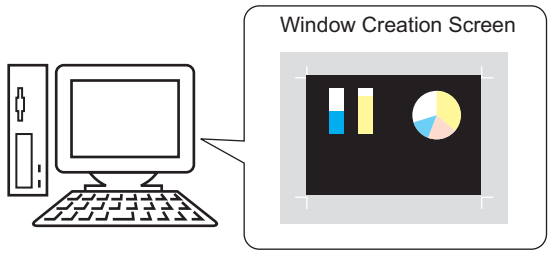
18 Window Display

This chapter explains about “Window Display” in GP-Pro EX, and the basic operations for placing Windows.
Please start by reading “18.1 Settings Menu” (page 18-2) and then turn to the corresponding page.

18.1 Settings Menu

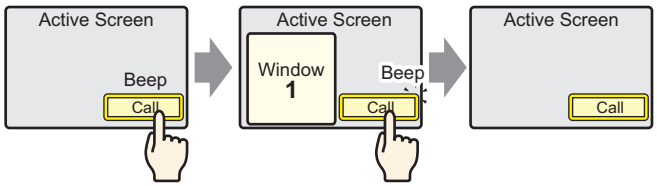
Creating Windows

Create and register screen contents that will be displayed on the Window.



☞ Setup Procedure (page 18-5)
☞ Details (page 18-4)

Displaying Windows



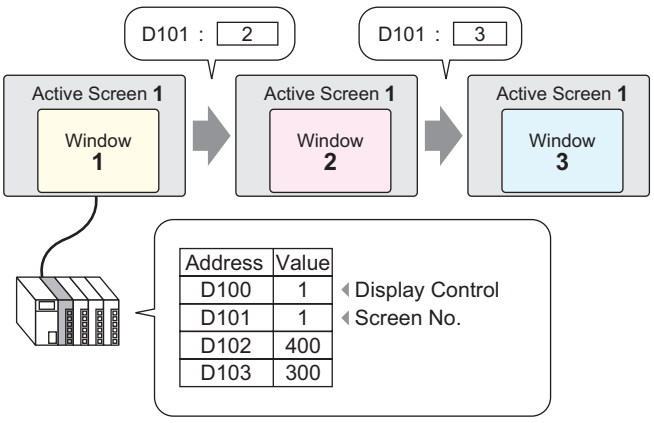
Touch and...

The Window is called and displayed. Check the Window, touch the switch again and...

The Window disappears.

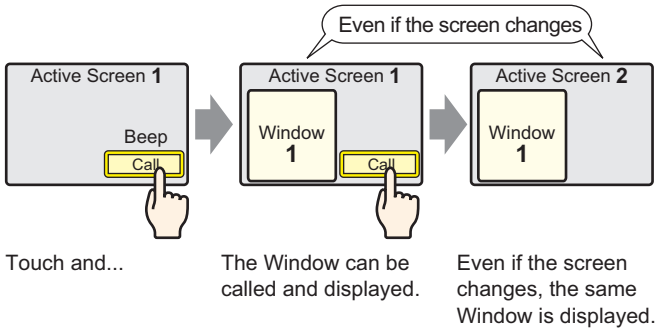
☞ Setup Procedure (page 18-8)
☞ Details (page 18-7)

Changing the Displayed Window



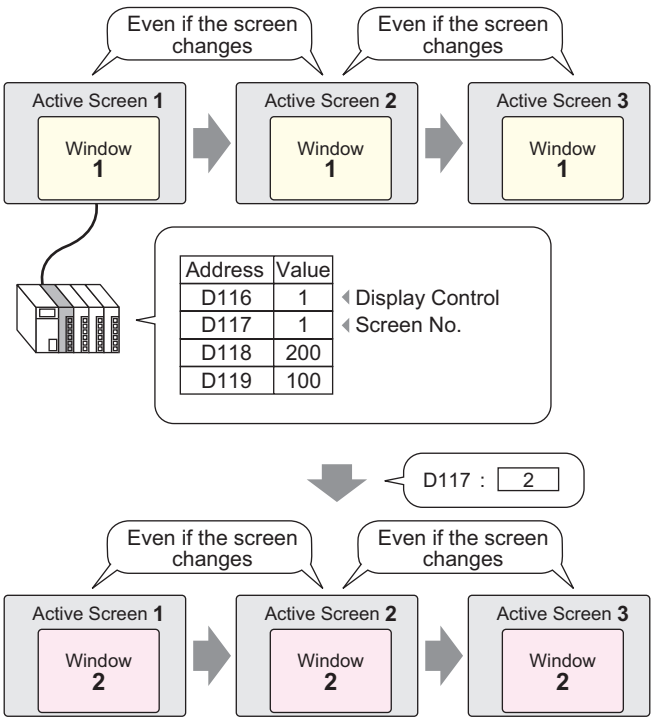
☞ Setup Procedure (page 18-12)
☞ Details (page 18-11)

Displaying the Same Window on All Screens



☞ Setup Procedure (page 18-15)
☞ Details (page 18-14)

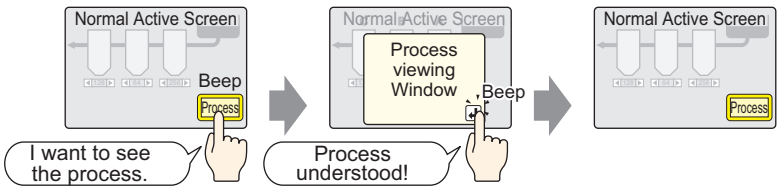
Changing the Displayed Window on All Screens



☞ Setup Procedure (page 18-18)
☞ Details (page 18-17)

18.2 Creating Windows

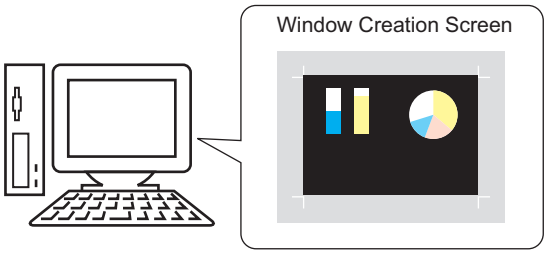
What is a Window?



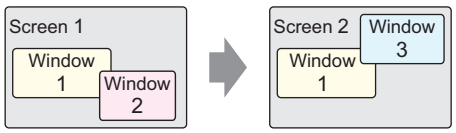
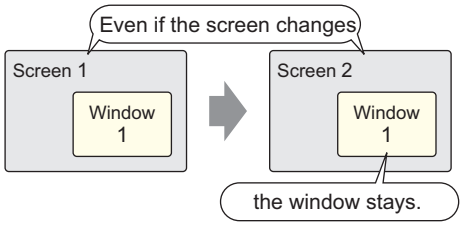
Screens that are not commonly used can be saved as Window Screens, and then displayed and hidden with a call button. They are suitable for temporary reference screens or error screens.

18.2.1 Details

Create and register window screens to display contents as a window. Up to 2000 window screens can be registered in a single project.



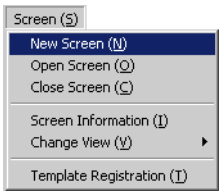
There are two display methods for created windows.

Display Method	
Display as a **Local Window**  Displays the set Window on a single screen.	☞ “18.3 Displaying Windows” (page 18-7)
Display as a **Global Window**  Displays the Window on all screens.	☞ “18.5 Displaying the Same Window on All Screens” (page 18-14)

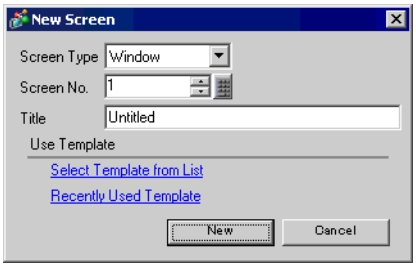
18.2.2 Setup Procedure

Create a new Window Screen.

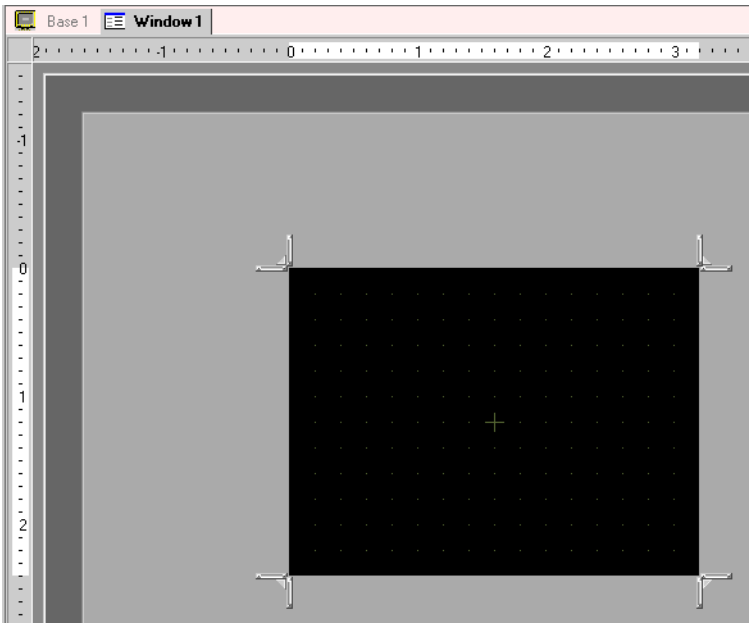
1 Select the [Screen (S)] menu - [New Screen (N)] command, or click the icon.



