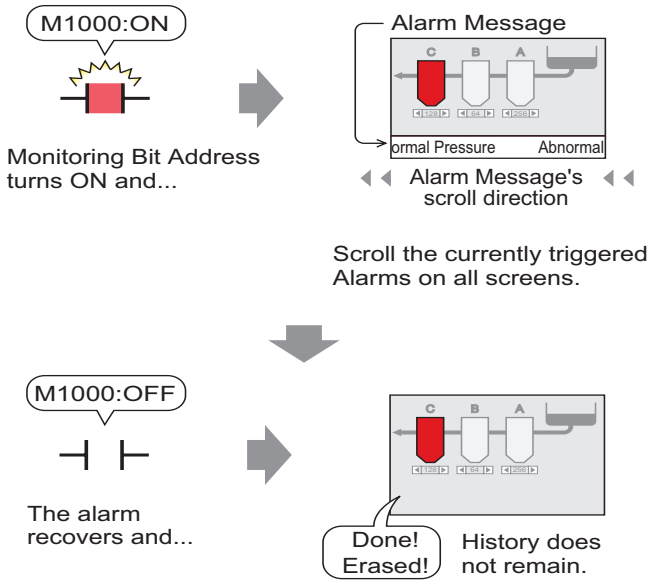
19 Alarm

This chapter explains how to display and manage "Alarms" in GP-Pro EX, and discusses the useful features of Alarms.
Please start by reading "19.1 Settings Menu" (page 19-2) and then turn to the corresponding page.

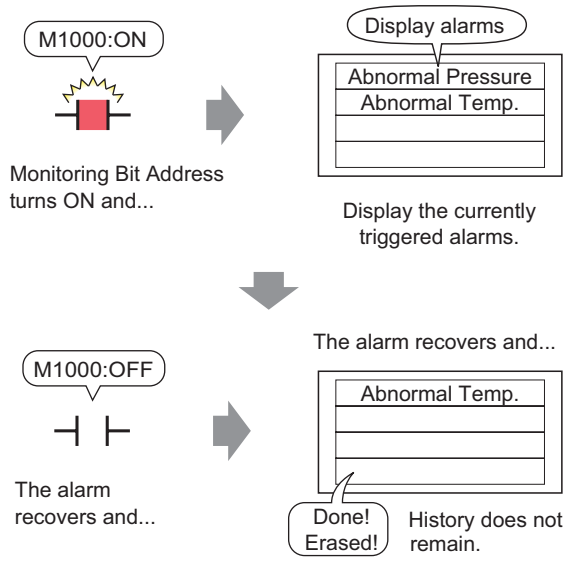
19.1 Settings Menu

Scrolling Alarm Messages



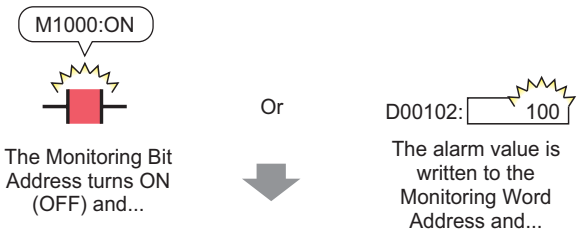
☞ Setup Procedure (page 19-12)
☞ Details (page 19-8)

Viewing Active Alarms in a List



☞ Setup Procedure (page 19-16)
☞ Details (page 19-15)

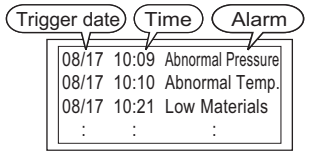
Acknowledging the Alarm History



Displays the currently active alarms in the order of their trigger date/time, and the Alarm History of past alarms.

All active Alarms can be viewed in a list.

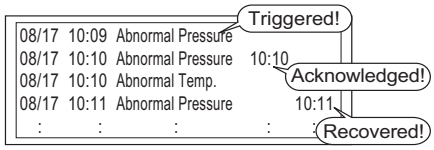
[Active]



The recovered alarm is cleared and no history remains.

Display Alarms separately by Trigger, Acknowledged, and Recovery.

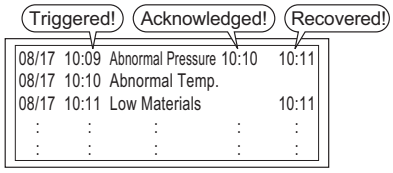
[Log]



Even when the alarm recovers, the history remains.

Display the Trigger time •Acknowledged time •Recovery time for all alarms on the same row.

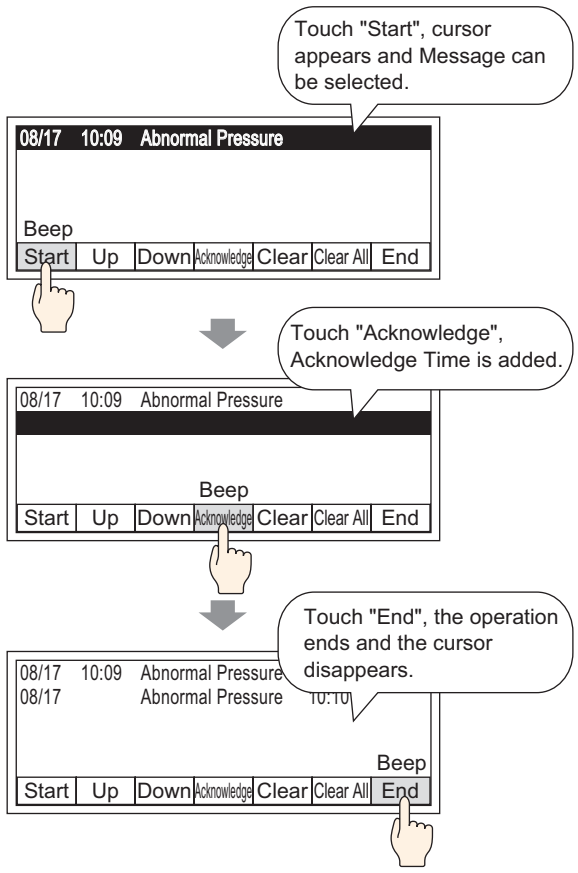
[History]



Even when the alarm recovers, the history remains.

☞ Setup Procedure (page 19-22)
☞ Details (page 19-21)

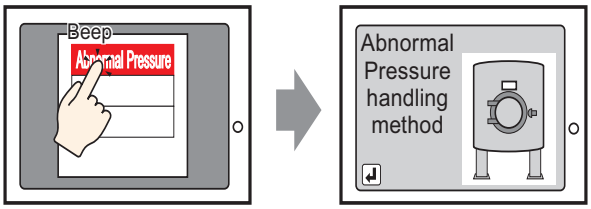
Working with Alarm History



☞ Setup Procedure (page 19-33)
☞ Details (page 19-32)

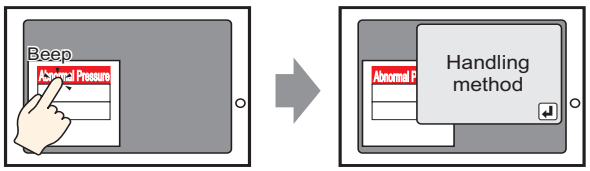
Displaying Help (Sub Display)

■ Display a Base Screen (Change Base Screen)



Touch the alarm, and the screen changes to another screen.

■ Display a window (Show Text Window)

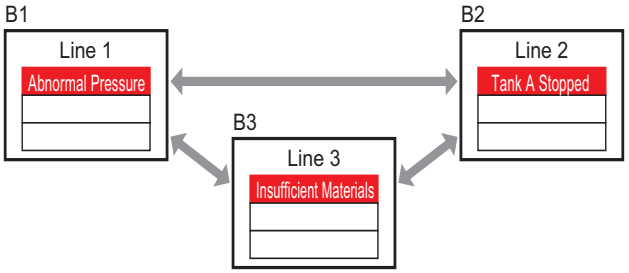


Touch the alarm and the related window is displayed.

☞ Setup Procedure (page 19-37)
☞ Details (page 19-36)

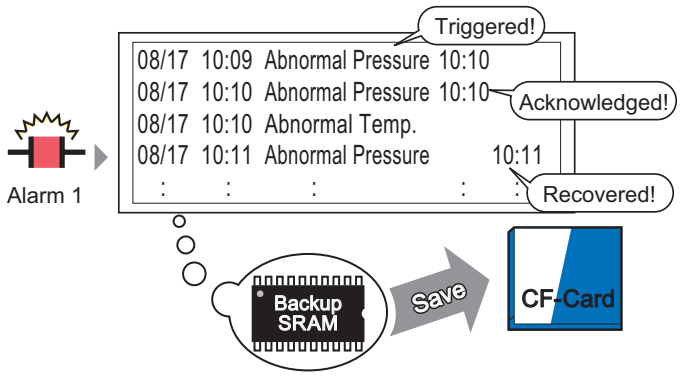
Viewing Alarms by Line

Alarm blocks displayed on each screen can be changed.



☞ Setup Procedure (page 19-51)
☞ Details (page 19-50)

Storing Alarm Messages in the CF Card or USB Storage Device



The Alarm History data stored in the backup SRAM is saved to the CF-card.

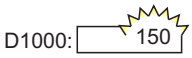
☞ Setup Procedure (page 19-57)
☞ Details (page 19-56)

Read data when Alarms occur

☞ Setup Procedure (page 19-65)
☞ Details (page 19-64)

When Monitor Bit Address turns ON(/OFF)...

Or

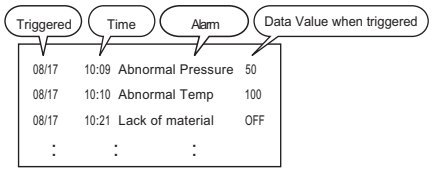


When Alarm Value is written to Monitor Word Address...

Value is displayed according to the triggered, acknowledged and recovered date and time of the current alarm.

Lists all active Alarms.

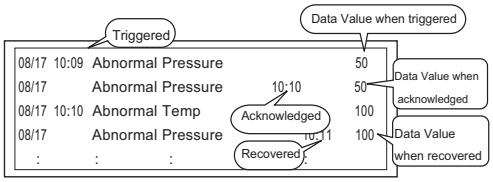
[Active]



*Recovered Alarms will be cleared and Alarm history will not be stored.

Display Alarms by status: Trigger, Acknowledged, or Recovery.

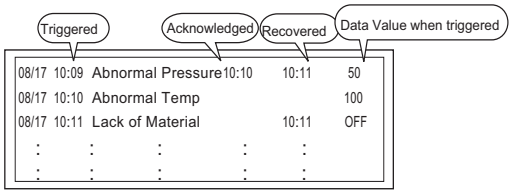
[Log]



*Alarm history will remain after recovery.

Display Alarms by Trigger, Acknowledged, or Recovery status, on the same row.

[History]



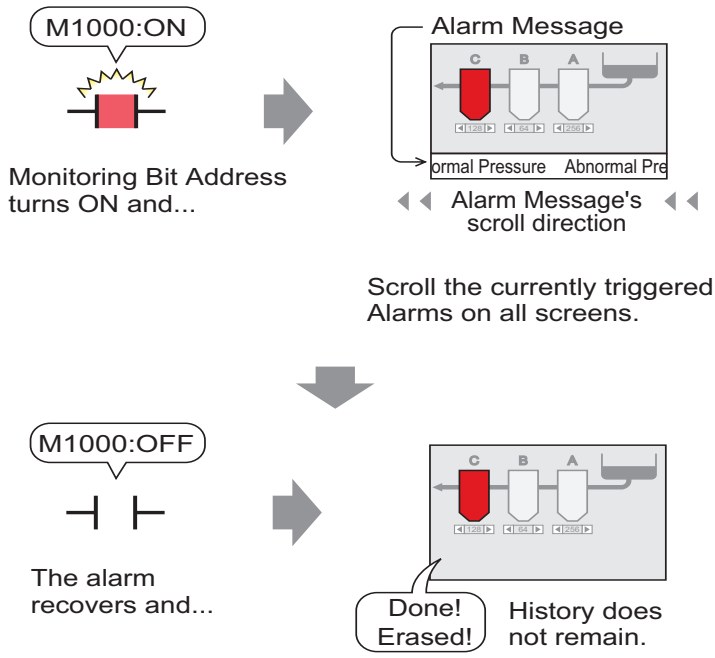
*Alarm history will remain after recovery.

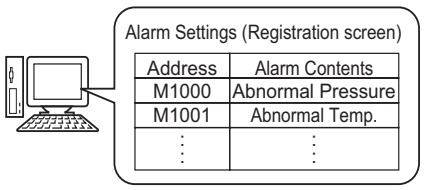
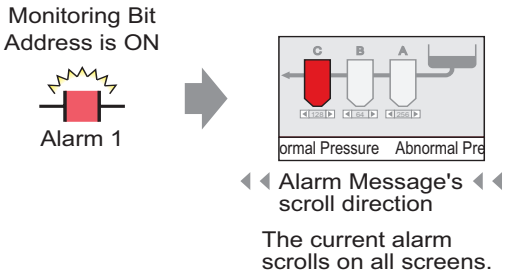
19.2 Scrolling Alarm Messages

19.2.1 Introduction

When the Monitoring Bit Address turns ON, the Alarm scrolls across the screen.

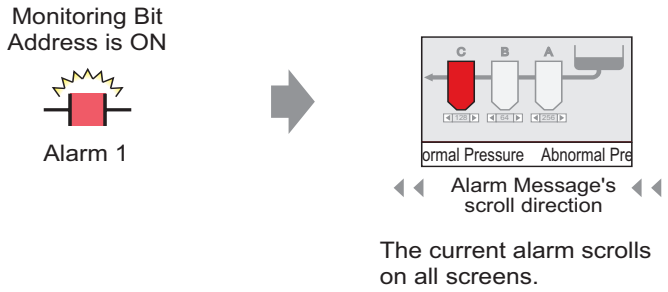
Scrolling Alarms (Example)



Register	Display
	

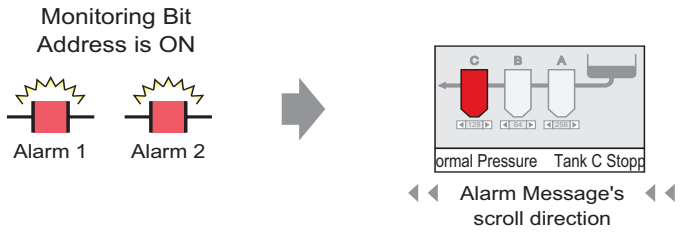
■ Display Example

◆ When a single alarm is triggered:



The current alarm scrolls on all screens.

◆ When multiple alarms are triggered:

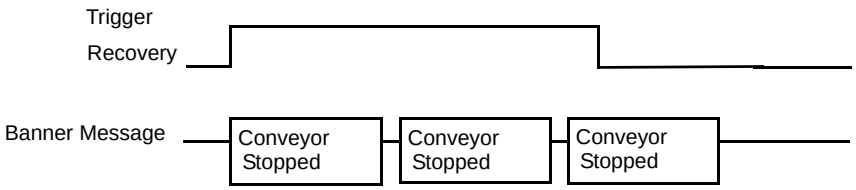


Currently triggered Alarm scroll on all screens.

■ Display When Alarm Ends

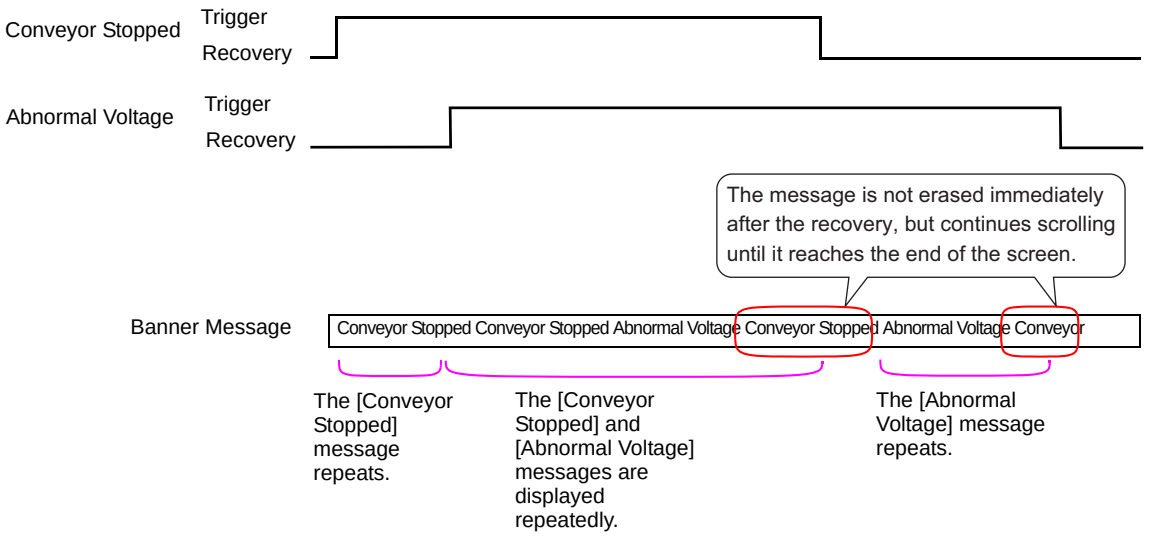
◆ When a single alarm is triggered:

While the alarm is active, a repeating Alarm Message scrolls on the screen. When the Alarm recovers, the final instance of the message displays until it finishes scrolling.



◆ When multiple alarms are triggered:

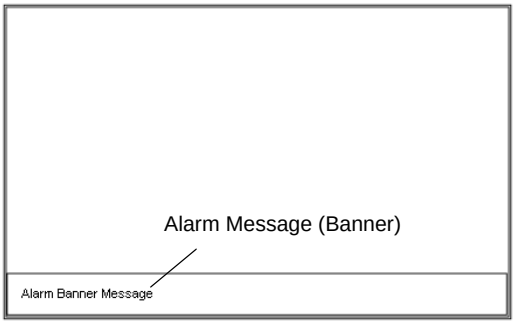
All active Alarm messages repeatedly scroll on the screen. When the [Conveyor Stopped] alarm recovers halfway through a message, the final [Conveyor Stopped] message scrolls until it is finished, and after that the [Abnormal Voltage] message displays repeatedly. Even when the [Abnormal Voltage] alarm recovers, the final instance of the message still displays until it finishes scrolling.



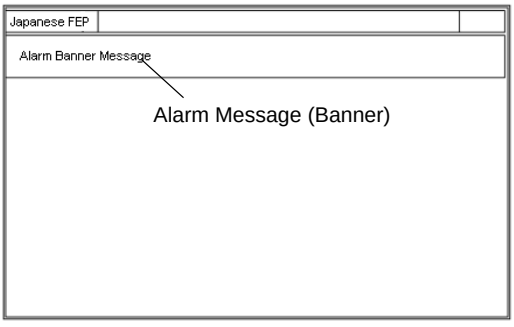
■ Display Alarm Message (Banner) Position

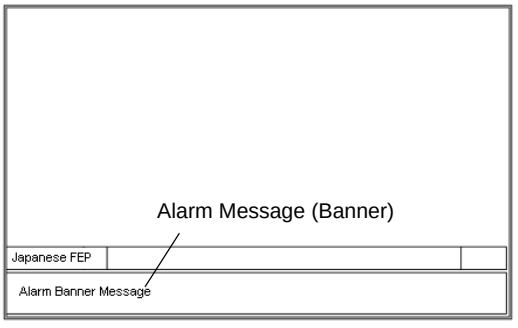
Alarm Messages (Banner) are displayed on the lower part of the GP screen but can also be displayed on the upper part, depending on the System Menu Window display setting.

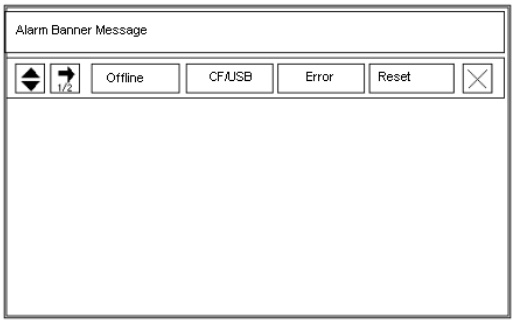
◆ Normal Display

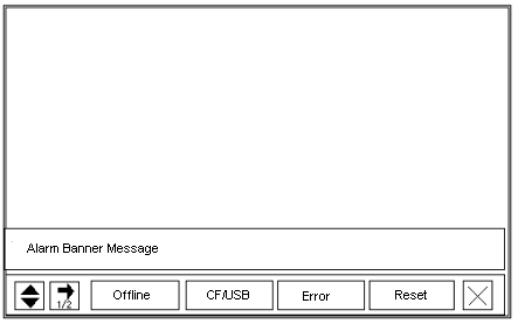


◆ Display layouts when the System Menu is combined with Alarm Message







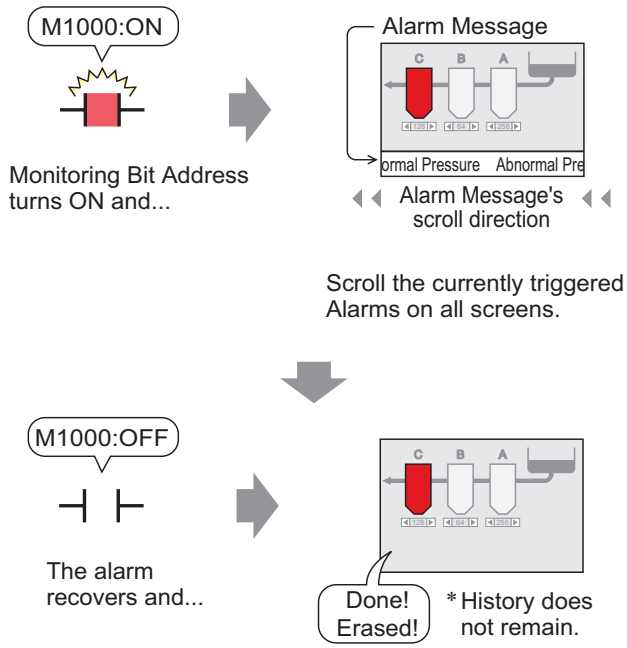


The Alarm Message banner can be displayed on the upper or lower part of the screen. If the Japanese FEP or the System menu is displayed, the Alarm Message banner will always appear below the Japanese FEP and above the System Menu.

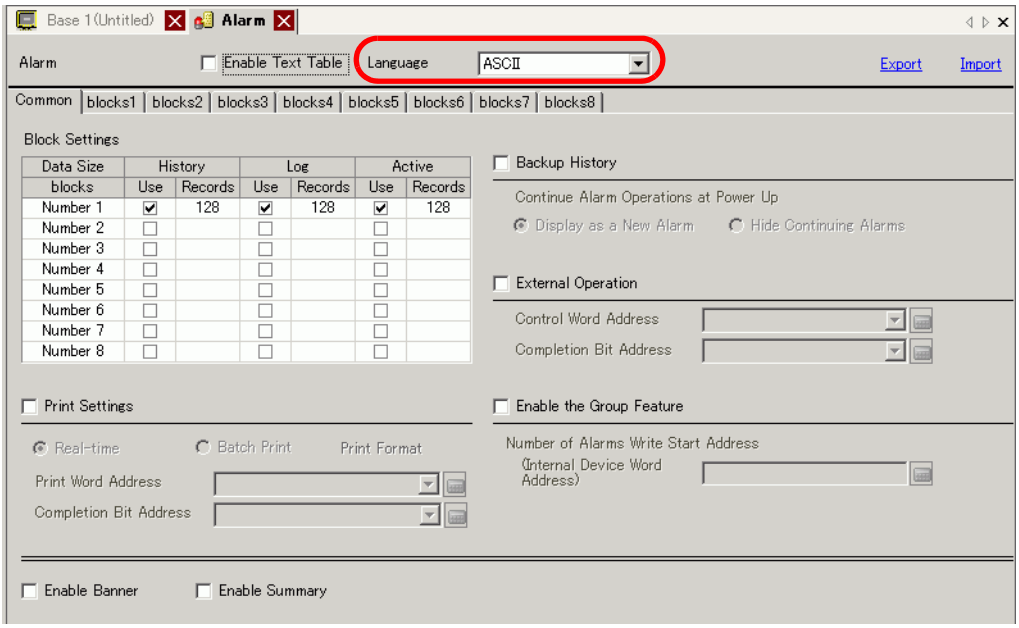
19.2.2 Setup Procedure

NOTE

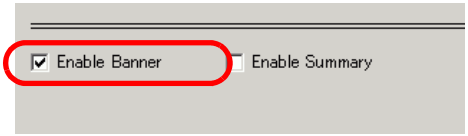
- Please refer to the Settings Guide for details.
  ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm (Banner) Settings Guide" (page 19-100)



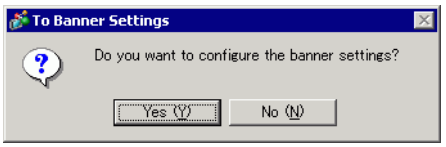
1 From the [Common Settings (R)] menu, select [Alarm (A)], or click  . The following screen appears. Specify a display language for the Alarm Message in [Language].

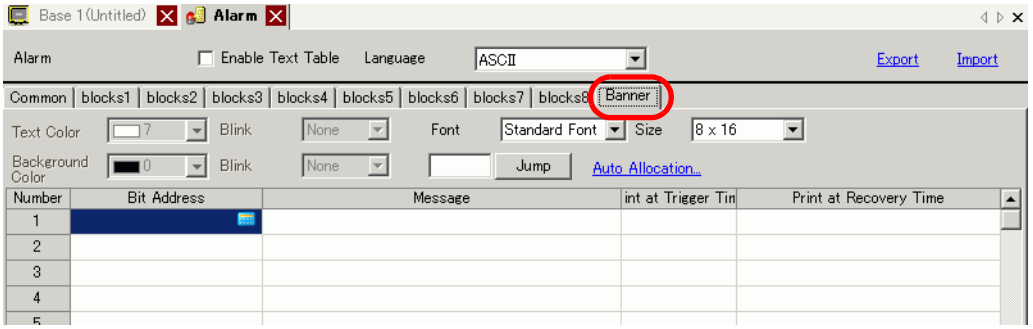


2 Select the [Enable Banner] check box.



3 When the following notice message appears, click [Yes]. The [Banner] tab is displayed.

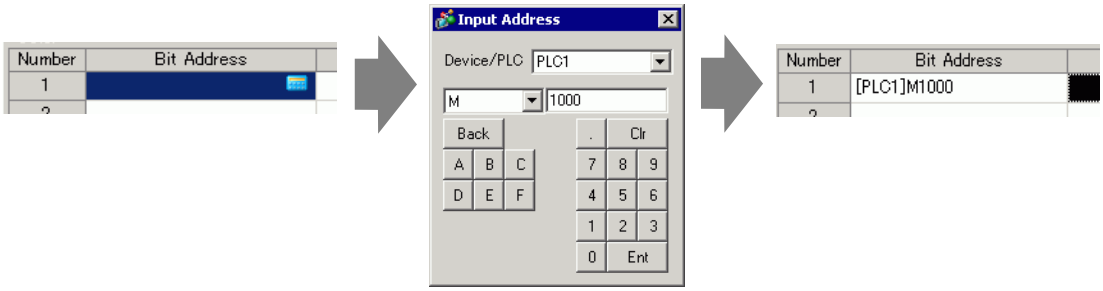




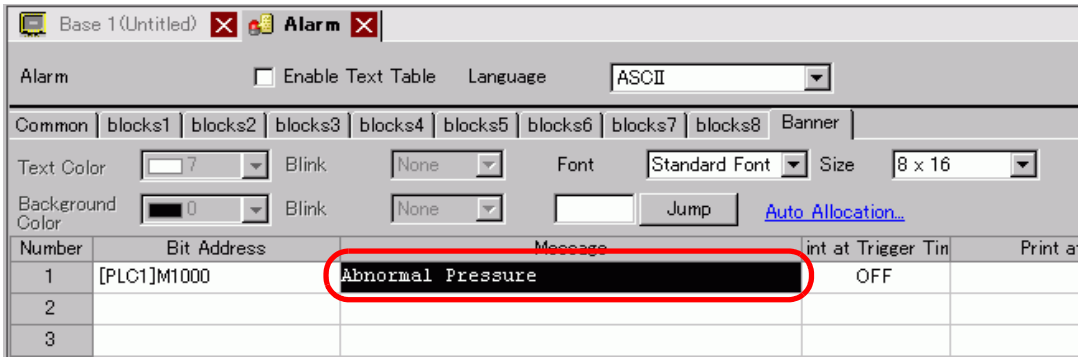
4 Set the [Bit Address] to monitor the alarm trigger. (For example, M1000)

Click the icon to display an address input keypad.

