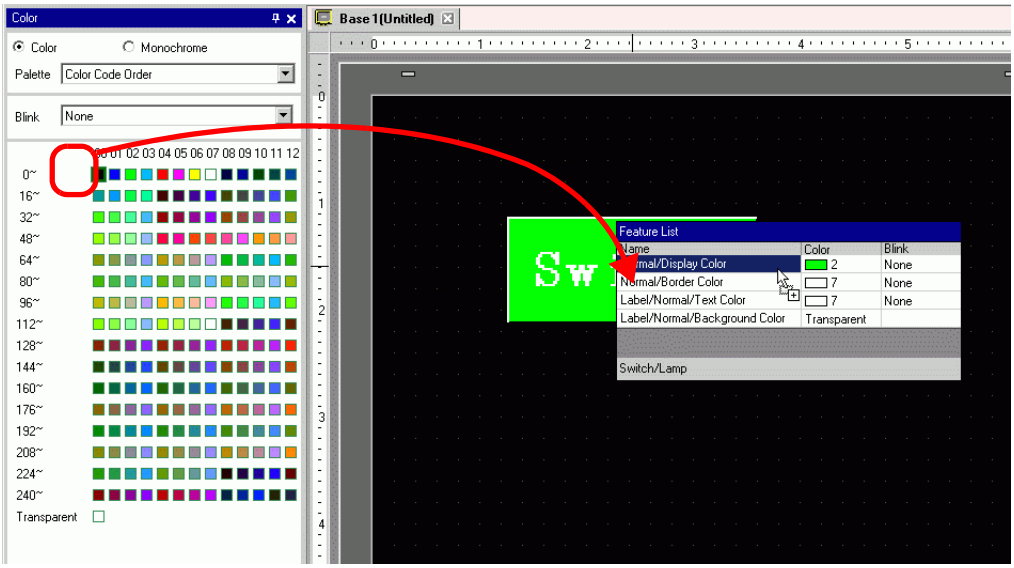




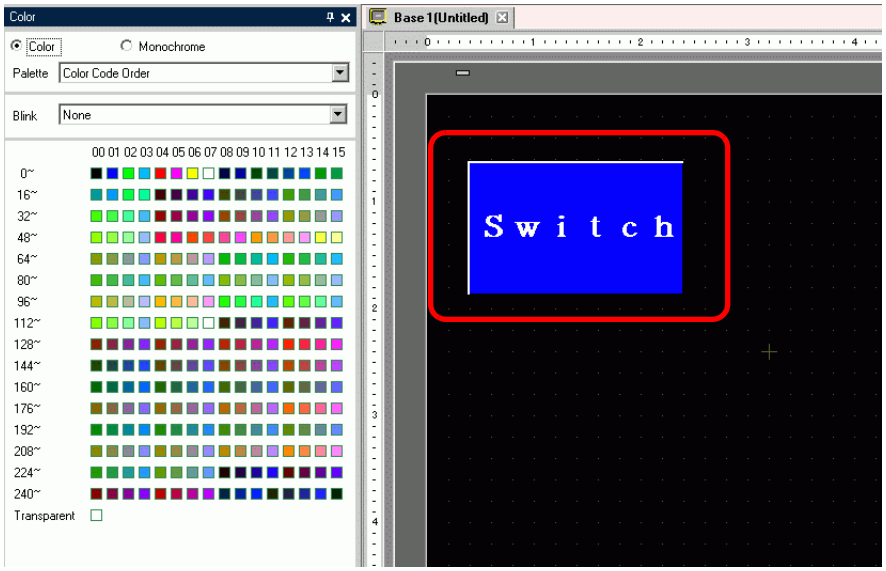
■ Changing Colors with Drag and Drop

You can change colors by dragging and dropping colors from [Color Settings (O)] workspace to the object on the editor screen.

1 Drag the selected color to the object on the drawing screen, and when the [Feature List] window appears drop the color onto [Display Color].



2 The display colors of the object will change to the dropped color.



NOTE

- When the [Color] window is not displayed, from the [View (V)] menu, point to [Work Space (W)] and select [Color Settings (O)].
- In the [Color] window you can set up blinking.

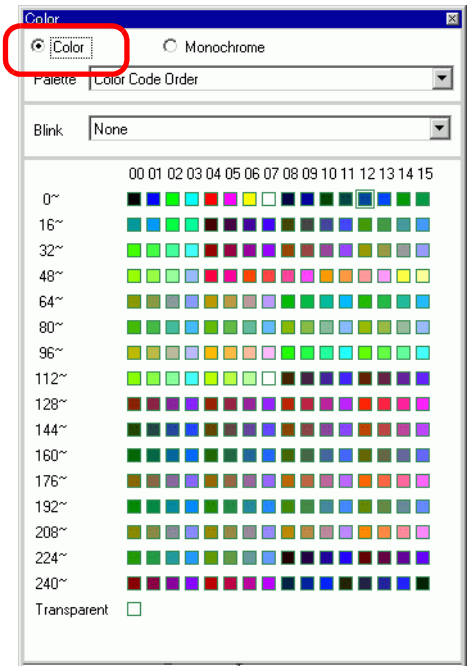
■ Types of Palettes

The type of palette will vary depending on the model and settings.

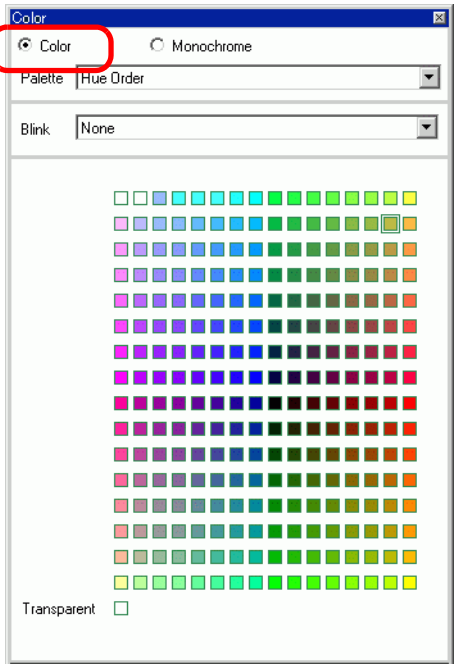
◆ Models That Support Color

You can select between [Color] and [Monochrome] palettes.
When [Color] is selected, select the display order of color cells by color code or hue.
When [Monochrome] is selected, a 12 level monochrome palette displays. The 4 missing colors of the 16 level monochrome are included in the [Color] palette.

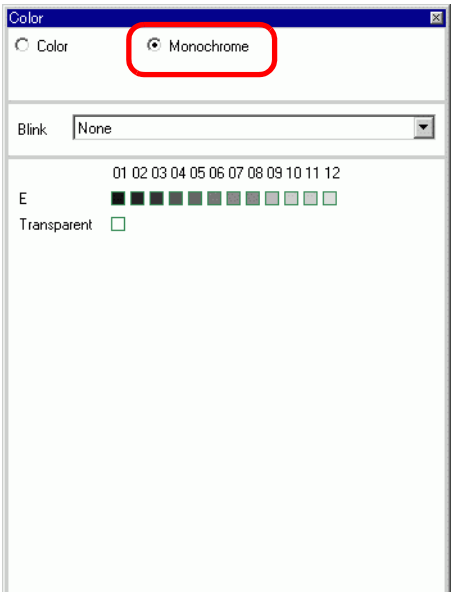
Color (Color Code Order)



Color (Hue Order)

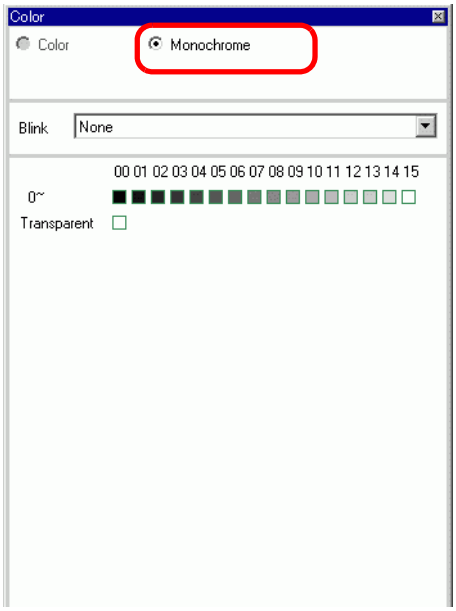


Monochrome (12 Levels)



◆ Models That Support Monochrome

You cannot select [Color] as the color palette. A 16 level monochrome palette displays.

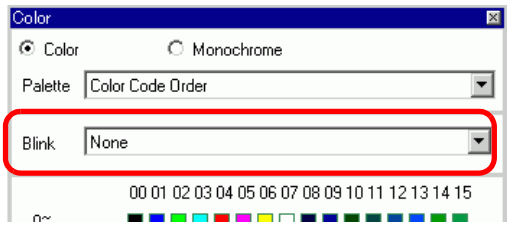


◆ Non-Blinking Palettes

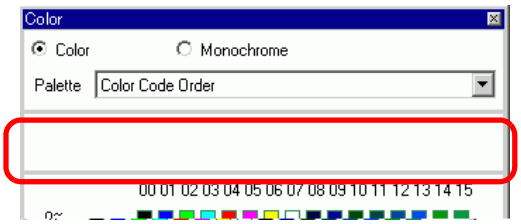
In the [Display Unit] page, when blink is disabled in the [Display Settings] area, the blink options will not display.

☞ 5.17.6 [System Settings] Setting Guide ■ [Display Unit] Settings Guide ◆ Display Settings 5-147

When Blink is ON



When Blink is OFF



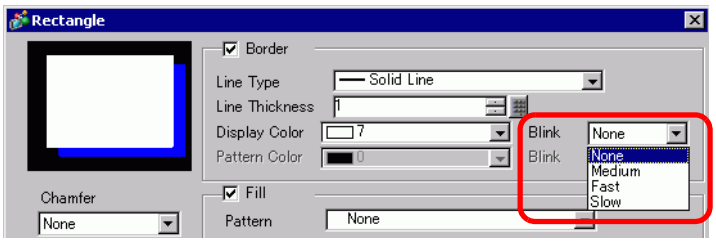
☞ For information about blinking, refer to"8.5.2 Setting Up Blink" (page 8-43)

8.5.2 Setting Up Blink

Blink makes the object blink on the display and has three selectable blink speed rates (Slow, Medium, Fast). [Fast] is twice the speed of [Medium] and [Slow] is half the speed of [Medium].
If you select [None], the object will not blink.

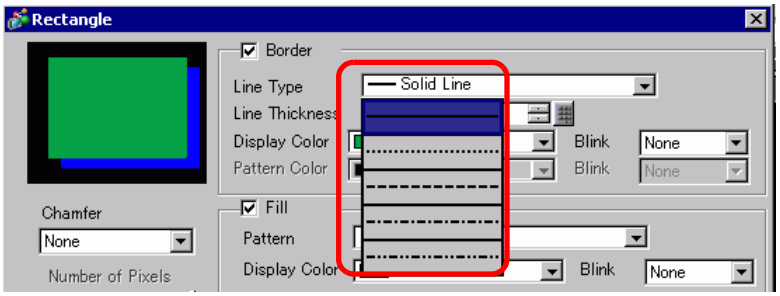
NOTE

- For faded color blink refer to 5.17.6 [System Settings] Setting Guide ■ [Display Unit] Settings Guide ◆ Display Settings 5-147.



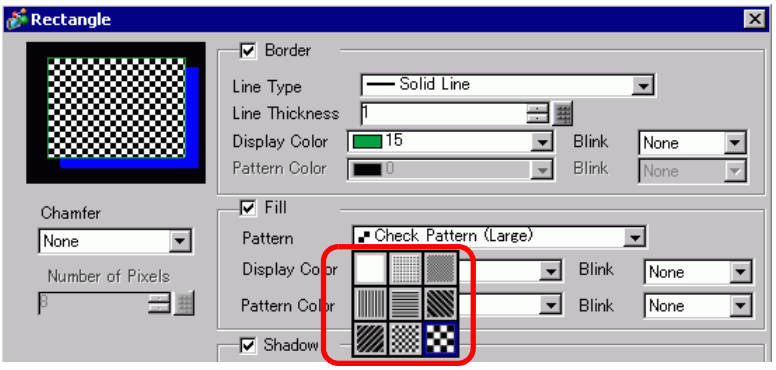
8.5.3 Setting Up Line Types

You can select the line type from five types: [Solid Line], [Dotted Line], [Dash Line], [Chain Line], or [Two-Dot Chain Line].



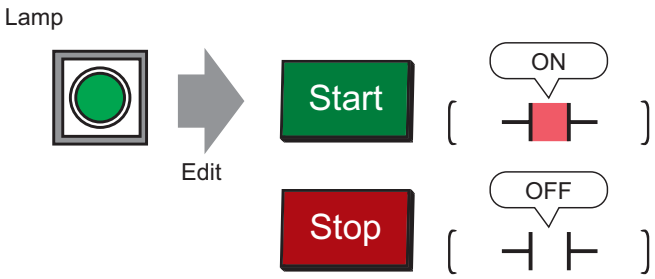
8.5.4 Setting Up Patterns

Select a pattern from the following nine types.



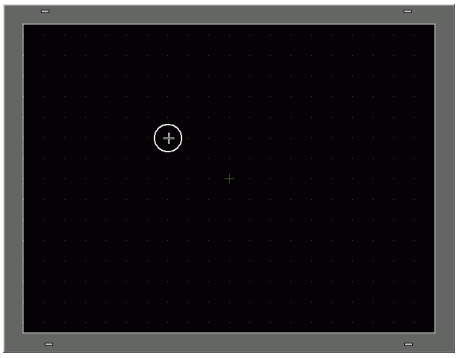
8.6 Editing a Part

8.6.1 Editing Parts

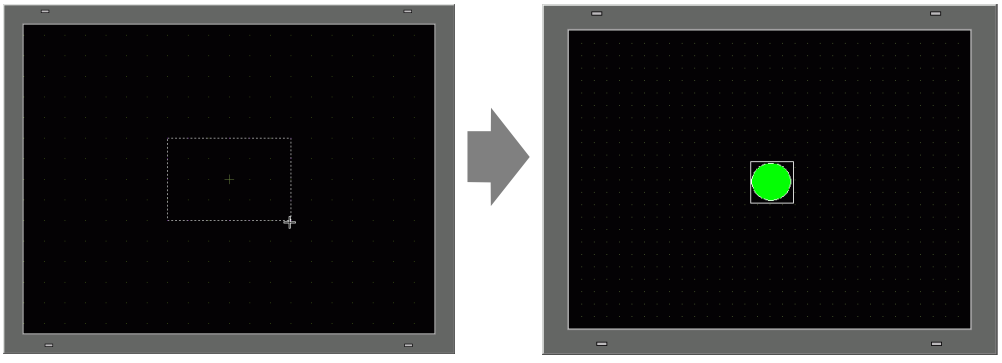


1 From the [Parts (P)] menu, point to [Switch Lamp (C)] and select [Lamp (L)] or click .

2 Move the pointer to the drawing screen and the pointer changes to a cross-hair cursor .



3 Drag the switch to the desired location. Release to place the switch.

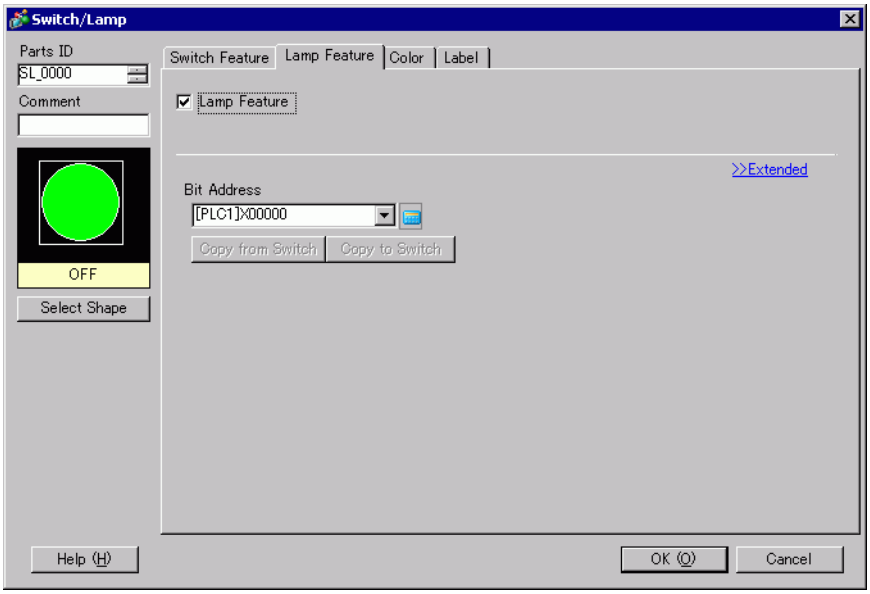


NOTE

- You can also drag and drop a part from the Parts Toolbox.
  From the [View (V)] menu, point to [Work Space (W)] and then click [Parts Toolbox (T)]. In the Parts Toolbox, select the [Parts Palette] and [Type] to browse various parts and shapes.

☞"5.17.5 [Work Space] Settings Guide ■ Parts Toolbox" (page 5-142)

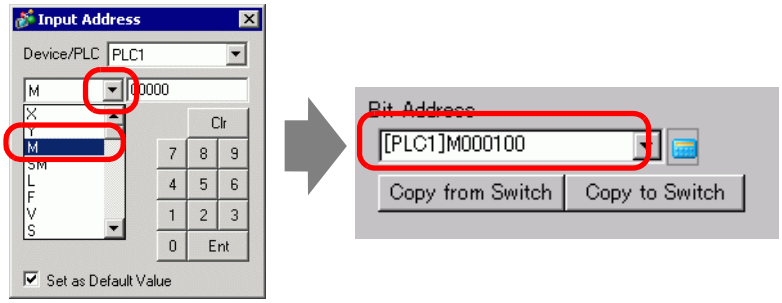
4 Double-click the placed lamp. The Switch/Lamp dialog box appears.



5 Click the  icon to display the [Input Address] dialog box.

 Click the icon and select the [Device/PLC] and [Device]. Input an address from the keypad.