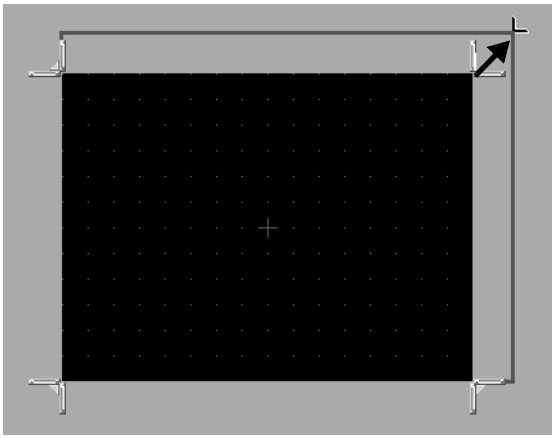
2 The [New Screen] dialog box will appear. Select [Window] from [Screen Type]. The [Screen No.] will be automatically allotted in order of registration starting from 1. The screen number can be changed, but multiple screens can not have the same screen number.



3 Click [New]. The window screen is displayed.



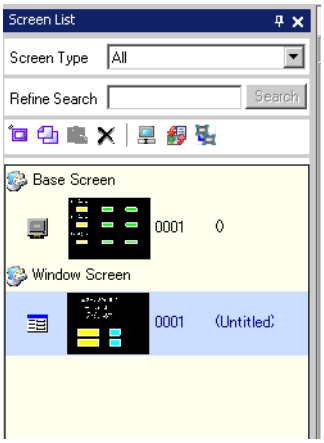
4 Adjust the window screen's size.
When over any of the 4 corners, the cursor shape will change to . Drag it to change the size.



NOTE • Please ensure that the Window Screen does not exceed the size of the Base Screen.

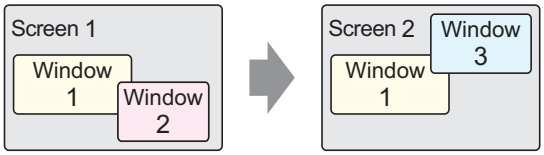
5 Create the screen. The creation method is the same as for a base screen. Save the project and the Window Screen's registration is complete.
After creating the window screen, select the [Screen (S)] menu - [Close Screen (C)] command or click to close the screen.

NOTE • The created Window Screen will be displayed in the [Screen List] window. Double-click the scaled-down display screen and the screen will open and can be edited.



18.3 Displaying Windows

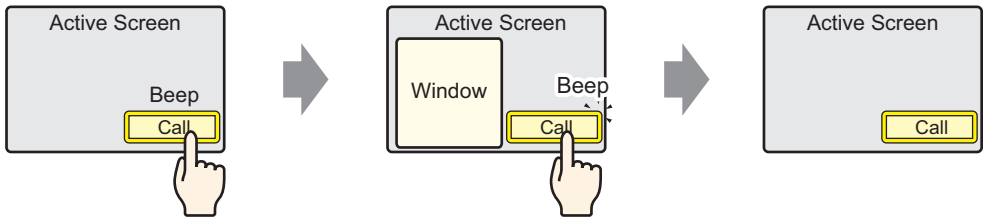
What is a Local Window?



A Window set exclusively for one screen. A maximum of 3 Windows can be displayed at a time.

18.3.1 Details

Call up a screen registered as a Window on top of an active screen. The running screen will remain unchanged, and the Window will be displayed temporarily.



Touch and...

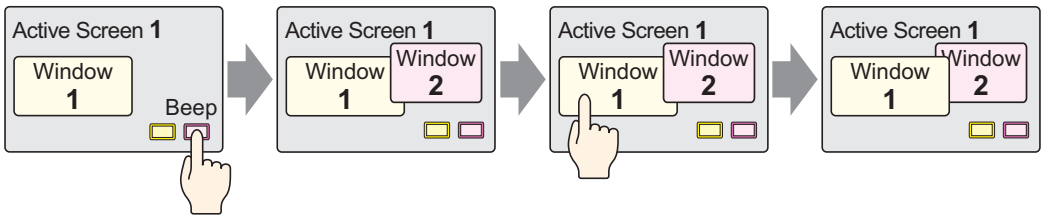
The Window is called and displayed. Check the Window, touch the switch again and...

The Window disappears.

NOTE

- As well as using a switch to display a window, a designated address in the device/PLC can also be used to turn a window's display ON/OFF.

When displaying multiple local windows that overlap on a screen, the window displayed last displays at the front. The display order can be changed by touching a window that is covered.



If you display a Window when another Window is already displayed...

The last displayed Window will appear at the front.

Touch the Window in the back and...

The rear screen is displayed.

18.3.2 Setup Procedure

NOTE

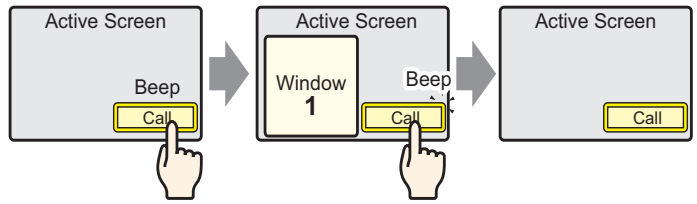
- Please refer to the settings guide for details.

  ☞ "18.7 Window Part Settings Guide" (page 18-21)

- For details about placing parts or setting addresses, shapes, colors, and labels, please refer to the "Part Editing Procedure".

  ☞ "9.6.1 Procedure for Editing a Part" (page 9-36)

Set the window to display when you touch a switch.

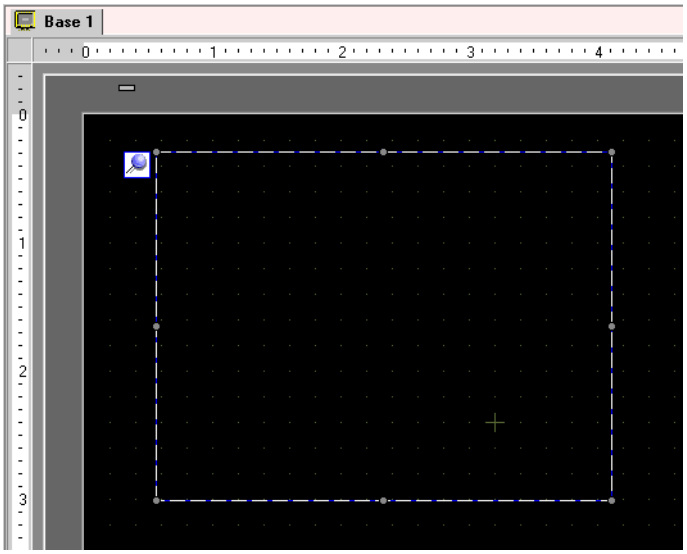


Touch and...

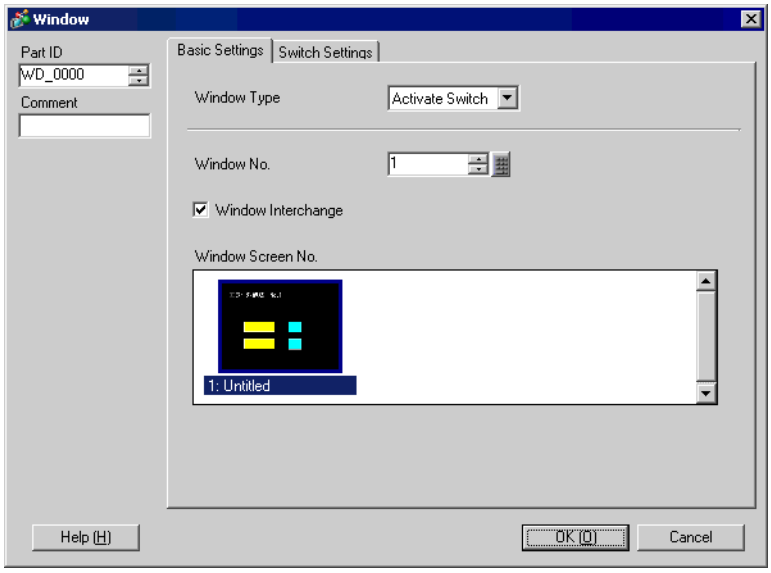
The Window is called and displayed. Check the Window, touch the switch again and...