Select device "M", input "1000" as the address, and press the "Ent" key.



5 In the [Message] column, enter a message to scroll when an alarm is triggered, and specify [Text Color], [Background Color], and [Blink].



NOTE

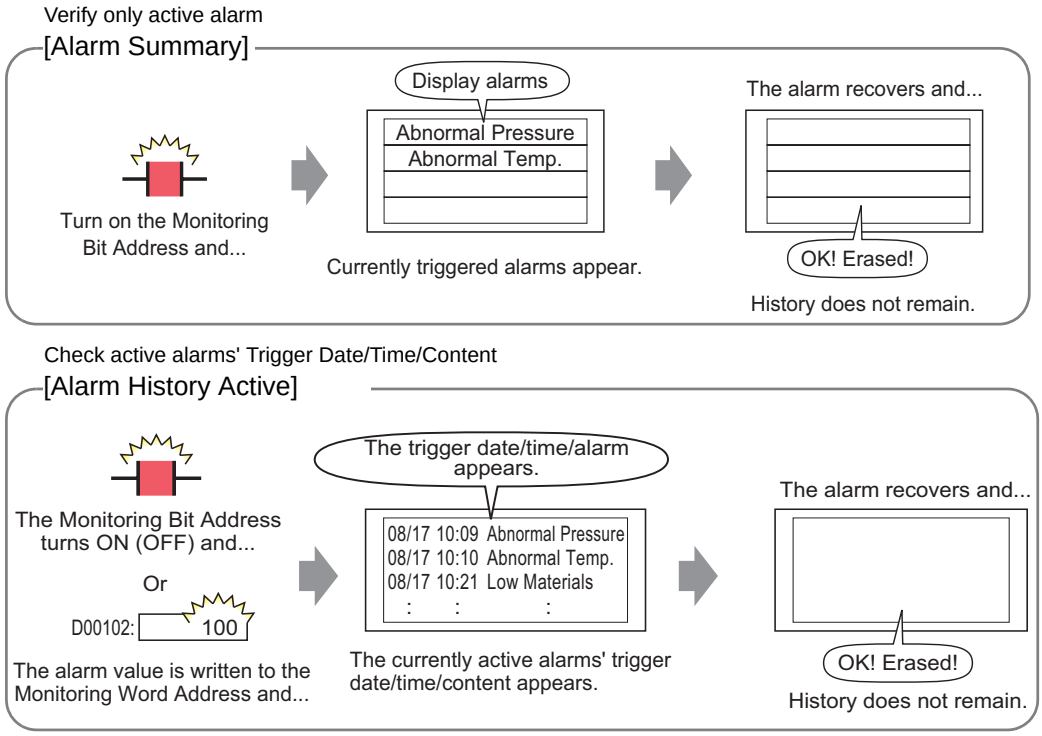
- Up to 512 alarm messages can be registered.
- Set the monitoring bits within 128 Words for the whole Alarm Message (Banner).
- Up to 160 single-byte characters can be registered in a single Alarm Message.
- When the [Enable Text Table] check box is selected, the message language can be switched and displayed even while the system is running.
  ☞"17.4 Changing Languages (Multilanguage)" (page 17-16)
- Alarm settings can be exported or imported in CSV format.
- You can show Alarm messages in banners or Memory Link (Ethernet) messages in banners, but not both. If you set both, an error will occur and the transfer cannot be performed. Please decide between the two.

19.3 Viewing Active Alarms in a List

19.3.1 Introduction

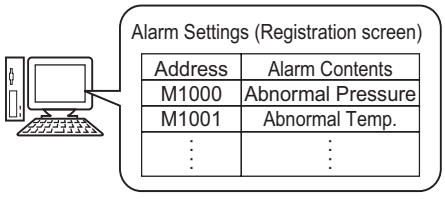
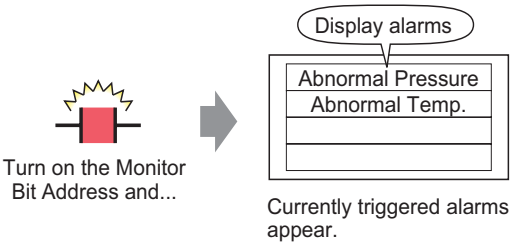
When the Monitoring Bit Address turns ON, the Alarm scrolls across the screen.

Viewing active alarms in a list (Example)



NOTE

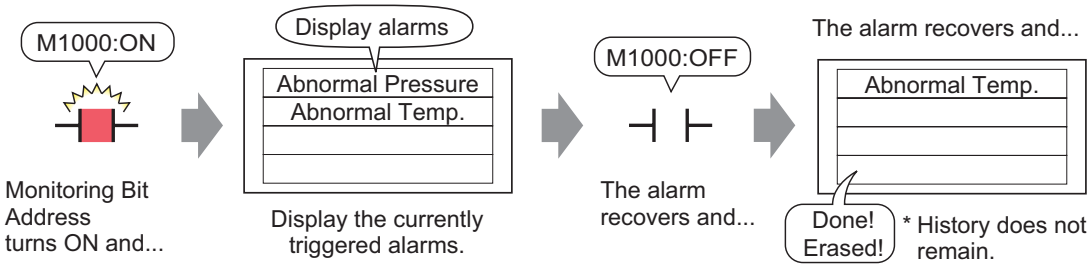
- This section explains the first case, Alarm Summary (Display alarm messages only).

Register	Display
	Active alarms are displayed in ascending order of registered Monitor Bit Addresses. 

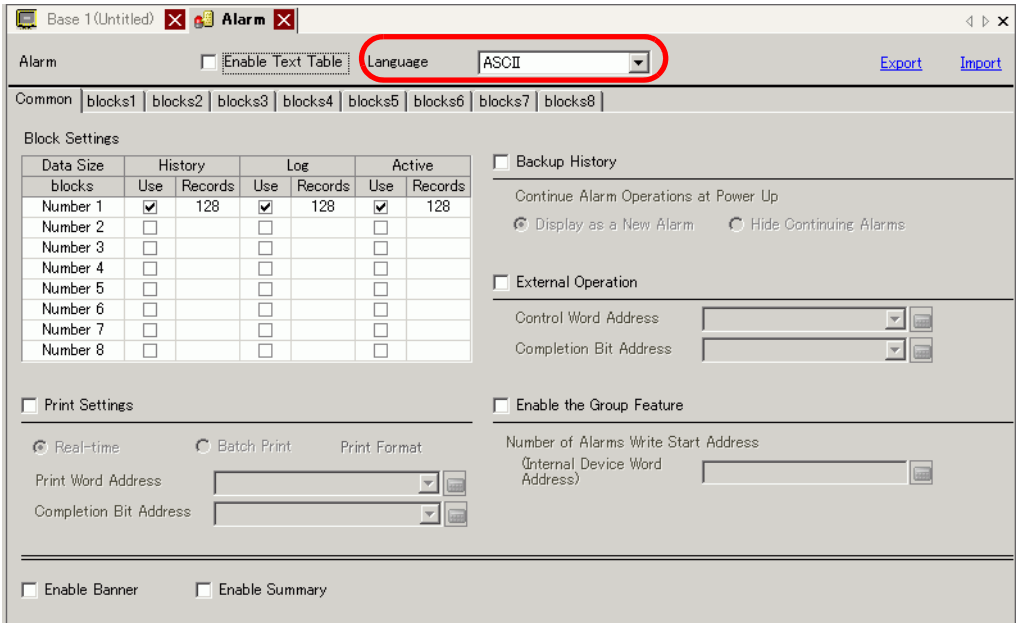
19.3.2 Setup Procedure

NOTE

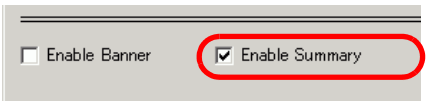
- Please refer to the Settings Guide for details.
  ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm (Summary) Settings Guide" (page 19-103)
  ☞"19.10.2 Alarm Parts Settings Guide ■ Summary" (page 19-140)
- Refer to Editing a Part for details about placing parts or setting addresses, shapes, colors, and labels.
  ☞"8.6.1 Editing Parts" (page 8-52)



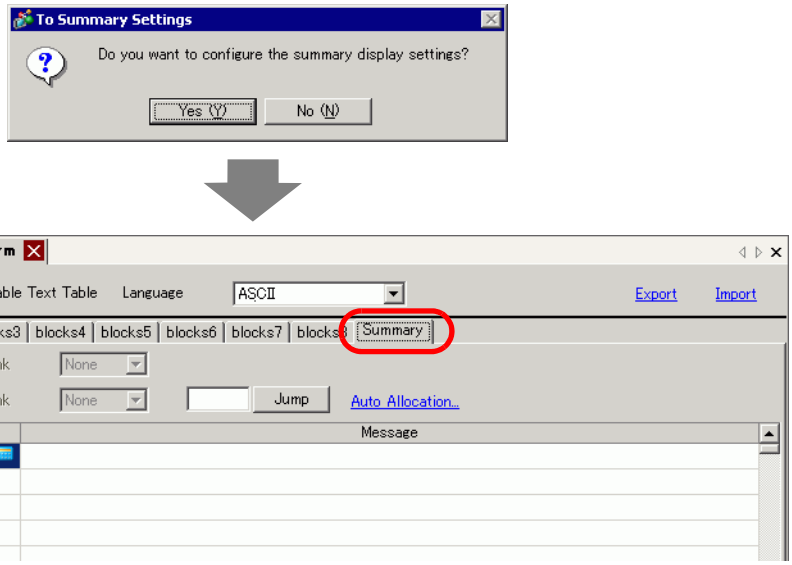
1 From the [Common Settings (R)] menu, select [Alarm (A)], or click . The following screen appears. Specify a display language for the Alarm Message in [Language].



2 Select the [Enable Summary] check box.



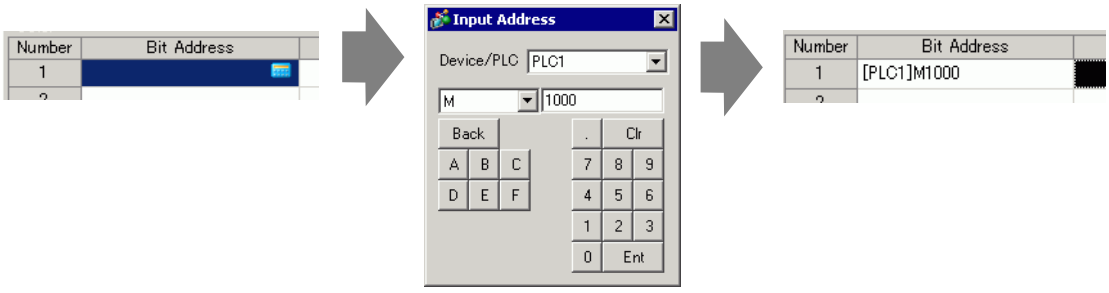
3 When the following notice message appears, click [Yes]. The [Summary] tab is displayed.



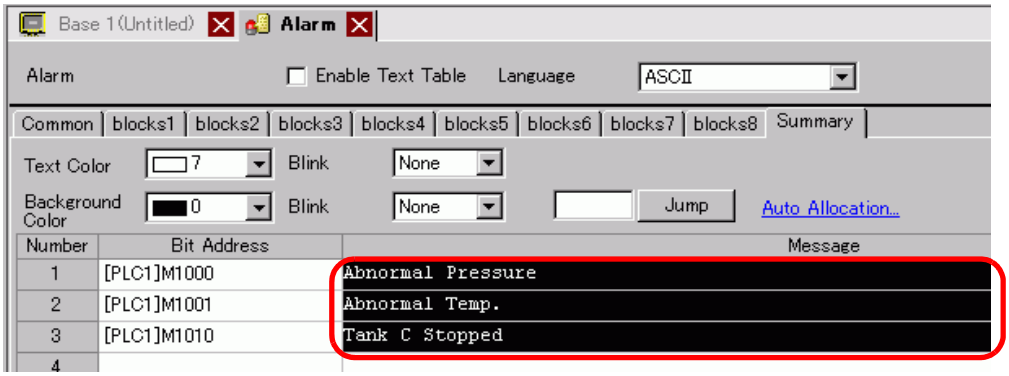
4 Set the [Bit Address] to monitor the alarm trigger. (For example, M1000)

Click the icon to display an address input keypad.

Select device "M", input "1000" as the address, and press the "Ent" key.



5 In the [Message] column, enter a message to display when an alarm is triggered, and specify [Text Color], [Background Color], and [Blink].



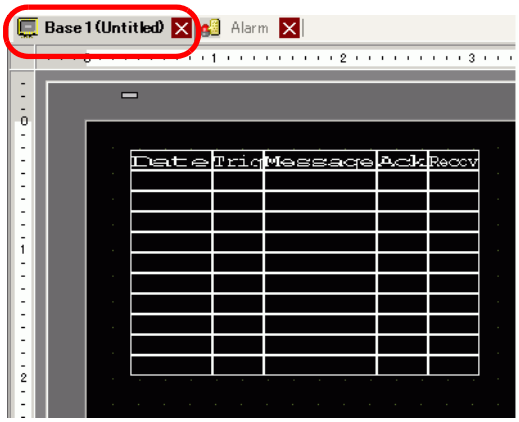
IMPORTANT

- Do not use the same address for multiple monitoring bits. When the same address is used for multiple monitoring bits, only the alarm message having the smallest registration number (Row Number) is displayed.
- Use consecutive Bit Addresses to set up the monitor bit for the message you want to display on 1 screen. If you set up monitor bits on different devices, or within the same device but in nonconsecutive Bit Addresses, you cannot display the message on the same screen.

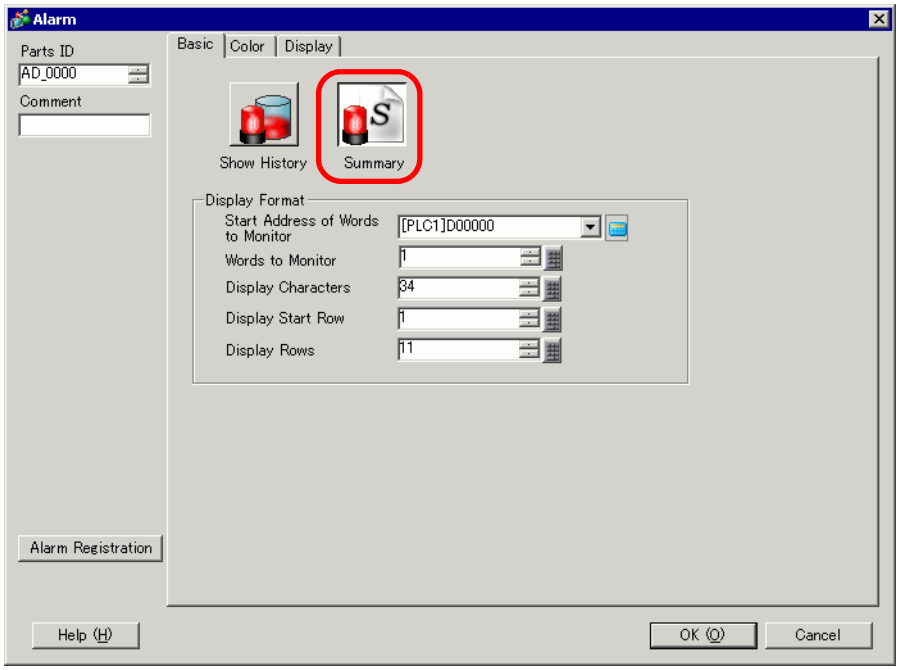
NOTE

- Up to 8,999 alarm messages can be registered.
- Up to 160 single-byte characters can be registered in a single Alarm Message.
- When the [Enable Text Table] check box is selected, the message language can be switched and displayed even while the system is running.
  ☞"17.4 Changing Languages (Multilanguage)" (page 17-16)
- Alarm settings can be exported or imported in CSV format.

6 Open the screen editor and set up the Alarm part. From the [Parts (P)] menu, select [Alarm (A)], or click  and place the Part on the screen.



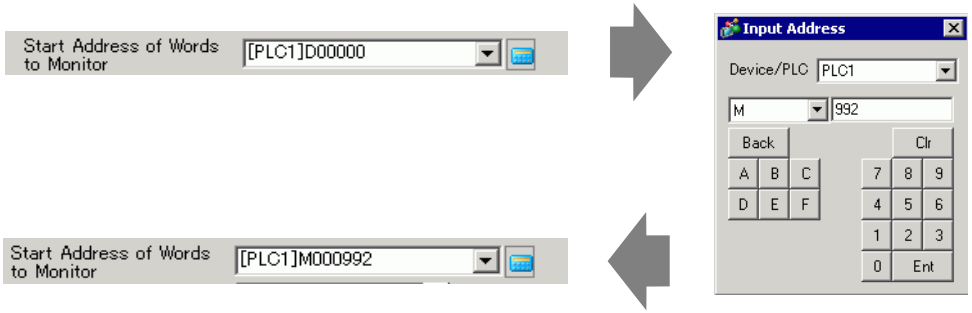
7 Double-click the placed Alarm. The Alarm dialog box appears. Select [Summary].

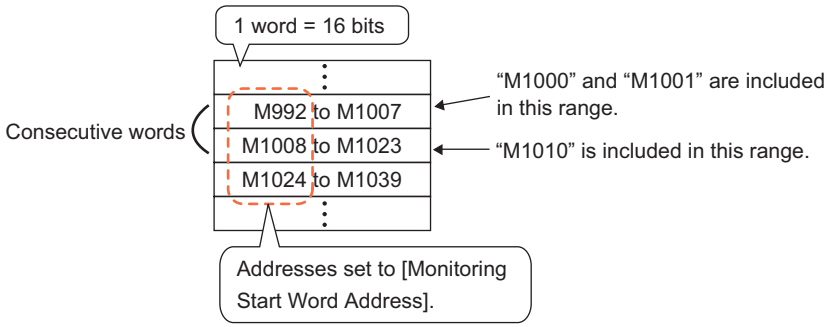


8 In [Start Address of Words to Monitor], set the start address of the Bit Address registered in [Alarm] by using the value converted into a 16-bit Word.
For example, to display the message of the registered monitoring bit "M1000" in a Summary, specify "M992" in [Start Address of Words to Monitor], because addresses from M992 to M1008 are included in one Word.

Click the icon to display an address input keypad.

Select device [M], input [992] as the address, and press the [Ent] key.





9 In [Words to Monitor], allocate monitoring bit addresses by defining the number of Words from the [Monitoring Word Address]. (Example: 2)

10 Set the [Display Characters], [Display Start Row], and [Display Rows] of the message to be displayed on the screen.

11 Set the color to be used when Alarm Message is recovered and cleared in the [Color] tab, then set the font and size of the message in the [Display] tab, and click [OK].

NOTE

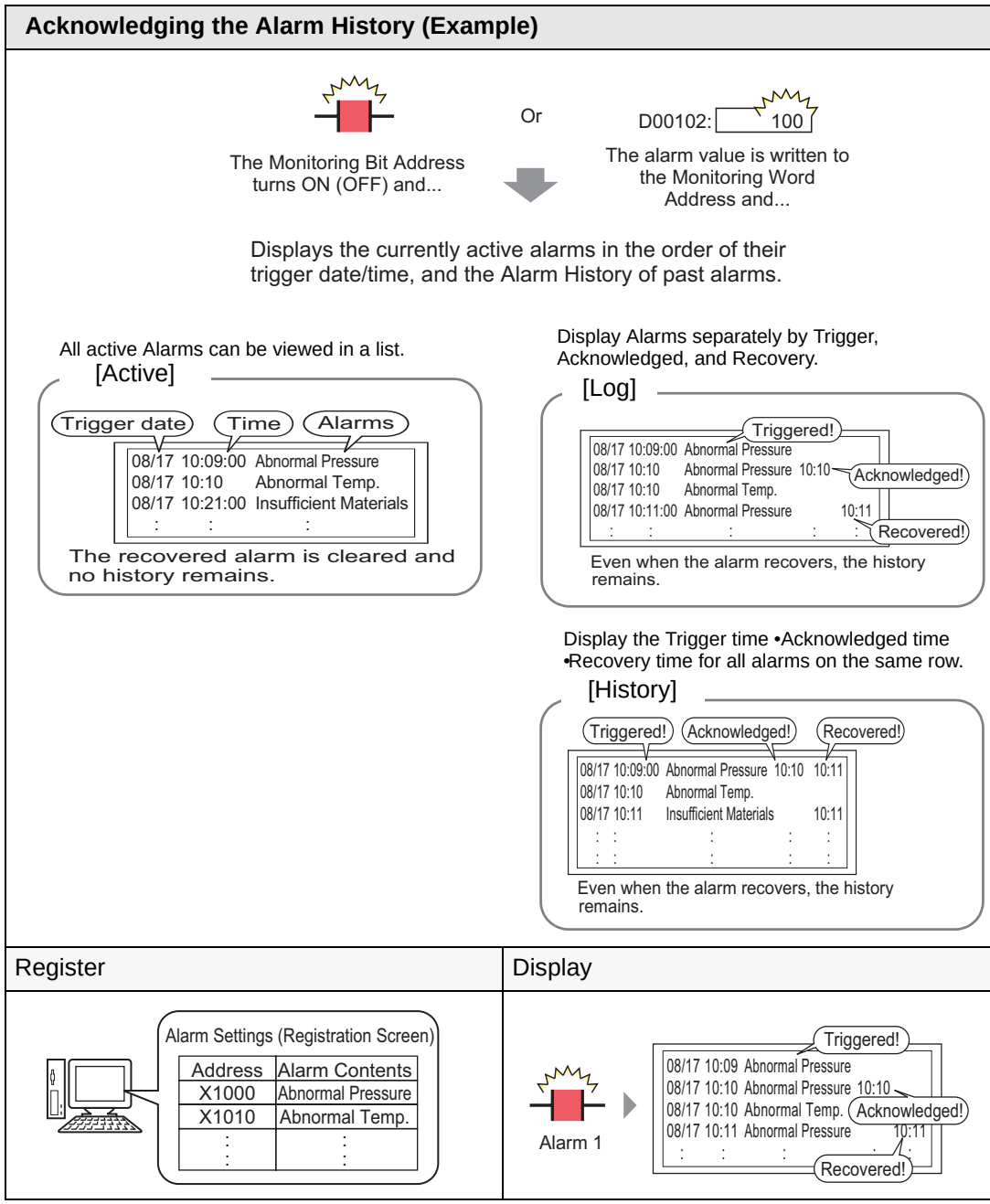
- You can draw one alarm part (alarm summary) on one base screen. If you want multiple alarm parts on the same screen, use Window parts to load and display Window Screens set up with alarm parts.
- Each alarm message can have a maximum 160 single-byte characters. You can display up to 50 rows on a single screen. When displaying alarms on the GP, the maximum number of characters per row and the maximum number of rows per screen depends on the GP model and the font size.
- If the Alarm Message is wider than the display area, the portion that exceeds the area is truncated and is not displayed.
- By setting Alarm Parts [Summary] on multiple screens, a maximum of 1,600 Alarm Messages can be displayed in an entire project.
- Place the Alarm Parts [Summary] display areas so that they do not overlap with other parts or objects.

19.4 Acknowledging the Alarm History

19.4.1 Introduction

When the Monitoring Bit Address turns ON (or OFF depending on your setting preference), or when alarm data is written to the Monitoring Word Address, the Alarms are listed together with its trigger date/time. There are three ways to view the Alarms: "Active", "Log", and "History".

Acknowledging the Alarm History (Example)



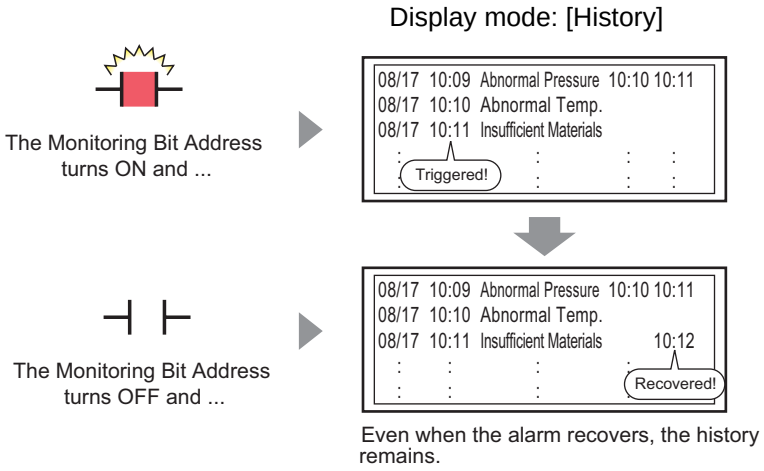
19.4.2 Setup Procedure

■ Bit Monitoring

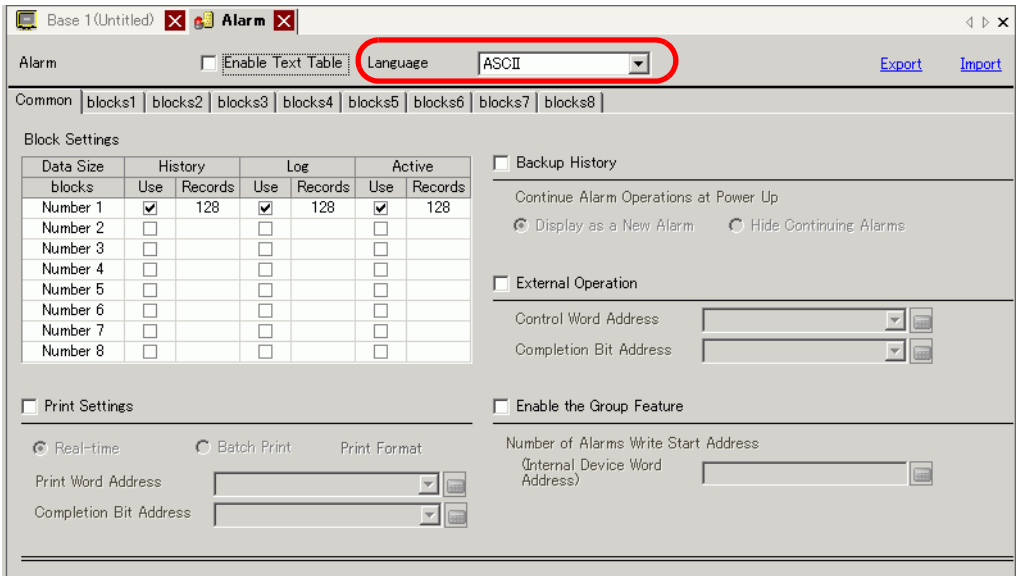
NOTE

- Please refer to the Settings Guide for details.
  ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm (Block 1) Settings Guide ◆ Bit Monitoring" (page 19-88)
  ☞"19.10.2 Alarm Parts Settings Guide ■ Show History" (page 19-106)
- Refer to Editing a Part for details about placing parts or setting addresses, shapes, colors, and labels.
  ☞"8.6.1 Editing Parts" (page 8-52)

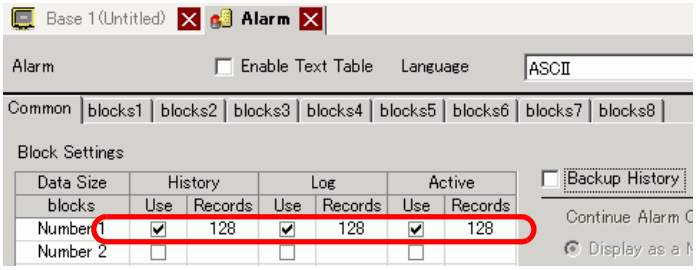
When the Monitoring Bit Address turns ON, the Alarms are displayed together with their trigger date/time. When the Monitoring Bit Address turns OFF, the recovery time is added on the same row.