(For example, M100)

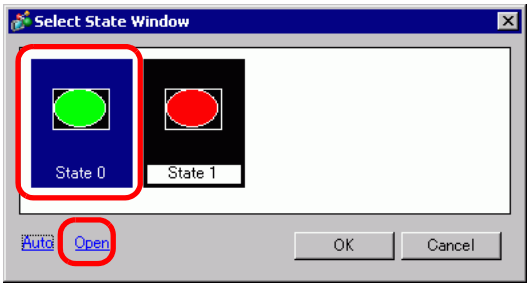


NOTE

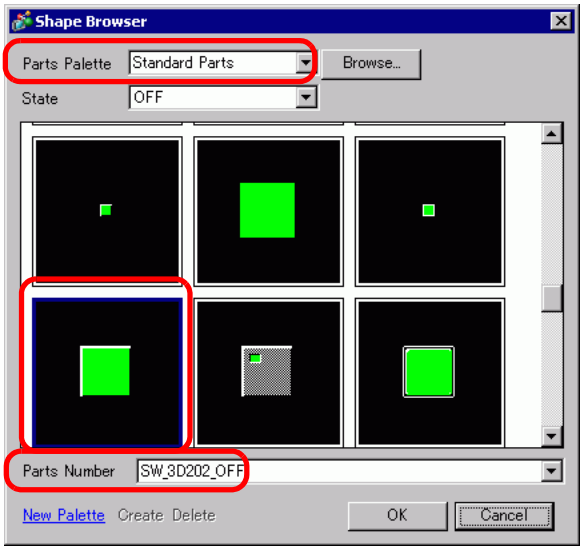
- Input the address with the keypad on the Input Address dialog. If you input it directly with the PC keyboard, it may not be recognized as an address.
- Select the [Use as Default Value] check box and click [Ent], and the value registered as the default value in the [Address Input] dialog box will appear on the next time.

6 Click [Select Shape].

7 The [Select State Window] appears. Select [State 0] and click [Open].



8 Select [Standard Parts] from the [Part Palette]. Next select the picture with [Part Number] "SW_3D202_OFF".

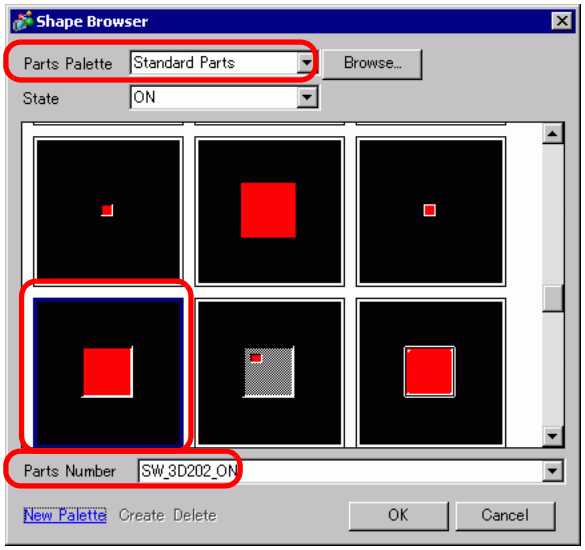


NOTE

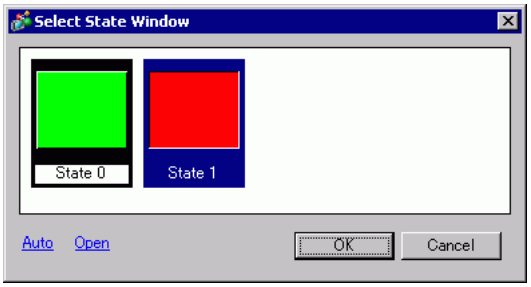
- Use the Parts Palette drop-down list to change the images displayed. There are parts with 65536, 256, or 64 colors. Please select the part palette that matches the colors supported by your model.

9 Click [OK] and the display returns to the [Select State Window]. Select [State 1] and click [Open].

10 Select [Standard Parts] from the [Part Palette]. Next, select the picture with [Part Number] "SW_3D202_ON".



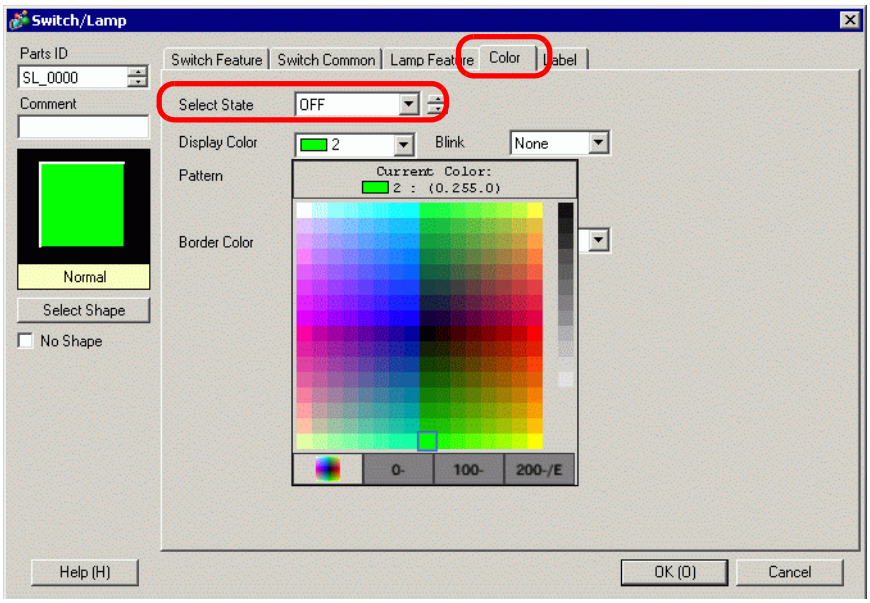
11 The pictures at [State 0] (OFF) and [State 1] (ON) are displayed. Click [OK].



NOTE

- Click [Auto] after defining the picture in [State 0] to automatically match the pictures for all other states with [State 0].
- If different states have different shapes, part of a previous shape may remain in the background when touching the switch to change its state. This results because part shapes are drawn by overwriting the other.

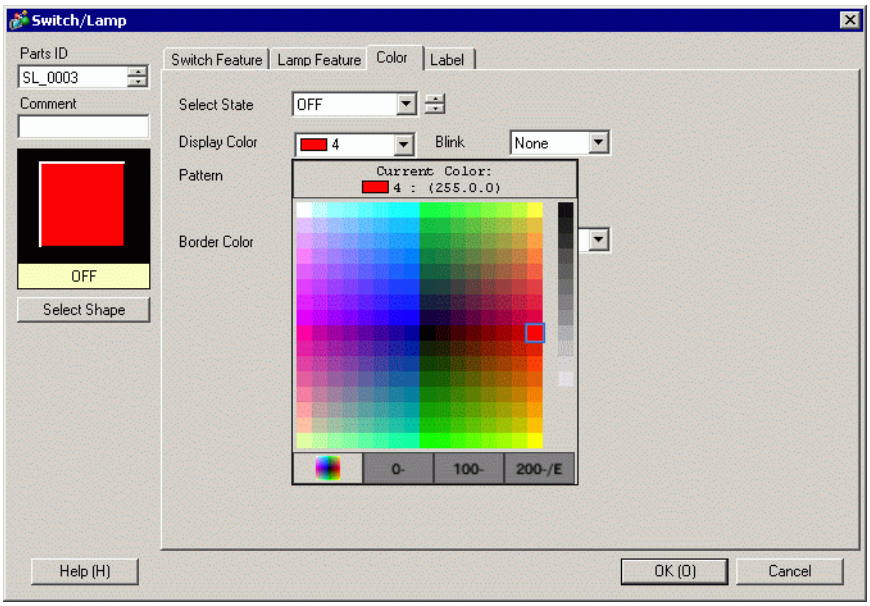
12 Click the [Color] tab. Confirm that [Select State] is OFF and set the color of the switch for the OFF state. For the [Display Color], click ▼ and select a color from the color palette.



NOTE

- You cannot edit the color for the Switch/Lamp menu image parts.
- To change the palette in the color code order, click the color code button under the palette.

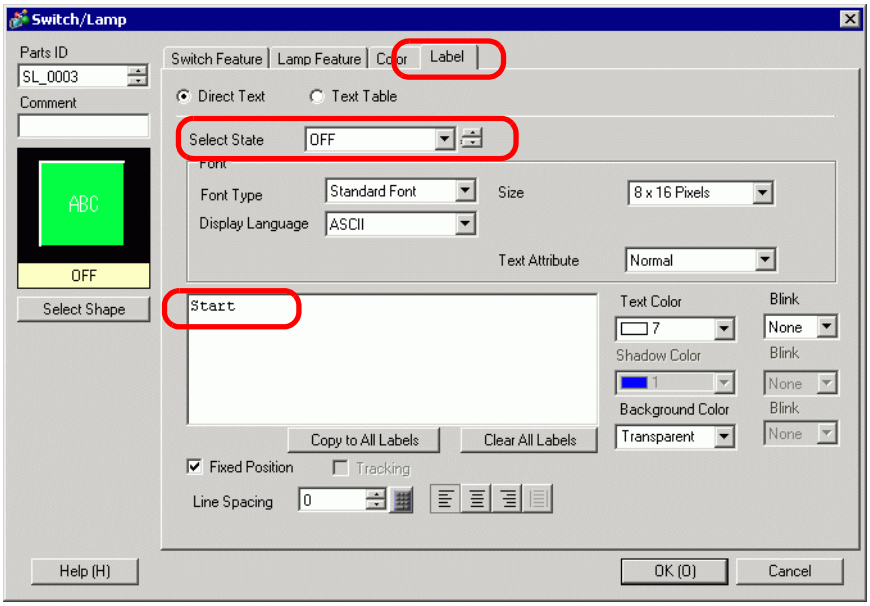
13 Click ▲▼ in [Select State] to select ON, and set the color of the switch for the ON state.



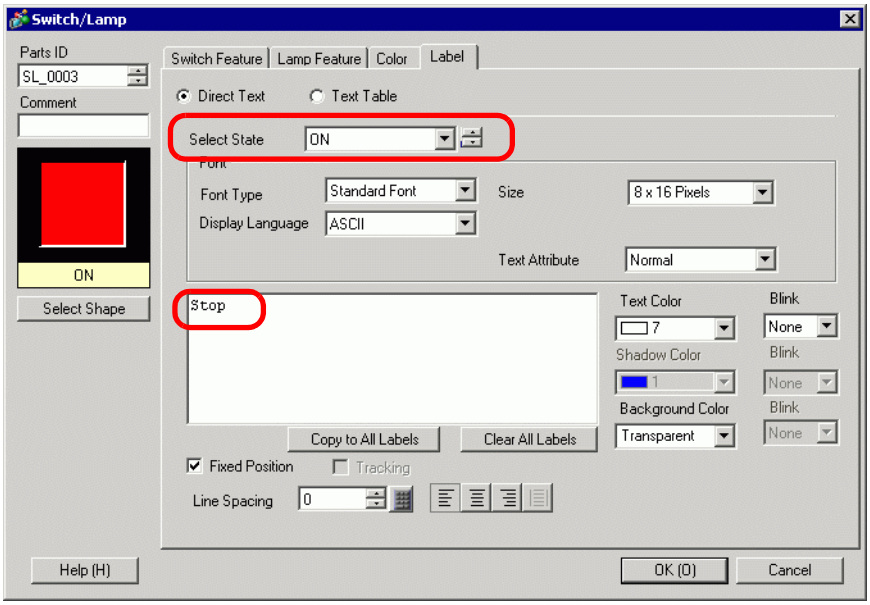
NOTE

- You cannot edit the color for the Switch/Lamp menu image parts.
- To change the palette in the color code order, click the color code button under the palette.

14 Select the [Label] tab. Click [...] in [Select State] to select OFF, and input the text to be displayed on the switch in the OFF state. (For example, START)



15 Click [...] in [Select State] to select ON and input the text to be displayed on the switch in the ON state. (For example, STOP)



NOTE

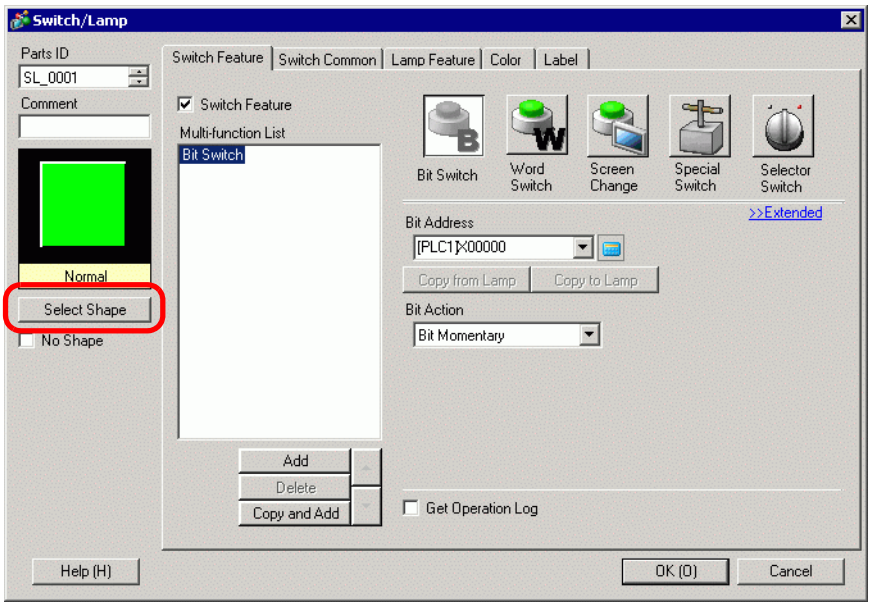
- Select the switch and press [F2] key, and you can directly edit the text on the label.

16 Click [OK] when all the settings are complete.

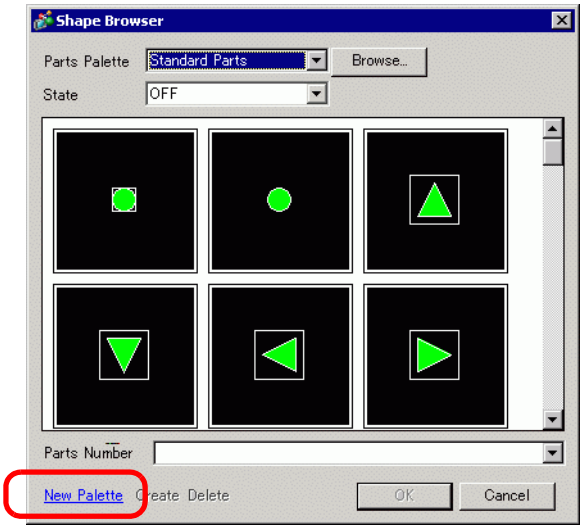
8.6.2 Creating Your Own Parts

Register new images for parts.

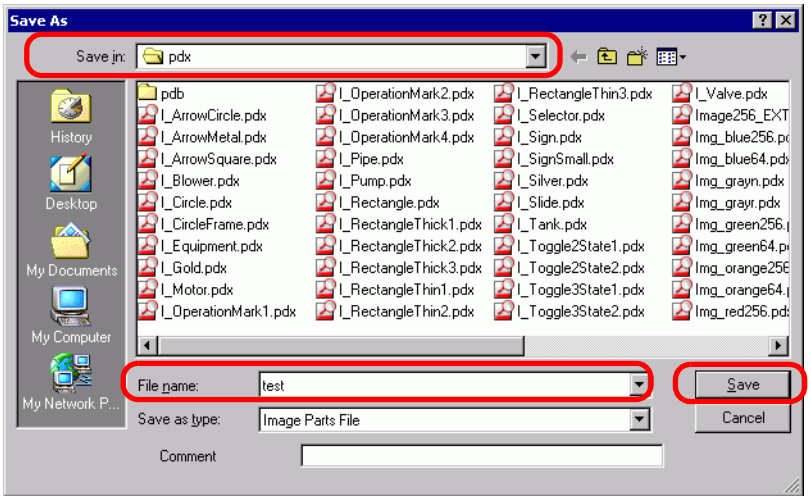
1 Double-click the part for which you want to register a new image, and the following dialog box will appear. Click [Select Shape], (For example, switch)



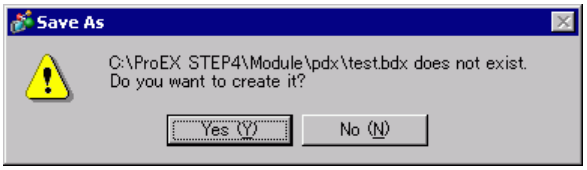
2 The [Shape Browser] dialog box will appear. Click [New Palette].



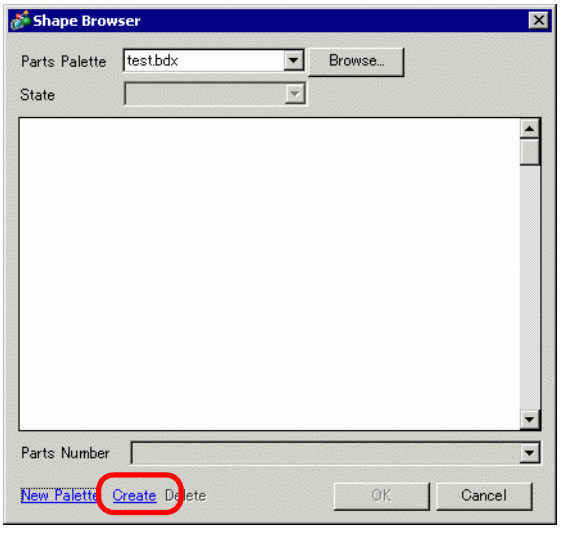
3 The [Save As] dialog box will appear. Define the [Location (I)] and [File Name (N)] of the new part palette you and click [Save (S)].



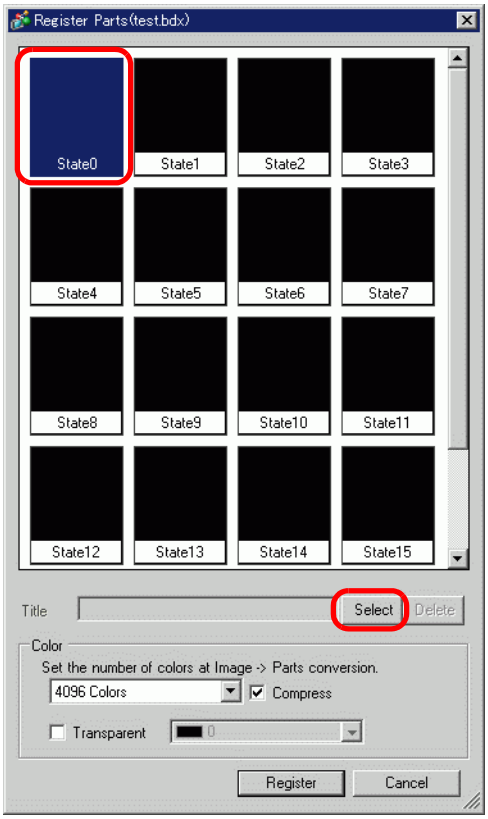
4 When the following message appears, click [Yes (Y)].