The Window disappears.

1 Select the [Part (P)] menu - [Window] command or click the icon to place a window on the screen. (When displaying in the GP, the area where the window screen is called is shown by the dotted-line border.)

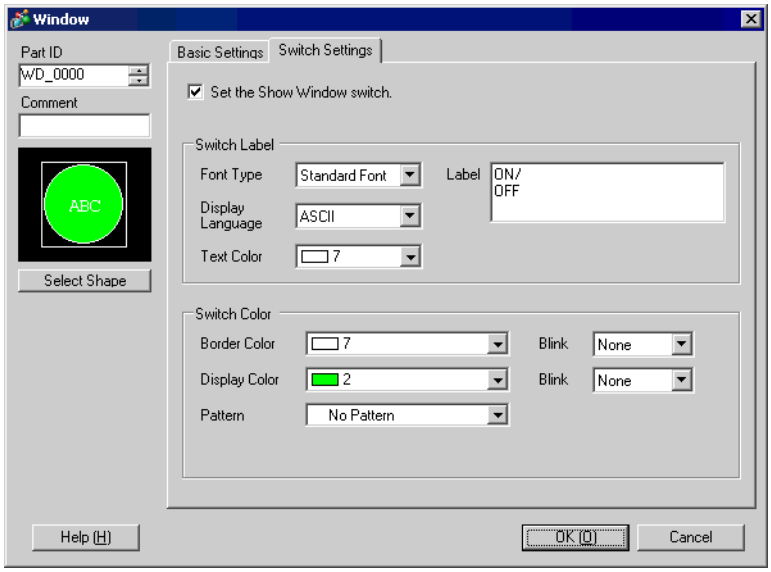


2 Double-click the placed Window part and the settings dialog box opens.
Select [Activate Switch] from [Window Type].

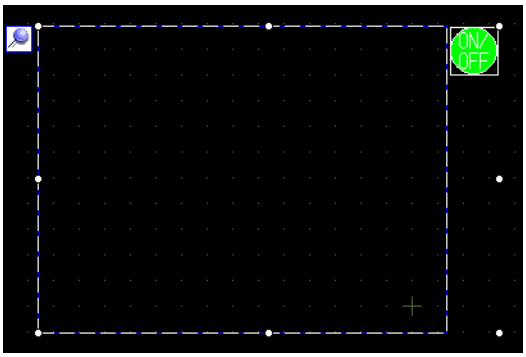


3 Set the [Window No.] to “1”. (Or click the scaled-down window to display from the [Window Screen No.].)

4 On the [Switch Settings] tab, set the switch’s shape, color, and label.

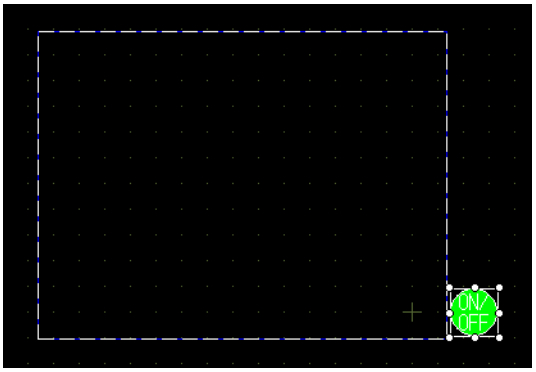


5 Click [OK]. A window with a switch attached is now set.



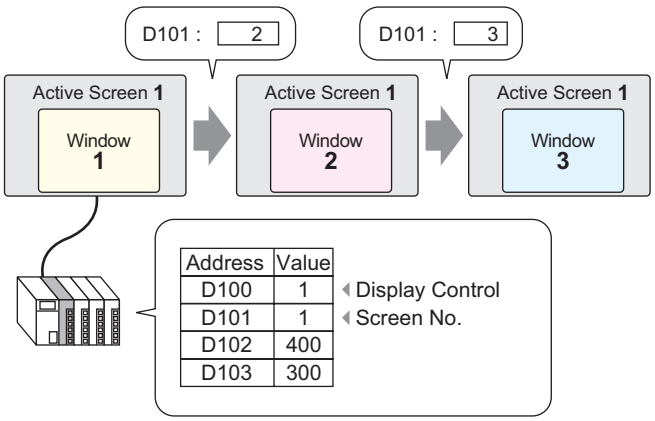
NOTE

- You can select just the switch and move it anywhere within the screen.



18.4 Changing the Displayed Window

18.4.1 Details



Multiple Window Screens can be changed and displayed to the specified screen.

NOTE

- When an undefined window screen number is designated, the window screen will not change. The displayed window will also be closed immediately before the window screen changes.

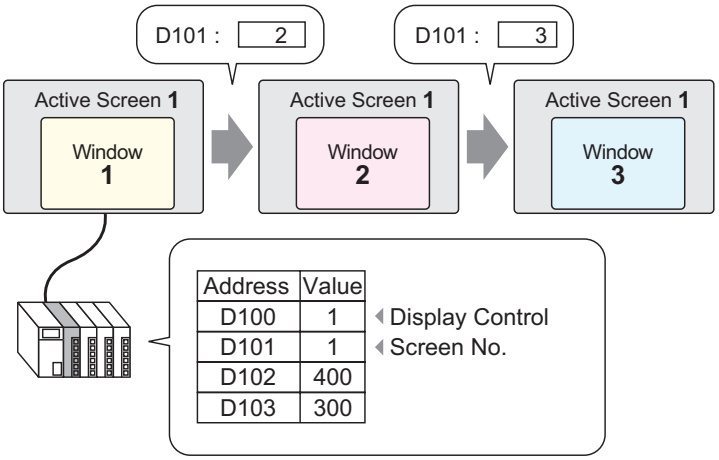
18.4.2 Setup Procedure

NOTE

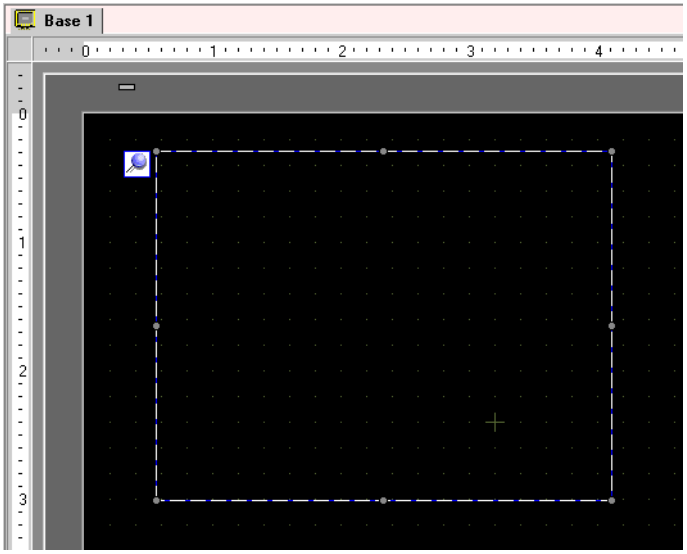
- Please refer to the settings guide for details.

☞ "18.7 Window Part Settings Guide" (page 18-21)

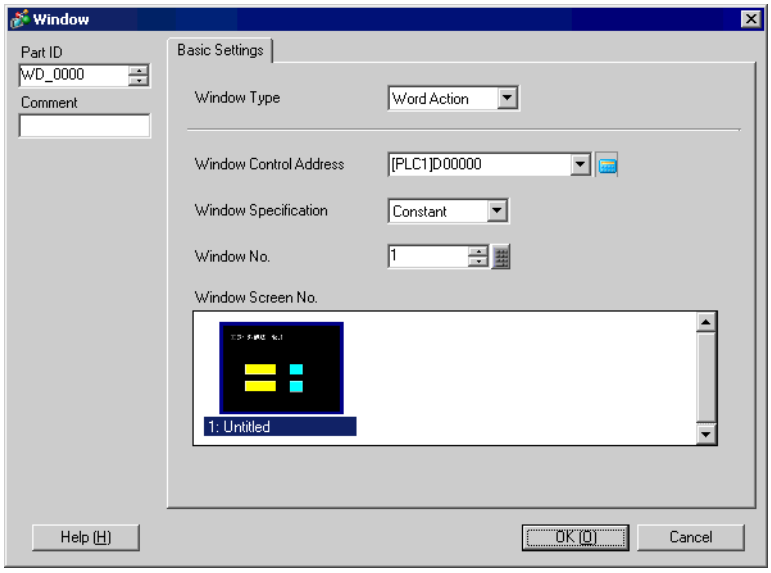
Change the displayed Window Screen according to the value stored in the word address (D101).