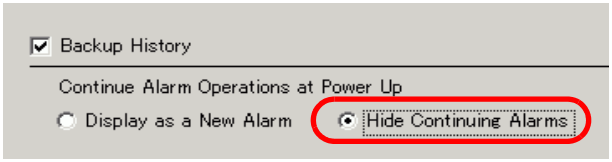
1 From the [Common Settings (R)] menu, select [Alarm (A)], or click . The following screen appears. Specify a display language for the Alarm Message in [Language].



2 In the Block Settings, select the check box for the desired display mode (History/Log/Active) for the block to which the message is registered, and set the number of messages stored as history for each mode.



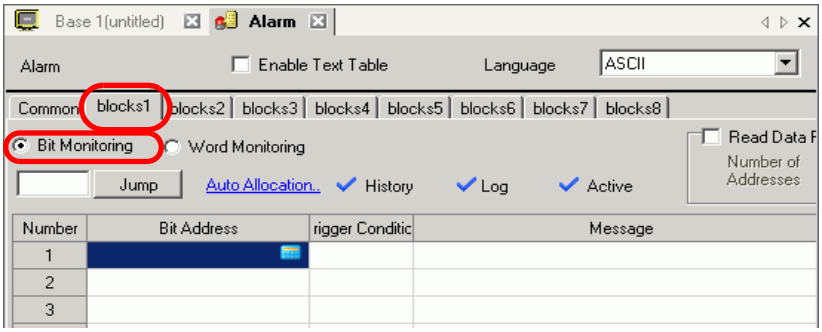
3 Select the [Backup History] check box and select [Hide Continuing Alarms].



IMPORTANT

- When the [Backup History] check box is not selected, the alarm history data will be erased when the GP unit is turned OFF or reset.

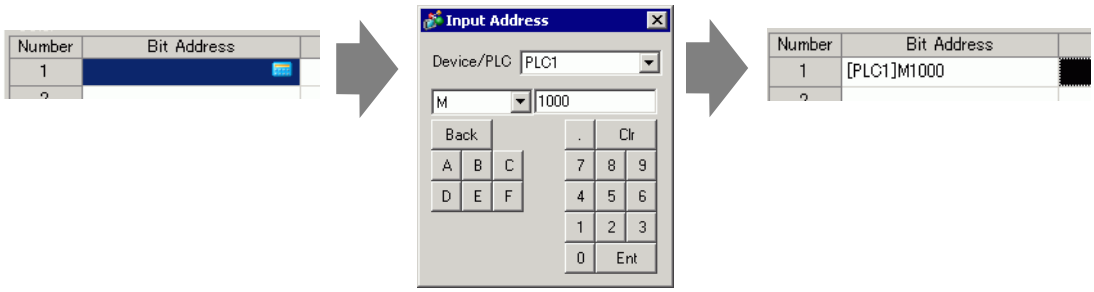
4 Open the [Block 1] tab, and select [Bit Monitoring].



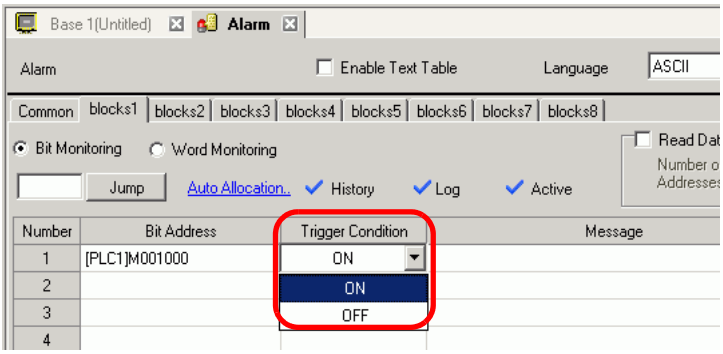
5 In [Bit Address], set the bit address to monitor the alarm trigger. (For example, M1000)

Click the icon to display an address input keypad.

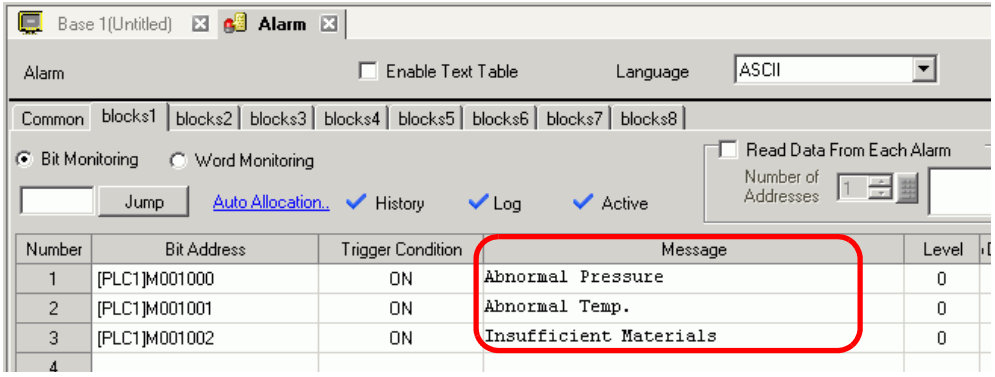
Select device "M", input "1000" as the address, and press the "Ent" key.



6 In the [Trigger Condition] cell, select whether the alarm is triggered when the Monitoring Bit Address turns ON or turns OFF.



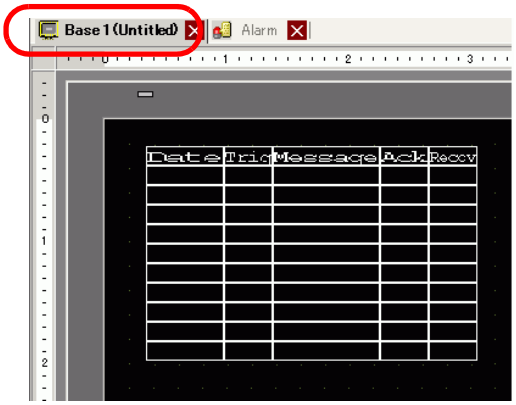
7 In the [Message] cell, input the alarm message that will display when the alarm is triggered.



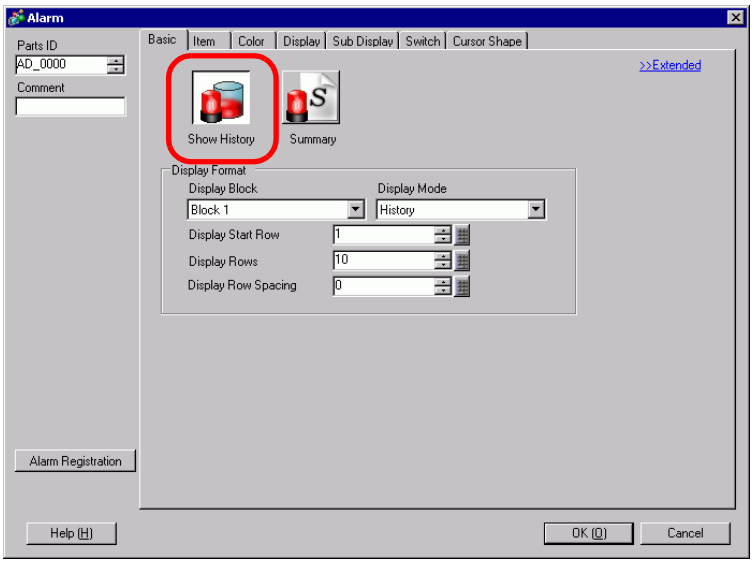
NOTE

- Up to 160 single-byte characters can be registered in a single Alarm Message.
- When the [Enable Text Table] check box is selected, the message language can be switched and displayed even while the system is running.
  ☞"17.4 Changing Languages (Multilanguage)" (page 17-16)
- Alarm settings can be exported or imported in CSV format.

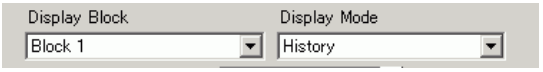
8 Open the screen editor and set the Alarm part which will display the Alarm. In the [Parts (P)] menu, select [Alarm (A)], or click  and place the Part on the screen.



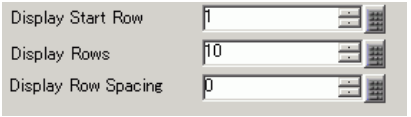
9 Double-click the placed Alarm. The Alarm dialog box appears.



10 Set the block and mode to be displayed for the Alarm.



11 Set the [Display Start Row], [Display Rows] and [Display Row Spacing].



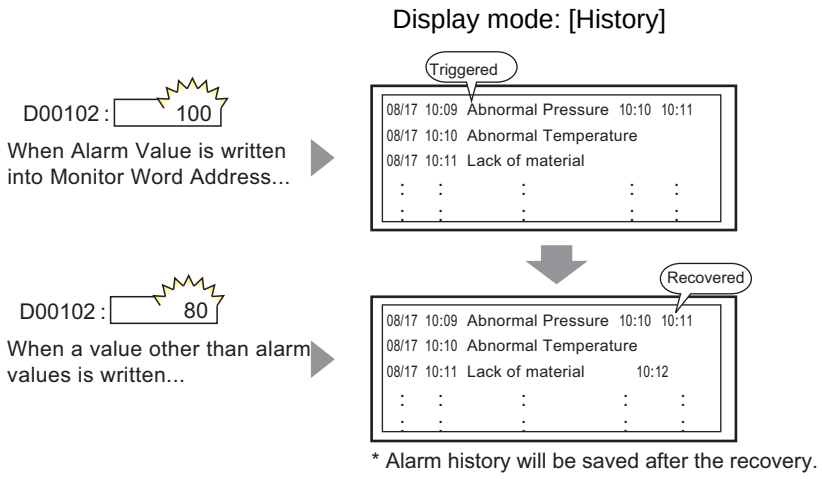
12 As needed, use the [Item] tab, [Color] tab, and [Display] tab options to change alarm message's number of display characters, text color, background color, font, and size. Click [OK].

■ Word Monitoring

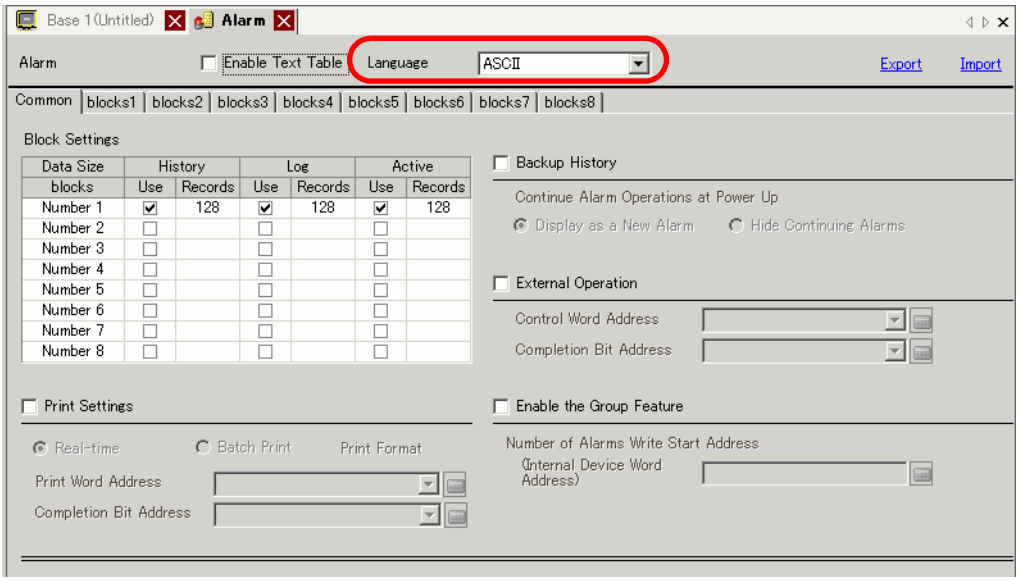
NOTE

- Please refer to the Settings Guide for details.
  ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm (Block 1) Settings Guide ◆ Word Monitoring" (page 19-92)
  ☞"19.10.2 Alarm Parts Settings Guide ■ Show History" (page 19-106)
- Refer to Editing a Part for details about placing parts or setting addresses, shapes, colors, and labels.
  ☞"8.6.1 Editing Parts" (page 8-52)

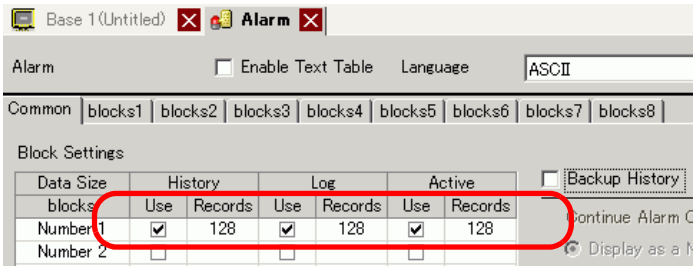
When the alarm value is written to the Monitoring Word Address, the alarm is displayed together with the trigger date/time. When a value other than the alarm value is written, the recovery time is added to the same row.



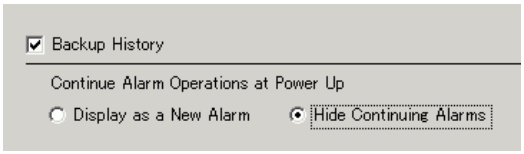
1 From the [Common Settings (R)] menu, select [Alarm (A)], or click . The following screen appears. Specify a display language for the Alarm Message in [Language].



2 In the Block Settings, select the check box for the desired display mode (History/Log/Active) for the block to which the message is registered, and set the number of messages stored as history for each mode.



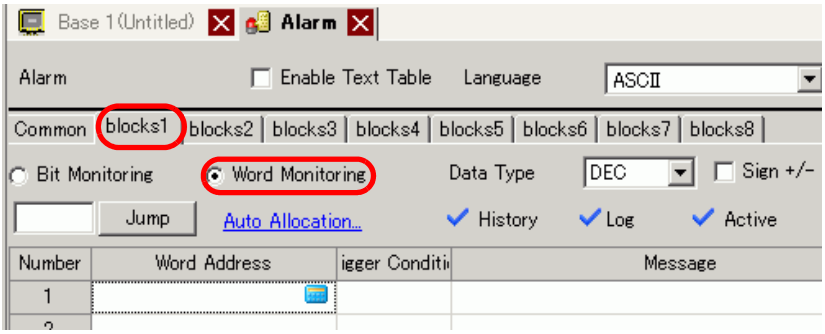
3 Select the [Backup History] check box and select [Hide Continuing Alarms].



IMPORTANT

- When the [Backup History] check box is not selected, the alarm history data will be erased when the GP unit is turned OFF or reset.

4 Open the [Block 1] tab, and select [Word Monitoring].



5 In [Data Type], select the data type of the [Alarm Value] to store in [Word Address].

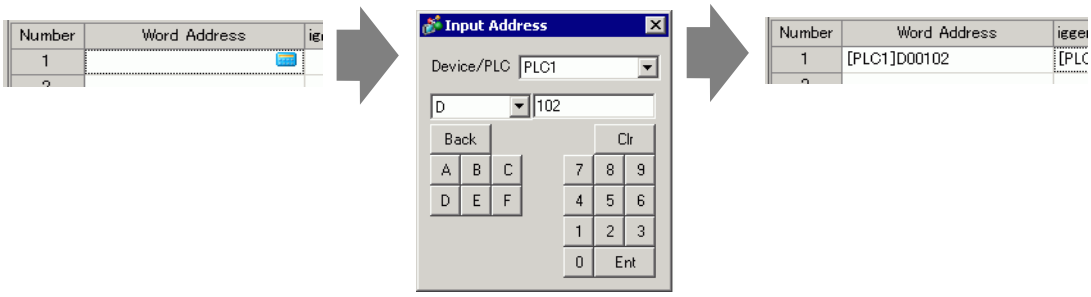
NOTE

- [Sign +/–] can only be set when the [Data Type] is [DEC].

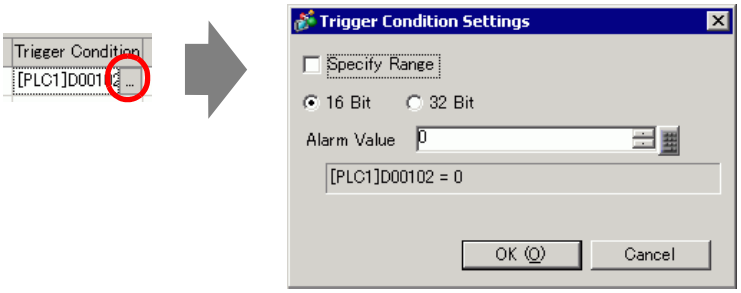
6 In [Word Address], set the Word Address to monitor the alarm trigger. (For example, D102)

Click the icon to display an address input keypad.

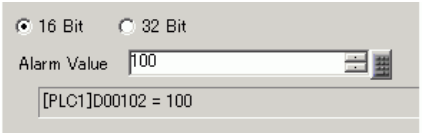
Select device "D", input "102" as the address, and press the "Ent" key.



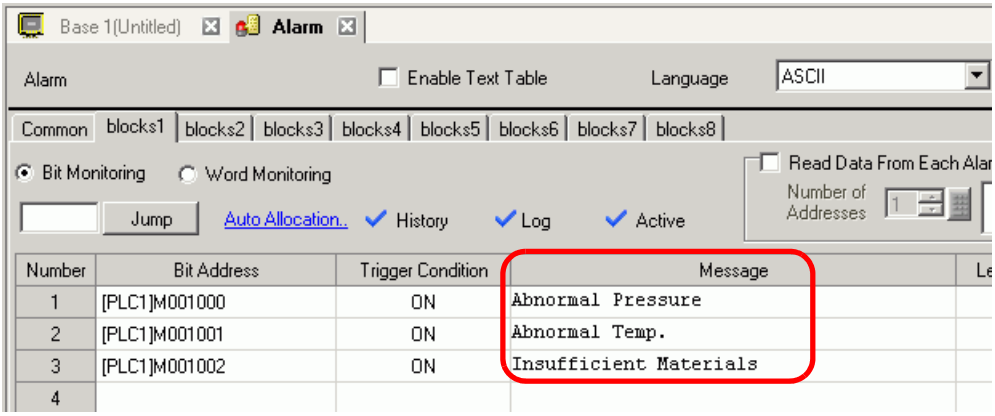
7 Click the [Trigger Condition] cell, then click [...]. The [Trigger Condition Settings] dialog box appears.



8 Select the bit length, set [Alarm Value] (for example, 100), and click [OK].



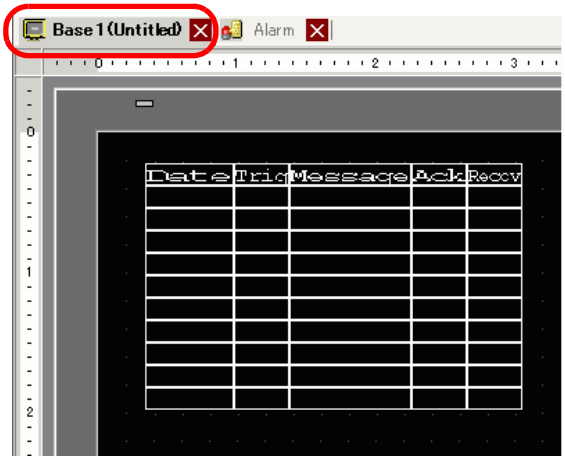
9 In the [Message] cell, input the alarm message that will display when the alarm is triggered.



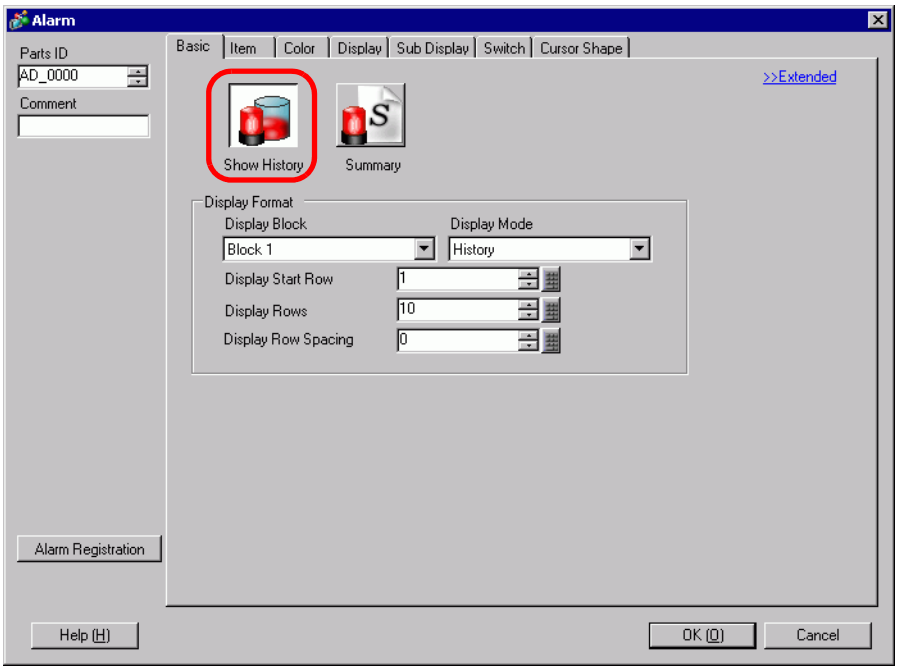
NOTE

- Up to 160 single-byte characters can be registered in a single Alarm Message.
- When the [Enable Text Table] check box is selected, the message language can be switched and displayed even while the system is running.
  ☞"17.4 Changing Languages (Multilanguage)" (page 17-16)
- Alarm settings can be exported or imported in CSV format.

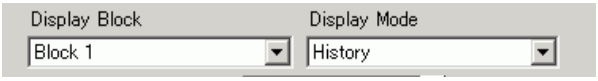
10 Open the screen, and set the Alarm that will display the History. In the [Parts (P)] menu, select [Alarm (A)], or click  and place the Part on the screen.



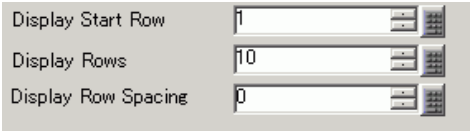
11 Double-click the placed Alarm. The Alarm dialog box appears.



12 Set the block and mode to be displayed for the Alarm.



13 Set the [Display Start Row], [Display Rows] and [Display Row Spacing].

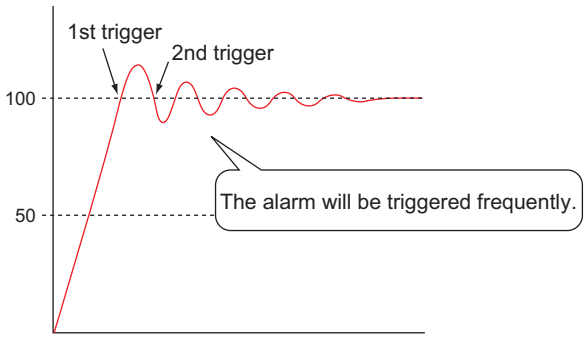


14 As needed, use the [Item] tab, [Color] tab, and [Display] tab options to change alarm message's number of display characters, text color, background color, font, and size. Click [OK].

NOTE

- When using the GP, you can set up 2,048 alarm messages. At run time, the GP can record up to 768 History, Log and Active messages in memory. When using the IPC, you can set up 10,000 alarm messages. At run time, the IPC can record up to 10,000 messages.
- When using multiple blocks, the total Alarm Messages that can be set for all blocks is 768.
  ☞"19.7 Viewing Alarms by Line" (page 19-50)
- The Monitoring Bit Address and Monitoring Word Address must be set within 256 Words of the Alarm Message (History).
- The maximum number of characters on one line and lines on one screen are decided by the GP type and [Size].
- If your message is wider than the display area, the portion that exceeds the area is truncated and is not displayed.
- For [Word Monitoring], if the alarm value stored in the [Word Address] fluctuates frequently, the alarm will be triggered often.

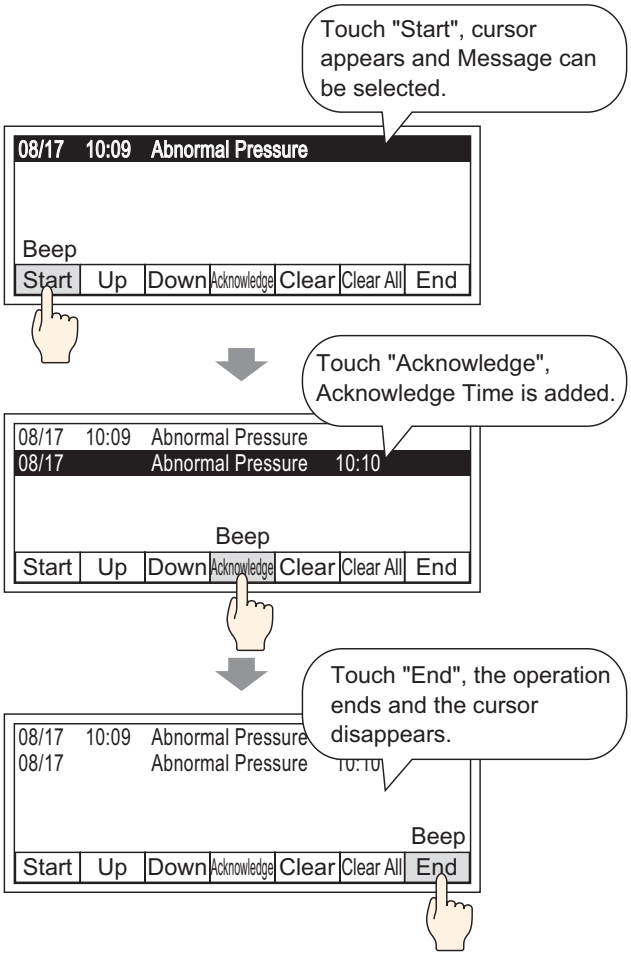
e.g.) When [Alarm Value] = 100



19.5 Working with Alarm History

19.5.1 Introduction

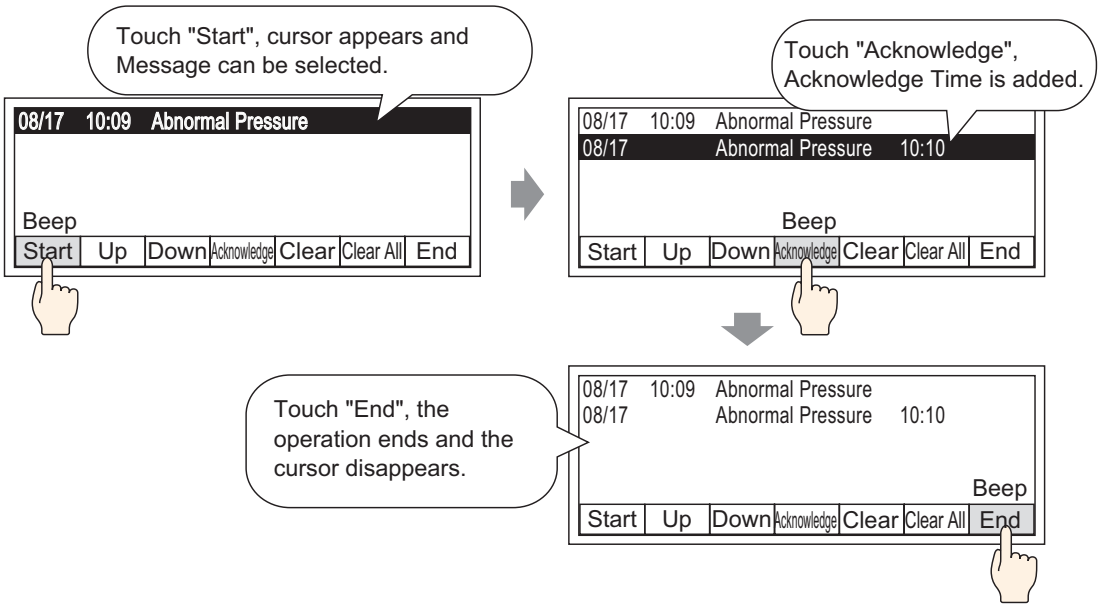
Select an operation switch to display an alarm message.
Several operations are available such as scrolling, sorting the displayed messages, and acknowledging and erasing the selected alarm message.