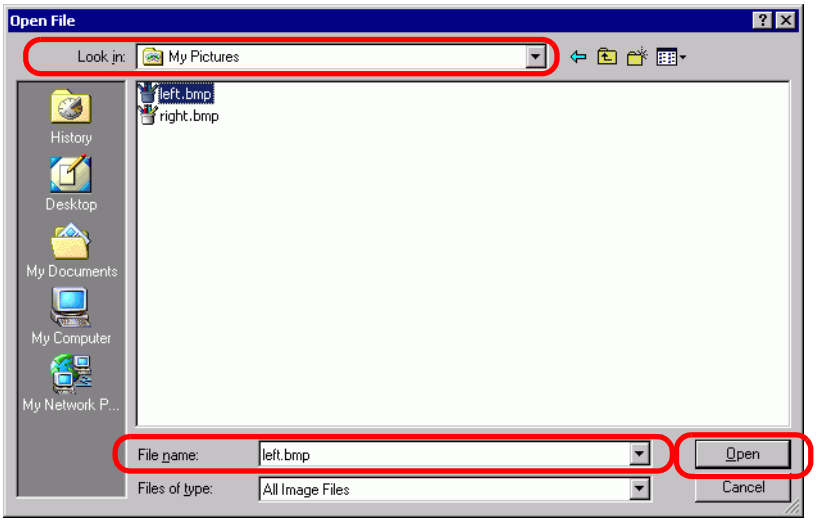
5 The newly registered [Shape Browser] dialog box will appear. Click [Create].



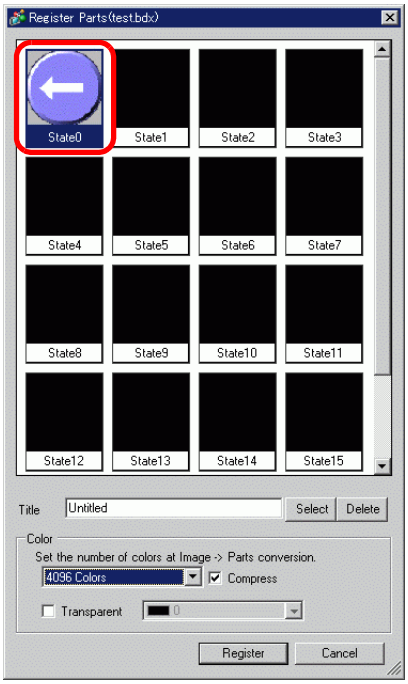
6 The [Register Part] dialog box will appear. Select [State 0], and click [Select].



7 When the [Open File] dialog box appears, navigate to the image location [Look In], select the file [File Name] and [Look in] and [File name] and click [Open].



8 The image will be registered in the [Register Part] dialog box [State 0].



9 If necessary, set the part number and number of colors for the image to register in [Title] and [Color Settings], and click [Register], to complete the process.

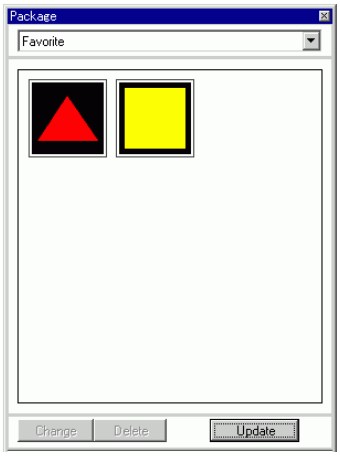
NOTE

- You can use the [Parts Toolbox] ON/OFF options to view Switches, Lamps, and Key parts in [State 0] (OFF) and [State 1] (ON).
- To select the registered image for the part, open the Parts dialog box and click [Select Shape]. In the [Shape Browser] dialog box, from the [Parts Palette] list select a palette to display its registered images. Select the appropriate image and click [OK].
- If you click "Create" while a previously registered part is selected, you can edit that part image. To create a new image, click the "Create" button while no previously registered part is selected.
- Image parts can be registered with a maximum size of 160 x 160 dots.
- Parts which use registered images can cause large project file sizes. It is recommended you set [Compress] in the [Color].
- You can register up to 200 image parts in a single parts palette file.
- Image parts that have been enlarged or reduced may display differently on the GP and in Pro-EX.
- When the registered image size is different depending on the state, the larger image will remain the same, and the smaller image will be enlarged.
- You cannot register or delete a previously-prepared PDX file.
- The types of image file that can be registered to a part are BMP, JPEG, DPD, and PNG.

8.6.3 Registering Frequently Used Parts as Your Favorites

You can register frequently used parts in the [Package] window's [Favorites] list.
You can also combine multiple objects together for registration.

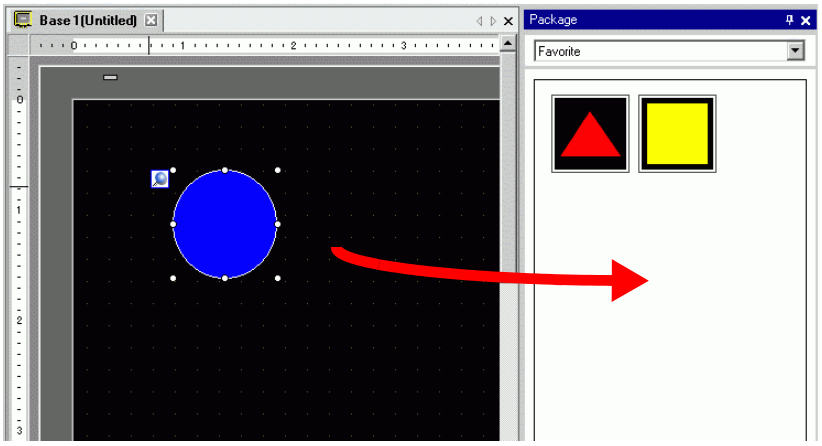
1 Open the [Package] window and select the [Favorite] package.



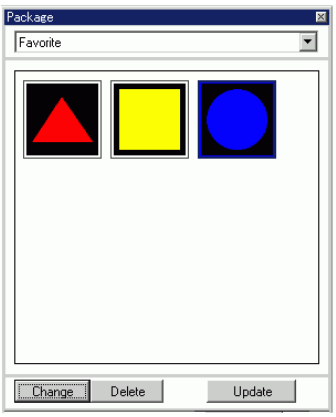
NOTE

- To display the [Package] window, on the [View (V)] menu, point to [Work Space (W)] and then click [Package (K)].
- After the application is just installed, opening the [Package] window displays the [Favorite] package. The next time the application is started, the [Package] window displays the last-used package.

2 Select the figure to register, and drag it to the [Package] window.



3 Package registration is complete.



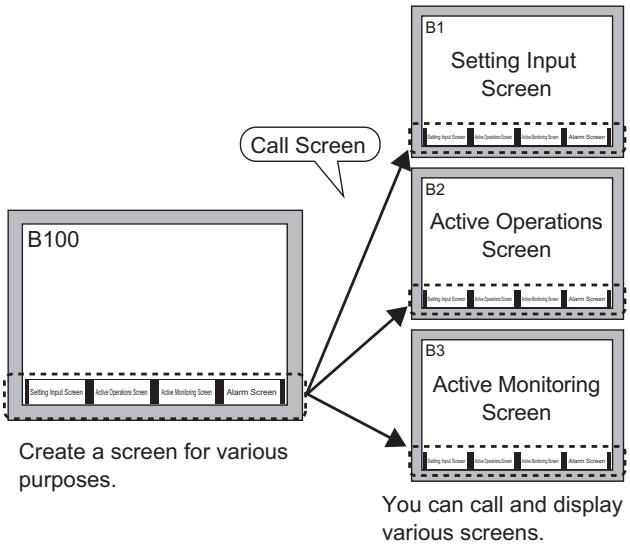
NOTE

- To register the figure to a separate package, in the [Package List] dialog box, select New and create a new package.

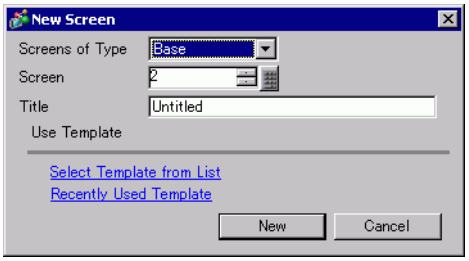
☞ "8.8.2 Registering Pictures in the Package" (page 8-61)

8.7 Using a Screen Multiple Times

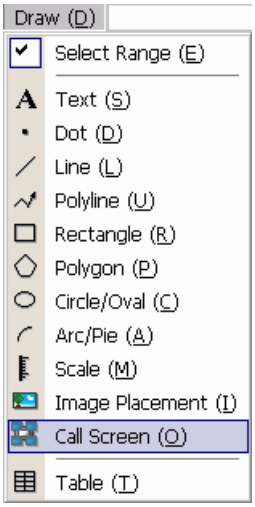
8.7.1 Setup Procedure



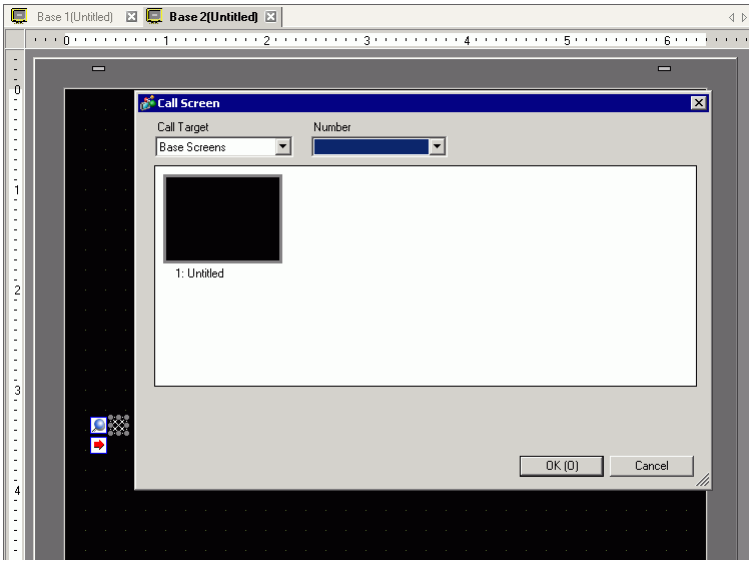
1 From the [Screen (S)] menu, select [New Screen (N)]. The following [New Screen] dialog box will appear. Click [New] to create a new base screen. (For example, Base Screen 2)



2 From the [Draw (D)] menu, select [Call Screen (O)] or click  .



3 When drag onto the created screen, a dashed line displays and the [Call Screen] dialog box appears.



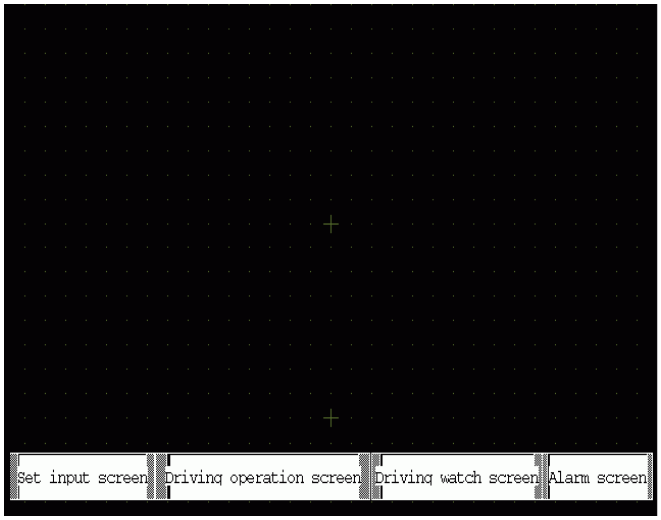
4 Select the target image from [Call Target].

Base Screen	Previously created base screens will display.
Image (Display Unit)	The image data registered in "Image Registration" will display.
Image (CF)	The CF-card image data registered in "Image Registration" will display.
Mark	Displays registered marks in "Mark Registration".
Keypad	The keypads registered in "Keypad Registration" will display.

NOTE

- When you call a [Base Screen], call and place it in the center of the screen.

5 Select an image and click [OK] to display the designated image.



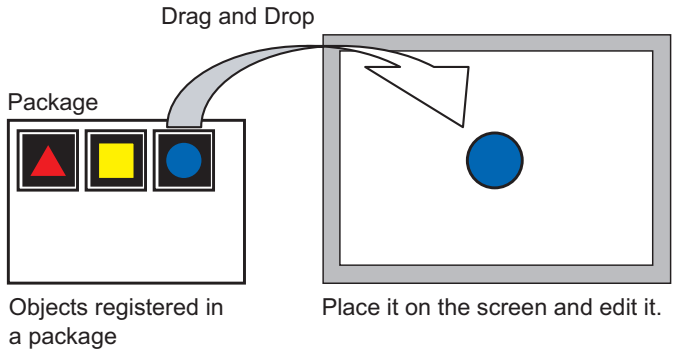
NOTE

- After drawing a [Call Screen] object, on the top left corner of the object, below the fixed pin, the jump icon becomes available. Click this icon to load the called screen. This feature is convenient for checking and editing screens.

8.8 Editing a Picture on Another Screen

8.8.1 Placing Graphics Registered in a Package

You can place graphics registered in the package by dragging and dropping on the screen.

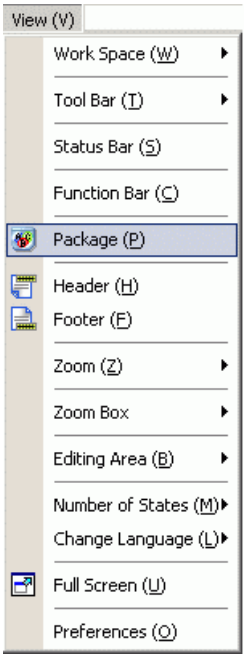


NOTE

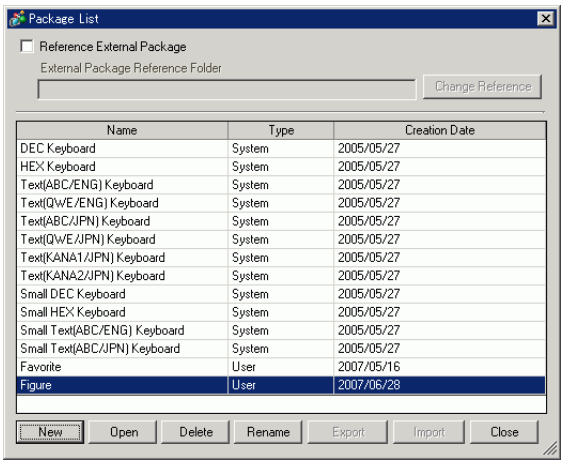
- You can load and browse the packages registered on other computers or servers.

☞"8.13.2 Package List Setup Guide" (page 8-95)

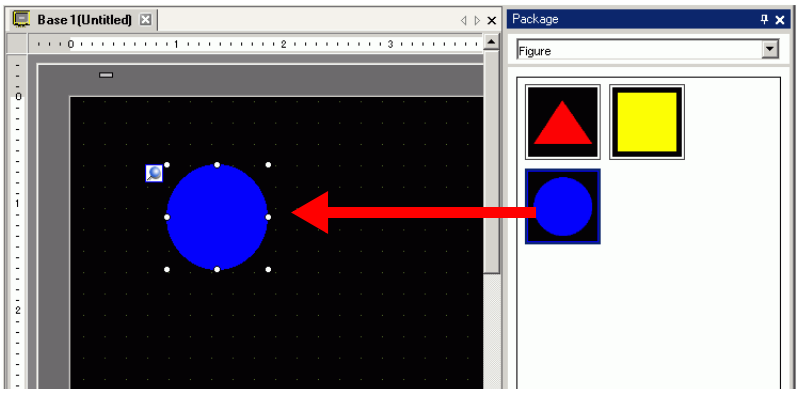
1 Displays registered shape lists. From the [View (V)] menu, select [Package (P)] or click  .



2 In the [Package List] dialog box, select the package with the shape you want, and click [Open]. (For example, figure)



3 The [Package] dialog box is will appear. Select a picture and drag it to the drawing screen to place it.



8.8.2 Registering Pictures in the Package

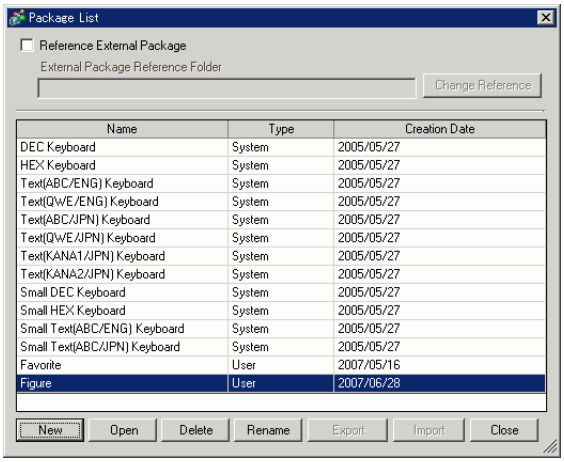
You can register a created object. You can also register a combination of multiple objects.

NOTE

- You can save packages you create to other computers and servers.
  ☞ "8.13.2 Package List Setup Guide" (page 8-95)

1 From the [View (V)] menu, select [Package (P)], or click  .

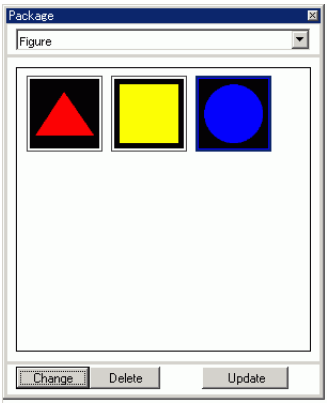
2 In the [Package] dialog box, select the package name to register and click [Open]. (For example, figure)



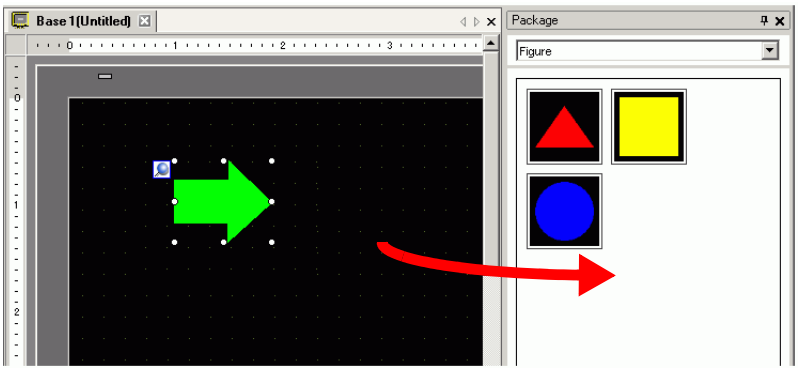
NOTE

- To register pictures in a new package, click [OK].