1 Select the [Part (P)] menu - [Window] command or click the icon to place a window on the screen.

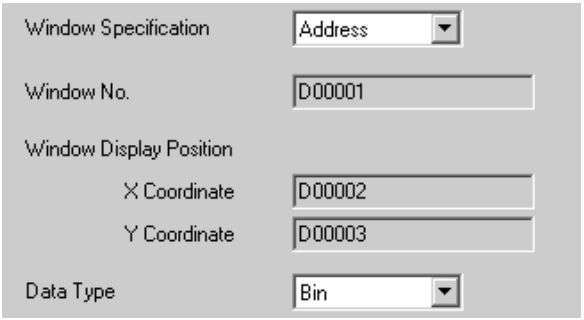


2 Double-click the placed Window part and the settings dialog box opens.
Select [Word Action] from [Window Type].



3 Set the word address (D100) which will control the window's display in [Window Control Address].

4 Select [Address] from [Window Specification] and set the [Data Type] of data that will be stored in the address.

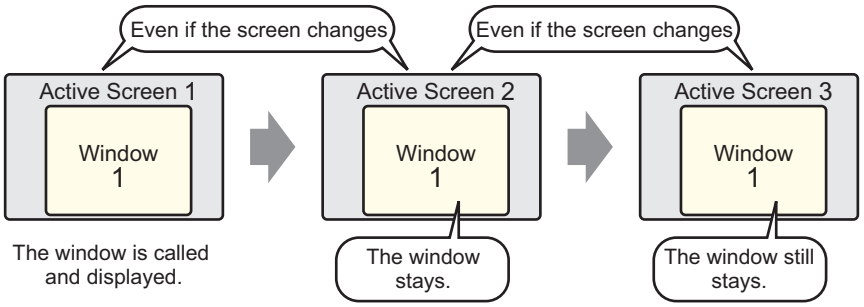


5 Click [OK]. The displayed Window Screen is now set up to change according to the value stored in the address.

If you turn ON Bit 0 of the Window Control Address (D100), the Window is displayed. When word address D101's value changes, the window screen changes. When the value of word address D102 or D103 changes, the window's display position is modified.

18.5 Displaying the Same Window on All Screens

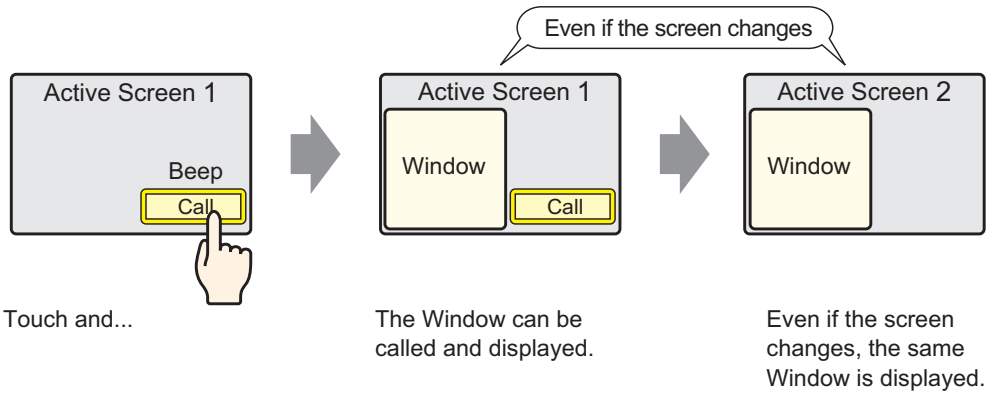
What is a Global Window?



A Window which is common to the whole system. It will still be displayed even if the screen changes.
A maximum of 1 Window can be displayed at a time.

18.5.1 Details

Call up a screen registered as a Window on top of an active screen. The same Window can be displayed on all screens.

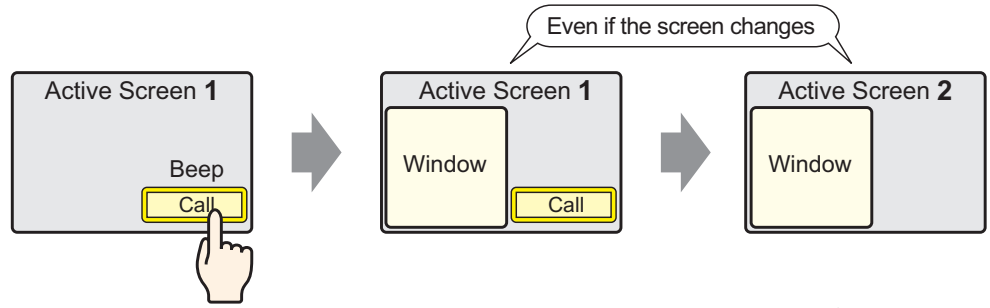


18.5.2 Setup Procedure

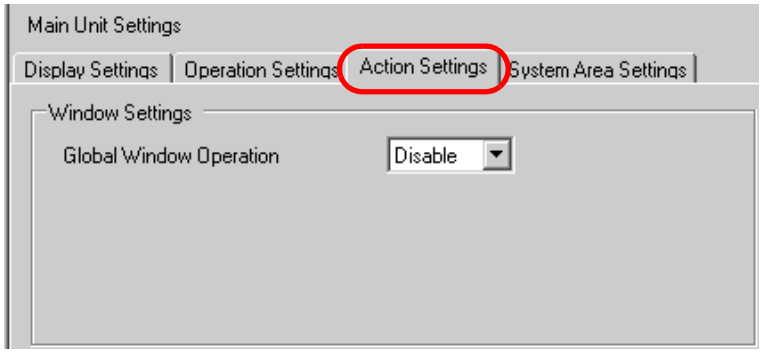
NOTE

- Please refer to the settings guide for details.
  ☞ "6.13.6 [System Settings Window] Setting Guide ■ [Main Unit Settings] Settings Guide" (page 6-90)
- For details about placing switches or setting addresses, shapes, colors, and labels, please refer to "Part Editing Procedure".
  ☞ "9.6.1 Procedure for Editing a Part" (page 9-36)

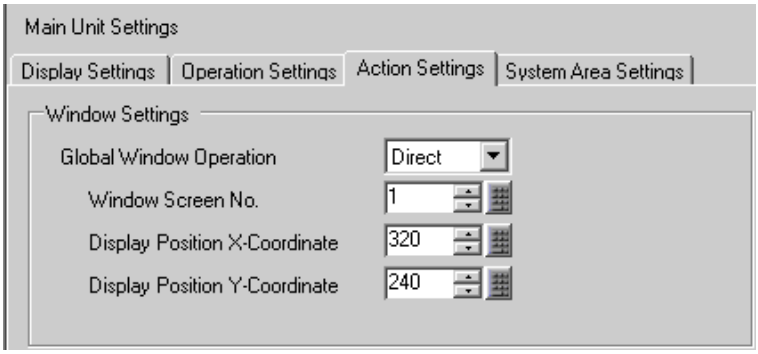
When you touch the switch placed on the base screen, the same Window is displayed on all screens.



1 Select the [Project (F)] menu - [System Settings (C)] option - [Main Unit Settings] command, or click on the system settings window's [Main Unit Settings], and select the [Action Settings] tab.



2 Select [Direct] from [Global Window Operation].

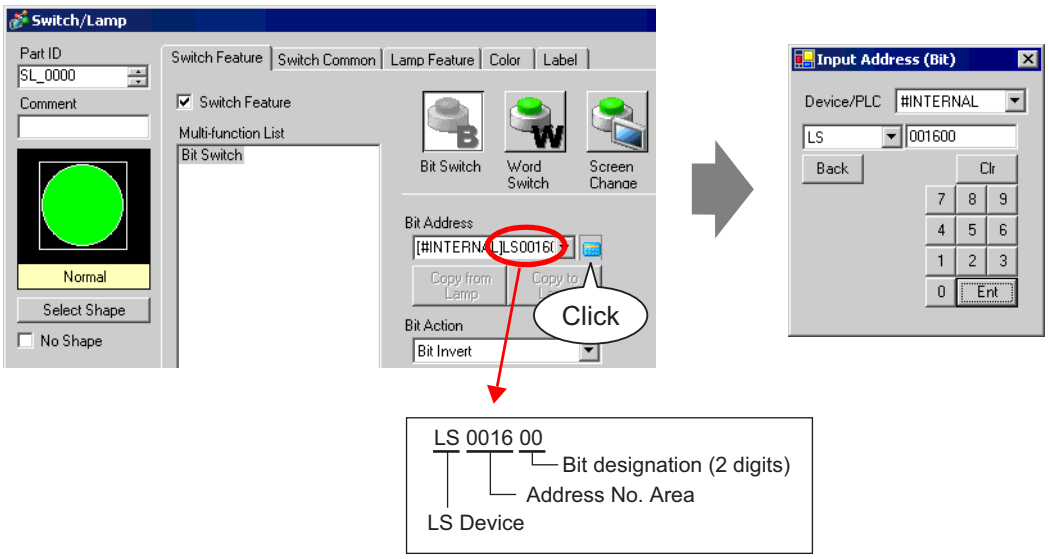


3 Set the [Window Screen No.] to "1", then set the [Display Position X-Coordinate] and [Display Position Y-Coordinate] of the display position on the base screen where you will display the window.
The Global Window settings are complete.