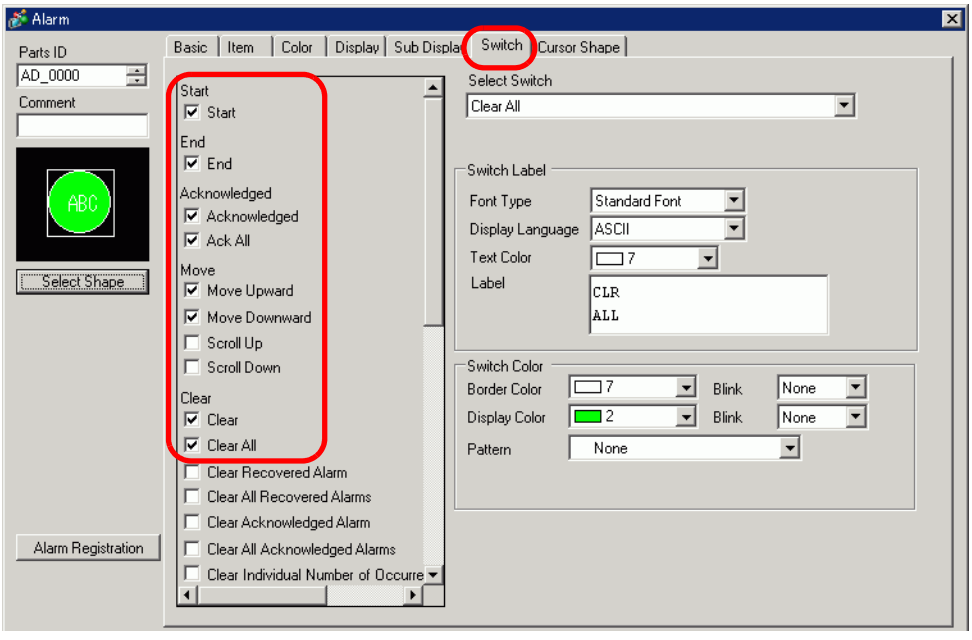
19.5.2 Setup Procedure

NOTE

- Please refer to the Settings Guide for details.
  ☞"19.10.2 Alarm Parts Settings Guide ■ Show History ◆ Switch" (page 19-131)
- Refer to Editing a Part for details about placing parts or setting addresses, shapes, colors, and labels.
  ☞"8.6.1 Editing Parts" (page 8-52)

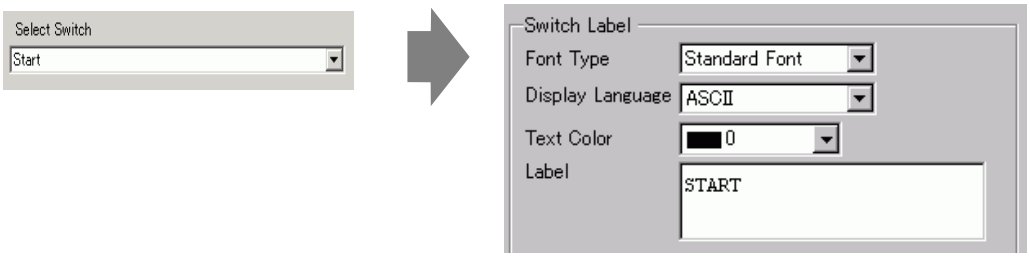


1 Double-click the new Alarm part. The Alarm dialog box appears. Open the [Switch] tab, and select the check box options you want.



2 Select the Switch shape from [Select Shape].

3 Choose the switch with [Select Switch], and designate the switch label [Font Type], [Display Language], [Text Color] and [Label].

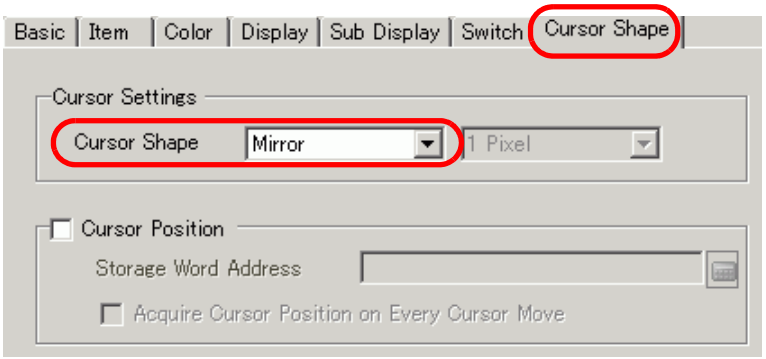


4 As necessary, set the Switch colors in [Switch Color].

NOTE

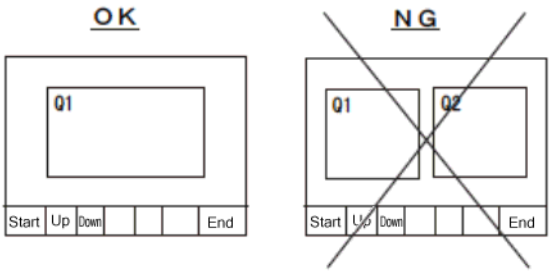
- The Switch Color and Shape settings are common to all Alarm parts, regardless of the switch type selected. To change the shape and color for each switch, use a Switch Lamp Part [Special Switch (Alarm History Switch)].
☞"10.14.4 Special Switch ■ Switch Feature ◆ Alarm History Switch" (page 10-66)

5 Click the [Cursor Shape] tab, select [Cursor Shape] as [Mirror], and click [OK].

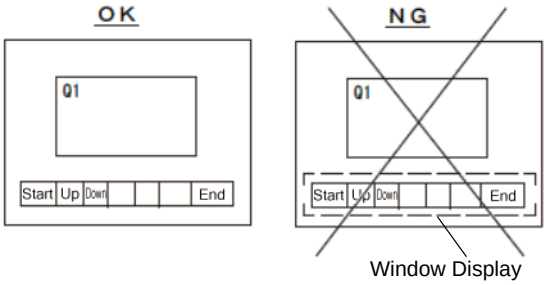


NOTE

- In order to use an Alarm Part (History) Switch, only one Alarm Part should be used per screen.



- Set the switches to the same screen that the Alarm Part is set to. They cannot be used if they are set to another screen.

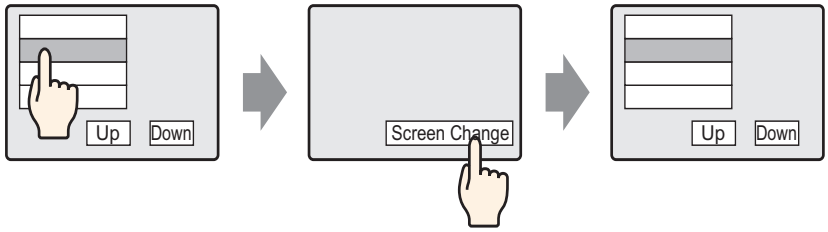


- When using the [Clear All Number of Occurrences], [Clear All Accumulated Time], and [Clear Individual Accumulated Time] switches, please be aware that data stored in the backup SRAM of the GP is also erased (cleared to "0"), not just the displayed values.
- When sort switches are placed on the screen and any of the switches (other than the [In Reverse Order of Trigger Date] switch) is pressed, it may take longer than usual to update the screen at a screen change.
- When sorting is performed on two blocks simultaneously such as [Level & In Reverse Order of Trigger Date], it may take longer than usual to display the result.

19.6 Displaying Help (Sub Display)

19.6.1 Introduction

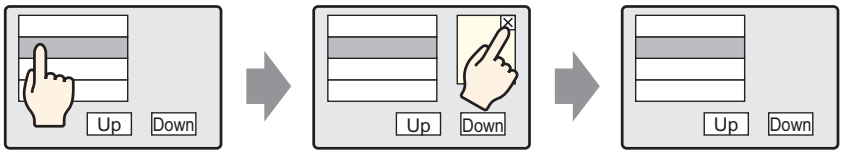
■ Change Base Screen



Touch the alarm message, and the screen changes to another screen according to the alarm.

Return to alarm screen using Change Screen Switch

■ Show Text Window



Touch the alarm message, and a Text Window is displayed according to the alarm.

Touch the Window Clearing Switch to close the Text Window.

19.6.2 Setup Procedure

■ Change Base Screen

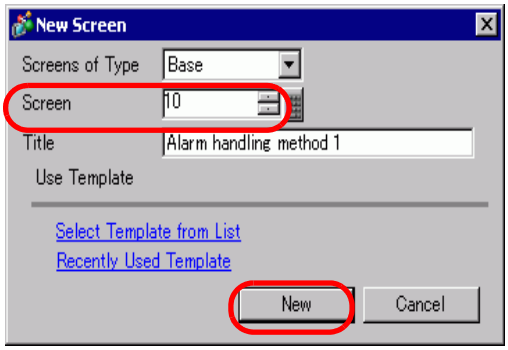
NOTE

- Please refer to the Settings Guide for details.
  ☞"10.14.3 Change Screen Switch ■ Switch Feature" (page 10-63)
  ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm (Block 1) Settings Guide" (page 19-88)
  ☞"19.10.2 Alarm Parts Settings Guide ■ Show History" (page 19-106)
- For details about placing parts or setting addresses, shapes, colors, and labels, please refer to Editing a Part.
  ☞"8.6.1 Editing Parts" (page 8-52)

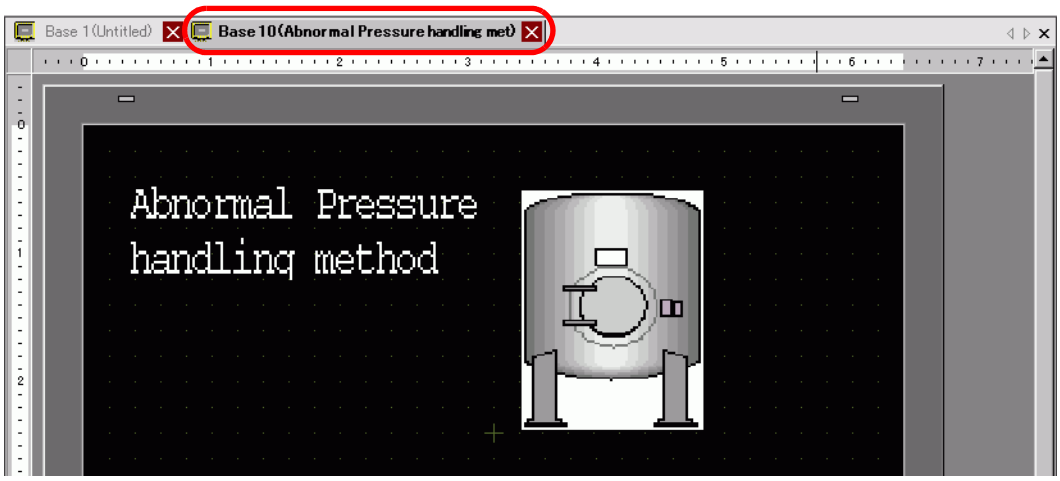
Touch the alarm, and the screen changes to another screen.

1 Display. In the [Screen (S)] menu, select [New Screen (N)], or click  . The [New Screen] dialog box appears.

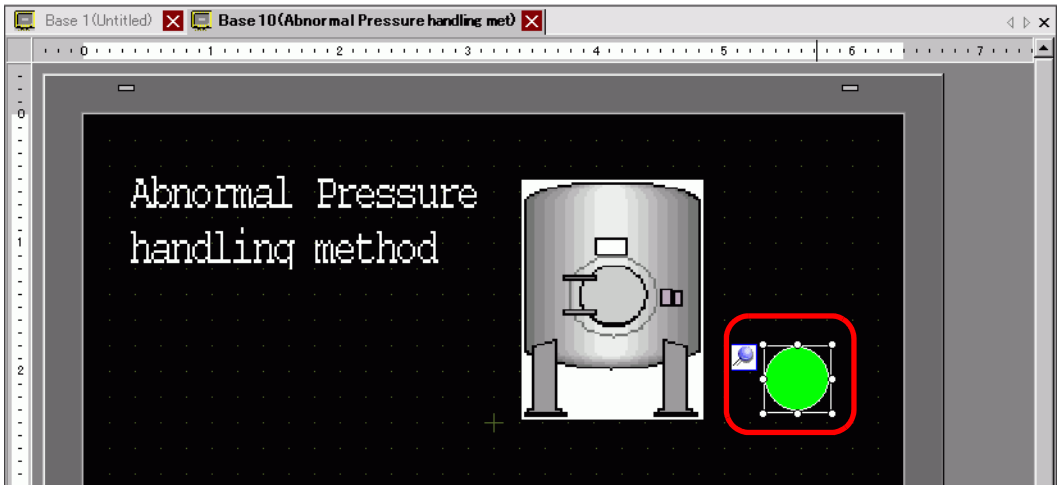
2 In Screen, set the Base Screen Number (For example, 10) used for the Sub Display, and click [OK].



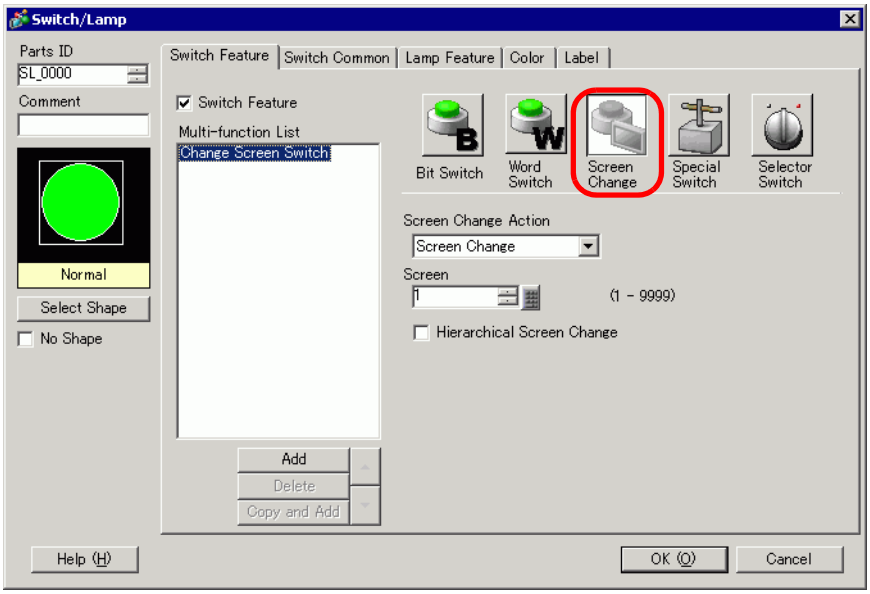
3 When Base Screen "10" appears, create the Base Screen for the Sub Display.



4 Set the Switch to change from the Sub Display screen to the Alarm Part placement screen. From the [Parts (P)] menu, point to [Switch/Lamp (C)] and select[Change Screen Switch (C)] or click , and place the Switch on the screen.

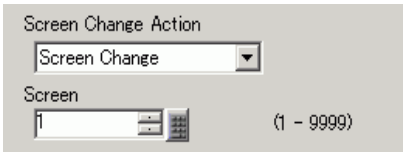


5 Double-click the placed Switch part. The following dialog box appears.

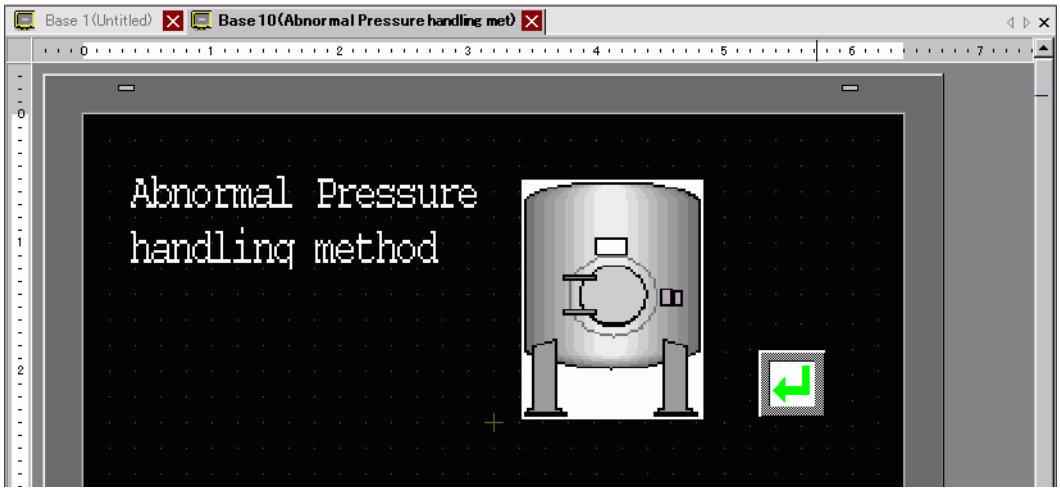


6 In [Select Shape], select the Switch shape.

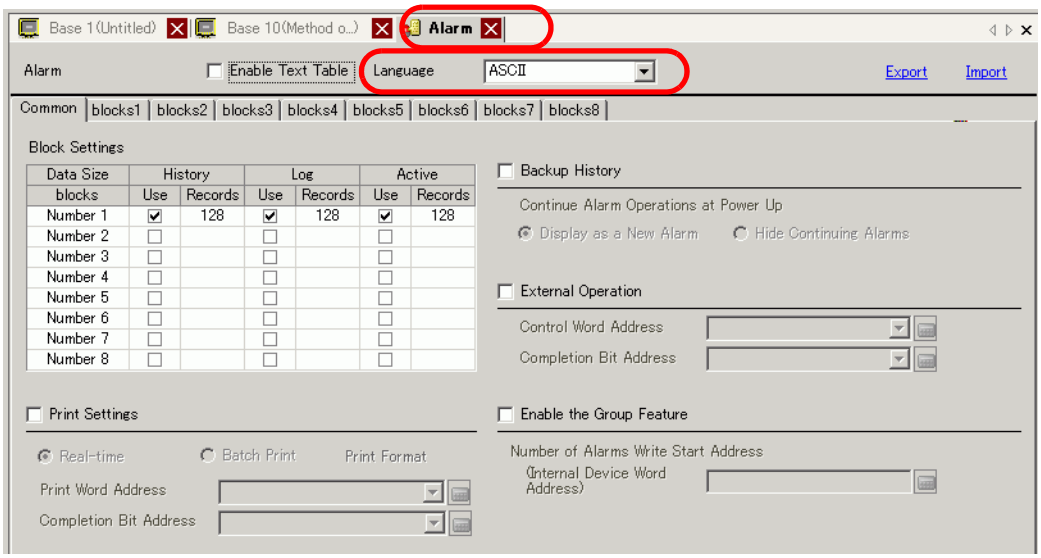
7 In [Screen Change Action], select the action to change screens, and set the screen number of the destination screen (for example, 1).



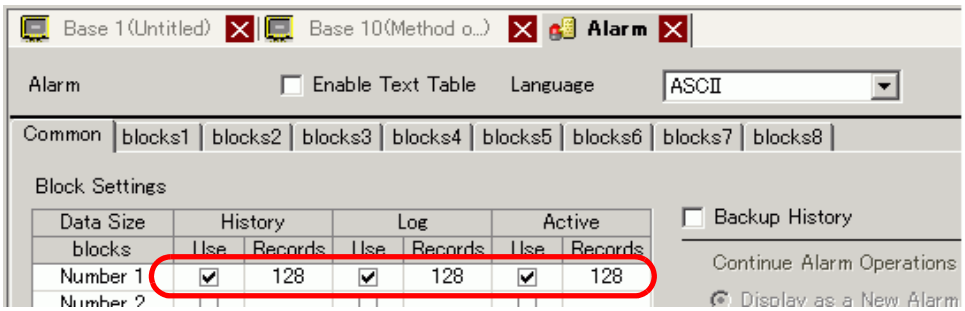
8 As needed, set the Switch color and display text on the [Color] tab and [Label] tab, and click [OK]. The creation of the Sub Display screen is complete.



9 Next, register the Message to display when the Alarm is triggered.
From the [Common Settings (R)] menu, select [Alarm (A)], or click . The following screen appears. Specify a display language for the Alarm Message in [Language].



10 In the Block Settings, select the check box for the desired display mode (History/Log/Active) for the block to which the message is registered, and set the number of messages stored as history for each mode.

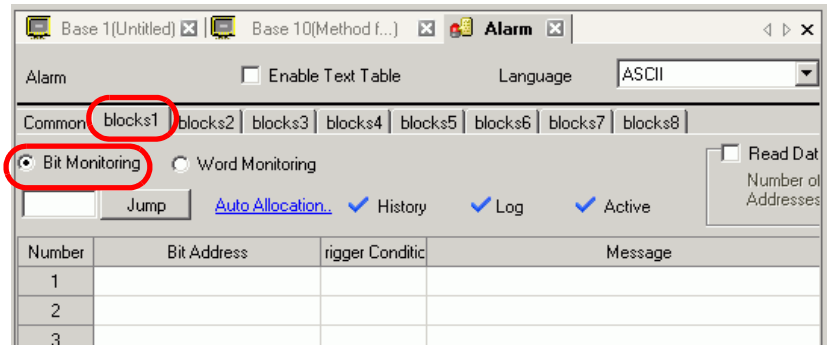


11 Select the [Backup History] check box and select [Hide Continuing Alarms].

IMPORTANT

- When the [Backup History] check box is not selected, the alarm history data will be erased when the GP unit is turned OFF or reset.

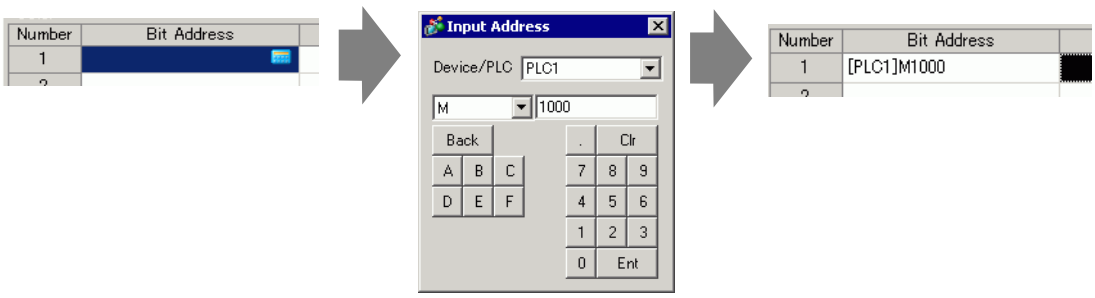
12 Open the [blocks 1] tab, and select [Bit Monitoring].



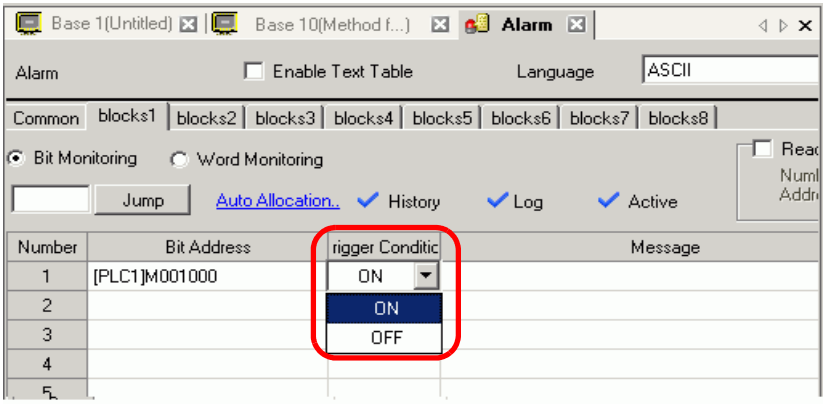
13 In [Bit Address], set the bit address to monitor the alarm trigger. (For example, M1000)

Click the icon to display an address input keypad.

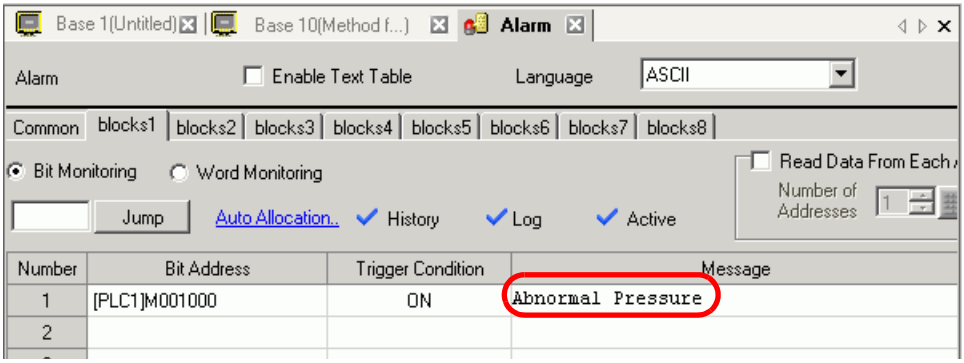
Select device "M", input "1000" as the address, and press the "Ent" key.



14 Click the [Trigger Condition] cell and select whether the alarm is triggered when the Monitoring Bit Address turns ON or turns OFF.



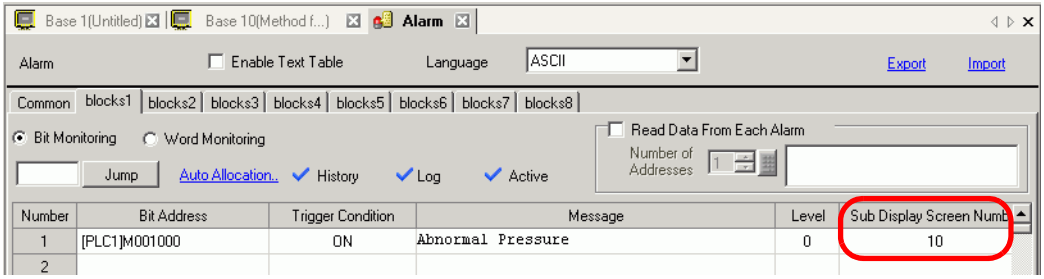
15 In the [Message] cell, input the alarm message that will display when the alarm is triggered.



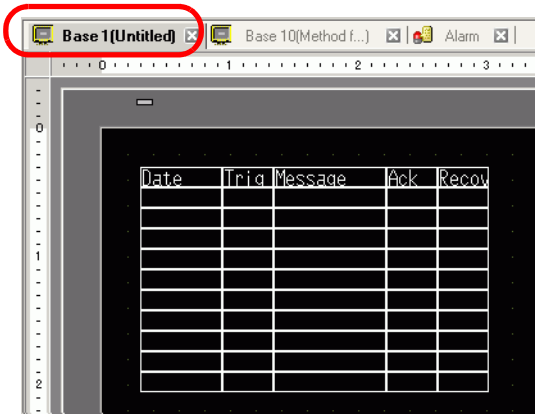
NOTE

- Up to 160 single-byte characters can be registered in a single Alarm Message.
- When the [Enable Text Table] check box is selected, the message language can be switched and displayed even while the system is running.
  ☞"17.4 Changing Languages (Multilanguage)" (page 17-16)
- Alarm settings can be exported or imported in CSV format.