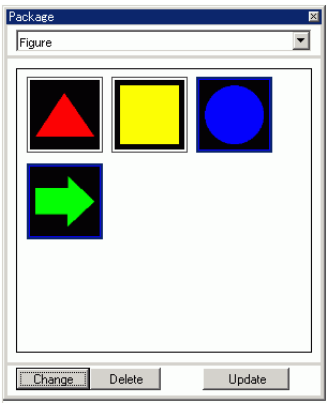
3 A dialog box of the selected [Package] will appear.



4 Select the figure to be registered and drag to the [Package] dialog box.



5 Package registration is complete.

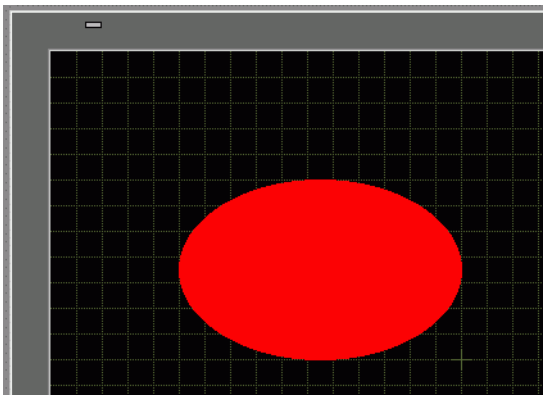


8.9 Creating a Screen from a Template

8.9.1 Setting up Grids

■ Introduction

You can display a grid with dots or lines on the drawing screen for reference when placing multiple objects.
The position of objects is defined by grid points, which makes it easier to adjust the object position.

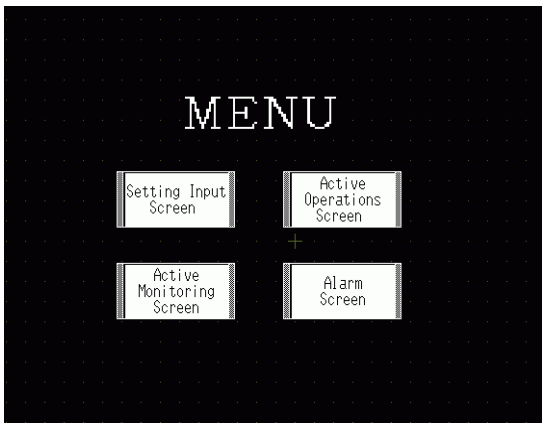


■ Setup Procedure

NOTE

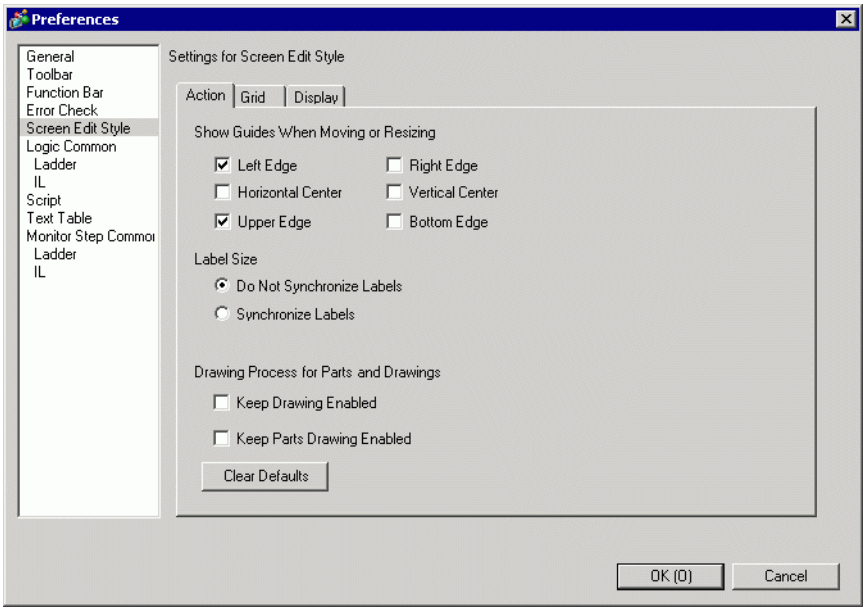
- Please refer to the Settings Guide for details.
☞ "8.13.3 Preferences (Screen Edit Style) Setup Guide" (page 8-97)

Display a lined grid on the drawing screen and set the environment for placing an object along a line.

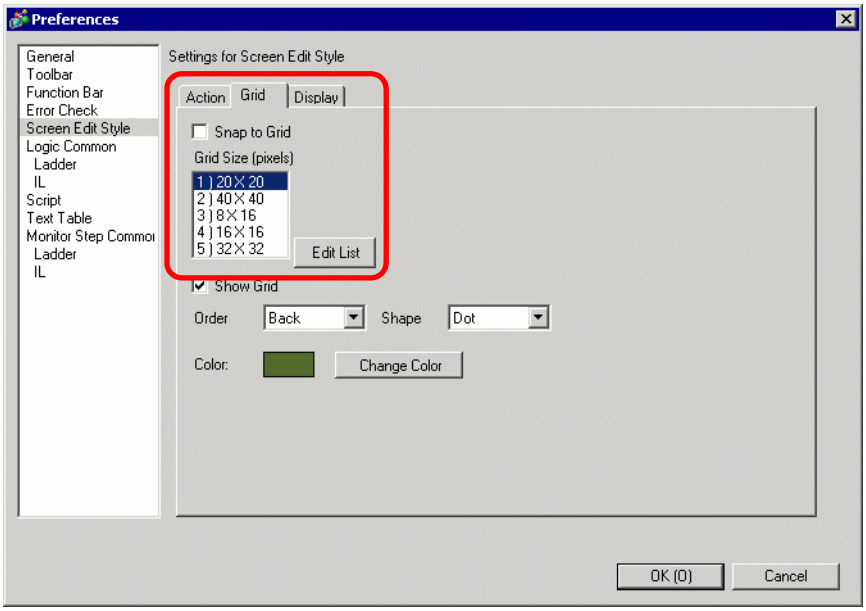


1 From the [View (V)] menu, select [References (O)].

2 The [Preferences] dialog box will appear. Select [Screen Edit Style].



3 Set up objects so they align with grid points when drawing or editing. In the [Grid] tab, select the [Snap to Grid] check box. In the [Grid Size (pixels)] list, select the grid spacing. (For example, 20 x 20).

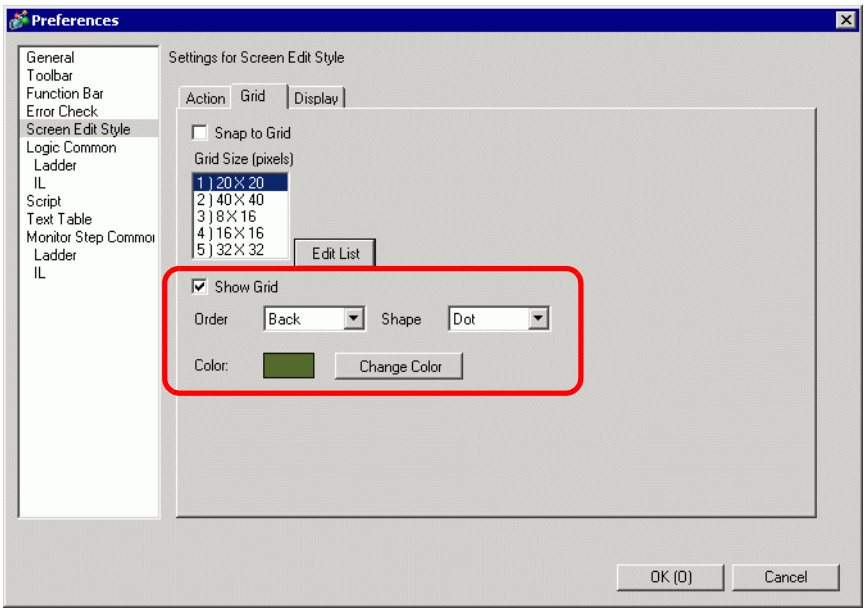


NOTE

- If you cannot find the desired [Grid Size], click [Edit List] to define a customized grid size.

☞ "8.13.3 Preferences (Screen Edit Style) Setup Guide" (page 8-97)

4 Defines the grid as either dots or lines. Select the [Show Grid] check box. Specify the display order and grid shape, and then click [OK].
(For example, [Order] Back, [Shape] Grid)

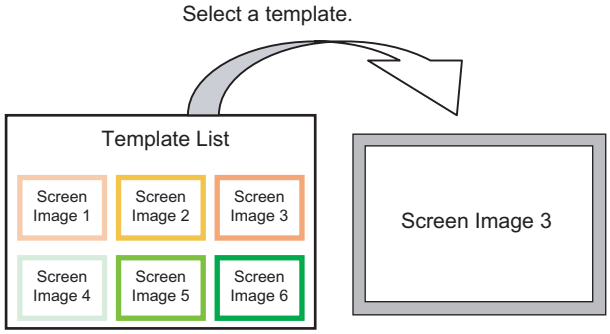


NOTE

- Click [Change Color] to select the grid color from the color palette.

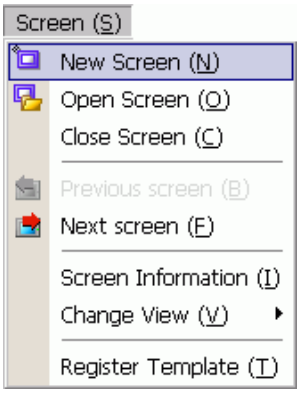
8.9.2 Selecting a Screen from Templates

You can reduce the number of drawing processes by editing in a screen registered in the templates.

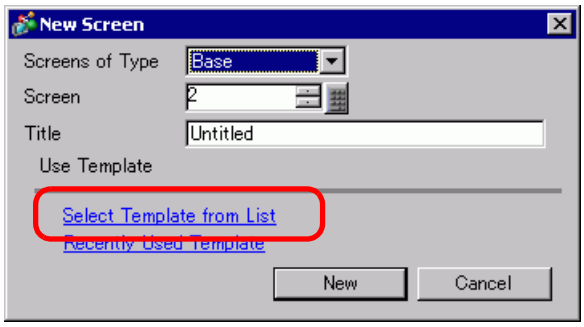


■ Placing a Screen Saved as a Template

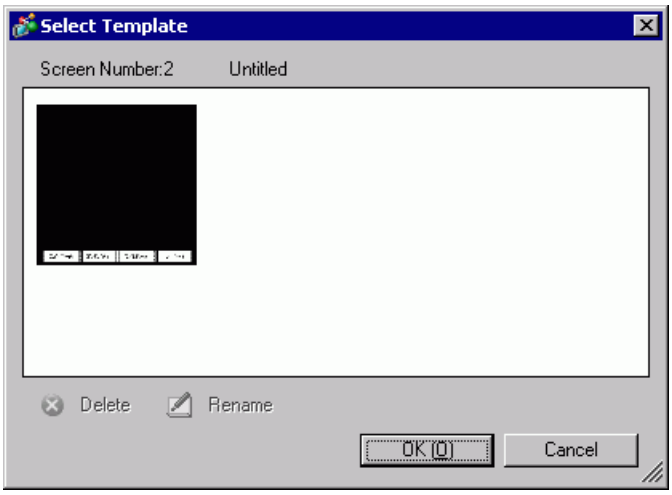
1 From the [Screen (S)] menu, select [New Screen (N)].



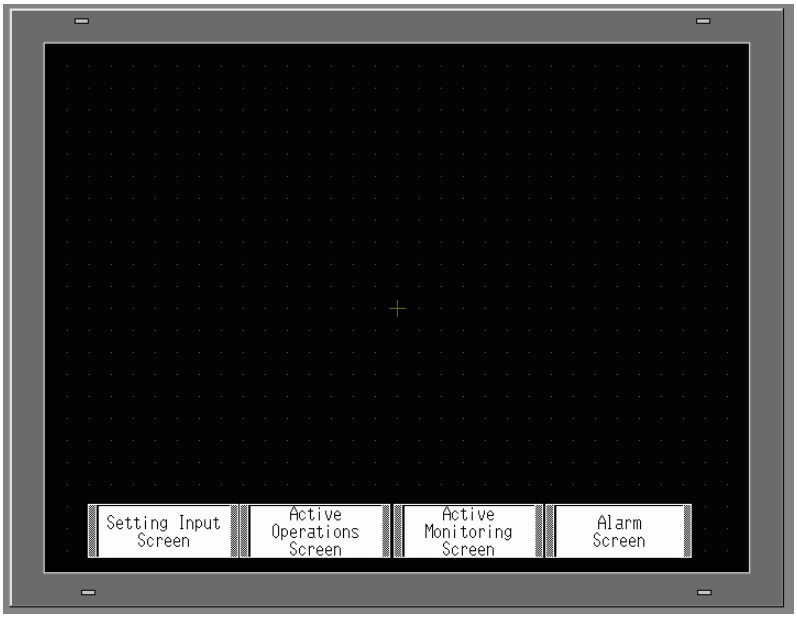
2 The following [New Screen] dialog box will appear. Click [Select Template from List].



3 The registered templates display. Select a screen you want to use and click [OK].

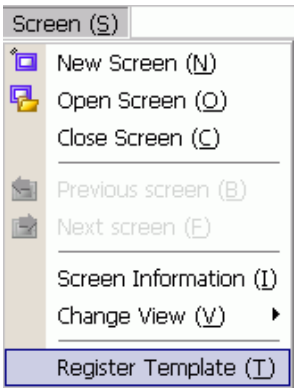


4 The template is placed.



■ Save as a Template

You can register created screens as templates and use them again. To make a screen into a template, from the [Screen (S)] menu,
select [Register Template (T)].



8.10 Pasting an Image

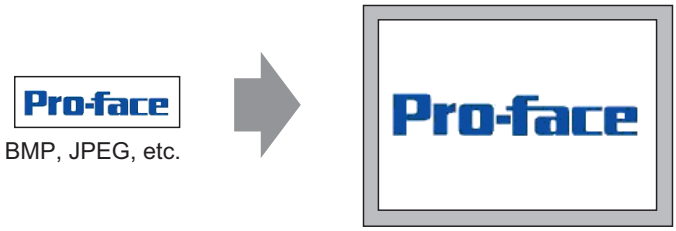
8.10.1 Target Image

Image data that can be displayed on the GP screen is as follows.

Image	Pasting Method	Description
Bitmap, JPEG, DPD, PNG File	Directly placing an image on the screen	Directly pastes BMP, JPEG, DPD, or PNG on the screen. **NOTE** • In using the same image on the multiple screens, you can hold down the screen capacity by registering the original image in "Image". • You can call the base screen with an image already placed onto another base screen. ☞ "8.10.2 Pasting BMP/JPEG Procedure ■ Paste Images Directly on the Screen" (page 8-70)
	Registering an image in "Image (Display)" and using Call Screen	Registers a BMP, JPEG, DPD, or PNG file as the "Image" and displays it on the base screen by using Call Screen. **NOTE** • You can improve screen capacity by registering an image file in "Image" and using the same image on the multiple screens. ☞ "8.10.2 Pasting BMP/JPEG Procedure ■ Registering and Using Images" (page 8-73) ☞ "8.7 Using a Screen Multiple Times" (page 8-56)
	Registering an image in "Image (CF)" and using Call Screen	Calls and displays the image data stored in the CF Card on the base screen. ☞ "8.7 Using a Screen Multiple Times" (page 8-56)
	Calling the base screen's image	Calls and displays the base screen's already created image data on the base screen. ☞ "8.7 Using a Screen Multiple Times" (page 8-56)
Mark	Registered "Mark registration" images.	Calls and displays the dotted image data registered in "Mark" on the base screen. ☞ "8.11 Drawing a Detailed Picture" (page 8-75)
Keypad	Registered "Keypad" images.	Calls and displays the registered keypad on the base screen. ☞ "8.7 Using a Screen Multiple Times" (page 8-56) **NOTE** • You can call one keypad from a [Call Screen] part on a Base Screen.

8.10.2 Pasting BMP/JPEG Procedure

■ Paste Images Directly on the Screen

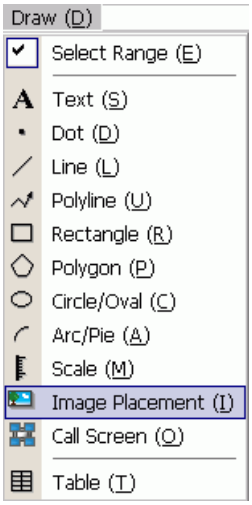


NOTE

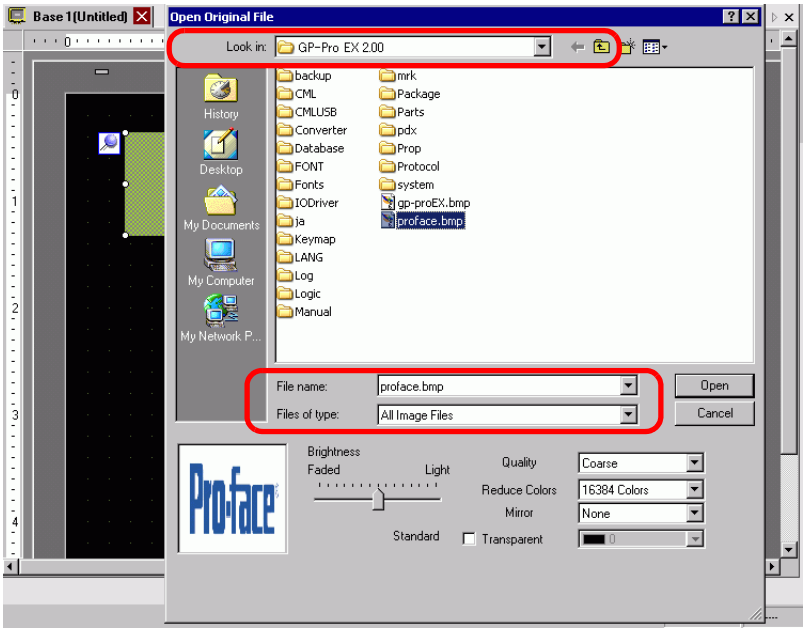
- You can select a particular color only from the used colors and change that color to the specified hue. For the setting method, refer to the following.