4 Place the switch used to display the global window on the base screen, double-click it, and the settings dialog box will open.

NOTE • Please do not place overlapping switches when displaying a Global Window.

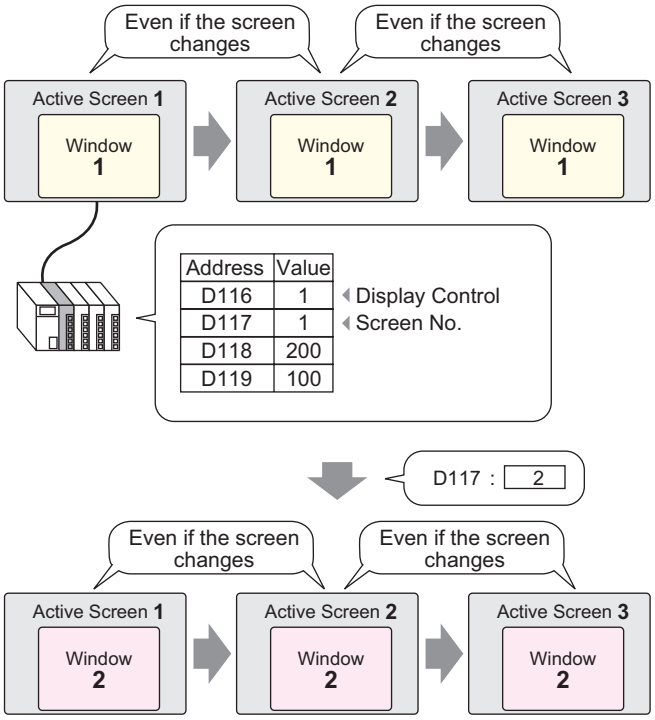
5 Set the [Bit Address]. Select [#INTERNAL] from [Device/PLC] and designate LS0016's bit 0.



6 Select [Bit Invert] from [Bit Action] and click [OK].

18.6 Changing the Displayed Window on All Screens

18.6.1 Details



NOTE

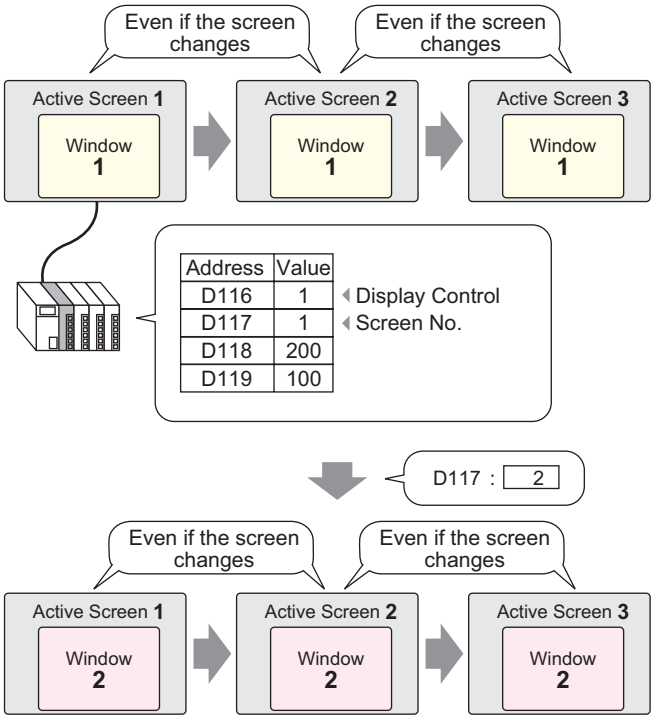
- When an undefined window screen number is designated, the window screen will not change. The displayed window will also be closed immediately before the window screen changes.

18.6.2 Setup Procedure

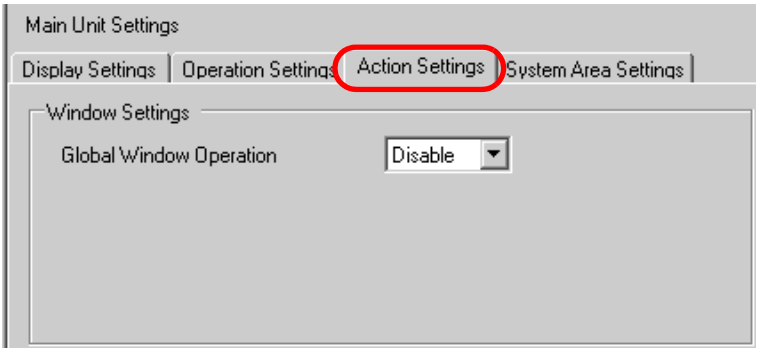
NOTE

- Please refer to the settings guide for details.
  ☞ "6.13.6 [System Settings Window] Setting Guide ■ [Main Unit Settings] Settings Guide" (page 6-90)

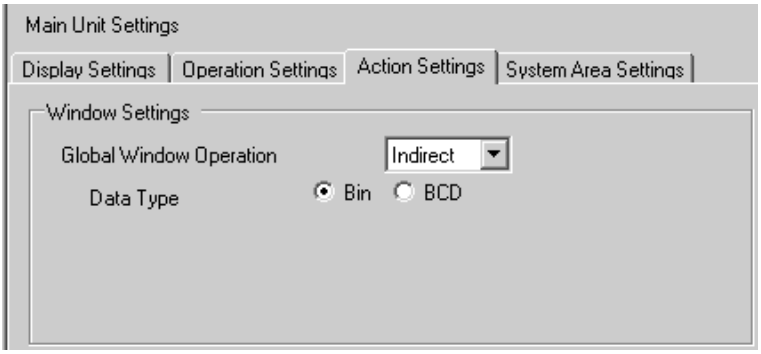
Change the Global Window Screen according to the value stored in the word address (e.g.: D117).



1 Select the [Project (F)] menu - [System Settings (C)] option - [Main Unit Settings] command, or click on the system settings window's [Main Unit Settings], and select the [Action Settings] tab.