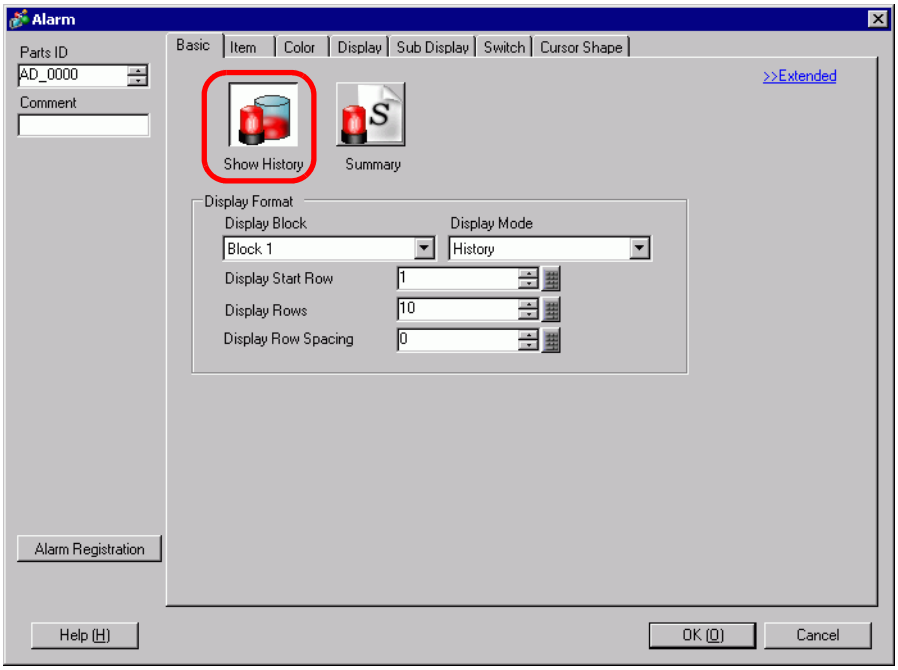
16 Set the Sub Display Screen Number. (For example, 10)



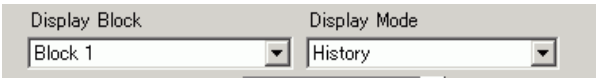
17 Set the Alarm Part that will display the Alarm.
Open the screen to display the Alarm (for example, Base 1), and in the [Parts (P)] menu, select [Alarm (A)], or click  , and place the Part on the screen.



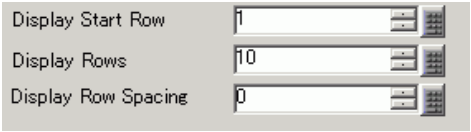
18 Double-click the placed Alarm. The Alarm dialog box appears.



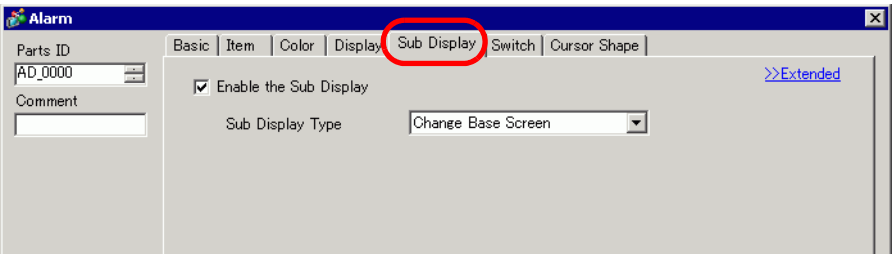
19 Set the block and mode to be displayed for the Alarm.



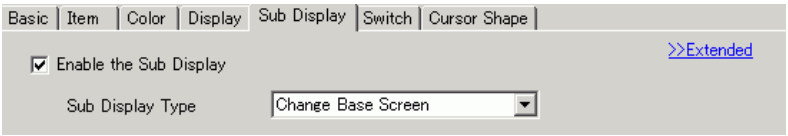
20 Set the [Display Start Row], [Display Rows] and [Display Row Spacing].



21 Open the [Sub Display] tab and put select the [Enable the Sub Display] check box.



22 In the [Sub Display Type] list, select [Change Base Screen].

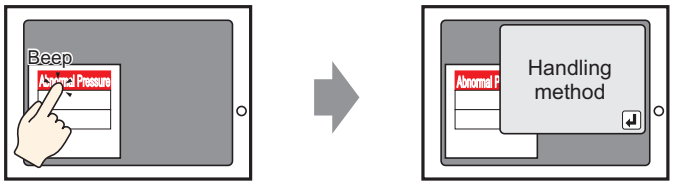


23 As needed, use the [Item] tab, [Color] tab, and [Display] tab options to change alarm message's number of display characters, text color, background color, font, and size. Click [OK].
All settings are now complete.

■ Show Text Window

NOTE

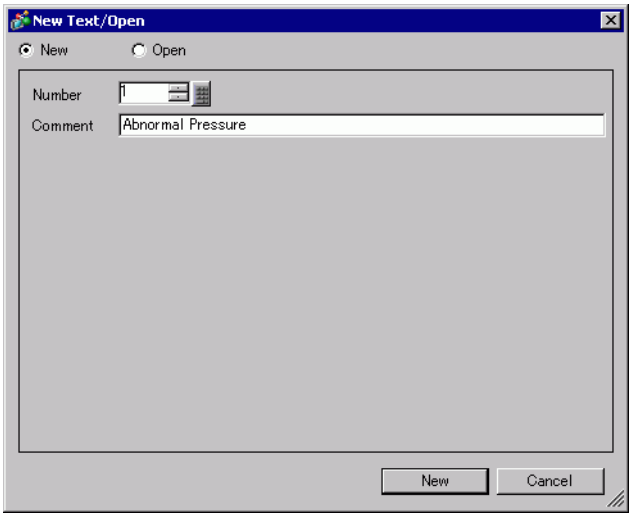
- Please refer to the Settings Guide for details.
  ☞"17.7.2 Common (Text Registration) Settings Guide" (page 17-52)
  ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm (Block 1) Settings Guide" (page 19-88)
  ☞"19.10.2 Alarm Parts Settings Guide ■ Show History" (page 19-106)
- For details about placing parts or setting addresses, shapes, colors, and labels, please refer to Editing a Part
  ☞"8.6.1 Editing Parts" (page 8-52)



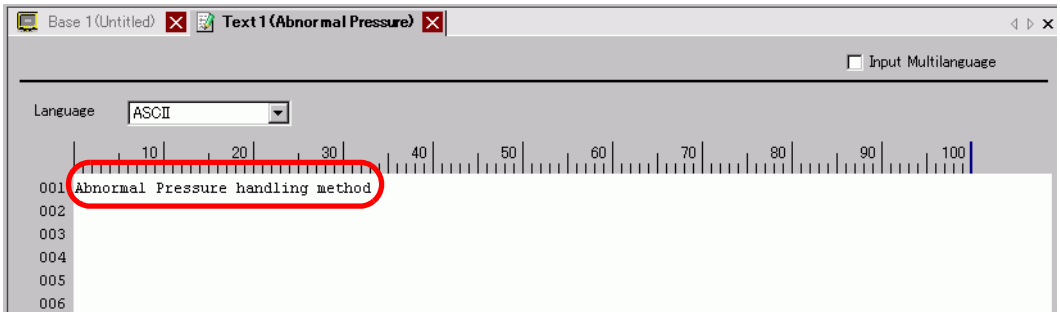
When the alarm message is touched, a Text Window is displayed.

1 Create a text window to call a Sub Display. From the [Common Settings (R)] menu, select [Text Registration (T)], or click . The following screen appears.

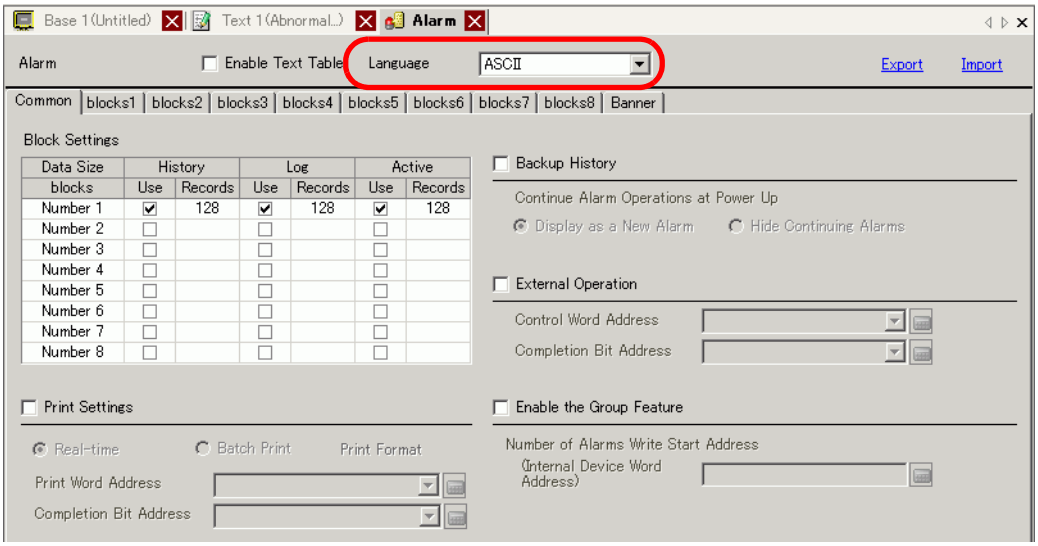
2 Set up the Text File Number and Comment (Example: Text File Number "1", Comment "Abnormal Pressure"), then click [Create].



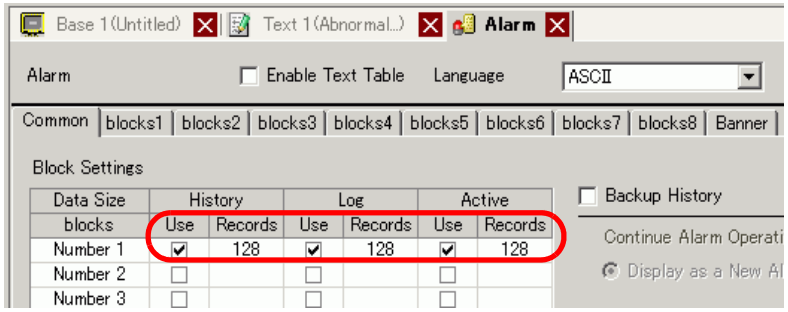
3 Specify [Language], and input the text to be displayed as a Sub Display.



4 Next, register the Message to display when the Alarm is triggered.
From the [Common Settings (R)] menu, select [Alarm (A)], or click . The following screen appears. Specify a display language for the Alarm Message in [Language].



5 In the Block Settings, select the check box for the desired display mode (History/Log/Active) for the block to which the message is registered, and set the number of messages stored as history for each mode.

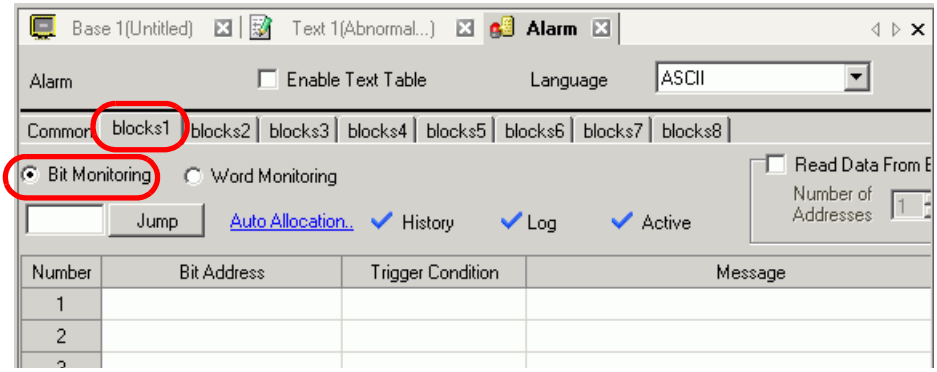


6 Select the [Backup History] check box and select [Hide Continuing Alarms].

IMPORTANT

- When the [Backup History] check box is not selected, the alarm history data will be erased when the GP unit is turned OFF or reset.

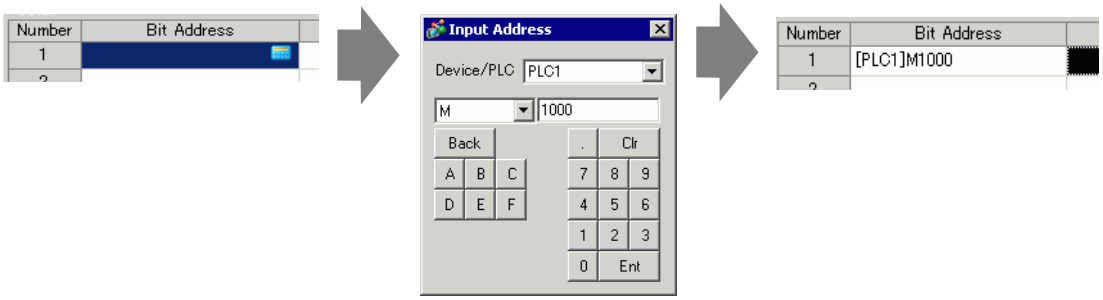
7 Open the [Block 1] tab, and select [Bit Monitoring].



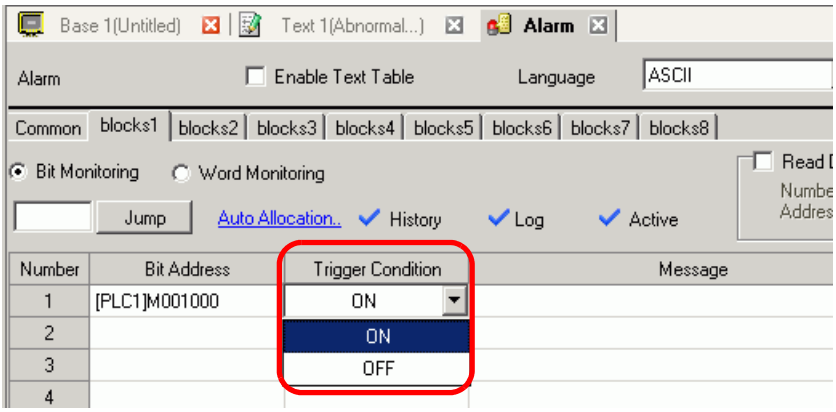
8 In [Bit Address], set the bit address to monitor the alarm trigger. (For example, M1000)

Click the icon to display an address input keypad.

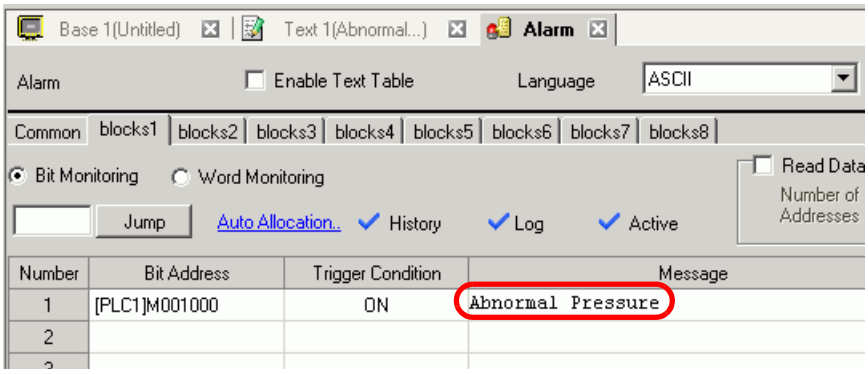
Select device "M", input "1000" as the address, and press the "Ent" key.



9 Click the [Trigger Condition] cell and select whether the alarm is triggered when the Monitoring Bit Address turns ON or turns OFF.



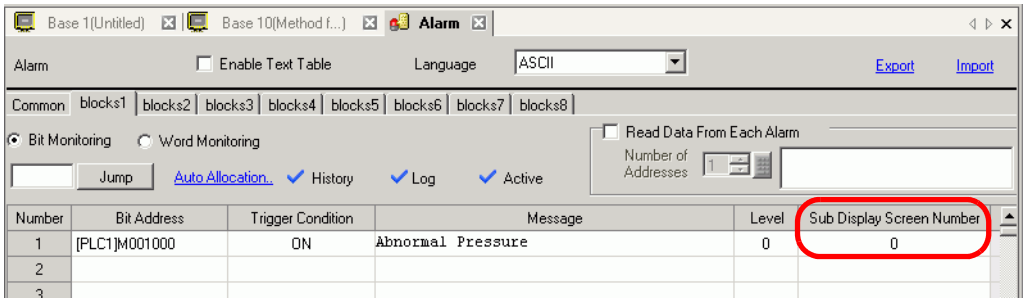
10 In the [Message] cell, input the alarm message that will display when the alarm is triggered.



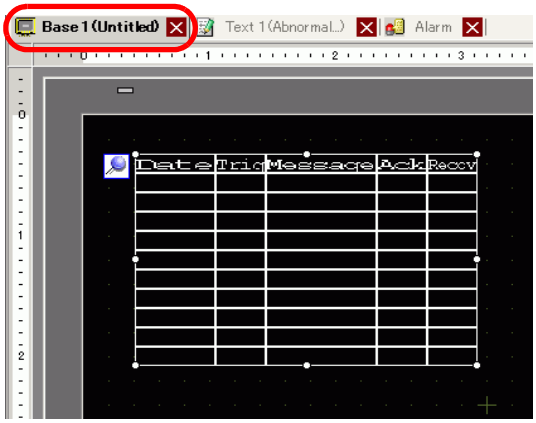
NOTE

- Up to 160 single-byte characters can be registered in a single Alarm Message.
- When the [Enable Text Table] check box is selected, the message language can be switched and displayed even while the system is running.
  ☞"17.4 Changing Languages (Multilanguage)" (page 17-16)
- Alarm settings can be exported or imported in CSV format.

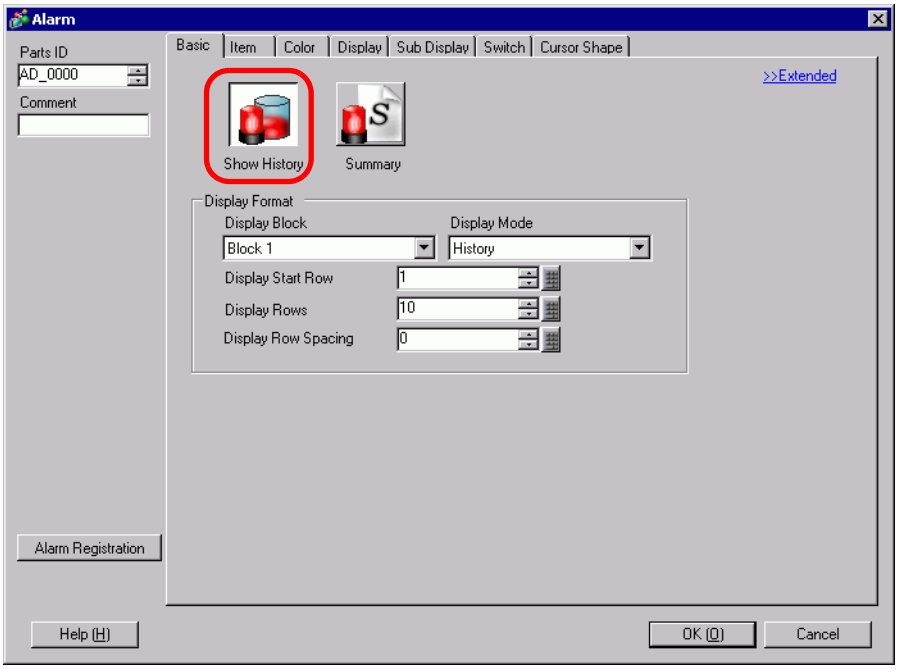
11 Set the Text File Number for the Sub Display to display (for example, 1).



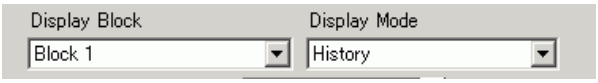
12 Set up the alarm part to display alarms.
Open the screen where you want to display alarms (Example: Base 1), and on the [Parts (P)] menu click [Alarm (A)], or click , then draw the alarm on the screen.



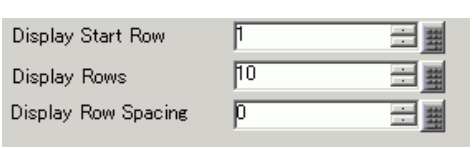
13 Double-click the placed Alarm. The Alarm dialog box appears.



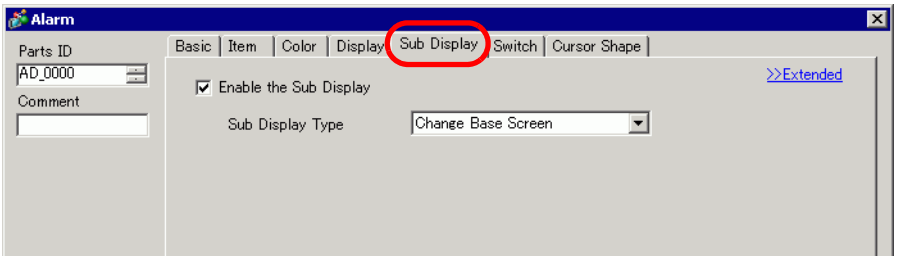
14 Set the block and mode to be displayed for the Alarm.



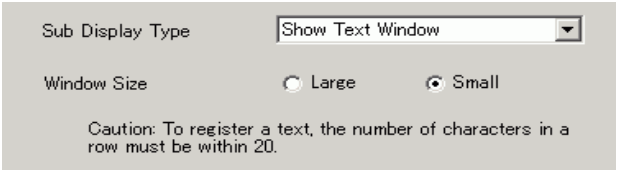
15 Set the [Display Start Row], [Display Rows] and [Display Row Spacing].



16 Click the [Sub Display] tab, and select the [Enable the Sub Display] box.



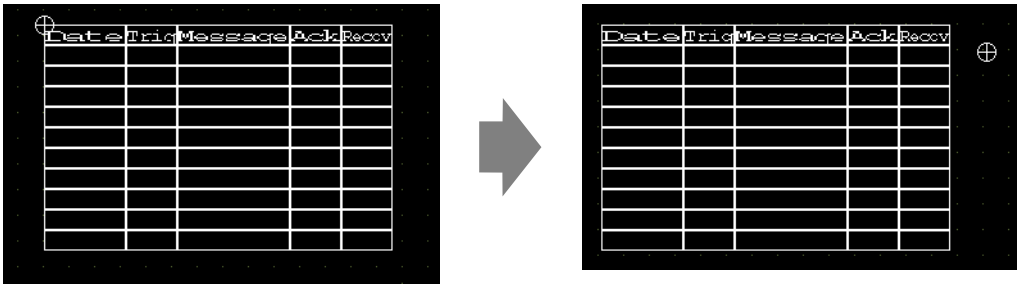
17 In the [Sub Display Type] list, select [Show Text Window].



18 In [Window Size], select the size of the Window for the Sub Display.

19 As needed, use the [Item] tab, [Color] tab, and [Display] tab options to change alarm message's number of display characters, text color, background color, font, and size. Click [OK].

20 The position setting mark  is displayed on the upper left of the Alarm Part. Move the position setting mark to the position where you want to display the text window as a Sub Display. All settings are now complete.

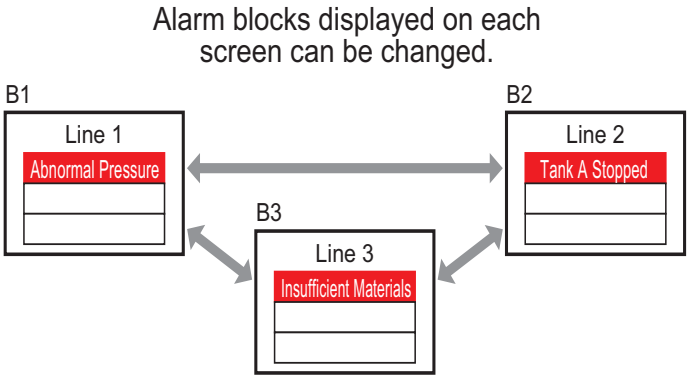


19.7 Viewing Alarms by Line

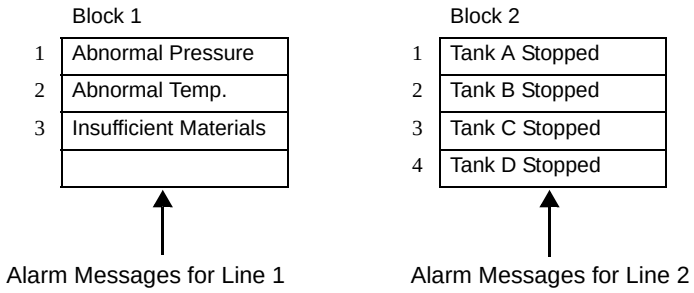
19.7.1 Introduction

You can change the Alarms displayed on each screen by registering different Alarm Messages with different production lines.

"Display"



"Register"



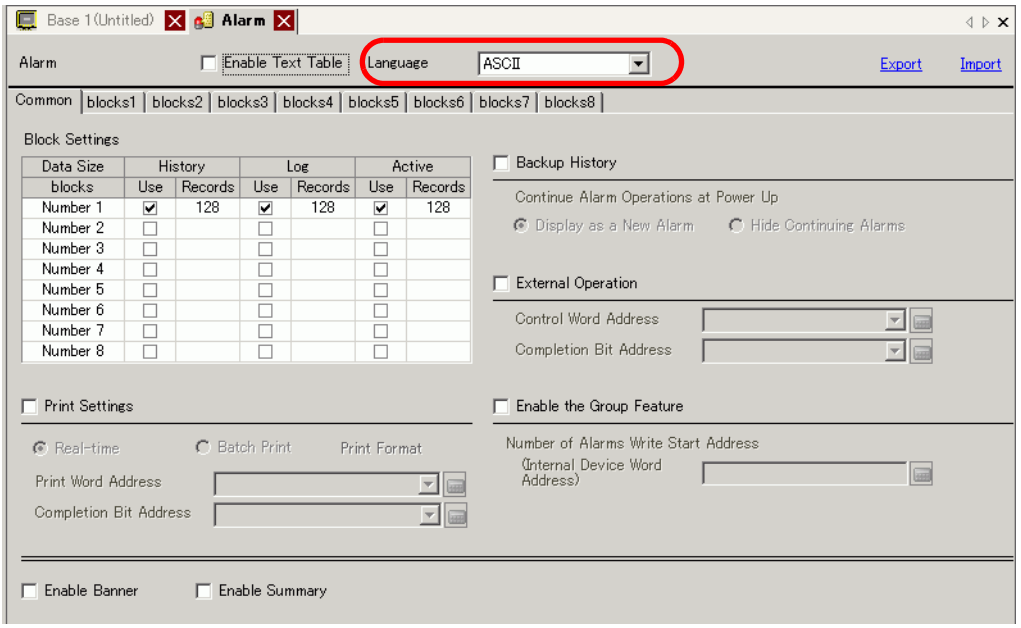
19.7.2 Setup Procedure

NOTE

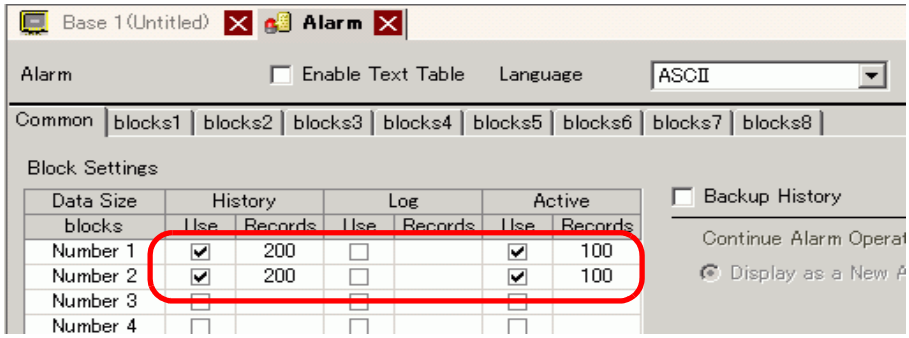
- Please refer to the Settings Guide for details.
  ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm Guide" (page 19-73)
  ☞"19.10.2 Alarm Parts Settings Guide" (page 19-105)
- Refer to Editing a Part for details about placing parts or setting addresses, shapes, colors, and labels.
  ☞"8.6.1 Editing Parts" (page 8-52)

Displays the different blocks' alarm messages on each screen.