☞"20.7.1 [Animation Settings] Settings Guide u Hue Animation" (page 20-31)

1 From the [Draw (D)] menu, select [Image Placement (I)] or click  .



2 Click the screen drawing area to place the image part. Double-click the object to open its dialog box and define the [Files of type] and [File name] of the image to paste.



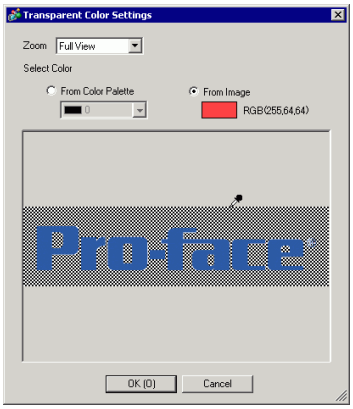
NOTE

- You can also copy bitmaps on the PC. Click the GP-Pro EX drawing area, and then from the [Edit] menu, select [Paste]. After selecting the [Paste] command, the dialog box above displays.

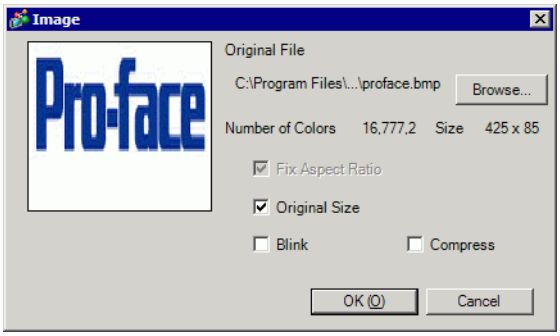
3 Adjust the image quality and number of colors, and click [Open].

NOTE

- Select [Transparent] check box to enable the [Settings] button. Click the button, and in the [Transparent Color Settings] dialog box, use a dropper to select the color on the image to make transparent. This feature is useful for making the background color transparent on pasted images.



4 The following [Image Registration] dialog box will appear. Set the size and blink rate for the image to paste.



NOTE

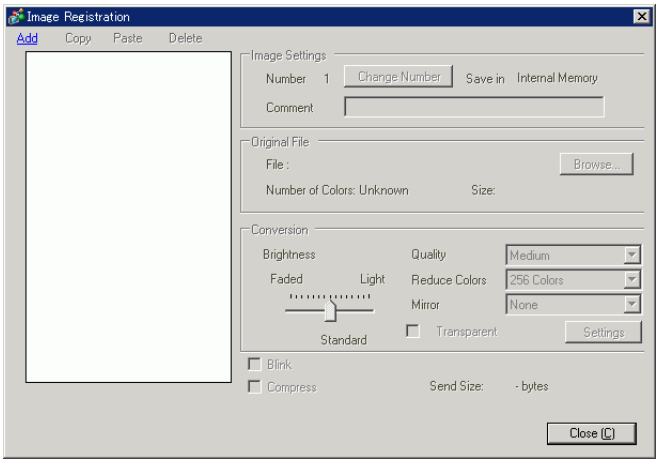
- When [Original Size] is selected, an image is placed with the same size as the original image. You cannot change the image size after placing it.
- When [Fix Aspect Ratio] is selected, an image is placed with the original image horizontal to vertical ratio fixed.

5 Click [OK] and the designated image will be placed.

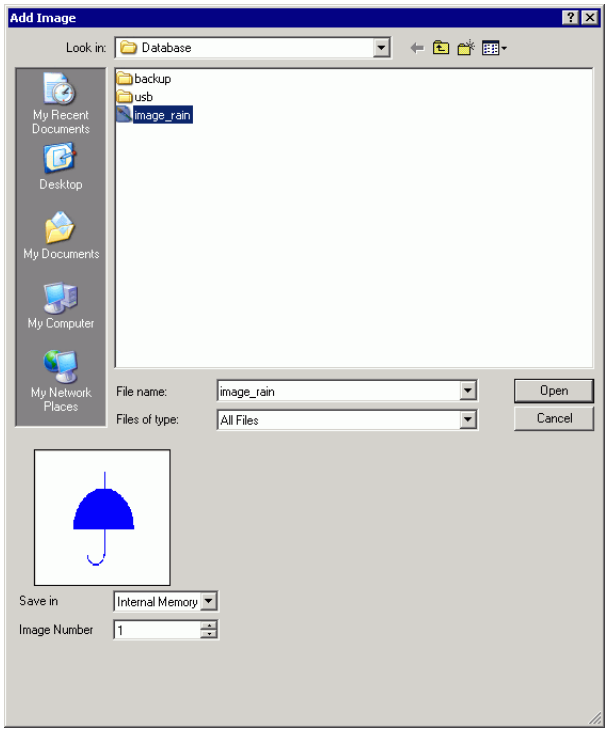
■ Registering and Using Images

Using Image Registration and using its images, you can reduce the volume of image data.

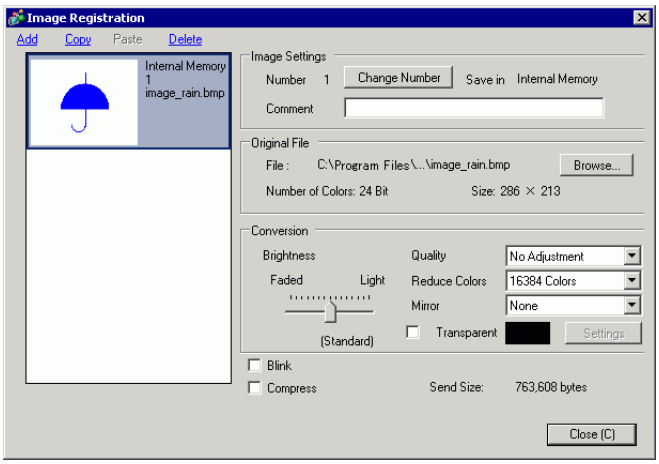
1 From the [Common Settings (R)] menu, select [Image Registration (I)], or click to display the following dialog box.



2 Click [Add]. The [Add Image] dialog box appears. Select a graphic and click [Open].

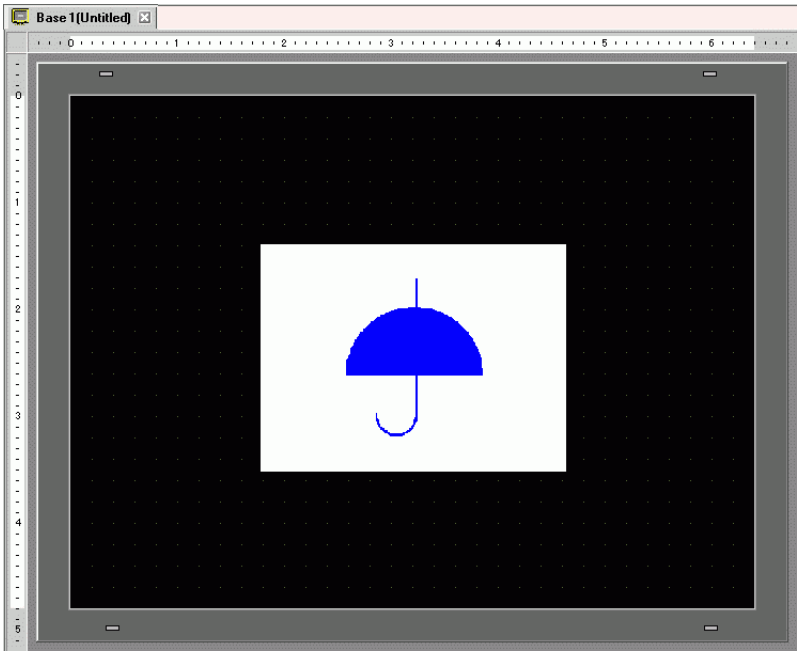


3 If required, add comments to images, set the brightness or colors, and then click [Close]. Image registration is complete.



4 The registered image can be loaded to the screen. The following describes the steps.

☞ "8.7 Using a Screen Multiple Times" (page 8-56)

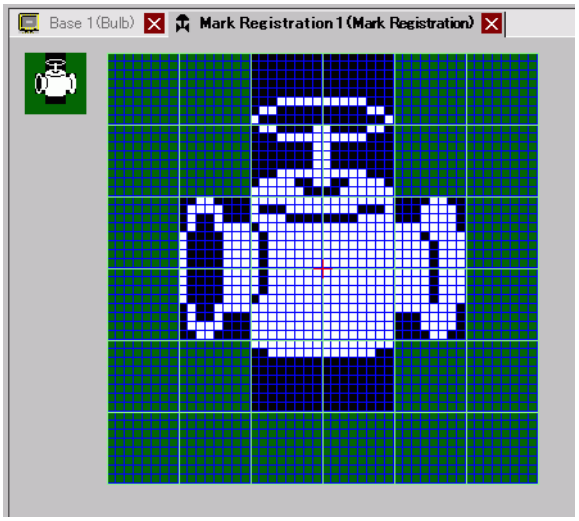


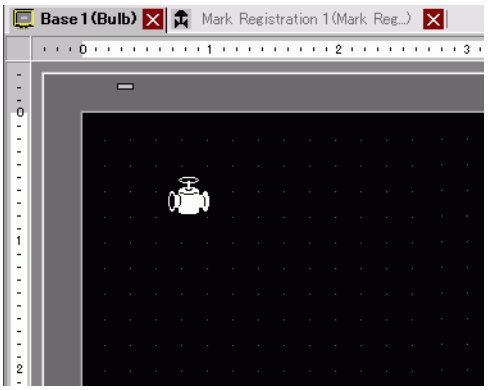
8.11 Drawing a Detailed Picture

8.11.1 Drawing a Valve

■ Introduction

You can call and display image data created in a Mark to the base screen. In [Mark Registration], you can use dots to draw your own symbols or pictures.





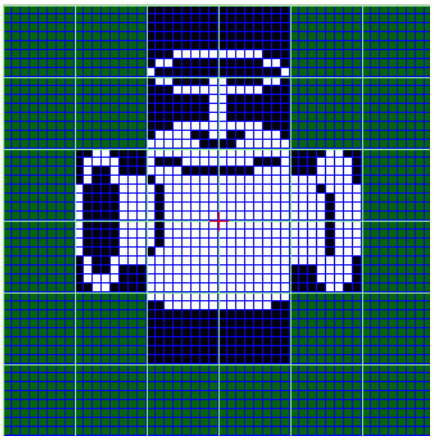
■ Setup Procedure

NOTE

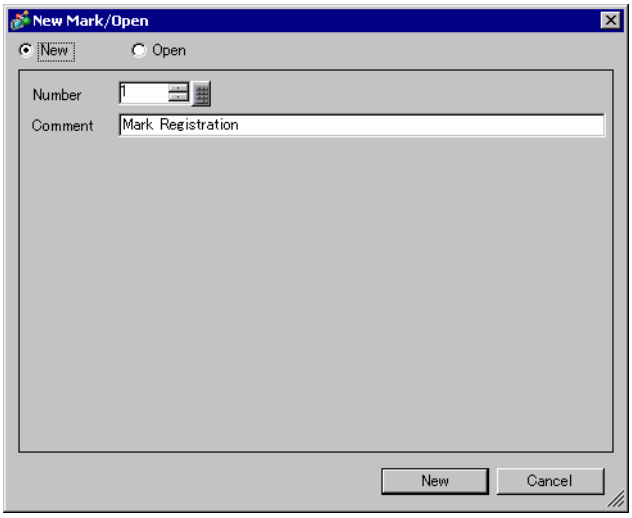
- Please refer to the Settings Guide for details.

☞ "8.13.4 Common Mark Registration Settings Guide" (page 8-102)

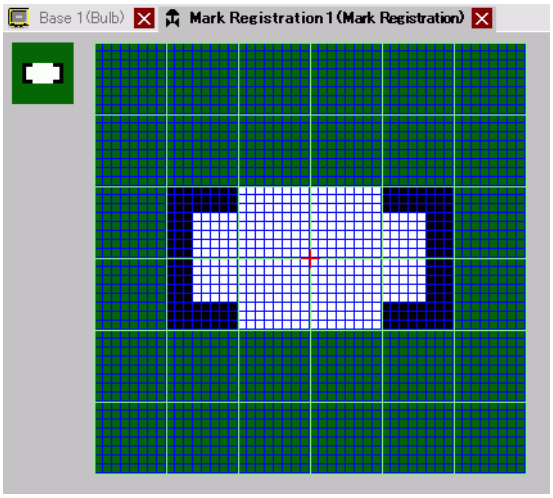
To draw a valve with dots:



1 From the [Common Settings (R)] menu, click [Mark Registration (M)]. Select [New] and enter the [Number] and [Comment] and click [New]. (For example, [Number]=1, [Comment]=Mark)



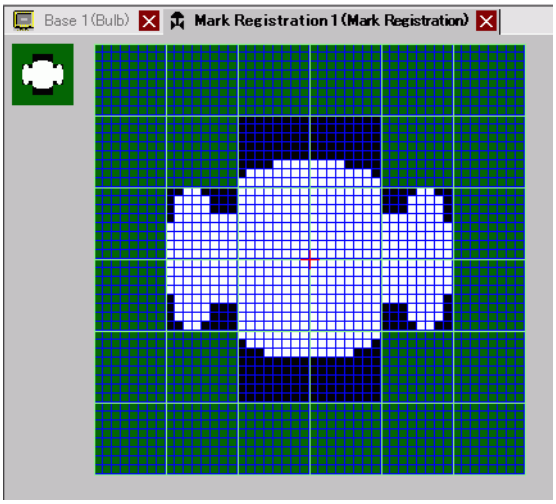
2 Create an outline of the valve body with a rectangle. From the [Draw (D)] menu, select [Filled Rectangle]. Place after dragging to adjust the size and location of the rectangle.



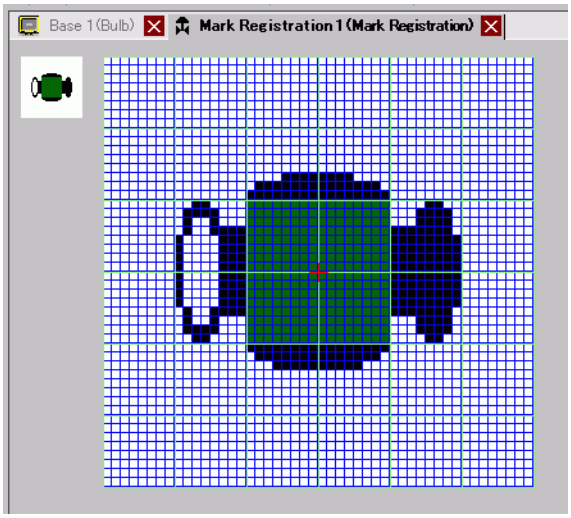
NOTE

- From the [Edit] menu, click [Undo (U)] to undo the command.

3 Create a valve opening with an ellipse. From the [Draw (D)] menu, select [Filled Circle/Ellipse (C)] and place the object after adjusting the size and location of the ellipse.

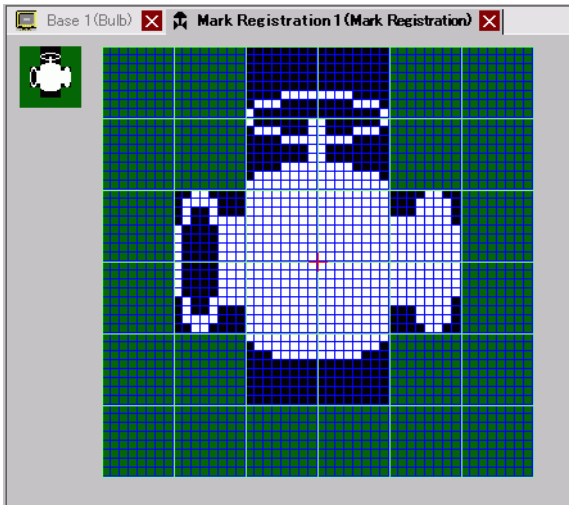


4 Create an outline of the valve opening using [Color Inversion]. From the [Edit] menu, select [Color Inversion (Y)] to mirror the dot on the campus. In this state, from the [Draw (D)] menu, select [Filled Circle/Ellipse (C)] to place after adjusting the size and location of the ellipse. After placement, click [Color Inversion (Y)] again to return to the campus state.

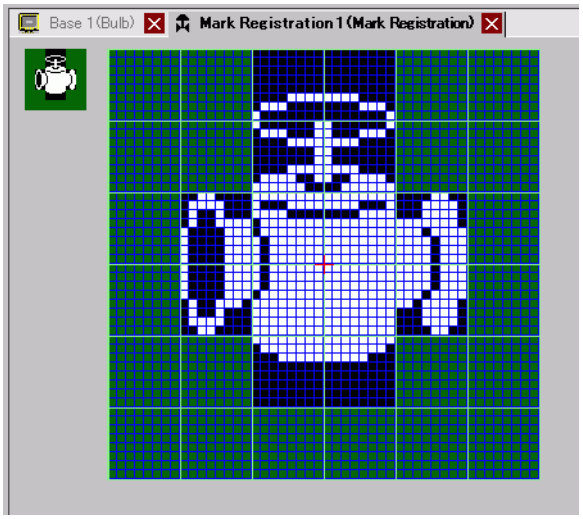


5 Create the handle part with an ellipse and rectangle. From the [Draw] menu, select [Circle/Ellipse (C)] or [Filled Rectangle (T)].

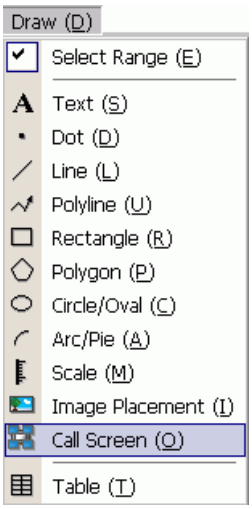
Click [Filled Rectangle (T)] and place the object after adjusting the size and location of the oval or rectangle.



6 Fine tune each part using dots. From the [Draw (D)] menu, select [Dot (D)]. To draw, you can click to turn ON (white) and right-click to turn OFF (black).