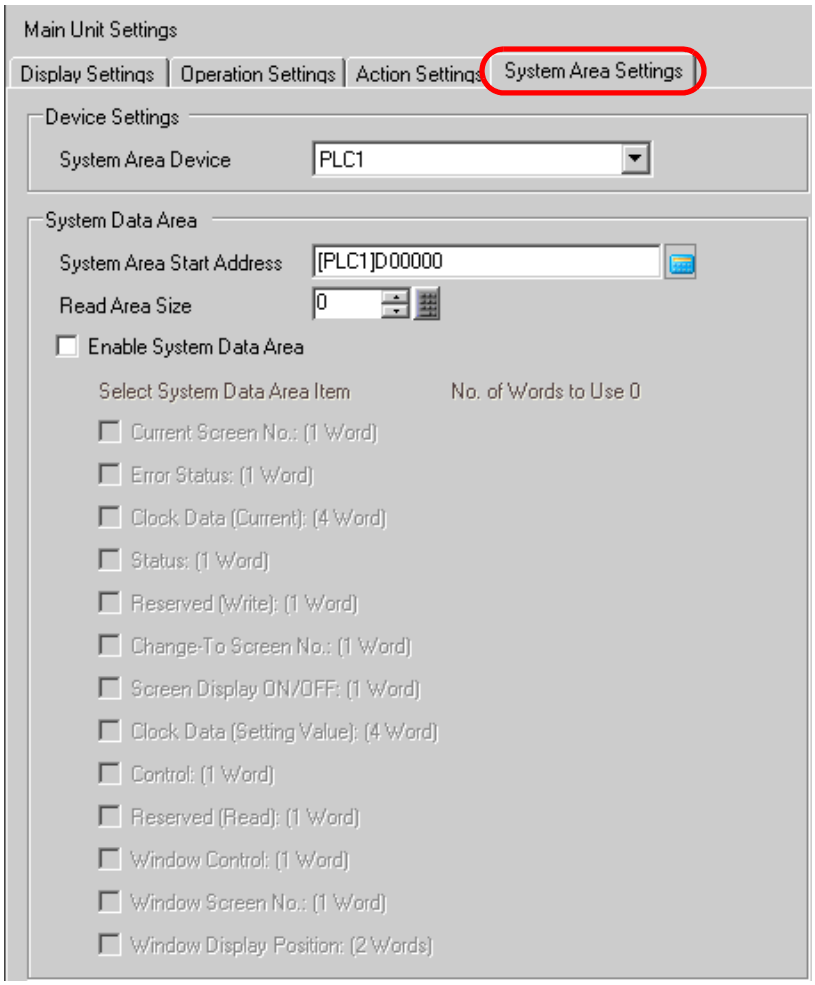


2 Select [Indirect] from [Global Window Operation].

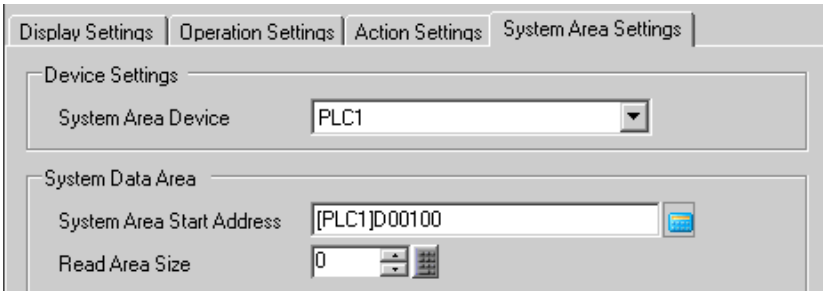


3 Set the [Data Type] of the address' data.

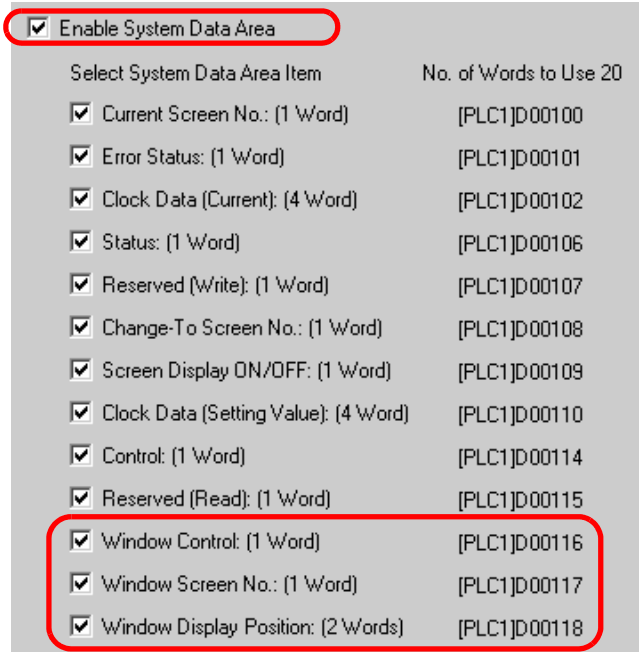
4 Select the [System Area Settings] tab.



5 Set the device that will use the system area in [System Area Device], and set the allotted top address (D100) in [System Area Start Address].



6 Put a check mark in [Enable System Data Area], then put a check mark in [Window Control], [Window Screen No.], and [Window Display Position].



The Global Window (Indirect designation) settings are complete.

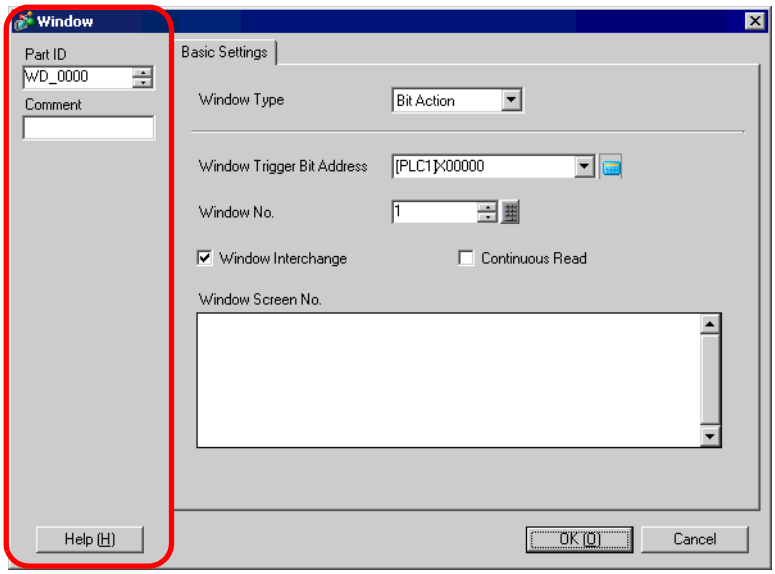
When bit 0 of the Window Control Address (e.g.: D116) specified in [System Area Device] turns ON, the Window is displayed. When the Window screen number's address (e.g.: D117) value changes, the screen changes. When the value of the display coordinate's address (e.g.: X-coordinate is D118, Y-coordinate is D119) changes, the Window's display position changes.

NOTE

- For details about the System Data Area, please refer to the "GP-Pro EX Device/PLC Connection Manual".

18.7 Window Part Settings Guide

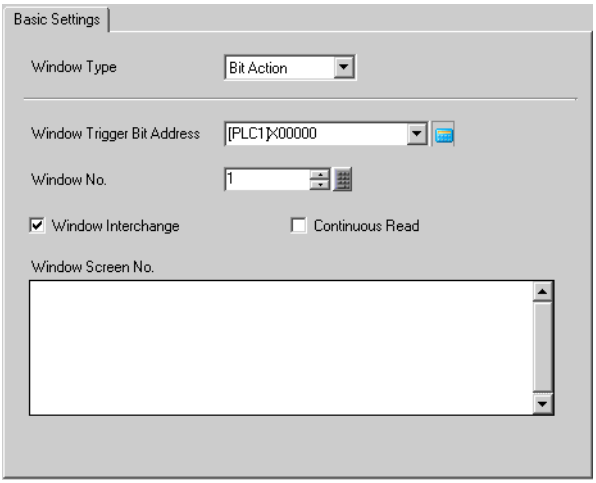
The Window part is used to display a Local Window on a Base Screen.
Place a Window part on the Base Screen and a window will be called up and displayed in that location.



Setting	Description
Part ID	Placed parts are automatically assigned an ID number. Window ID: WD_**** (4 digits) The letter portion is fixed. The number portion can be modified from 0000 to 9999.
Comment	The comment for each Part can be up to 20 characters long.
Window Type	Choose the control method for displaying/erasing the Window. • Bit Action The Window display is controlled by a specific bit address turning ON/OFF. ☞ "18.7.1 Bit Action" (page 18-22) • Word Action The Window display is controlled by a specific word address. ☞ "18.7.2 Word Action" (page 18-23) • Activate Switch The Window display is controlled by touching an exclusive switch. ☞ "18.7.3 Activate Switch" (page 18-25)

18.7.1 Bit Action

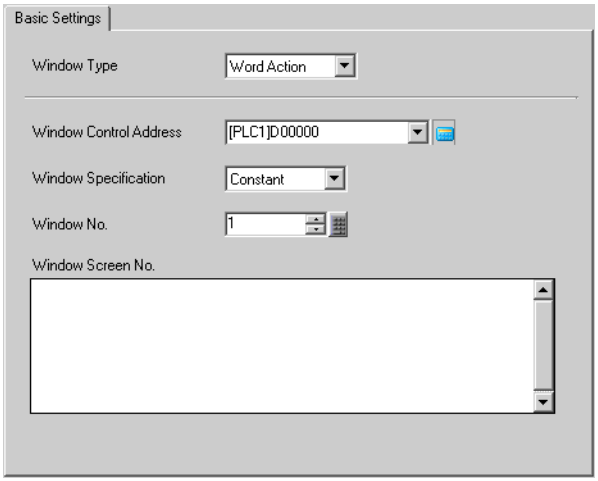
■ Basic Settings

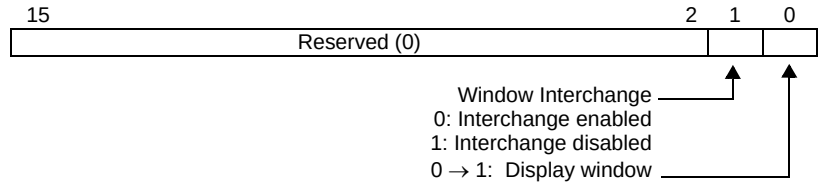


Setting	Description
Window Trigger Bit Address	Specify the bit address which will control the window display. This can be set to either a PLC address or GP internal device (System Data Editor). **NOTE** • When many parts are placed and running from a window, you can sometimes speed up screen display by designating GP internal device addresses.
Window No.	Specify the number of the Window Screen you want to display from 1 to 2,000.
Window Interchange	When this check box is checked, and when multiple windows are displayed on the screen, the current window display will be moved behind all other screen windows by touching it.
Continuous Read	Select whether or not to continue reading data from a part (not including touch input parts) placed on the window, regardless of the window being displayed/hidden. When a window is displayed, the part's Data Display speed is increased. **NOTE** • Since even when the window is not displayed, part data specified on the window and screen is read, so all the other screen display speeds will be decreased. • Up to 3 window parts with the [Continuous Read] option (2 if using Global Windows) can be placed on a single Base screen. When 3 windows are placed, other window parts (windows where [Continuous Read] is not set) can not display. • If there are windows with the [Continuous Read] option and windows without the option, windows with the [Continuous Read] option are read first. • Even when a window is not displayed, any scripts set on that window will execute if the script condition is satisfied. If you do not want it to execute, make sure the [Continuous Read] option is not checked.
Window Screen No.	Displays a list of the currently registered Window Screens. Choose a screen and the [Window Screen No.] will be automatically inputted.