1 From the [Common Settings (R)] menu, select [Alarm (A)], or click  . The following screen appears. In [Language Settings], specify a display language for the Alarm Message.



2 In the Block Settings, select the display mode (History/Log/Active) for each of the blocks to which the messages are registered, and set the number of messages stored as history.

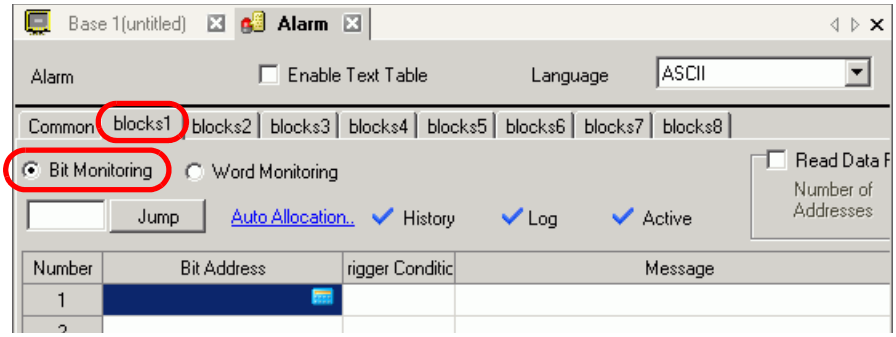


3 Select the [Backup History] check box and select [Hide Continuing Alarms].

IMPORTANT

- When the [Backup History] check box is not selected, the alarm history data will be erased when the GP unit is turned OFF or reset.

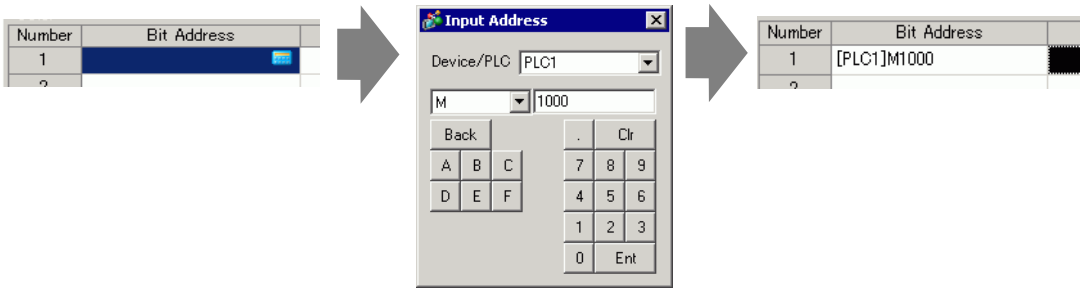
4 Open the [Block 1] tab, and select [Bit Monitoring].



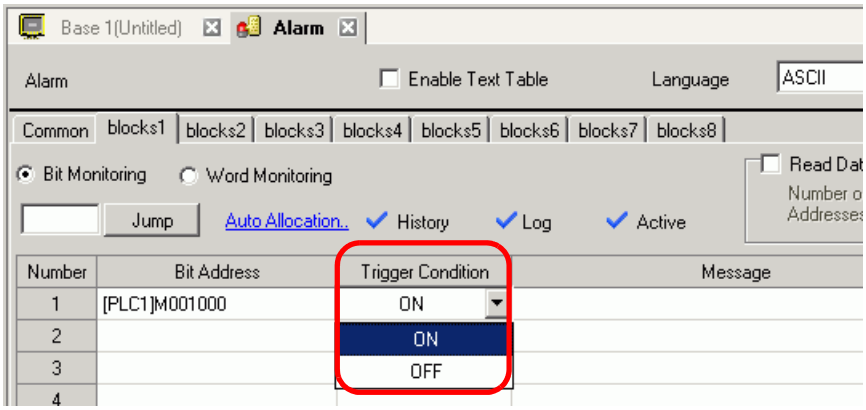
5 In [Bit Address], set the bit address to monitor the alarm trigger. (For example, M1000)

Click the icon to display an address input keypad.

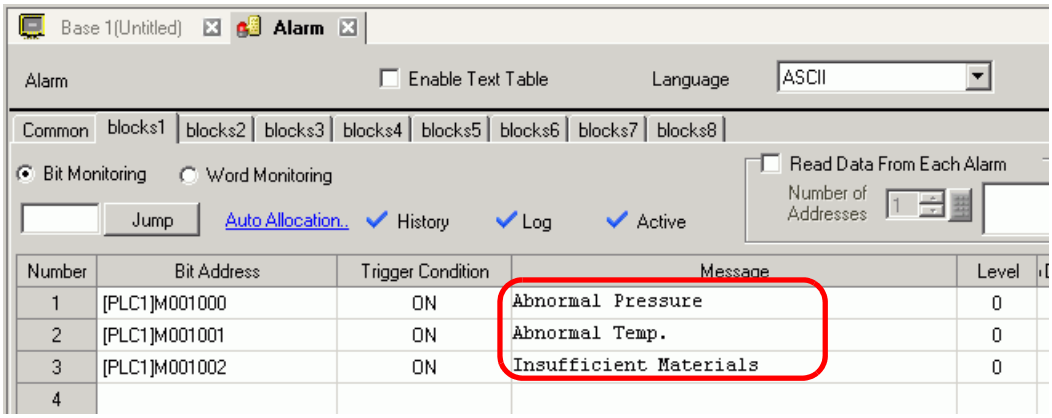
Select device "M", input "1000" as the address, and press the "Ent" key.



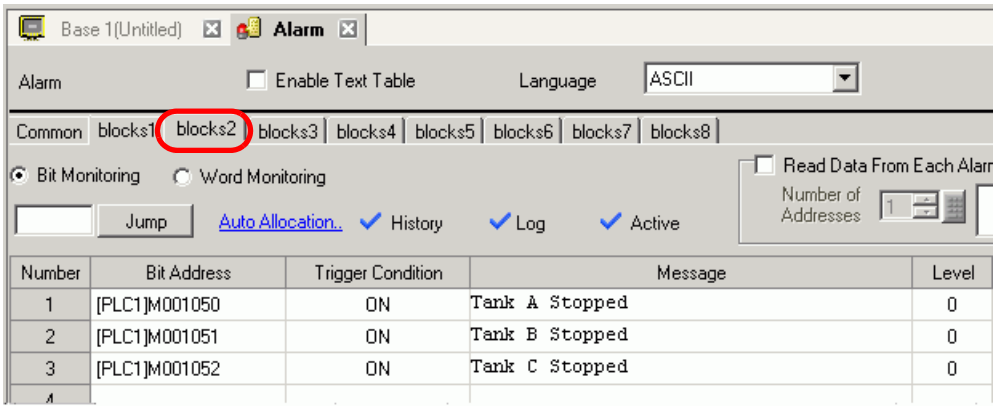
6 Click the [Trigger Condition] cell and select whether the alarm is triggered when the Monitoring Bit Address turns ON or turns OFF.



7 In [Message], enter the alarm message for the alarm that occurs in production line 1.



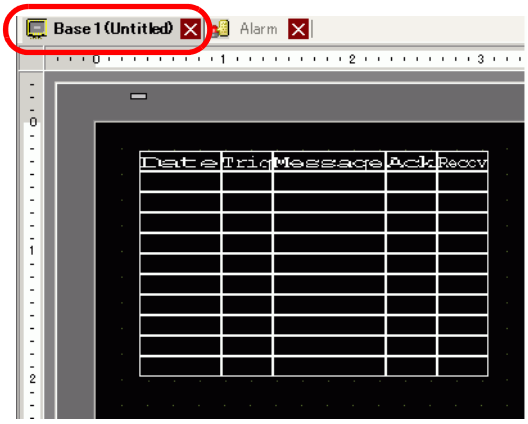
8 In the same manner, open the [blocks 2] tab and register the Monitoring Bit Addresses and Alarm Messages for Line 2.



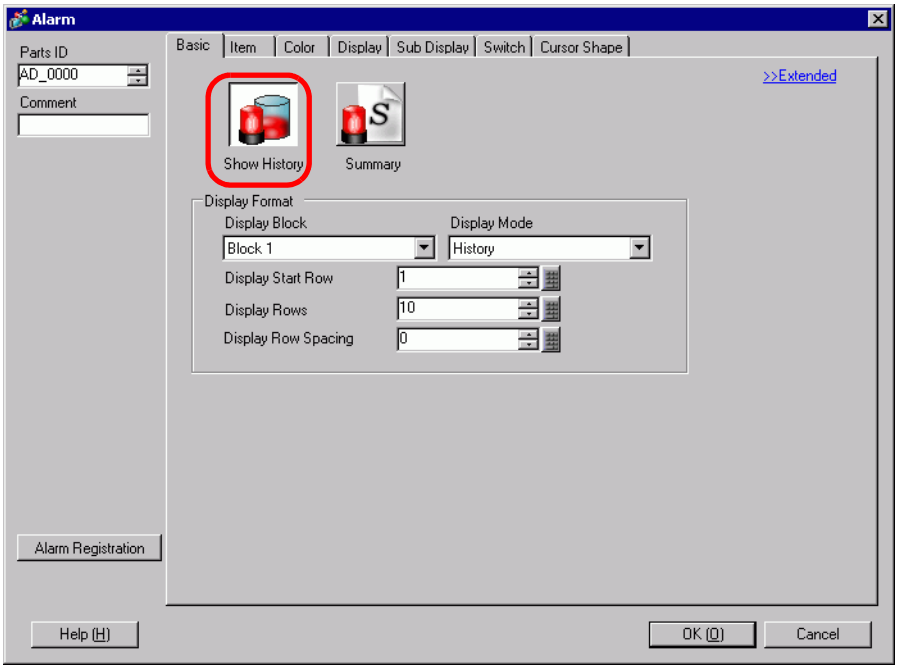
NOTE

- Alarm settings can be exported or imported in CSV format.

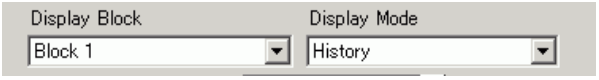
9 Open the screen to display the Alarms (For example, Base 1), and first set the Alarm Part to display the Alarms for Line 1. In the [Parts (P)] menu, select [Alarm (A)], or click , and place the Part on the screen.



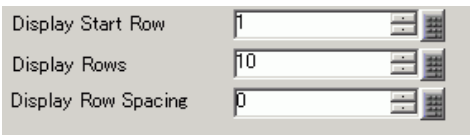
10 Double-click the placed Alarm. The Alarm dialog box appears.



11 In [Display Block] specify [Block 1] and set the Display Mode.

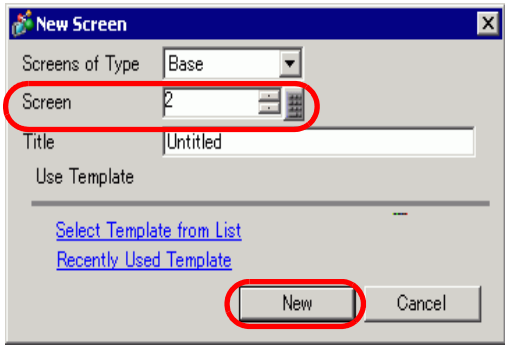


12 Set the [Display Start Row], [Display Rows] and [Display Row Spacing].

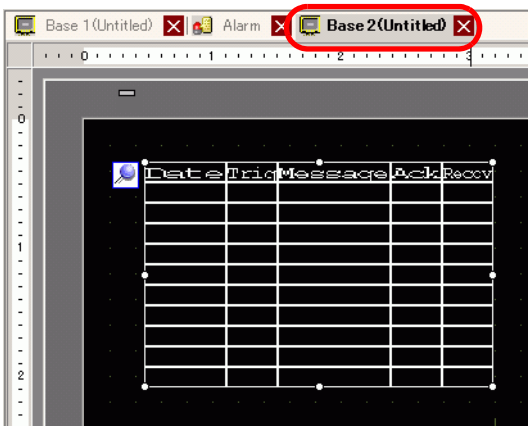


13 As needed, use the [Item] tab, [Color] tab, and [Display] tab options to change alarm message's number of display characters, text color, background color, font, and size. Click [OK].
The creation of the screen to display the Alarm Messages of Block 1 is now complete.

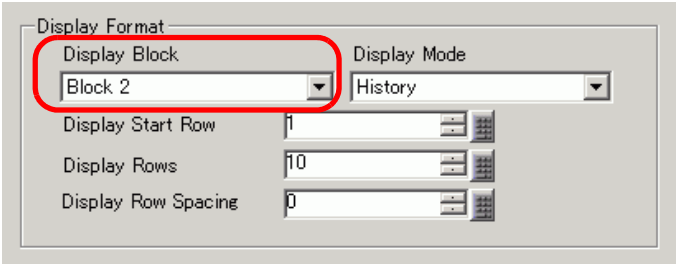
14 In the [Screen (S)] menu, select [New Screen (N)], or click . The [New Screen] dialog box appears. In Screen, set the Base Screen Number (for example, 2), and click [OK].



15 In the [Parts (P)] menu, select [Alarm (A)], in the [Base 2] screen or click , and place the Part on the screen.



16 Double-click the placed Alarm. The Alarm dialog box appears. In [Display Block], specify [Block 2].

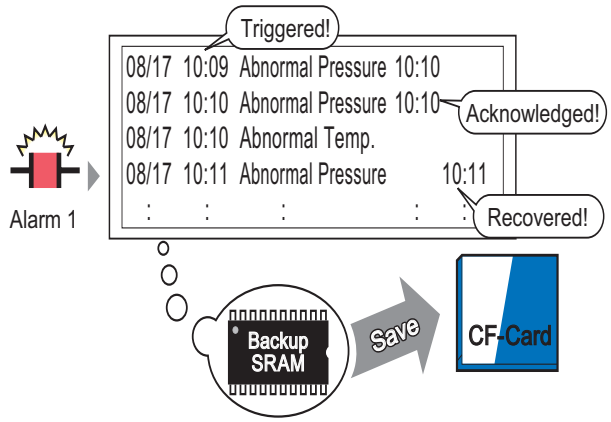


17 As needed, use the [Item] tab, [Color] tab, and [Display] tab options to change alarm message's number of display characters, text color, background color, font, and size. Click [OK].
The creation of the screen to display the Alarm Messages of Block 2 is now complete.

19.8 Storing Alarm Messages in the CF Card or USB Storage Device

19.8.1 Details

Saves the alarm history data from the display unit backup SRAM to the CF Card or USB storage.
Saved in CSV format, you can edit the alarm data with any spreadsheet application such as Microsoft Excel.



The Alarm History data stored in the backup SRAM is saved to the CF-card.

NOTE

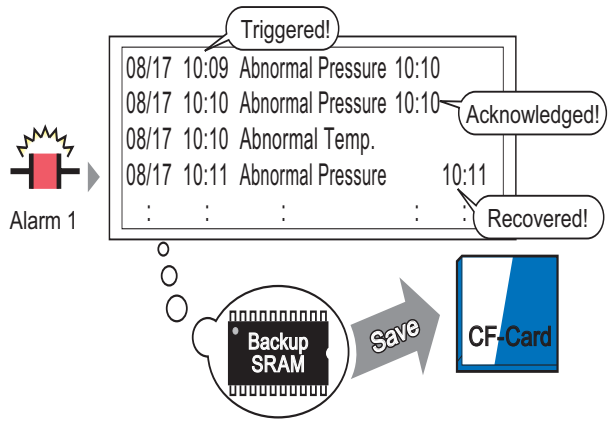
- If there is not enough free space on the CF Card, allocate more disk space by moving non-urgent data to USB memory.
  ☞"A.5 Transferring Data Between a CF Card and a USB Memory Device" (page A-90)

19.8.2 Setup Procedure

NOTE

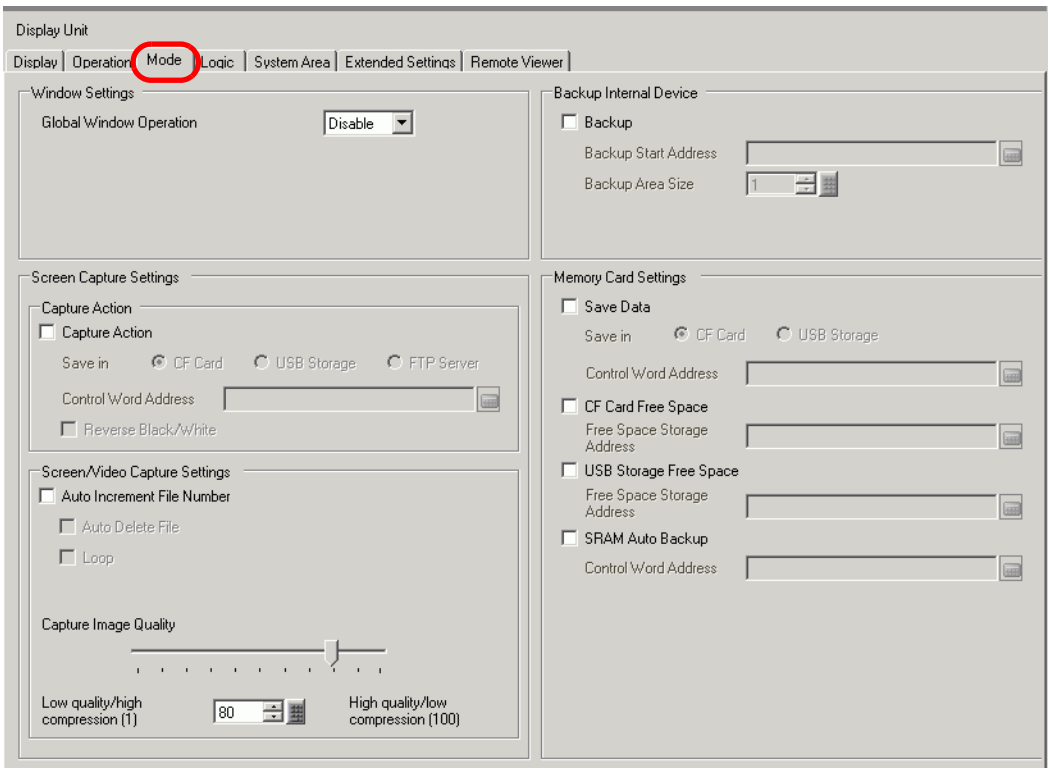
- Please refer to the Settings Guide for details.
  ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm Guide" (page 19-73)
  ☞"5.15.6 [System Settings] Setting Guide ■ [Display Unit] Settings Guide ◆ Operation" (page 5-134)

The following procedure saves the alarm history data from the display unit backup SRAM to a CF Card as a CSV file. You can also save the data to a USB storage device.



The Alarm History data stored in the backup SRAM is saved to the CF-card.

1 From [System Settings], point to [Display Unit] and open the [Mode] tab.

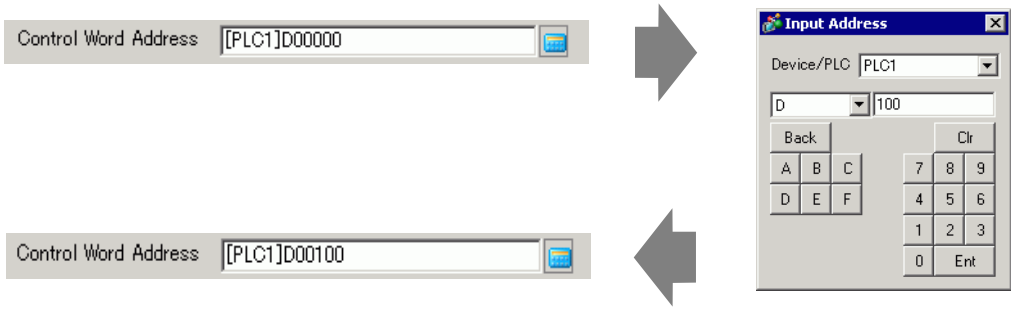


2 In [Memory Card Settings], select [Save Data]. Then select [CF Card].

3 In [Control Word Address], set the address used to control the writing of data to the CF Card (for example, D100).

Click the icon to display an address input keypad.

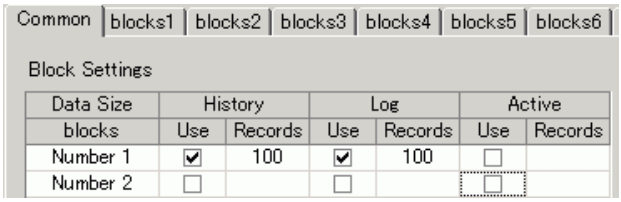
Select the address to device "D", input "100" and press the "Ent" key.



4 The settings for writing Alarm History data to the CF Card are now complete.

NOTE

- The CSV storage format is determined by the [Display Mode] setting. The setting is checked in the order of [History] → [Log] → [Active], and data is output in the format of the first [Display Mode] set [On].
  For example, When the data of Block 1 is saved to the CF Card



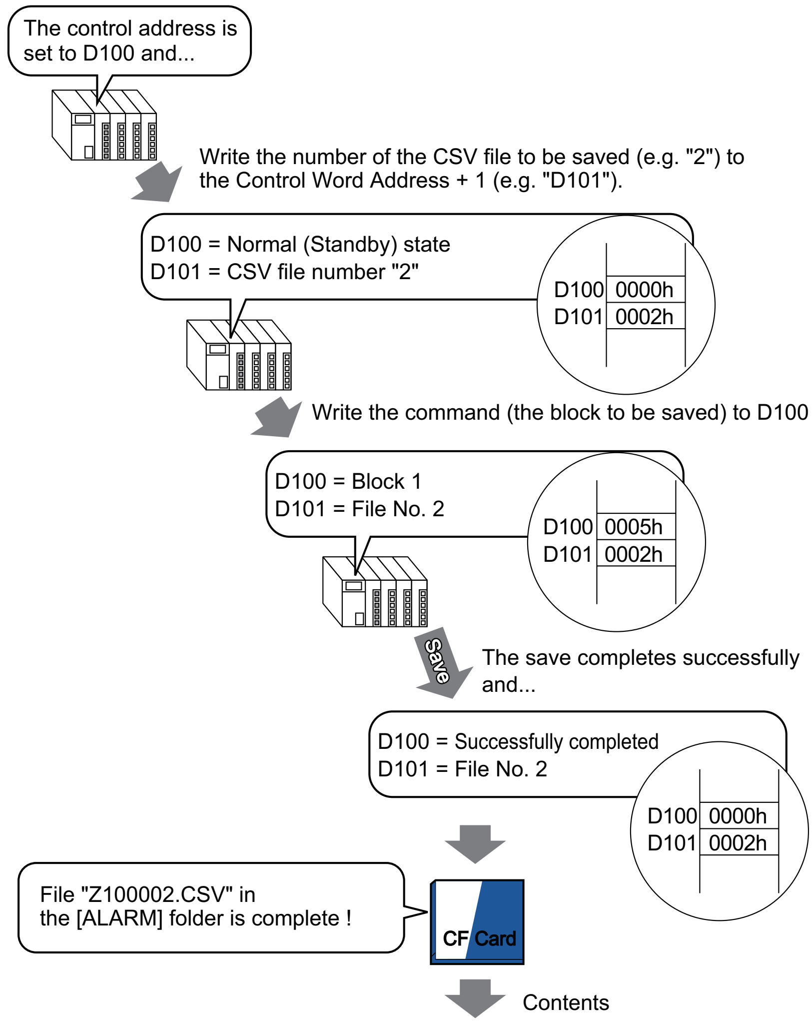
  In this case, the data is saved in [History] format. If [History] were not set, the data would be saved using [Log] format.
- The latest information is output on the foreground when saved in any Display Mode.
  The items such as [Trigger Date], [Trigger Time], and [Message] have fixed outputs. If the Language is set to other languages such as ASCII, Korea, Chinese (Simplified), Chinese (Traditional), Cyrillic, Thai, it is shown in English.

19.8.3 Structure

This section reviews the structure to write the Alarm History data to a CF Card or USB storage device.

■ Saving to CF Card or USB Storage

To save data to the CF Card, manage the designated control word address as follows:




```
"Number of Message(s)","3","","",""
"","","","",""""
Trigger Date","Trigger Time","Message(s)","Acknowledged Time","Recovery Time","Number of occ.","Acc. Time","Level"
"05/11/14","10:05:35","B Tank- Abnormal Pressure","10:20:35","11:00:15","1",:"1:00:00","1"
"05/11/13","12:15:00","A Tank - Low Water Level","13:20:00","16:15:00","2","03:00:00","0" "05/11/13","12:00:10","Pump Number 1 Closed","14:00:20","16:50:30","1","4:50:20","
```

When this data is opened in Microsoft Excel ...

No. of Message(s)	3						
Trigger Date	Trigger Time	Message(s)	Acknowledge Time	Recovery Time	No. of occ.	Acc. Time	Level
2005/11/14	10:05:35	B Tank- Abnormal Pressure	10:20:35	11:00:15	1	1:00:00	1
2005/11/13	12:15:00	A Tank - Low Water Level	13:20:00	16:15:00	2	3:00:00	0
2005/11/13	12:00:10	Pump No. 1 Closed	14:00:20	16:50:30	1	4:50:20	2

■ Control Word Address of Data Save

The address controls data writing. Specify the file number and write the command to the address. The data are saved to the CF Card or USB storage device.

Control Word Address	Command/Status
+1	File Number

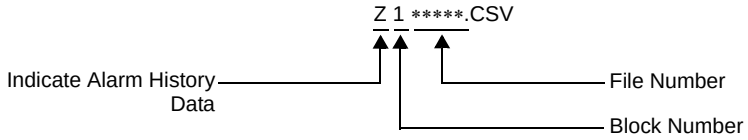
◆ Command and Status

The data are written to the CF Card or USB Storage device. The operation result is reflected in the address:

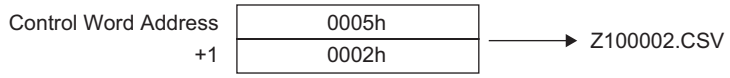
Mode	Word Data	Description
Command	0001h	Filing Data
	0002h	GP-PRO/PB III for Windows Logging data (compatible)
	0003h	GP-PRO/PB III for Windows Line Chart data (compatible)
	0004h	GP-PRO/PB III for Windows Sampling data (compatible)
	0005h	Block 1's Alarm History data
	0006h	Block 2's Alarm History data
	0007h	Block 3's Alarm History data
	0008h	Block 4's Alarm History data
	0009h	Block 5's Alarm History data
	000ah	Block 6's Alarm History data
	000bh	Block 7's Alarm History data
	000ch	Block 8's Alarm History data
	0020h	GP-PRO/PB III for Windows Logging loop auto-save start (compatible)
	0021h	GP-PRO/PB III for Windows Logging loop auto-save completion (compatible)
Status	0000h	Completed Successfully
	0100h	Write Error
	0200h	The CF Card/USB storage device is not inserted, or the CF Card cover is not closed.
	0300h	No data to be loaded (when no data is specified)
	0400h	File Number Error (File number is outside of range)
	2000h	GP-PRO/PB III for Windows Logging loop auto-save responding correctly (compatible) Control Address becomes this value during the auto-save mode. When the value is changed, the auto-save mode finishes.

◆ File Name and Location

Designate a File from 0 to 65,535 in the address following the control word address prior to writing a command.
For example, after writing a command, Alarm History data is saved to the CF Card/USB storage [ALARM] folder with the following file name:



e.g.)



NOTE

- When the CF Card is reset by the GP unit, a folder will automatically be created to save data.