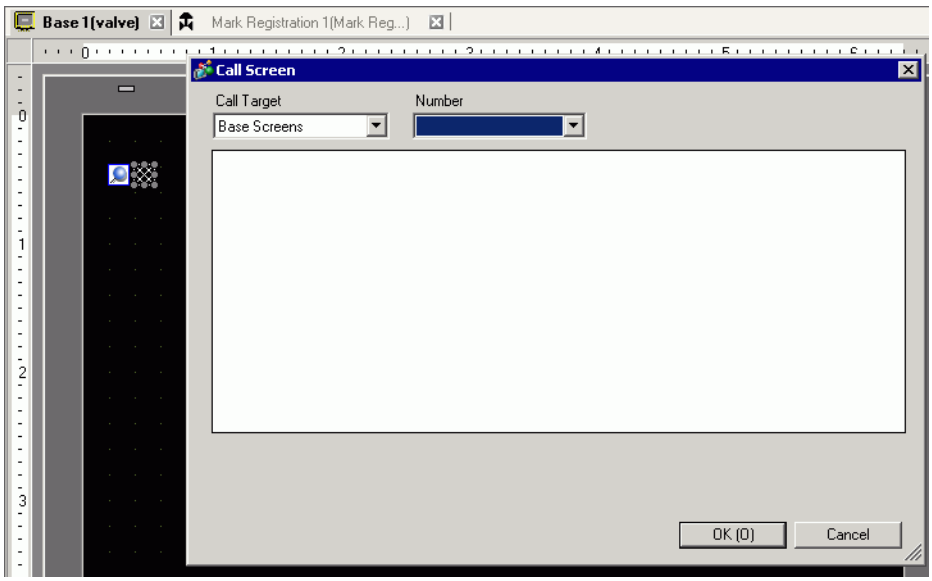
7 Click the [Base 1] tab and open a base screen to place the mark. From the [Draw (D)] menu, click [Call Screen (O)].



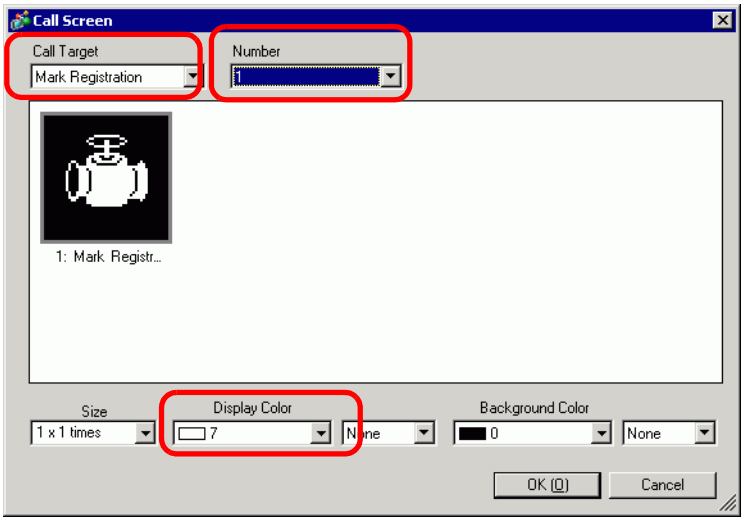
NOTE

- From the [Screen (S)] menu, select [New Screen (N)] to create a new base screen.

8 Click the drawing screen and the dotted border is placed and the [Call Screen] dialog box will appear.



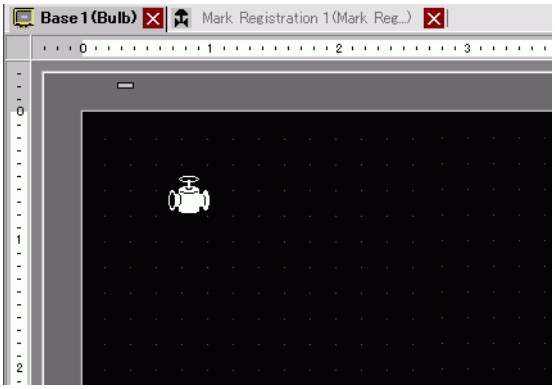
9 Select [Mark Registration] from [Call Target] and select the mark number registered in [Number]. (For example, 1)



NOTE

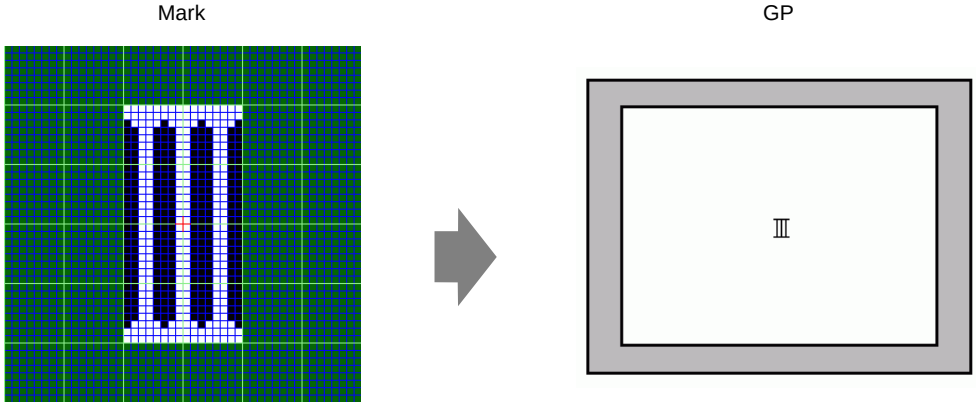
- You can designate the display color of the created mark.

10 Select an image and click [OK] to display the designated image.



8.11.2 Displaying a Character External to the Character Code

Draw an external character with dots in Mark. You can display registered external characters on the screen.
You can register external characters only when selecting the ASCII standard font (bitmap font) and the font size of 8 x 16 dots or larger.

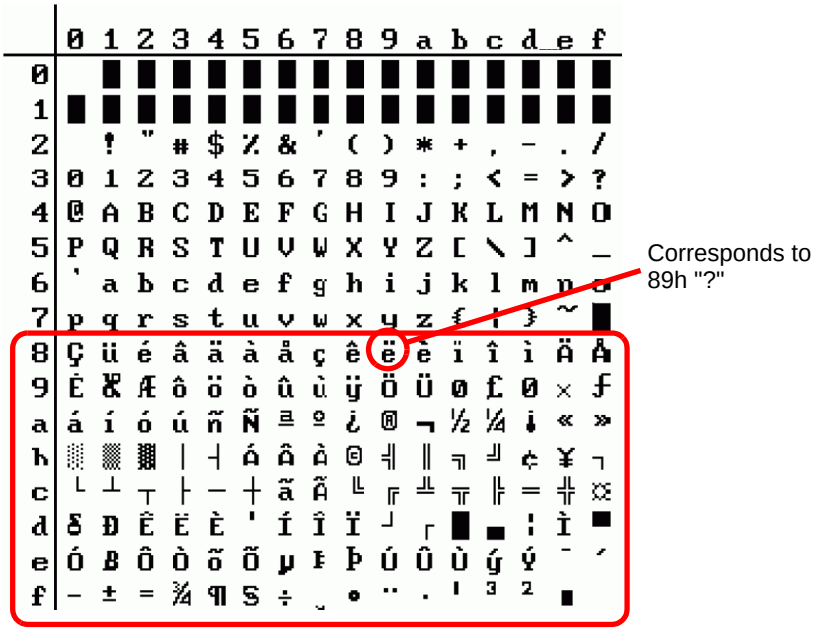


■ Setup Procedure

You can display the created character on the screen by replacing a character in the frame in the character code table with it. The following is the procedure for replacing the character "?" (89h) in the character code table (Code Page 850) with the character "III", which was created with dots, and displaying the character "III" on the GP screen.

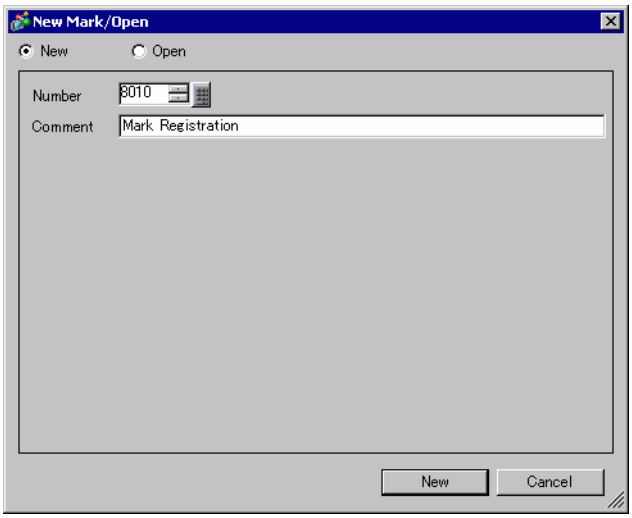
◆ Character Code Table

The following is the character code table of Code Page 850, the character code used on the GP.

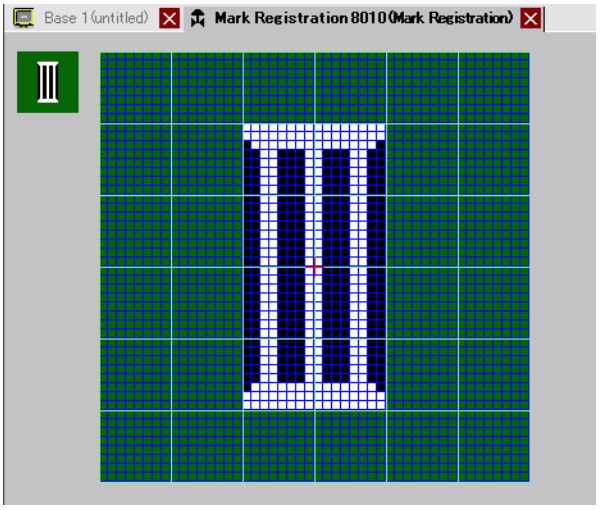


1 From the [Common Settings (R)] menu, click [Mark Registration (M)]. Select [New], and enter the mark number "8010" in the [Number] which corresponds to the character ? (89h) in the character code table, and click [New]

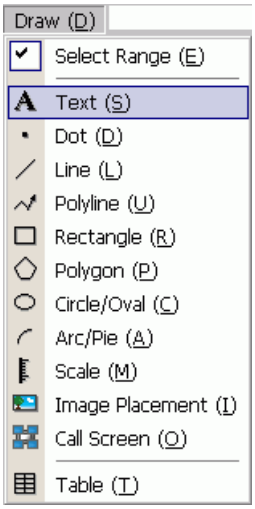
☞ " ■ Input Code Table" (page 8-85)



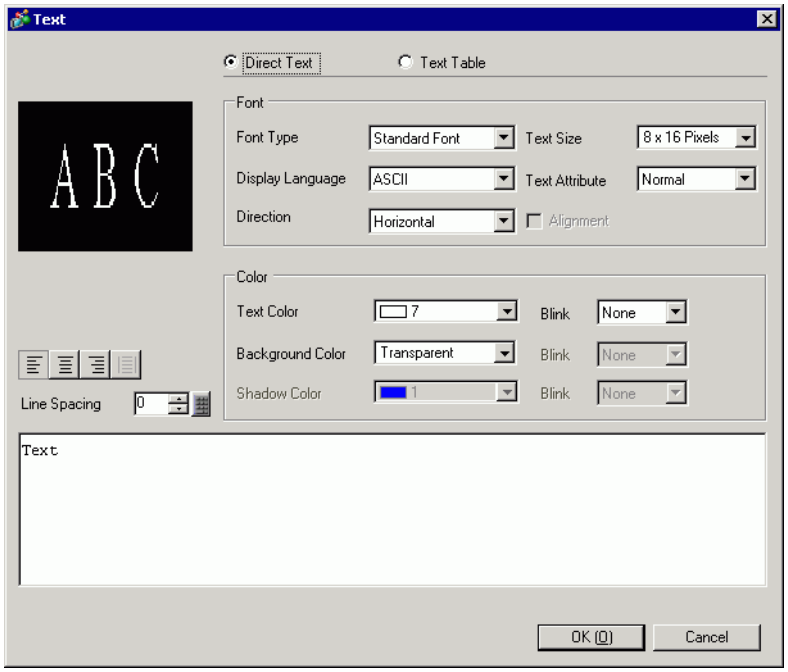
2 Draw a special character. Create "III" to display on the screen.



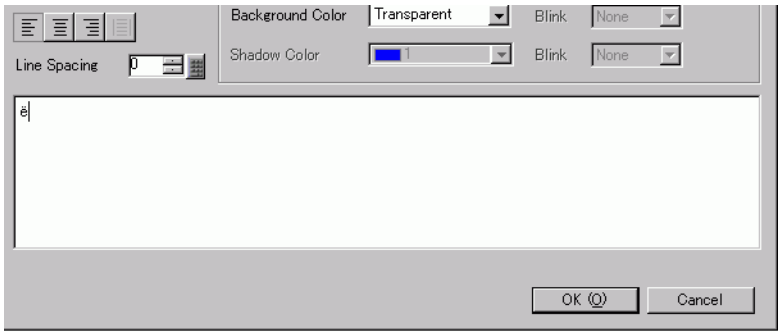
3 Click the [Base 1] tab, select the [Draw (D)] menu, and then select [Text (S)].



4 Place the text on the screen, and double-click it to open the [Text] dialog box.



5 In the text input area, while holding down the [Alt] key, type the [Input Code] "0235", which corresponds to text code (89h). Upon releasing the [Alt] key, ? is input. Click [OK].
☞ " ■ Input Code Table" (page 8-85)



NOTE

- The character placed on the drawing screen displays as "?". However, on the screen display transferred to the GP, "III" will display.

■ How to Display Characters Whose Character Code is Not Listed

The marks drawn for the mark numbers from 8001 to 8128 are treated as the characters of the character codes from 80h to FFh. For example, 8001 corresponds to 80h, and 8002 to 81h. If you create marks for these mark numbers, they will be registered as external characters. By inputting the input code corresponding to a mark number on the base screen, the character displayed on the base screen displays as a registered external character on the GP.

■ Input Code Table

Mark Number	Text Code Code Page 850	Input Code (Alt + Code)	Mark Number	Text Code Code Page 850	Input Code (Alt + Code)	Mark Number	Text Code Code Page 850	Input Code (Alt + Code)
8001	80h	0199	8049	B0h	0130	8097	E0h	0211
8002	81h	0252	8050	B1h	0131	8098	E1h	0223
8003	82h	0233	8051	B2h	0132	8099	E2h	0212
8004	83h	0226	8052	B3h	0133	8100	E3h	0210
8005	84h	0228	8053	B4h	0134	8101	E4h	0245
8006	85h	0224	8054	B5h	0193	8102	E5h	0213
8007	86h	0229	8055	B6h	0194	8103	E6h	0181
8008	87h	0231	8056	B7h	0192	8104	E7h	0254
8009	88h	0234	8057	B8h	0169	8105	E8h	0222
8010	89h	0235	8058	B9h	0135	8106	E9h	0218
8011	8Ah	0232	8059	BAh	0136	8107	EAh	0219
8012	8Bh	0239	8060	BBh	0137	8108	EBh	0217
8013	8Ch	0238	8061	BCh	0138	8109	ECh	0253
8014	8Dh	0236	8062	BDh	0162	8110	EDh	0221
8015	8Eh	0196	8063	BEh	0165	8111	EEh	0175
8016	8Fh	0197	8064	BFh	0139	8112	EFh	0180
8017	90h	0201	8065	C0h	0140	8113	F0h	0173
8018	91h	0230	8066	C1h	0141	8114	F1h	0177
8019	92h	0198	8067	C2h	0142	8115	F2h	0159
8020	93h	0244	8068	C3h	0143	8116	F3h	0190
8021	94h	0246	8069	C4h	0144	8117	F4h	0182
8022	95h	0242	8070	C5h	0145	8118	F5h	0167
8023	96h	0251	8071	C6h	0227	8119	F6h	0215
8024	97h	0249	8072	C7h	0195	8120	F7h	0184
8025	98h	0255	8073	C8h	0146	8121	F8h	0176
8026	99h	0214	8074	C9h	0147	8122	F9h	0168
8027	9Ah	0220	8075	CAh	0148	8123	FAh	0183
8028	9Bh	0248	8076	CBh	0149	8124	FBh	0185
8029	9Ch	0163	8077	CCh	0150	8125	FCh	0179
8030	9Dh	0216	8078	CDh	0151	8126	FDh	0178
8031	9Eh	0128	8079	CEh	0152	8127	FEh	0247
8032	9Fh	0129	8080	CFh	0164	8128	FFh	0160
8033	A0h	0225	8081	D0h	0240			
8034	A1h	0237	8082	D1h	0208			
8035	A2h	0243	8083	D2h	0202			
8036	A3h	0250	8084	D3h	0203			
8037	A4h	0241	8085	D4h	0200			
8038	A5h	0209	8086	D5h	0153			
8039	A6h	0170	8087	D6h	0205			
8040	A7h	0186	8088	D7h	0206			
8041	A8h	0191	8089	D8h	0207			
8042	A9h	0174	8090	D9h	0154			
8043	AAh	0172	8091	DAh	0155			
8044	ABh	0189	8092	DBh	0156			
8045	ACh	0188	8093	DCh	0157			
8046	ADh	0161	8094	DDh	0166			
8047	AEh	0171	8095	DEh	0204			
8048	AFh	0187	8096	DFh	0158			

8.12 Making an Animated Screen By Controlling Colors and Display of Drawings Animation

8.12.1 Types of Animation That can be Set

NOTE

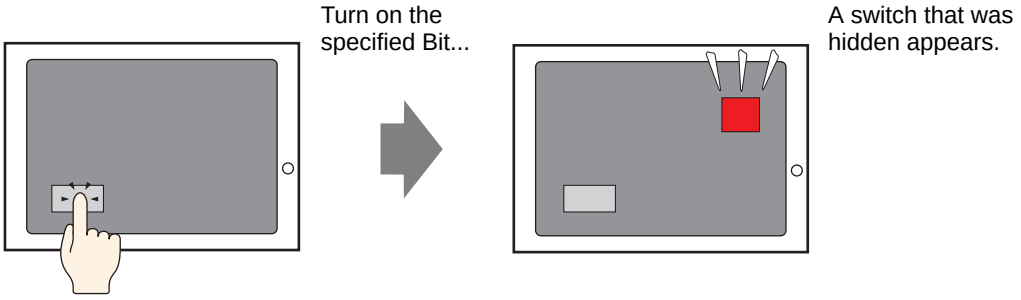
- For more information about the animation feature, please refer to the following.