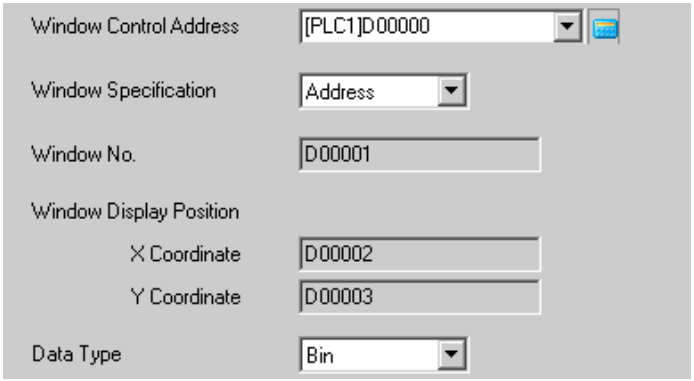
18.7.2 Word Action

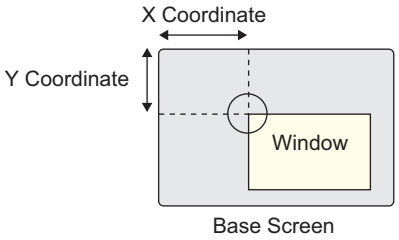
■ Basic Settings



Setting	Description
Window Control Address	Specify the word address which will control the window display. This can be set to either a PLC address or GP internal device (System Data Editor).  **NOTE** • When many parts are placed and running from a window, you can sometimes speed up screen display by designating GP internal device addresses.
Window Specification	Select the method to display the window from [Constant] or [Address]. For [Constant] Word Address: +1 Reserved; +2 Reserved; +3 Reserved (Control Address) For [Address] Word Address: +1 Window Screen No.; +2 Display Position (X Coordinate); +3 Display Position (Y Coordinate) (Control Address) • Constant Directly designate the Window No. • Address Four consecutive words are used starting from [Window Control Address], the Window No. and display position data are stored and designated indirectly. ☞ " ◆ Address Designation" (page 18-24)
Window No.	Specify the number of the Window Screen you want to display. The value can be from 1 to 2,000.
Window Screen No.	Displays a list of the currently registered Window Screens. Select a screen by clicking on it and [Window No.] will automatically be input.

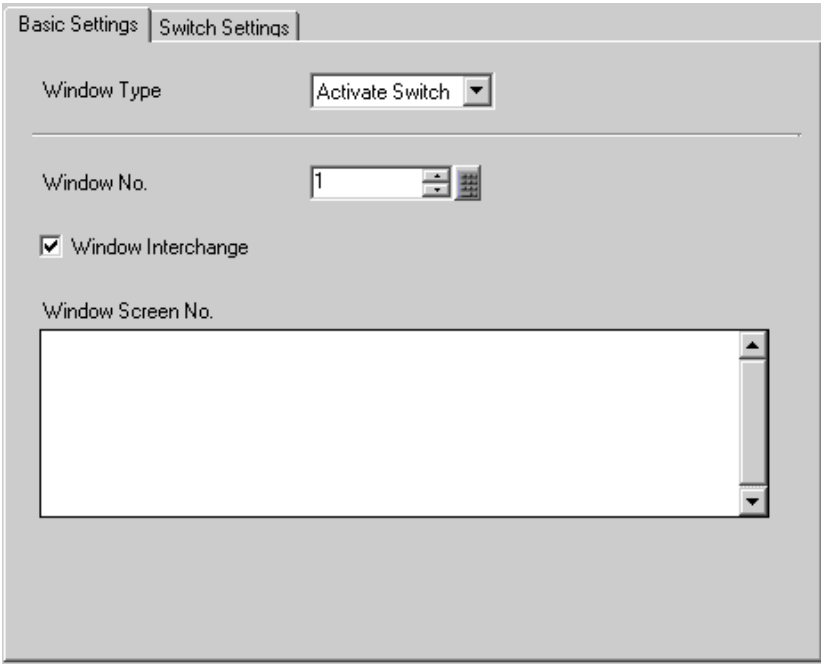
◆ Address Designation



Setting	Description
Window No.	Shows the address ([Window Control Address] + 1) which will store the window screen number you want to display.
Window Display Position (X Coordinate/ Y Coordinate)	Displays the address (X Coordinate: [Window Control Address] + 2, Y Coordinate: [Window Control Address] + 3) which will store the window's layout position data. It stores the coordinate data of the window's top-left corner. 
Data Type	Choose the type of data stored in the address from [Bin] or [BCD].

18.7.3 Activate Switch

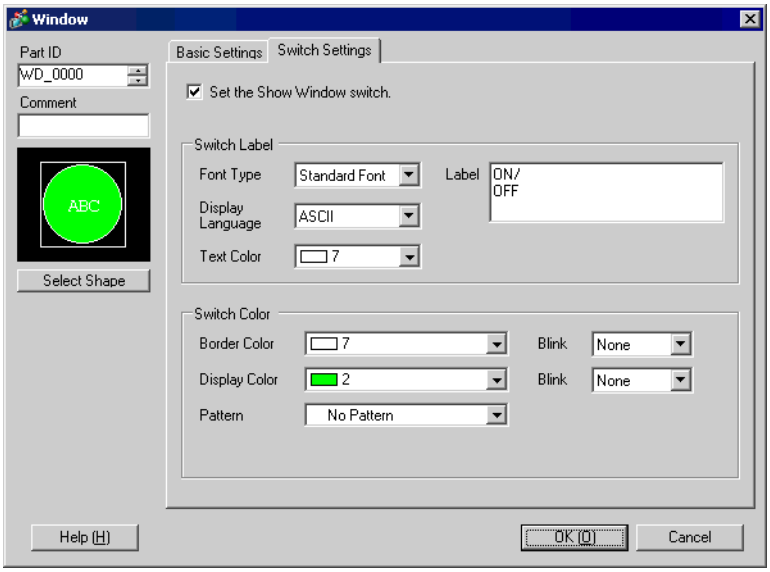
■ Basic Settings



Setting	Description
Window No.	Specify the number of the Window Screen you want to display from 1 to 2,000.
Window Interchange	When this check box is checked, and when multiple windows are displayed on the screen, the current window display will be moved behind all other screen windows by touching it. When you touch a window in the background, it will be moved to the front of the screen.
Window Screen No.	Displays a list of the currently registered Window Screens. Choose a screen and the [Window Screen No.] will be automatically inputted.

■ Switch Settings

When the [Window Type] is [Activate Switch], a display switch that is attached to the Window Part can be set.



Setting		Description
Set the Show Window switch		Select whether or not to place a switch used exclusively to display/erase the window. The Switch will automatically be placed in the top-right of the window. You can move it by selecting it.
Switch Label	Font Type	Select the font type that will be displayed on the Switch's label. • Standard Font For a bit map font, you can choose the magnification level of the letters' height and width. When you magnify/shrink the letters, the outline may become rough or the letter may appear squished. • Stroke Font This is an outline font where the ratio of the characters' height/width is fixed. The letters will have a smooth outline even if you magnify/shrink them, however, this font has a large size so it can burden the GP.
	Display Language	Select the label's display language from [ASCII], [Japanese], [Taiwanese], [Chinese] and [Korean].
	Text Color	Select a color for the label's text.
	Label	Input the text to display on the Switch.