Folder	Data to be saved	File Name
\FILE	Filing Data	F*****.BIN
	Transfer CSV Data	ZR*****.CSV
\LOG	GP-PRO/PB III for Windows Logging data (compatible)	ZL*****.CSV
\DATA	Image Screen	I*****.BIN
	Sound Data	O*****.BIN
\CAPTURE	Screen Capture Video Capture	CP*****.JPG
\MOVIE	Movie File	*.SDX
\TREND	GP-PRO/PB III for Windows Line Chart data (compatible)	ZT*****.CSV
	GP-PRO/PB III for Windows Sampling data (compatible)	ZS*****.CSV
\ALARM	Block 1's Alarm History data	Z1*****.CSV
	Block 2's Alarm History data	Z2*****.CSV
	Block 3's Alarm History data	Z3*****.CSV
	Block 4's Alarm History data	Z4*****.CSV
	Block 5's Alarm History data	Z5*****.CSV
	Block 6's Alarm History data	Z6*****.CSV
	Block 7's Alarm History data	Z7*****.CSV
	Block 8's Alarm History data	Z8*****.CSV

Continued

Folder	Data to be saved	File Name
\SRAM	Backup SRAM data	ZD*****.BIN
\SAMP01	Sampling Group 1's data	SA*****.CSV
- - -	- - -	
\SAMP64	Sampling Group 64's data	SA*****.CSV

■ Caution for Saving to a CF Card or USB Storage Device

- While data is being written to the CF Card/USB storage, changes to parts and screens may be slower.
- It may take several seconds to write data, depending on the amount.
- After the Status data is read out from the GP, be sure to allow time equal to at least one communication cycle[*1] or one Display Scan Time[*2] period, whichever is longer, before the next command can be written.
- Do not call up screens that use the CF Card/USB storage when the CF Card/USB storage is not installed on the GP. If you do, they will not function properly.
- If a write error occurs, any file that has not finished loading may remain on the CF Card.
- To overwrite and save the CF Card/USB storage data existing, the CF Card/USB storage must have enough free space to allow the data. If the data is larger than the available space, a write error occurs.
- When data is saved to the CF Card/USB storage device and the target folder does not exist, the [ALARM] folder is created to save the data. However, if the folder cannot be created a write error occurs.
- The number of times that data can be written on a CF Card is limited. (Approximately 100,000 times for rewriting 500 KB.)
- To format the CF Card/USB storage on your PC, select FAT or FAT32. If you use NTFS for formatting, GP does not recognize the CF Card/USB storage.
- Do not connect more than 1 USB storage. If you do so, the USB devices may not be recognized properly.

■ CF Card Cautions for Use

- When ejecting a CF Card, make sure that the CF Card access LED lamp turns OFF. Otherwise, the data on the CF Card may be damaged.
- When accessing a CF Card, be sure not to power OFF or reset the GP, or eject the CF Card. Create an application screen on which the CF Card cannot be accessed, and on that application screen, you may power OFF or reset the GP, open and close the CF Card cover, and eject the CF Card.

*1 The communication cycle time is the time it takes to request and take in data from the display unit to the device/PLC. It is stored in the internal device area LS2037 as binary data. The unit is 10 milliseconds (ms).

*2 Display Scan Time is the time required to process one screen. This value is stored in internal device LS2036 as a binary value, in millisecond units.

- When inserting a CF Card, check the front and back sides and the connector position of the card. If the CF Card is inserted the wrong way, the data, the CF Card, or the GP may be damaged.
- Use a CF Card manufactured by Digital Electronics Corporation. If a CF Card manufactured by another company is used, the contents of the CF Card may be damaged.
- Please make sure to back up all CF Card data.
- Please refrain from doing the following, as it can result in damage to data and equipment:
  - •Bending the CF Card
  - •Dropping the CF Card
  - •Spilling water on the card
  - •Touching the CF Card's connectors directly
  - •Disassembling or modifying the CF Card

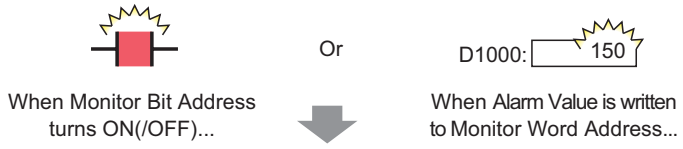
■ USB Storage Cautions for Use

- While accessing data on a USB storage device, do not reset, insert, or detach the device. The data in the USB storage device may become corrupted.
  To remove the USB storage device safely, design the system to disconnect after turning ON the System Variable " #H_Control_USBDetachTrigger" and acknowledging that the " #H_Status_USBUsing" is OFF.
  ☞"A.6.2 HMI system variables (#H system variables) ■ Bit type" (page A-116)
- Please make sure to back up all data on the USB storage device.

19.9 Read data when Alarms occur

19.9.1 Details

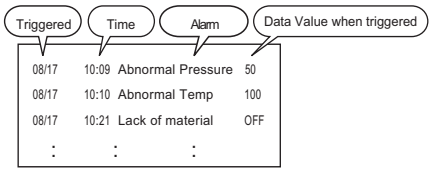
When the Bit Address to be monitored is turned ON (/OFF), or Alarms are written in the Word Addresses to be monitored, each data value is read in accordance with the Trigger, Acknowledged, and Recovery state of Alarms. By analyzing the data values, you can quickly identify the cause of the Alarm.



Value is displayed according to the triggered, acknowledged and recovered date and time of the current alarm.

Lists all active Alarms.

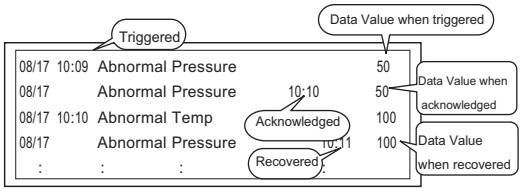
[Active]



*Recovered Alarms will be cleared and Alarm history will not be stored.

Display Alarms by status: Trigger, Acknowledged, or Recovery.

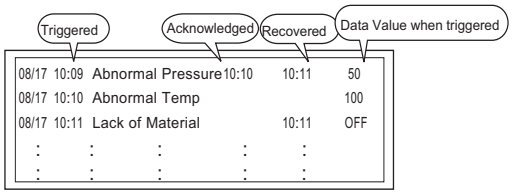
[Log]



*Alarm history will remain after recovery.

Display Alarms by Trigger, Acknowledged, or Recovery status, on the same row.

[History]



*Alarm history will remain after recovery.

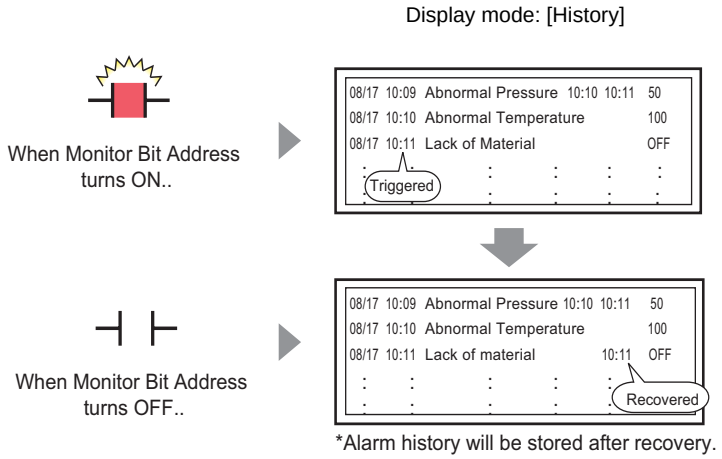
19.9.2 Setting Procedure

This section explains the setting procedure, using a Bit Monitoring example.

NOTE

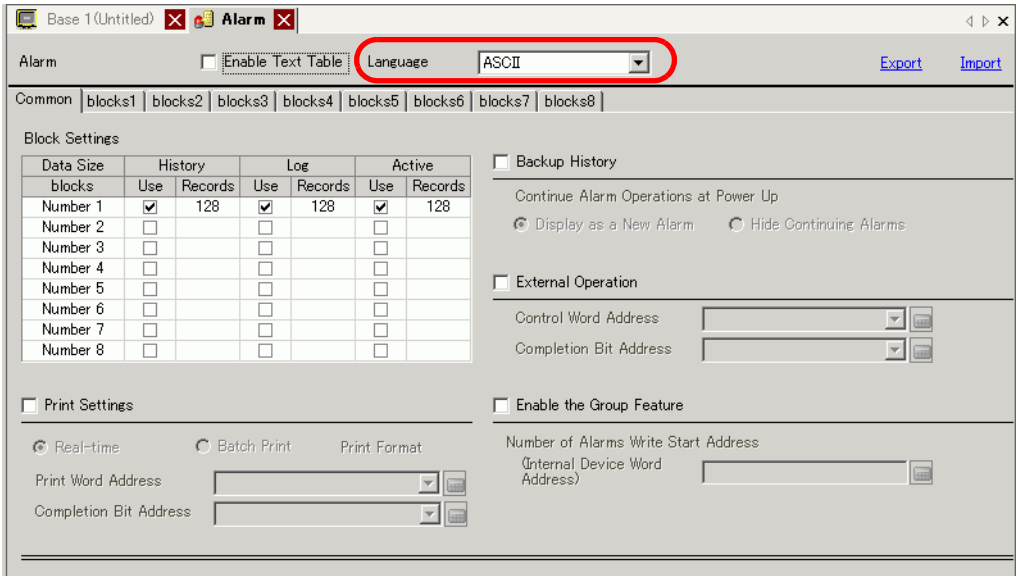
- Please refer to the Settings Guide for details.
  ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm (Block 1) Settings Guide ◆ Bit Monitoring" (page 19-88)
  ☞"19.10.2 Alarm Parts Settings Guide ■ Show History" (page 19-106)
- Refer to Editing a Part for details about placing parts or setting addresses, shapes, colors, and labels.
  ☞"8.6.1 Editing Parts" (page 8-52)

When the Monitoring Bit Address turns ON, the Alarms are displayed together with their trigger date/time. When the Monitoring Bit Address turns OFF, the recovery time is added on the same row.

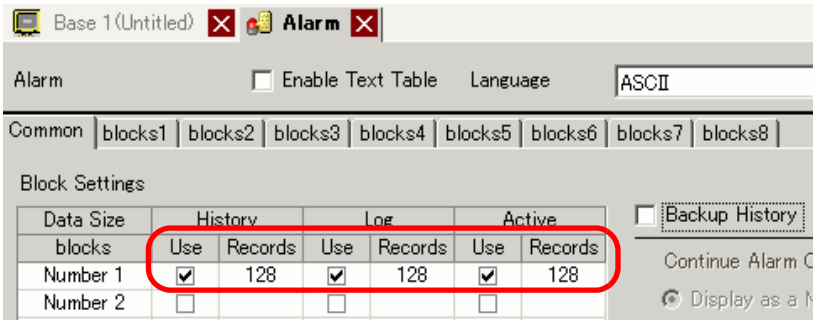


*Alarm history will be stored after recovery.

1 From the [Common Settings (R)] menu, select [Alarm (A)], or click . The following screen appears. Specify a display language for the Alarm Message in [Language].



2 In the Block Settings, select the check box for the desired display mode (History/Log/Active) for the block to which the message is registered, and set the number of messages stored as history for each mode.

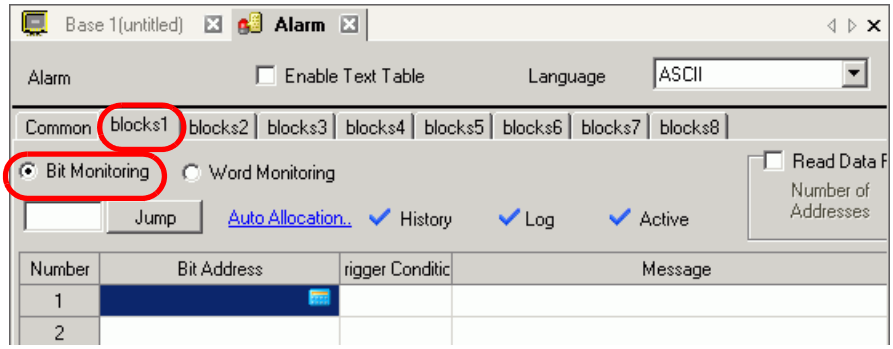


3 Select the [Backup History] check box and select [Hide Continuing Alarms].

IMPORTANT

- When the [Backup History] check box is not selected, the alarm history data will be erased when the GP unit is turned OFF or reset.

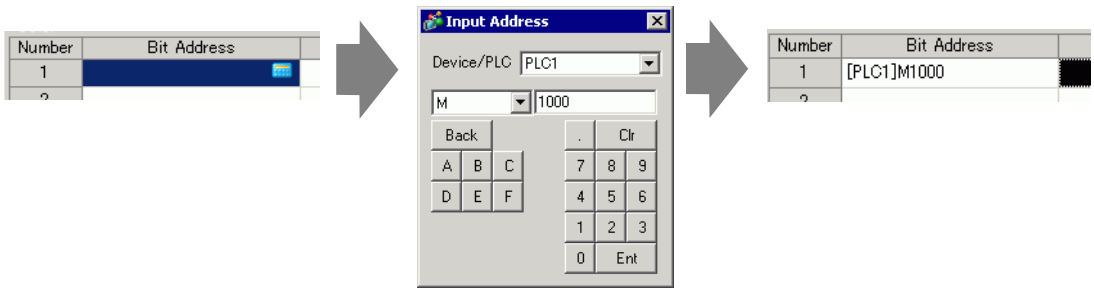
4 Open the [Block 1] tab, and select [Bit Monitoring].



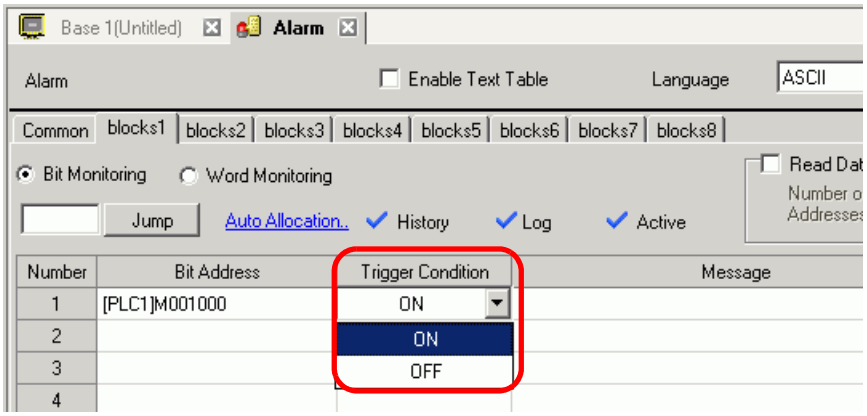
5 In [Bit Address], set the bit address to monitor the alarm trigger (For example, M1000).

Click the icon to display an address input keypad.

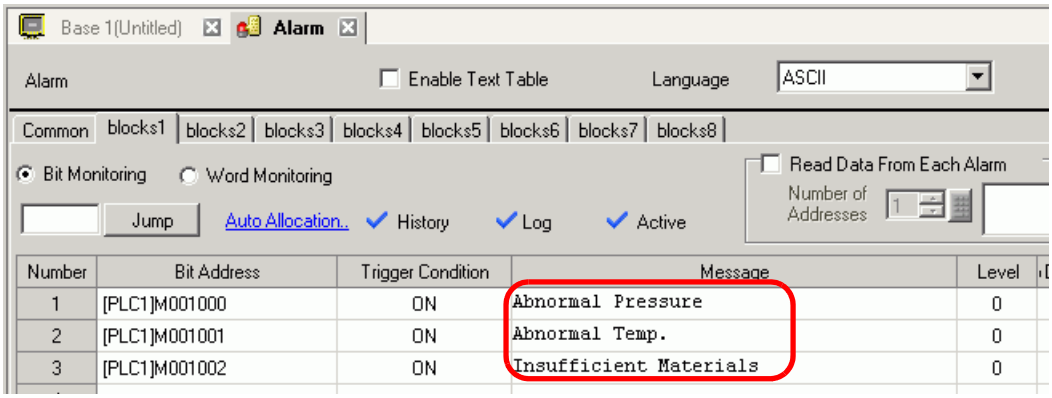
Select device "M", input "1000" as the address, and press the "Ent" key.



6 In the [Trigger Condition] cell, select whether the alarm is triggered when the Monitoring Bit Address turns ON or turns OFF.



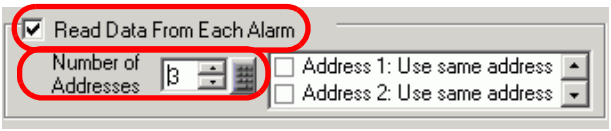
7 In the [Message] cell, input the alarm message that will display when the alarm is triggered.



NOTE

- Up to 160 single-byte characters can be registered in a single Alarm Message.
- When the [Enable Text Table] check box is selected, the message language can be switched and displayed even while the system is running.
☞"17.4 Changing Languages (Multilanguage)" (page 17-16)

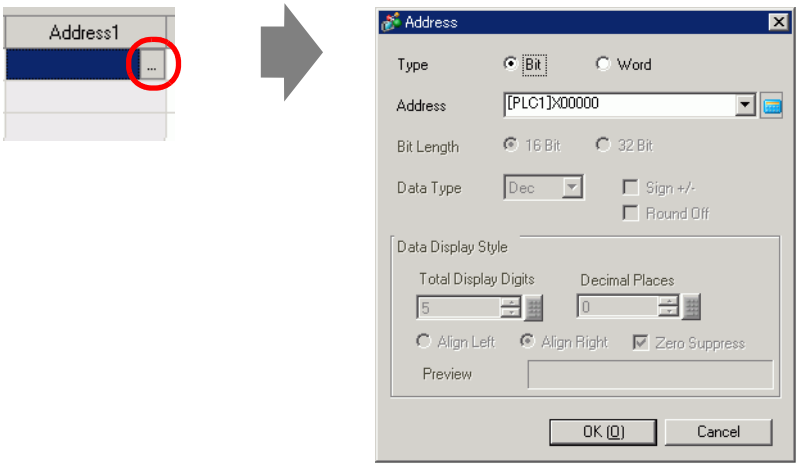
8 Select the [Read Data From Each Alarm] check box, and specify [Number of Addresses](For example: 3) to read the data values.



NOTE

- When using the same address for Alarms Triggered regardless of their Messages, select the [Common Address] check box. The address set here will be used for all the Messages.

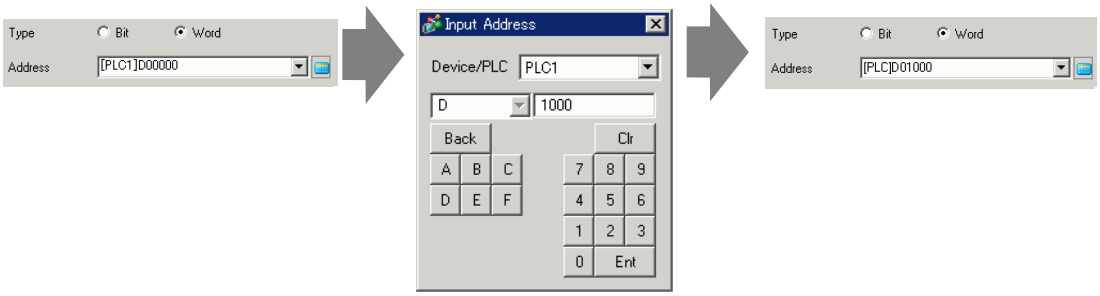
9 Click the [Address1] cell, and then click [...]. The [Address] dialog box appears.



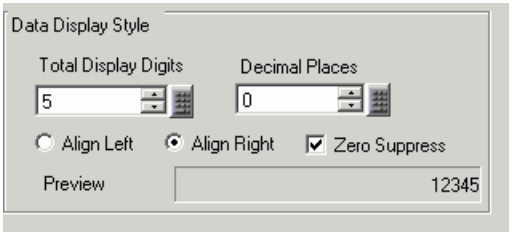
10 Sets the addresses to read the data values when Alarms triggered. (For example: Word Address "D1000")

Click the icon to display an address input keypad.

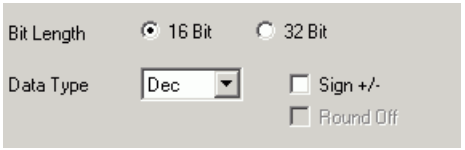
Select the address to device "D", input "1000" and press the "Ent" key.



11 Set the value in [Data Display Style], and click [OK].



12 Specify [Bit Length] and [Data Type].

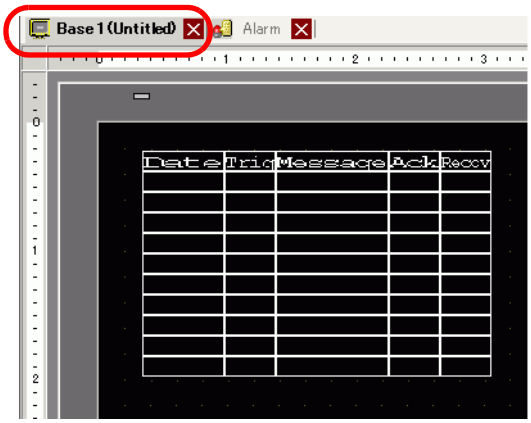


Alarm settings have been completed.

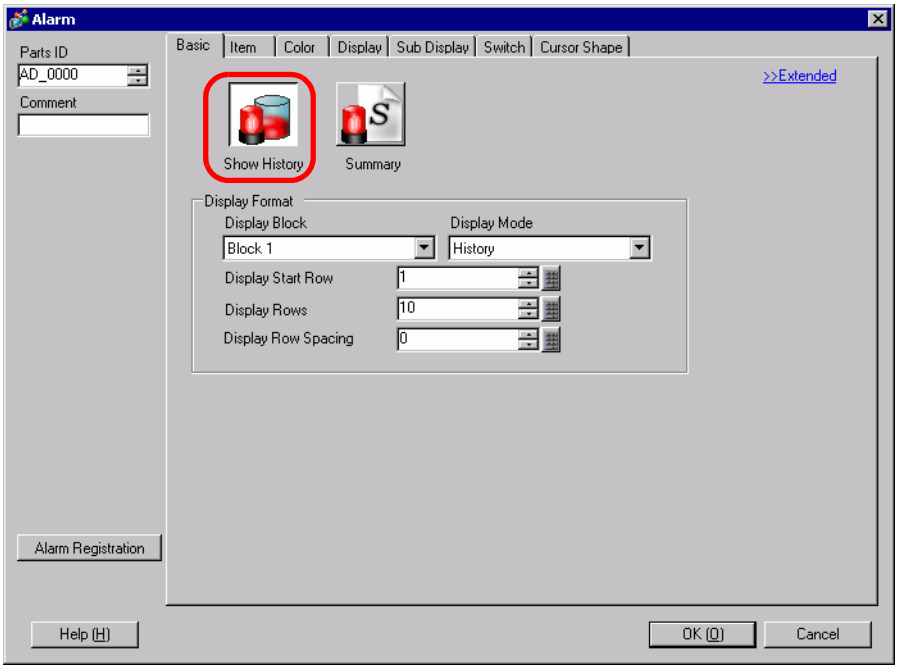
NOTE

- For further information about data read timing, see the following:
☞"19.10.1 Common (Alarm) Settings Guide ◆ Timing for reading data" (page 19-99)
- Alarm settings can be exported or imported in CSV format.

13 Open the screen editor and set the Alarm part which will display the Alarm. In the [Parts (P)] menu, select [Alarm (A)], or click  and place the Part on the screen.



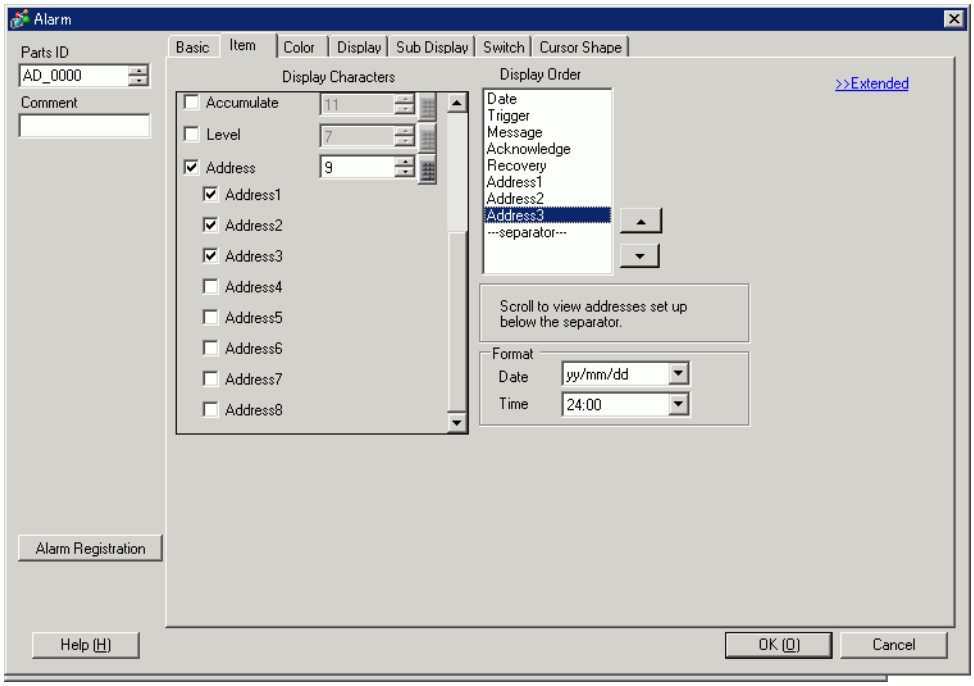
14 Double-click the placed Alarm. The Alarm dialog box appears.



15 Select the Alarm part Block and Mode to be displayed. (Example: Block 1, History)

16 Set the [Display Start Row], [Display Rows] and [Display Row Spacing].

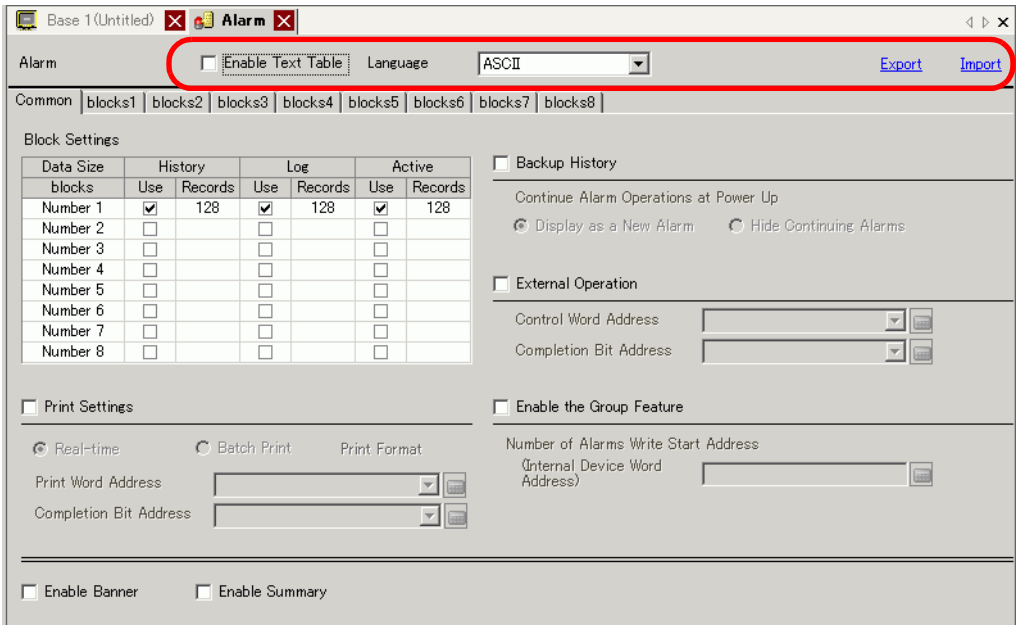
17 On the [Item] tab, select the [Address] check box to set [Display Characters]. Select the [Address1], [Address2], and [Address3] check box.