☞"Chapter 20 Animating Screen Objects", page 20-1

■ Show/Hide of the Drawing

The drawing can be hidden once and displayed again when needed. It can be used also as a security feature such as keeping it normally hidden so that only a particular person can operate it.

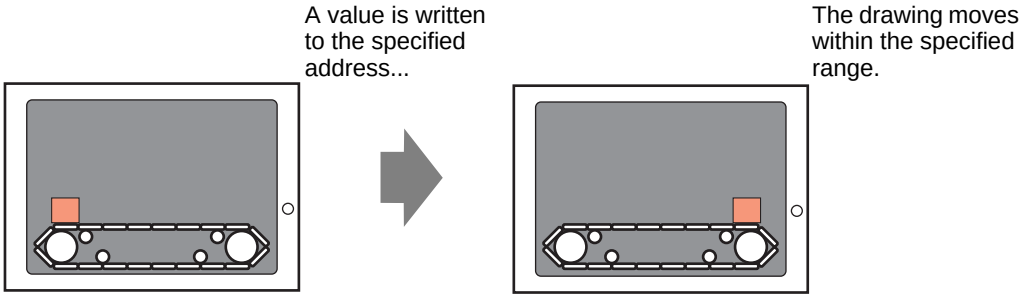
For example:



■ Change the Position of the Drawing

By moving the drawing, changes in actual situations can be displayed on the screen.

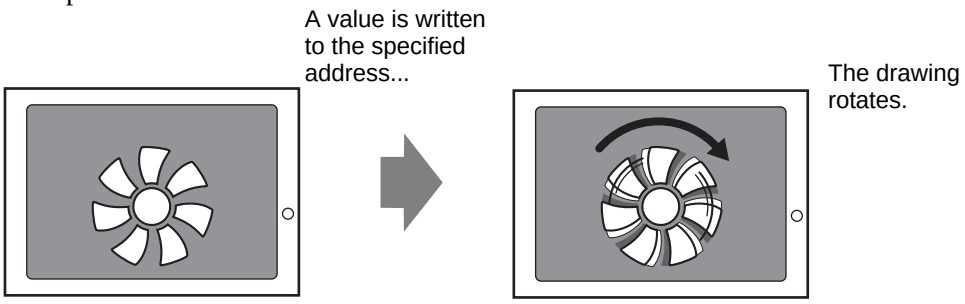
For example:



■ Rotating Drawings

The drawing can be rotated to display rotating actions of equipment such as fans and motors.

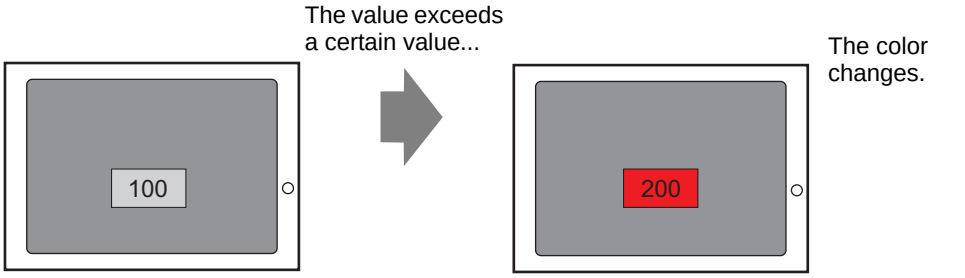
For example:



■ Change the Color of the Drawing

The color of the drawing can be changed at an arbitrary timing. Change the color as the value exceeds a certain value, and when you want to distinguish among error messages.

For example:

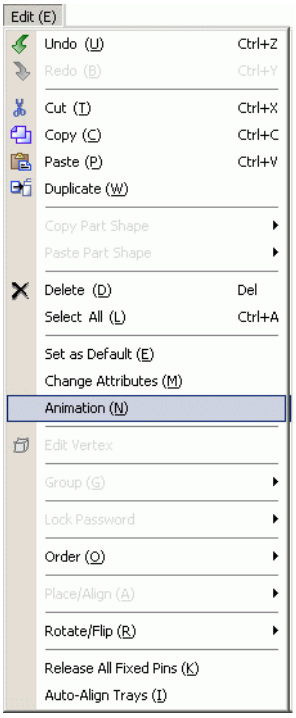


8.12.2 Setup Procedure

NOTE

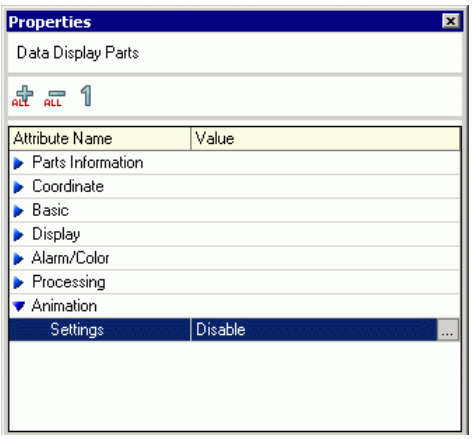
- Please refer to the Animation Settings Guide for details.
☞"20.7 Settings Guide" (page 20-22)

1 Select a drawing for which you want to set the animation, and click [Animation (N)] in the [Edit (E)] menu.

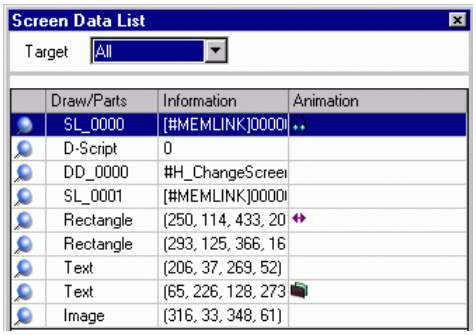


NOTE

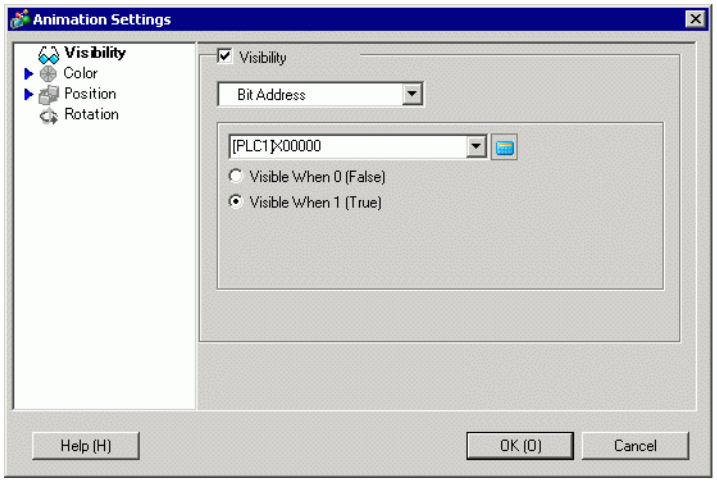
- The animation settings screen can also be displayed as follows.
  •Select a drawing, and click [...] in [Properties] - [Animation].



  •In the [Screen Data List], double-click the [Animation] column of the part you want to edit.



2 The [Animation Settings] dialog box will appear. Select the type of animation from the list on the left of the screen. Set the animation on the right of the screen.



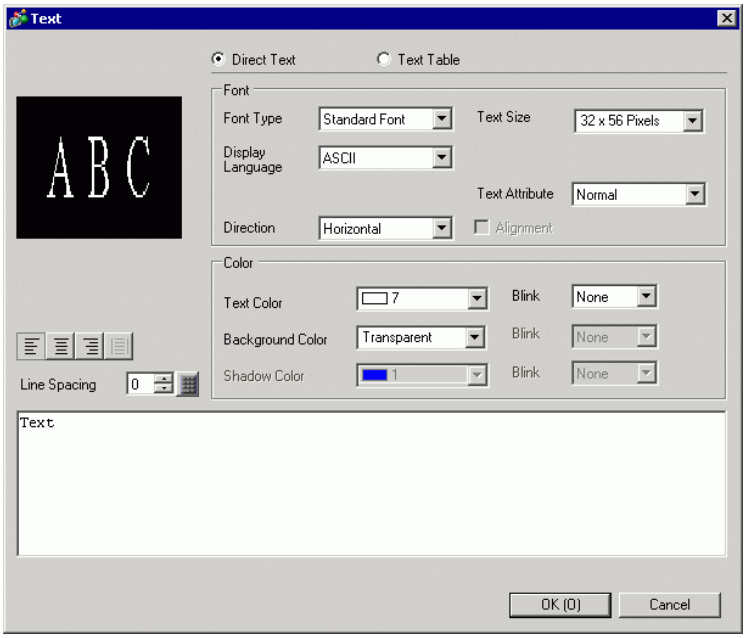
NOTE

- The type of animation that can be set varies depending on the selected parts and drawings.

☞ "20.1.2 Supported Objects" (page 20-4)

8.13 Settings Guide

8.13.1 Text Settings Guide



Setting		Description
Direct Text		Input text into the Input Text window and place it directly as fixed text.
	Font Type	Select from among [Standard Font], [Stroke Font], and [Image Font]. • Standard Font You can select the bitmap font from [ASCII], [Japanese], [Chinese (Traditional)], [Chinese (Simplified)] or [Korean]. **IMPORTANT** • The standard font will become bitmap font. The display speed is faster than with other fonts, but characters may have jagged outlines or distort if enlarged/reduced too much. • The Japanese and ASCII standard fonts are transferred to the GP. To use the Chinese (Simplified), Korean, or Chinese (Traditional) standard font, you must add the font in [System Settings/Font]. ☞ "6.2 Defining Stroke Font and Standard Font" (page 6-3)

Continued

Setting		Description
Direct Text	Font Type	• Stroke Font You can select the vector font from [ASCII], [Japanese], [Chinese (Traditional)], [Chinese (Simplified)], [Korean], [Cyrillic], or [Thai]. IMPORTANT • The stroke font will become vector font. Characters are displayed with smooth outlines when enlarged, but the display speed is slower than with the standard font. • The ASCII stroke font will be transferred to the GP. To use the Japanese, Chinese (Simplified), Korean, Chinese (Traditional), Cyrillic or Thai stroke font, you must add the font in [System Settings/Font]. ☞ "6.2 Defining Stroke Font and Standard Font" (page 6-3) • Image Font Displays a Windows font as bitmap data. ☞ "6.3 Image Font" (page 6-14)
	Text Size	Select the text size. Each font type has a different size range. Standard Font You can select the font size from either [8 x 8 pixels] to [64 x 128 pixels] in increments of 8 pixel units, or a fixed font size from [6 x 10 pixels], [8 x 13 pixels], or [13 x 23 pixels]. When using fixed sizes, you can display only single-byte alphanumeric characters. Stroke Font: 6 to 127 When the [Automatically Adjust Text Size] check box is selected, set the font's [Maximum Size] and [Minimum Size].
	Display Language	Choose a text display language from [ASCII], [Japanese], [Chinese (Traditional)], [Chinese (Simplified)], [Korean], [Cyrillic], or [Thai].
	Text Attributes	When [Font Type] is [Standard Font] or [Stroke Font], select from the following text attributes. Standard Font: Choose from [Standard], [Bold], [Shadow] (When using a fixed font size [6 x 10], select from [Standard] or [Shadow].) Stroke Font: Choose from [Standard], [Bold], [Outline]
	Direction	Select from [Portrait] or [Landscape].
	Centering	When selecting "Vertical", align the center of text with single-byte and double-byte characters.
	Input Text Field	If [Direct Text] is selected, input the character string.
Text Table		Use text from a previously saved Text Table. ☞ "17.4 Changing a Text's Language (Multilanguage)" (page 17-15)

Continued

Setting			Description
Text Table	Font Type		Select either [Standard Font] or [Stroke Font]. • Standard Font You can select the bitmap font from [ASCII], [Japanese], [Chinese (Traditional)], [Chinese (Simplified)] or [Korean]. IMPORTANT • The standard font will become bitmap font. The display speed is faster than with other fonts, but characters may have jagged outlines or distort if enlarged/reduced too much. • The Japanese and ASCII standard fonts are transferred to the GP. To use the Chinese (Simplified), Korean, or Chinese (Traditional) standard font, you must add the font in [System Settings/Font]. ☞ "6.2 Defining Stroke Font and Standard Font" (page 6-3)
	Font Type		• Stroke Font You can select the vector font from [ASCII], [Japanese], [Chinese (Traditional)], [Chinese (Simplified)], [Korean], [Cyrillic], or [Thai]. IMPORTANT • The stroke font will become vector font. Characters are displayed with smooth outlines when enlarged, but the display speed is slower than with the standard font. • The ASCII stroke font will be transferred to the GP. To use the Japanese, Chinese (Simplified), Korean, Chinese (Traditional), Cyrillic or Thai stroke font, you must add the font in [System Settings/Font]. ☞ "6.2 Defining Stroke Font and Standard Font" (page 6-3)
	Text Size		Select the text size. Each font type has a different size range. Standard Font You can select the font size from either [8 x 8 pixels] to [64 x 128 pixels] in increments of 8 pixel units, or a fixed font size from [6 x 10 pixels], [8 x 13 pixels], or [13 x 23 pixels]. When using fixed sizes, you can display only single-byte alphanumeric characters. Stroke Font: 6 to 127 When the [Automatically Adjust Text Size] check box is selected, set the font's [Maximum Size] and [Minimum Size].
	Automatically Adjust Text Size		With the range of maximum and minimum text sizes that have been set, the font size adjusts automatically to fit the text. NOTE • The range cannot be set when Standard Font is selected.
		Maximum size	6-127
		Minimum size	6-127

Continued

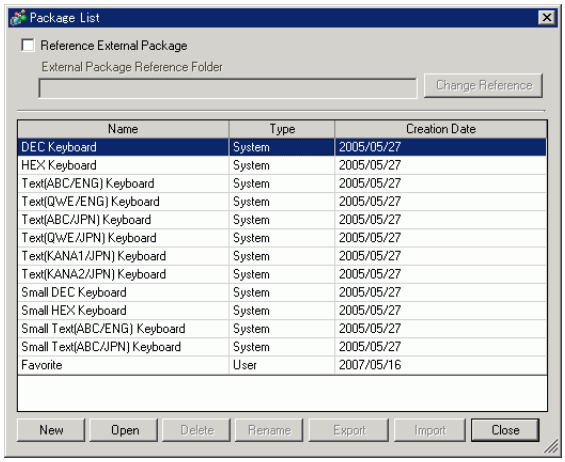
Setting		Description
Text Table	Text Attributes	When [Font Type] is [Standard Font] or [Stroke Font], select from the following text attributes. Standard Font: Choose from [Standard], [Bold], [Shadow] (When using a fixed font size [6 x 10], select from [Standard] or [Shadow].) Stroke Font: Choose from [Standard], [Bold], [Outline]
	Direction	Select from [Portrait] or [Landscape].
	Centering	When selecting "Vertical", align the center of text with single-byte and double-byte characters.
	Select text	Select text from the Text Table.
Text Color		Set the display color for the text.
Background Color		Set the background color for the text.
Shadow Color		If the [Font Type] menu - [Standard Font] command and the [Text Attribute] menu - [Shadow] command are selected, set the color for the text shadow.
Display Language		Choose a text display language from [ASCII], [Japanese], [Chinese (Traditional)], [Chinese (Simplified)], [Korean], [Cyrillic], or [Thai].
Line Spacing		Set a value from 0 to 255. This is only applicable when in the [Text] field you add multiple lines of text. This option cannot be used when the [Font Type] is set to [Image Font].
Align		Specifies whether text is fixed to the center of parts.

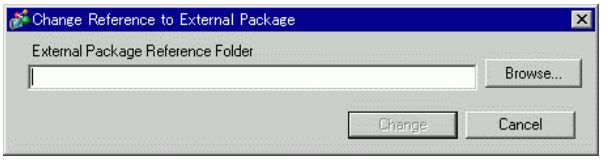
NOTE

- Select the text placed on the screen and press [F2] key, and you can directly edit the text.

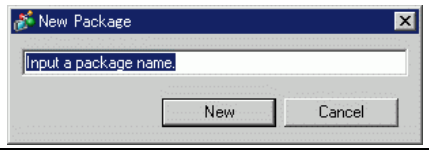
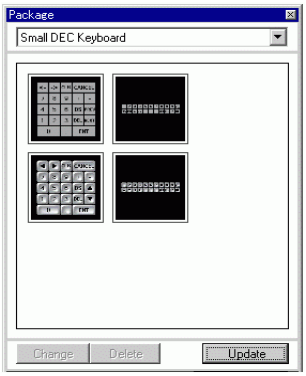
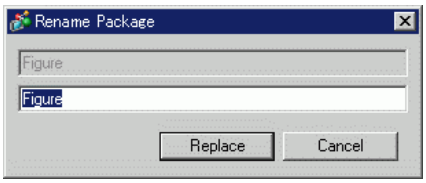
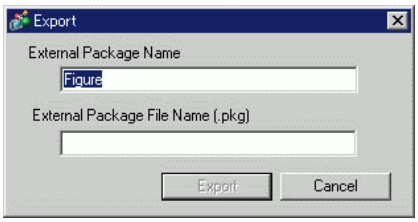
8.13.2 Package List Setup Guide

Displays the Package List registered in GP-Pro EX. You can register user-created parts, drawings, keypads, and so on. One [Package] can store a combination of 200 drawings, parts, and keypads. If a drawing or part is registered in multiple groups, it counts as one in the package count.



Setting	Description
Reference External Package	Sets up references of external packages. **NOTE** • If enabled, lists registered packages and registered reference folder packages. • If the reference folder is not found, an error message appears and the list displays registered packages only.
External Package Reference Folder	Displays the location of the reference folder. • Change Reference Displays a dialog box for changing reference to external packages. Input the location of the folder directly or click [Browse] and select the folder from the [Browse folder] dialog box. 
Package List	Displays a Package list. • Name Displays the names of all the packages registered in a project file. • Type Displays types of packages from among the following three types. System : Registered package User : Package created by users External : External package • Creation Date Displays the dates when the packages were registered.