Continued

Setting		Description
Switch Color	Border Color	If the Part Shape is set to have a border, select a color for it.
	Display Color	Select the Switch's color.
	Pattern	Select from the 8 patterns or choose [No Pattern].
	Pattern Color	If a pattern has been selected, choose a pattern color. The Switch's color will appear as a combination of the [Display Color] and [Pattern Color].
	Blink	Select whether or not the Part will blink, and the blink speed. You can choose different blink settings for the [Border Color], [Display Color], and [Pattern Color]. **NOTE** • There are cases where you can and can not set Blink depending on the Main Unit and System Settings' [Color Settings]. ☞ "9.5.1 Specify Color ■ Supported Color List" (page 9-33)

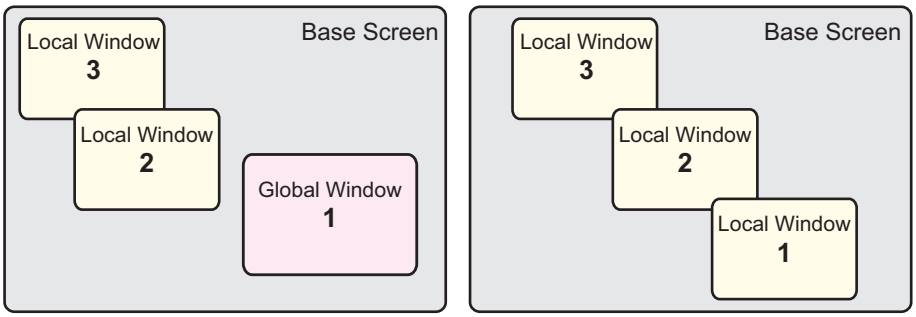
18.8 Restrictions for Windows

18.8.1 Restrictions for Window Screens

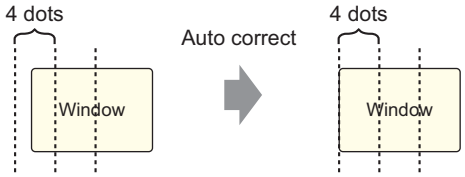
- Up to 2,000 Window Screens can be registered.
- A window can not be called from another window screen. Neither a window nor a Special Data Display [File Manager] can be placed on a window screen.
- When placing a Historical Trend Graph, Data Block Display Graph, Data Display, or Special Data Display [Show CSV] on a window screen, the following restrictions apply.
  - Historical Trend Graph, Data Block Display Graph
    A maximum of 8 Historical Trend Graphs and Data Block Display Graphs can be displayed at the same time on a single screen. When you are using a window screen, the total number of parts that can be displayed on the base screen and window screen together is 8.
    Also, the maximum number of channels (number of lines) that can be displayed on a single screen is 40. When you are using a window screen, the total number of channels that can be displayed on the base screen and window screen together is 40. When more than 40 lines are set up, the 41st and subsequent lines will not function.
  - Data Display
    You cannot input from a popup keypad into a Data Display placed on a Window. To input data into a Data Display on a Window, directly place the keypad.
  - Special Data Display [Show CSV]
    You can not edit data. (CSV edit screen will not function.)
- When 384 parts are already placed on the base screen and window screen combined, additional placed parts will not function. Parts will become disabled starting with parts placed on the last displayed window screen.
- When more than 512 Moving Mark display positions are on the base screen and window screen, the 513th on will be disabled. They will become disabled starting with marks placed on the last displayed window screen.

18.8.2 Restrictions for Show Window

- Multiple Window parts can be placed on the same Base screen, but a maximum of 3 can displayed at the same time. In the case of global windows, 1 Global Window and 2 Local Windows can be displayed simultaneously on a single screen.
  For more details, please refer to " ■ Displaying multiple Windows on a single screen" (page 18-30) .



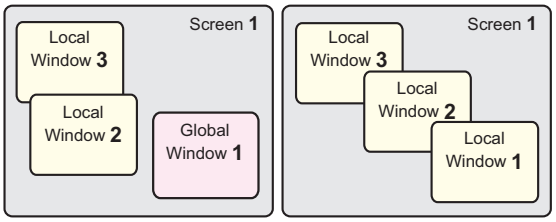
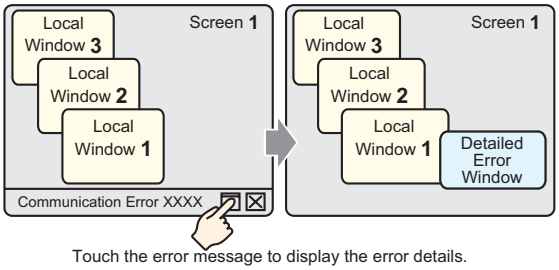
- Only 1 Global Window can be set in each project.
- When an undefined registration number is designated, the window will not display.
- When a window has been positioned to stick out past its Base Screen, the window will be automatically adjusted to fit inside the screen.
- A window's size and display position go in 4 dot increments for the X coordinate and 1 dot increments for the Y coordinate.
  When the designated X coordinate position is not a 4 dot increment, the left side will automatically be adjusted to display as a 4 dot increment.

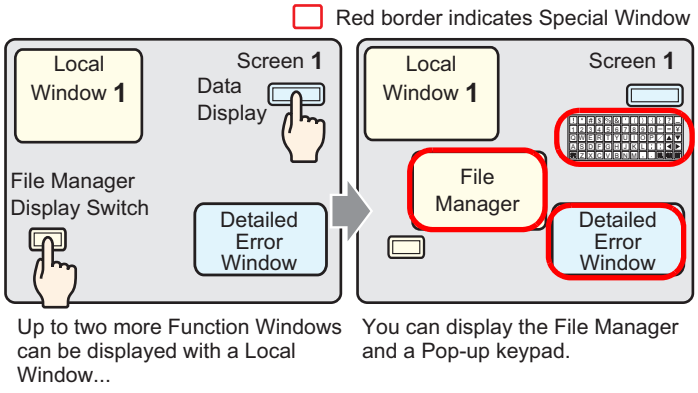


- If multiple devices/PLCs are connected, only the device/PLC specified in the GP's System Data Area will be able to display Global Windows.
- When using a Switch Lamp [Special Switch (Window Display)] to display a window, if the Window part specified in [Window ID] is saved multiple times on the same screen, the first registered window will be displayed. All other registered windows will not function.
- Parts on screens that are completely hidden by a displayed window can not be activated by touch. However, if only a portion of a part is hidden by a window, the viewable portion can be activated by touching it.
- Up to 3 window parts with the [Continuous Read] option (2 if using Global Windows) can be placed on a single screen. When 3 are placed, all other windows without the [Continuous Read] option that are placed on the screen will not function.
- If [Continuous Read] is set, even when the window is not displayed, any scripts set on the window will execute when their condition is satisfied.
  If you do not want the scripts to execute, make sure the [Continuous Read] option is not checked.

■ Displaying multiple Windows on a single screen

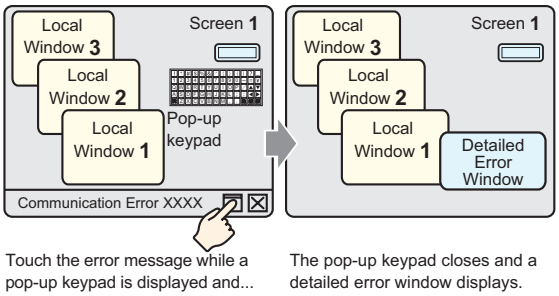
In addition to the Global Windows/Local Windows (known as a [User Window]) that can be created, there are also screens that are handled as a system window.

<table>
<tr><th></th><th>Subject</th><th>No. of Windows that can be displayed on 1 screen</th></tr>
<tr><td>User Window</td><td>• Local Window
• Global Window</td><td>Up to 3 Global Windows/Local Windows combined can be displayed
 
</td></tr>
<tr><td>Special Window</td><td>• Security Password Input Screen
• Detailed Error Window
• Data Display’s Pop-up keypad
• Special Data Display [Show CSV]’s edit screen
• Special Data Display [File Manager]</td><td>You can only display one Special Window.
 

However, if the maximum number of User Windows are not currently displayed, multiple Special Windows can be displayed by using Local Windows.
 

IMPORTANT
• When the Security Password Input Screen is displayed, other features cannot be displayed in a User Window.</td></tr>
</table>

Continued

<table>
<tr><th></th><th>Subject</th><th>No. of Windows that can be displayed on 1 screen</th></tr>
<tr><td>Special Window</td><td>• Security Password Input Screen
• Detailed Error Window
• Data Display's Pop-up keypad
• Special Data Display [Show CSV]'s edit screen
• Special Data Display [File Manager]</td><td>When a window display with a high-priority function occurs, a lower priority window will automatically be closed in order to display the new window.
Function Priority Order
<table><tr><td>1</td><td>Security Password Input Screen</td></tr><tr><td>2</td><td>Detailed Error Window</td></tr><tr><td>3</td><td>• Data Display's Pop-up keypad
• Special Data Display [Show CSV]'s edit screen
• Special Data Display [File Manager]</td></tr></table> 
Touch the error message while a pop-up keypad is displayed and...
The pop-up keypad closes and a detailed error window displays.
IMPORTANT
• A Special Window has a higher priority display function than a User Window. Therefore if a File Manager (displayed as a Local Window) overlaps a Detailed Error Window, the File Manager is hidden under the Detailed Error Window.</td></tr>
<tr><td>System Window</td><td>• Error Message
• Banner Alarm Message
• System Menu
• Japanese keypad</td><td>These windows will be displayed regardless of the display status of the User Windows/Special Windows. Because these are independent windows used by the system, there is no display limit.</td></tr>
</table>

Memo