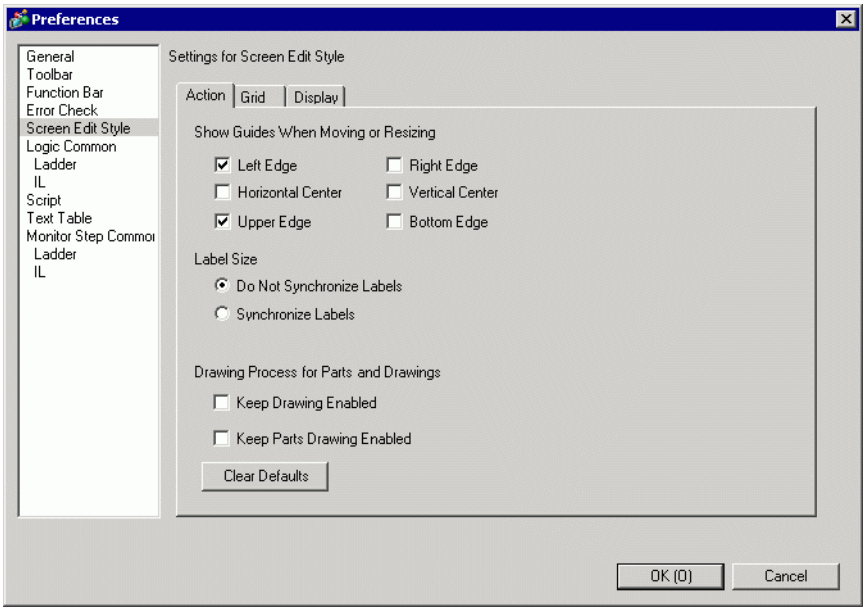
Continued

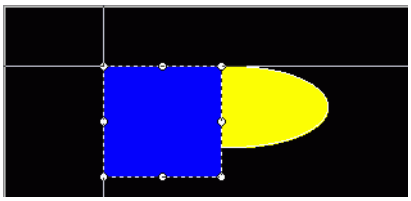
Setting	Description
New	Displays the [New Package] dialog box. Set a name of a new part, drawing, keypad, etc. to register in the package within 64 characters. 
Open	Displays the [Package] window. You can register parts, drawings, and keypads by dragging them in from the drawing screen. You can drag and drop parts, drawings, and keypads registered in the [Package] onto the drawing screen.  **NOTE** • You can also display the [Package] window from the [View (V)] menu. Point to [Work Space (W)] and then click [Package (K)].
Delete	Deletes the parts, drawings, keypads, etc. previously registered in [Package].
Rename	Displays the [Rename Package] dialog box. Renames the parts, drawings, keypads, etc. previously registered in [Package]. Set a new name within 64 characters. 
Export	Outputs packages created by users to the [External Package Reference Folder]. 
Import	Imports as user packages external packages selected from the list.
Close	Closes the [Package List] dialog box.

8.13.3 Preferences (Screen Edit Style) Setup Guide

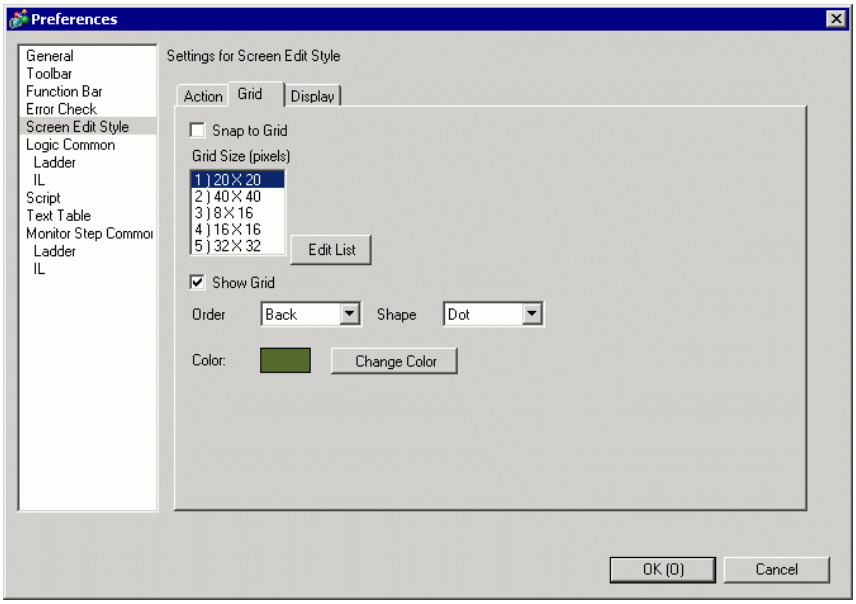
On the [View (V)] menu, click [Preferences (O)]. The following [Preferences] dialog box will appear. Select [Screen Edit Style] in the left window.

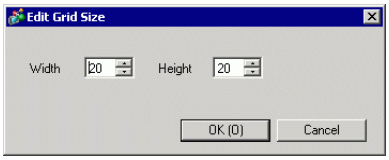
■ Action



Setting	Description
Show Guide on Move or Resize	This function is valid when aligning an object with a previously placed object. Guidelines are displayed at the designated points (the left edge and upper edge). 
Label Resizing Process	Set whether the size of the label (text) will also be changed when the size of the part is changed.
Drawing Process for Parts/ Drawings	Specify whether drawings and parts can be placed continuously when they are created. If you cancel continuous placement, right-click on the unused screen area, or select the menu and icons of other features.
Clear Defaults	Right-click Draw/Parts, and from the menu, reset the default attributes of Draw/Parts set in [Set as Defaults of Parts].

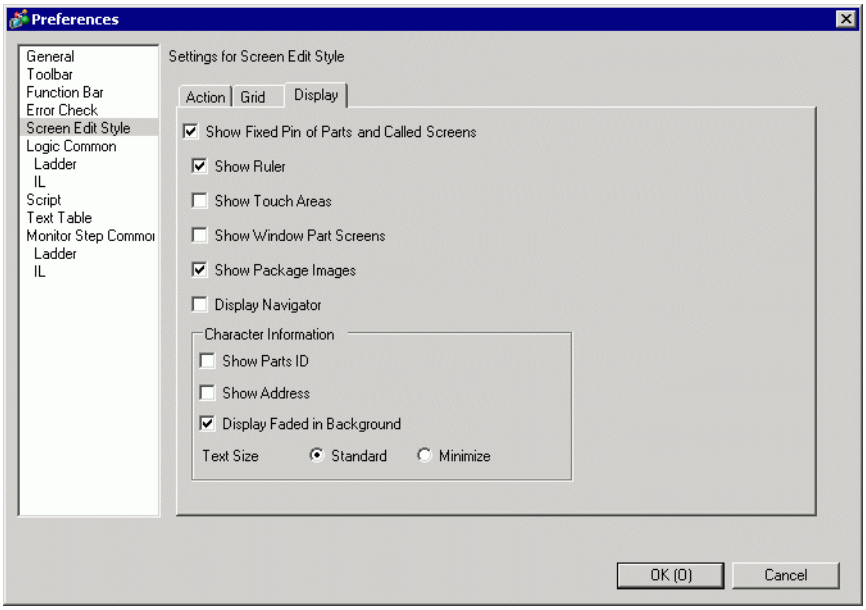
■ Grid

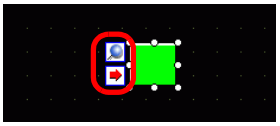
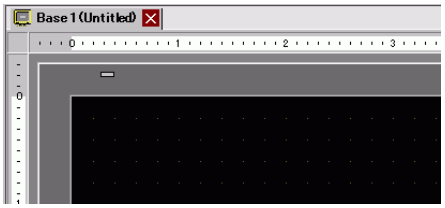


Setting	Description
Snap to Grid	The cursor position is determined from the grid size, you don't have to fine tune the position. ☞ "8.9 Creating a Screen from a Template" (page 8-63)
Grid Size (pixels)	Select the grid size from a list. • Edit List If the list does not have the desired size, display the [Edit Grid Size] dialog box and specify the width and height. 

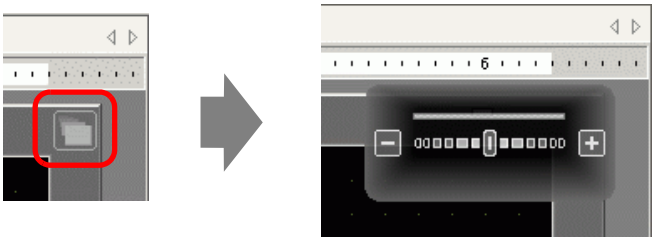
Setting	Description
Show Grid	Designate whether or not to show a grid. • Order Select the display order from [Back] or [Front]. • Shape Select the shape from [Grid] or [Dot]. • Color specification Display set colors. To change, click [Change Color] and select the color that you want to display from the color palette. 

■ Display



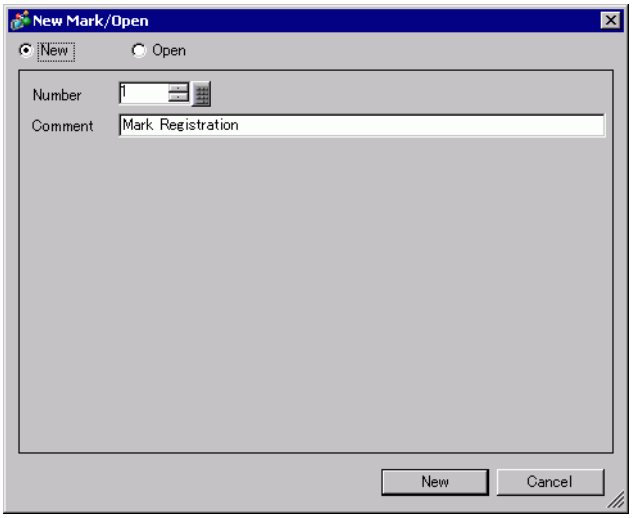
Setting	Description
Show Fixed Pin of Parts and Called Screens	Specify whether a pin mark and jump icon should be displayed when selecting objects.  **NOTE** • If you click the pin mark, the Move and Edit Object functions will be locked and the pin mark will be red. • Click the jump icon to open the screen to be called.
Show Ruler	Shows rulers at the top and the left side of the screen. 
Show Touch Area	Specify whether the Touch Input Valid Area is shown or not. **IMPORTANT** • Place each object so that the touch areas do not overlap each other.
Show Window Part Screens	Specify whether the Window Parts Screen is shown or not.
Show Package Images	Place the cursor on the figure in the [Package] window screen to display figure images.

Continued

Setting		Description
Display Navigator		Display the navigator. Display/Hide the placed parts. Move the cursor close to the [Display Navigator Icon] on the top right of the drawing screen to display the navigator.  **NOTE** • Click the [Display Navigator] icon [−] to hide the parts in the order they are placed. [+] Click the icon to show the parts in order. • Parts that are hidden by the [Display Navigator] have rows of parts grayed out in the [Screen Data List] window. Select the gray parts in the list to display it. • Select [Display Navigator] - [▯] and drag it to the left or right to display/hide the part.
Character Information		Designate whether or not to show character information of the placed parts on the parts, and the display format.
	Show Parts ID	Designate whether or not to show the ID number of the placed part.
	Show Address	Designate whether or not to show the address set for the part.
	Display Faded in Background	Designate whether to display the background as semi-transparent when showing the part ID and addresses.
	Text Size	Select the text size for the part ID and addresses from [Standard] or [Reduced].

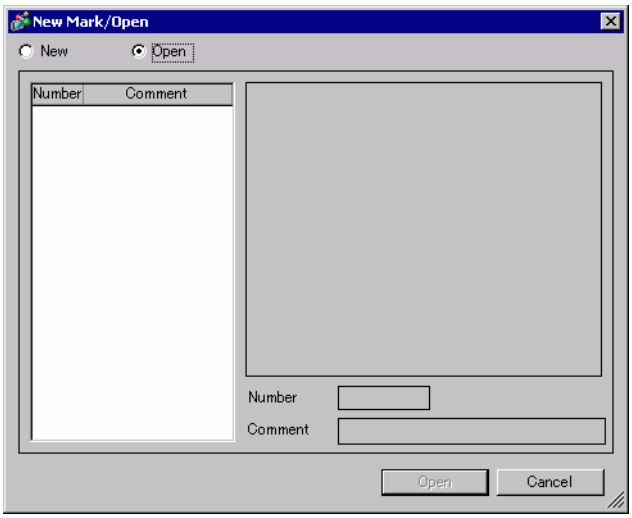
8.13.4 Common Mark Registration Settings Guide

■ New



Setting	Description
New	Creates a new [Mark Registration] screen.
Open	Opens a previously created [Mark Registration] screen.
Number	Set the [Mark Registration] screen Number to any value between 1 and 8999.
Comment	Enter a comment of up to 30 characters for the [Mark Registration] screen.

■ Open

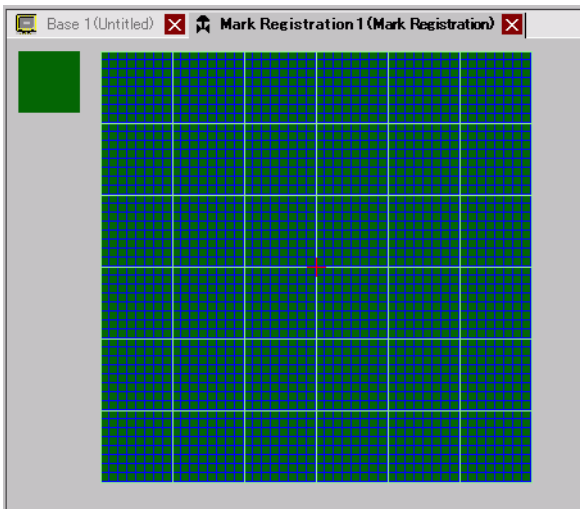


Setting	Description
New	Creates a new [Mark Registration] screen.
Open	Opens a previously created [Mark Registration] screen.
List of marks	Displays the list of the [Mark Registration] screens in the project file.

Continued

Setting		Description
	Number	Displays the number of each [Mark Registration] screen.
	Comment	Displays the comment for each [Mark Registration] screen.
Mark preview		Provides a preview display of the marks in the [Mark Registration] screen selected in the mark list.
	Number	Displays the number of the [Mark Registration] screen selected in the mark list.
	Comment	Displays the comment for the [Mark Registration] screen selected in the mark list.

■ Mark Registration



Setting	Description
Preview area	Provides a preview display of the mark's on-screen display size.
Drawing area	Used to draw marks using the drawing operations below, which can be selected from the menu and toolbar. • [Dot] • [Line] • [Rectangle] • [Circle/Oval] • [Filled Rectangle] • [Filled Circle/Ellipse] • [Fill] • [Text] • [Draw Size] The following items are displayed in the drawing area: • Origin • 48 x 48 dot grid • Quadrant (8 x 8 dot area) borders • Dot ON, Dot OFF (Black), Dot OFF (Transparent)

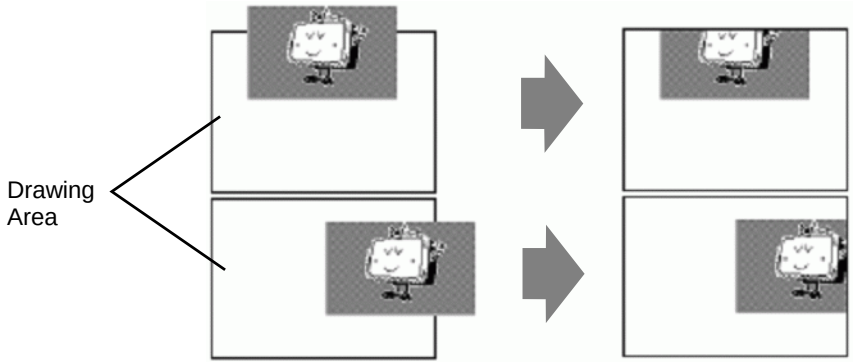
8.14 Restrictions

8.14.1 Restrictions for Drawing (Text)

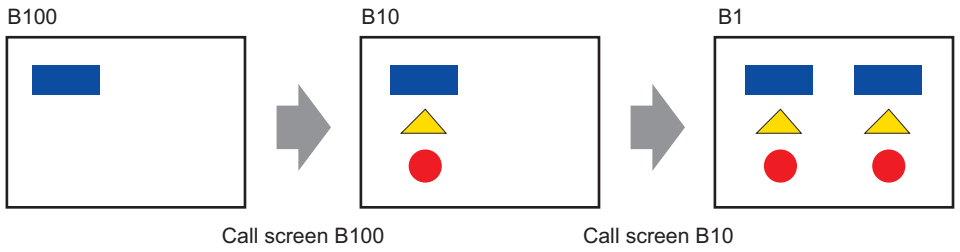
- When text is enlarged or rotated, the thickness of some letters may change.
- For characters with a character code (0x80 to 0xFF), the characters' shape will change due to differences in font between GP-Pro EX and GP.

8.14.2 Restrictions for Pasting BMP/JPEG

- If you set the background color to the screen used for a call screen, the objects placed on the screen are not displayed on the GP.
- For a color data image screen, the data capacity is large, but the display speed on the GP is fast. For a monochrome data image screen, the display speed on the GP is somewhat slow, but the data capacity can be saved. Convert screens depending on the purpose.
- If an image screen is placed beyond the drawing area, the part that is outside the area is not displayed on the GP.



- Nesting (calling hierarchy) up to 10-layer (11-fold) is available. However, if the remaining memory in the PC decreases in operation, the display on the screen may be omitted. When transferred, the nested objects are normally displayed on the GP.
  For example, double-layer (threefold) nesting.



8.14.3 Package Registration Restrictions

- Packages are registered and saved when you close the GP-Pro EX project.
- Up to 200 objects can be registered in one package. To register more than 200 objects, create a new package and register them in a new category.

8.14.4 Restrictions on Marks

- Acknowledge the registered external character after the screen data transmission on the display unit. The text corresponding to the input text code displays on GP-Pro EX.
- External characters can be registered only when the English standard font with a font size of 8 x 16 pixel or larger is selected. 8 x 8 pixel is not supported.
- To create an external character, draw it with single-byte characters (within 8 x 16 dot) with reference to the origin of the mark creating area (0,0).
- External characters cannot be rotated.
- When you print text in Alarm, external characters are not outputted. The results, depending on printer types, are as follows:
  For NEC PR201, EPSON ESC/P, HP Laser Jet, and Text ASCII:
  Direct code output of the text codes.
  For EPSON PM/Stylus:
  Image output of Code Page 850 characters
- If you were using the Character code (0x80 to 0xFF) of the Western standard fonts in a CSV file while registering external marks, and you want to display the marks in the Special Data Display [CSV Display] and [CSV Data Transmission] on GP, they will be converted to the external characters that were registered in the mark screen.

8.14.5 Restrictions for Screen Display

When you reduce the screen edit area with the zoom function, some drawings may not display correctly, depending on the magnification.