18 As needed, use the [Color] tab, and [Display] tab options to change alarm message's number of display characters, text color, background color, font, and size. Click [OK].

19.10 Settings Guide

19.10.1 Common (Alarm) Settings Guide



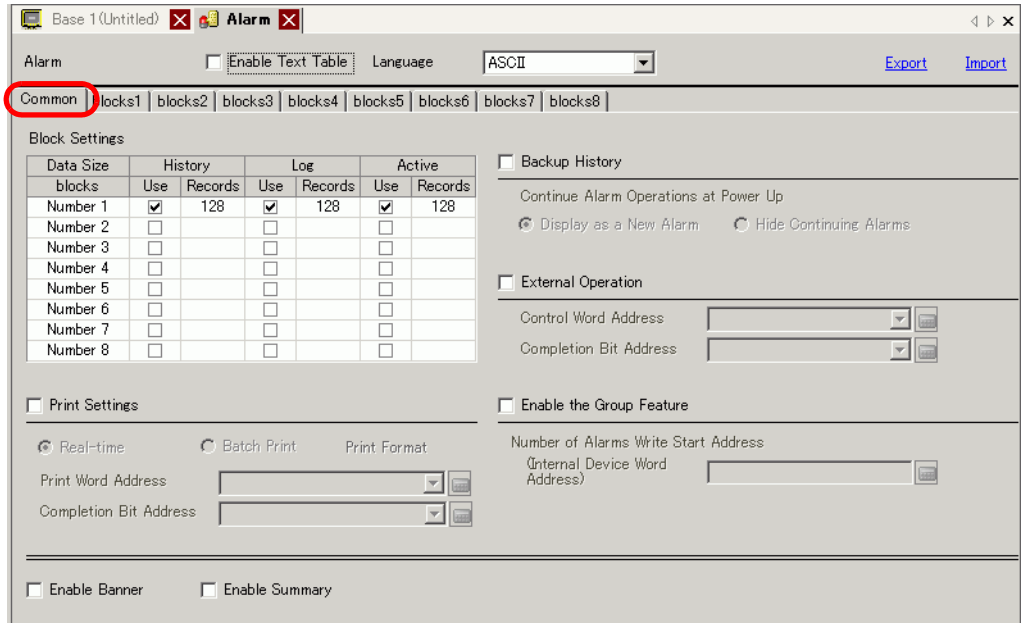
Setting	Description
Enable Text Table	Specify whether to use the character string registered in the text table for alarm messages. The language of alarm messages can be changed while the system is running. ☞ "17.7.7 Alarm (Enable Text Table) Settings Guide" (page 17-64)
Language	When entering messages without using the Text Table, select the language of the alarm message as [Japanese], [ASCII], [Chinese (Simplified)], [Chinese (Traditional)], [Korean], [Cyrillic], or [Thai].
Export	Outputs the settings in CSV format.
Import	Load the settings created in CSV format.

NOTE

- The setting of the text table or language is common to all alarm settings (History, Banner, Summary). When the selection of [Language Setting] is changed to [Enable Text Table] and vice versa, the messages which have been set are deleted.
- When [Enable Text Table] is selected, the Import and Export features cannot be used.

■ Alarm Guide

You can set the block, display mode, and the number of Alarm Histories stored for Alarm Message (History).

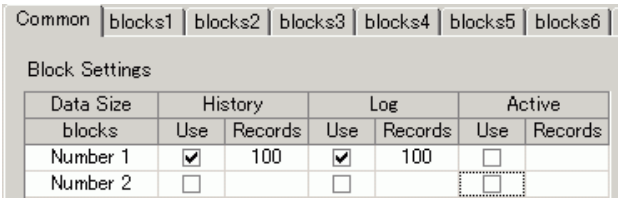
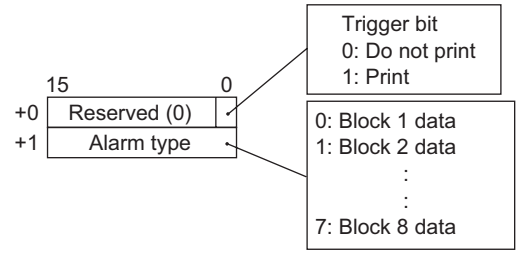


Setting	Description
Block Settings	Set the display mode and the number of Alarm History records (the number of Alarm Histories stored in the display unit) in each mode for each block. A maximum of 768 Alarm Histories can be set. **NOTE** • When IPC Series is selected, the alarm data size sets the Alarm History maximum at 10,000.
Block	A group of Alarm Messages to be registered. A maximum of 8 blocks can be used.

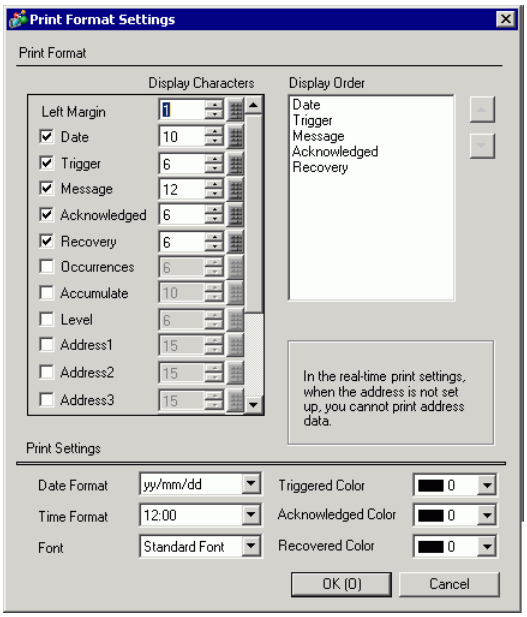
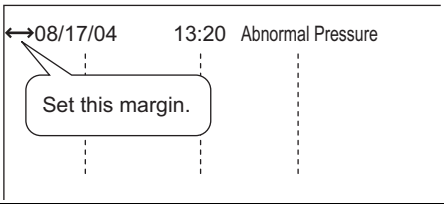
Continued

<table>
<tr><th colspan="2">Setting</th><th>Description</th></tr>
<tr><td rowspan="3">Block Settings</td><td>Display Mode</td><td>
Choose the Alarm Message's display method from [History], [Log], or [Active]. Choose [Active] to display only alarms which are currently triggered. To save old alarms choose [History] or [Log].
<table>
<tr><td>[History]</td><td>Displays Alarm Messages, data, trigger date, and time, in the order they are triggered. The time when the Alarm is acknowledged or recovered will be added to the same row. The change in the state of each Alarm can be viewed on a single row.
<table>
<tr><th>Date</th><th>Trigger Time</th><th>Message</th><th>Ack Time</th><th>Recovery Time</th><th>Address 1</th></tr>
<tr><td>2003/12/13</td><td>20:14</td><td>Conveyor Stopped</td><td></td><td></td><td>OFF</td></tr>
<tr><td>2003/12/13</td><td>20:02</td><td>Hopper Capacity Reduced</td><td>20:08</td><td></td><td>30</td></tr>
<tr><td>2003/12/13</td><td>19:30</td><td>Abnormal Voltage</td><td>19:40</td><td>20:00</td><td>150</td></tr>
</table></td></tr>
<tr><td>[Log]</td><td>The messages, date/time, and read data are displayed in separate rows every time the state changes from [Trigger], [Acknowledged], to [Recovery]. The date in every state can be viewed.
<table>
<tr><th>Date</th><th>Trigger Time</th><th>Message</th><th>Ack Time</th><th>Recovery time</th><th>Address 1</th></tr>
<tr><td>2003/12/13</td><td>20:14</td><td>Conveyor Stopped</td><td></td><td></td><td>OFF</td></tr>
<tr><td>2003/12/13</td><td></td><td>Hopper Capacity Reduced</td><td>20:08</td><td></td><td>30</td></tr>
<tr><td>2003/12/13</td><td>20:02</td><td>Hopper Capacity Reduced</td><td></td><td></td><td>30</td></tr>
<tr><td>2003/12/13</td><td></td><td>Abnormal Voltage</td><td></td><td>20:00</td><td>100</td></tr>
<tr><td>2003/12/13</td><td></td><td>Abnormal Voltage</td><td>19:40</td><td></td><td>150</td></tr>
<tr><td>2003/12/13</td><td>19:30</td><td>Abnormal Voltage</td><td></td><td></td><td>150</td></tr>
</table></td></tr>
<tr><td>[Active]</td><td>Only [Trigger] alarms are displayed. When an alarm recovers, it is automatically erased.
<table>
<tr><th>Date</th><th>Trigger Time</th><th>Message</th><th>Acknowledge Time</th></tr>
<tr><td>2003/12/13</td><td>20:14</td><td>Conveyor Stopped</td><td></td></tr>
<tr><td>2003/12/13</td><td>20:02</td><td>Hopper Capacity Reduced</td><td></td></tr>
<tr><td>2003/12/13</td><td>19:30</td><td>Abnormal Voltage</td><td>19:40</td></tr>
</table></td></tr>
</table>
</td></tr>
<tr><td>Use</td><td>Select the [Display Mode] to be used. A total of 8 display modes at maximum can be set for the whole Alarm History.</td></tr>
<tr><td>Records</td><td>Set the number of Alarm Histories stored for each display mode. Up to 768 Alarm Histories can be set in total. When triggered alarms exceed the specified number, the oldest alarm is deleted.
NOTE
• When IPC Series is selected, the alarm data size sets the Alarm History maximum at 10,000.</td></tr>
</table>

Continued

Setting	Description
Print Settings	Select whether or not to print the Alarm History. ☞ "19.11.1 Restrictions for Printing Alarm History" (page 19-160)
Real-time Print/ Batch Print	Choose the printing timing from [Real-time Print] or [Batch Print]. • Real-Time Print Alarm history is printed every time an alarm is [Triggered], [Acknowledged], and [Recovery]. The print format is the same as the display format of [Log]. Even when two or more blocks are used, printing is performed as occasion arises regardless of the block. • Batch Print When the bit 0 in [Print Word Address] is turned ON, the whole Alarm Histories stored in the designated block are printed. The print format is determined by the [Display Mode] settings. The settings are checked in the order of [History]→[Log]→[Active], and data is printed in the format of the first [Display Mode] set [On]. For example, When printing block 1  Common | blocks1 | blocks2 | blocks3 | blocks4 | blocks5 | blocks6 Block Settings Data Size / History / Log / Active blocks / Use / Records / Use / Records / Use / Records Number 1 ☑ 100 ☑ 100 ☐ Number 2 ☐ ☐ ☐ In this case, the block is printed using [History] format. If [History] were not set, the block would be printed using [Log] format. A page feed occurs after printing.
Print Word Address	This address controls the printing of the Alarm History. After setting the type of alarm, turn ON the trigger bit (bit 0) to start printing.  15 0 +0 Reserved (0) +1 Alarm type Trigger bit 0: Do not print 1: Print 0: Block 1 data 1: Block 2 data : : 7: Block 8 data
Completion Bit Address	Set the bit address that will tell you when printing has completed. This bit will turn ON when printing finishes. **NOTE** • After the [Completion Bit] has been confirmed as ON, please turn it OFF again. It is recommended to turn OFF the bit 0 of [Print Word Address] also at this timing.

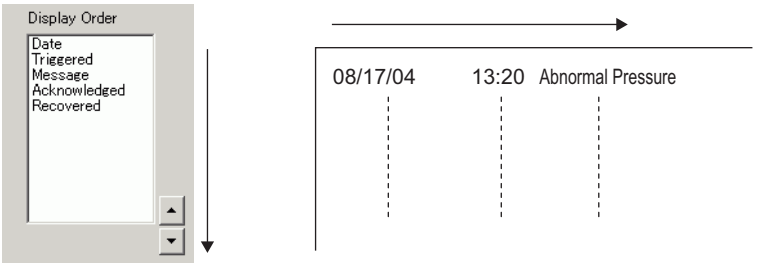
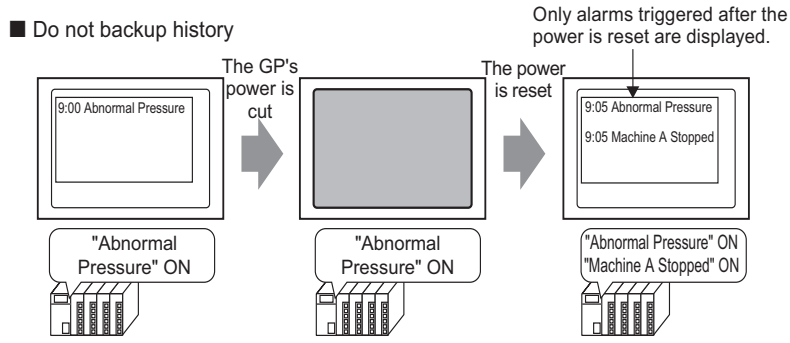
Continued

Setting			Description
	Print Format		Displays the [Print Format Settings] dialog box. 
		Left Margin	Select the spacing between the character of the left-most item and the border from 0 to 100 characters. 

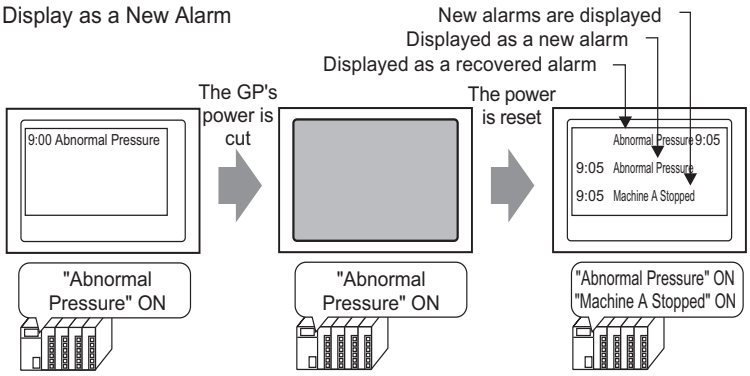
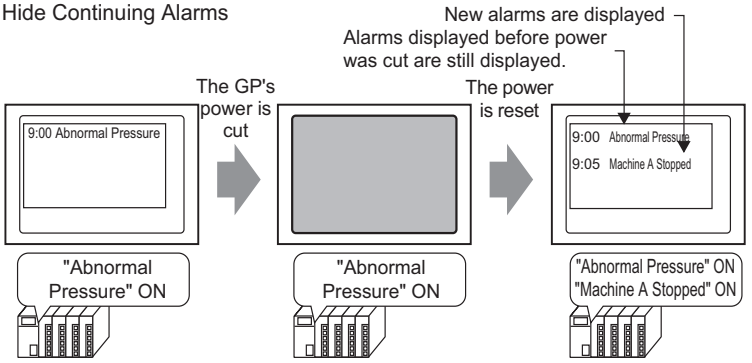
Continued

<table>
<tr><th colspan="3">Setting</th><th>Description</th></tr>
<tr><td rowspan="2">Print Settings</td><td rowspan="2">Print Format</td><td>Select blocks to print</td><td>Specify blocks to print from [Date], [Trigger], [Message], [Acknowledged], [Recovery], [Occurrence], [Accumulate Time], [Level], [Address1] ~ [Address8].
• Date
Prints the date when the alarm was triggered.
• Trigger
Prints the time when the alarm was triggered.
• Message
Prints Alarm Message.
• Acknowledged
Prints the time when the alarm message was confirmed.
• Recovery
Prints alarm's recovery time.
• Number of Times
Prints the number of times the alarm was triggered. The maximum count is 65,535.
• Duration
Prints the total duration of time when the alarm was in the triggered state. The maximum duration is 9,999 hours 59 minutes 59 seconds.
• Level
Prints alarm's importance level.
• Address1 - Address8
Prints read data when Alarms are triggered, acknowledged, recovered.</td></tr>
<tr><td>Display Characters</td><td>Set the number of characters displayed for each item. Each item's setting range is as follows.
<table><tr><td>Date</td><td>5 to 100 or 8 to 100 characters
(The setting range differs depending on the selected date format)</td></tr><tr><td>Trigger, Acknowledged, Recovery</td><td>5 to 100 or 8 to 100 characters
(The setting range differs depending on the selected time format)</td></tr><tr><td>Message</td><td>1 to 160 characters</td></tr><tr><td>Cycles, Duration, Level</td><td>2 to 100 characters</td></tr><tr><td>Address1 - 8</td><td>0 to 100 single-byte characters</td></tr></table>
NOTE
• When you want to provide spaces between the items, set [Total Display Digits] larger than the number of characters that will actually be displayed.</td></tr>
</table>

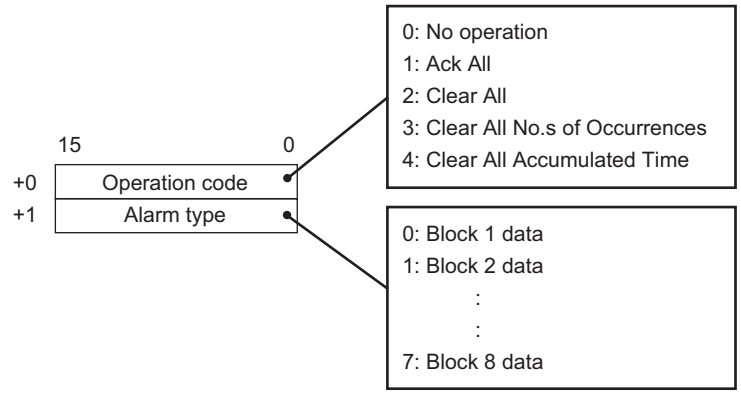
Continued

Setting			Description
Print Settings	Print Format	Display Order	Set the display order of all items. Blocks starting from the top of this list will be printed from left to right. 
		Date Format	Choose a print format for the date from [yy/mm/dd], [mm/dd/yy], [dd/mm/yy], and [mm/dd].
		Time Format	Choose a print format for the time from [12:00],[24:00],[12:00:00],[24:00],00]
		Font	Choose a font type for the Alarm Message from [Standard Font] or [Stroke Font].
		Trigger Color Acknowledged Color Recovery Color	Choose from 8 colors for the Alarm Message's [Trigger], [Acknowledged], and [Recovery] colors. Messages are printed in the specified colors regardless of the GP type. **NOTE** • When white is selected, messages are printed in black. • When the [Display Mode] is [History] and [Batch Print] is set, the trigger color will be used when printing a triggered alarm, the acknowledge color for an acknowledged alarm, and the recovery color for a recovered alarm. However, when acknowledging a previously recovered alarm, the recovery color will be used for printing. The color setting is effective for text only. The background color will not be printed.
Backing up History			Select whether or not to backup the Alarm History to the backup SRAM of the GP. ☞" ◆ About Backup SRAM" (page 19-82) When backup is not selected and the GP is turned OFF, all the Alarm Histories displayed before are erased. When the GP is turned ON again, only the alarms triggered at the time and afterward are displayed. 

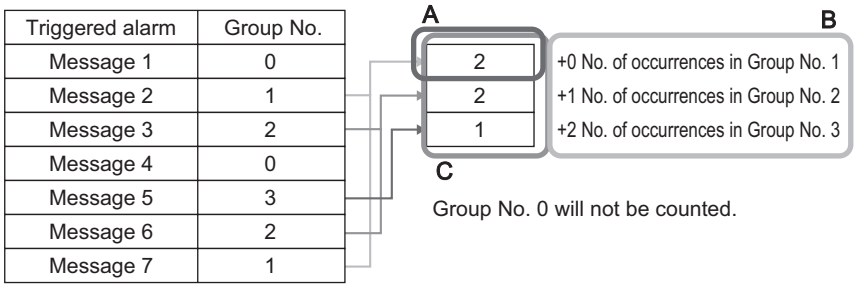
Continued

Setting		Description
Backing up History	Alarm Continuous Action at Power ON	Select the display method to use when power is turned ON. • Display as a new Alarm The information of the host (PLC) before the GP was turned OFF is not retained. The Alarm Messages that were displayed before the GP was turned OFF are displayed as recovered state after the power is turned ON again. Any continuing alarms are separately displayed as new alarms. • Hide Continuing Alarms The information of the host (PLC) before the GP was turned OFF is retained. The Alarm Messages that were displayed before the GP was turned OFF are continuously displayed when power is turned ON again. If the trigger/recovery state of alarms changes after the GP was turned ON again, the change is displayed. Backup Function Examples ■ Display as a New Alarm  ■ Hide Continuing Alarms 
External Operation		Select whether or not to perform [Ack All], [Clear All], [Clear All Number of Occurrences], and [Clear All Accumulated Time] from the host (PLC). ☞ "19.11.3 Restrictions for Running External Operations from Multiple Display Units" (page 19-163)

Continued

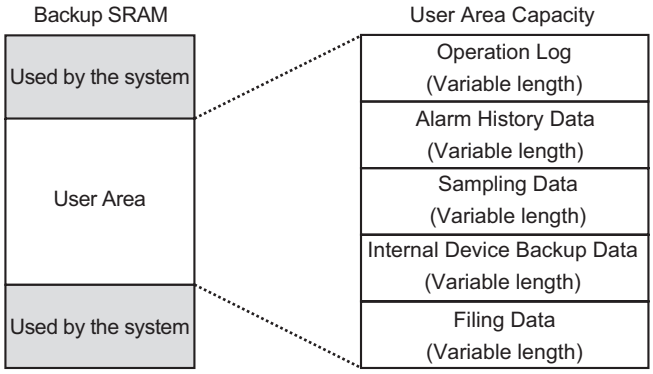
Setting		Description
External Operation	Control Word Address	Set the address which will control the type of operation performed from the PLC (operation code), and the type of alarm.  **NOTE** • When an external operation is performed, it handles all Alarm Messages in the block (active, history, log). For example, if you perform a [Clear All] on block 1, all Alarm Messages in block 1 (active, history, log) are cleared. The Alarm Messages assigned to active, history, and log within the block are not treated individually. The operation's order is [History]→[Log]→ [Active].
	Completion Bit Address	Set the address which will monitor the completion of the operation. This bit will turn ON when the operation finishes.

Continued

Setting	Description
Using Group Feature	Select whether or not to use the Group feature. Set this feature to count the number of times that alarms have been triggered by group number.
Number of Alarms Write Start Address (Internal Word Address)	(A) Set the start address in the GP internal device to write the number of alarm occurrences. (B) Among the addresses set up in (A), only those with the registered group number are used as the area for the writing frequency of internal device addresses. (C) Each time an alarm occurs, data in the corresponding group number's address (internal device) will be increased by 1.  **NOTE** • The largest group number available is 6096. Hence, you can specify a different group number for every alarm message. • Please ensure that the number of groups is within the internal device's area (USR area or LS area). For the LS area, refer to the following. ☞"A.1.4 LS Area (Direct Access Method)" (page A-9) • The alarm frequency gets erased when the GP unit is turned OFF. When backing up the data, please use the internal device's backup feature. ☞"5.15.6 [System Settings] Setting Guide ■ [Display Unit] Settings Guide ◆ Operation" (page 5-134) • The frequency can be counted from 0 to 65,535. Even when the frequency passes 65,535, the count will still remain there. • When data is written to an internal device which stores alarm frequency or the display unit's power turns OFF, data are clear and not counted properly. • The data format of the alarm frequency is fixed as Bin. • Alarms with group number 0 are not counted.
Enable Banner	Configure Alarm Messages to display as scroll banners. ☞" ■ Alarm (Banner) Settings Guide" (page 19-100)
Enable Summary	This setting displays currently active alarms in a list. ☞" ■ Alarm (Summary) Settings Guide" (page 19-103)

◆ About Backup SRAM

The backup SRAM saves data even when the GP unit's power is OFF.
The backup SRAM's user area is used to save not only the Alarm History data but also the sampling data, internal device backup data, and filing data.
The capacity of the backup SRAM that can be used for Alarm History data depends on the type of GP and the space used by other data.



Backup SRAM has the following usage priorities:
(1) Operation Log
(2) Alarm History data
(3) Sampling Data
(4) Internal device backup data
(5) Filing data

IMPORTANT

- The Alarm History data stored in the backup SRAM is erased when:
  •Screen transfer occurs
  •Memory is reset (Offline)
  •Backup SRAM is initialized (Offline)

Space Requirements for Alarm History Data

The space of the backup SRAM required to save the Alarm History data depends on the number of [Records] of all blocks and the number of registered messages (addresses). When no message is registered, the data size is 0 byte regardless of the [Backup History] setting.

Calculation

- Size of the Alarm History data (all blocks) (Unit: byte)

576
+ [Number of records of Block 1 × (28 + 4 + (Number of addresses + 15)/16 × 4 + Number of addresses × 4)]
. . . (Apply the same calculation as Block 1 for Block 2 to 7)
+ [Number of records of Block 8 × (28 + 4 + (Number of addresses + 15)/16 × 4 + Number of addresses × 4)]
+ (16 × Number of registered messages) + (4 × Number of registered messages) + (4 × Number of registered messages)]

Calculation Example

Setting	Description
Setting for Block 1	-
Data Size of Alarms for Block 1	768
Number of Addresses for Block 1	0
Settings for Blocks 2 - 8	None
Number of registered messages	2048
Backup setting	-
Backup History	Enable

Calculation result (576) + (768 × (28 + 0)) + (16 × 2048) + (4 × 2048) + (4 × 2048) = 71232 bytes (approximately 69 KB)

◆ Alarm History Import/Export

Alarm data can be imported/exported using a CSV file.
It can be created and edited in spreadsheet software such as Microsoft Excel.

CSV File Format

In the Alarm Window, select [Export]. Alarm information is output in a CSV file. The following screen shows how the data appears when opened in Microsoft Excel:

NOTE

- When you create a new Alarm in CSV file format, input the items in the following format.
  Input the item name even if you do not use it. Do not edit or delete the exported item name of the CSV File. An error will occurs and you will not be able to import.
- You can import a CSV file exported from GP-Pro/PBIII.

- Header Information

	A	B	C
1	GP-Pro EX		
2	File Type	Alarm Data	
3	File Version	1	0
4			
5	Common Setting		
6			
7	Language	Color Code	
8	ja-JP	2	
9			

- Common Setting: Common
  Language:Set the alarm message language with the following text:
  ja-JP:Japanese, en-US:ASCII, zh-CN:Chinese(Simplified), zh-TW:Chinese(Traditional), ko-KR:Korean, ru-ru:Cyrillic, th-TH:Thai
  Color Code:Set the alarm message color with the following text:
  0: 65536 Colors No blink6: 256 Colors No blink
  1: 32768 Colors 1-speed blink (reservation)7: 64 Colors 3-speed blink
  2: 16384 Colors 3-speed blink8: 16 Colors 1-speed blink
  4: 4096 Colors 3-speed blink9: Monochrome 8 Levels 1-speed blink
  5: Monochrome 16 Levels 3-speed blink10: Monochrome 8 Levels No blink

- Block Setting

	A	B	C	D	E	F	G
10	Block Setting						
11	Block No.	History(0:Not Use, 1:Use)	History Records	Log(0:Not Use, 1:Use)	Log Records	Active(0:Not Use, 1:Use)	Active Records
12	Block1	1	128	1	128	1	128
13	Block2	1	76	1	76	1	76
14	Block3	0	0	0	0	0	0
15	Block4	0	0	0	0	0	0
16	Block5	0	0	0	0	0	0
17	Block6	0	0	0	0	0	0
18	Block7	0	0	0	0	0	0
19	Block8	0	0	0	0	0	0
20							

Block Number:Block Number
History:History "0: Disable, 1: Enable"
History Records:History [Records]
Log:Log "0: Disable, 1: Enable"
Log Records:Log History [Records]
Active:Active "0: Disable, 1: Enable"
Active Records:Active History [Records]

	A	B
21	Print Setting(0:Disable, 1:Enable)	1
22	Print Mode(0:Real Time, 1:Batch)	1
23	Print Word Address	[PLC1]D00000
24	Completion Bit Address	[PLC1]X00000
25		
26	Backup History(0:Disable, 1:Enable)	1
27	Continues Action(0:Display as a new Alarm, 1:Hide continuing Alarms)	0
28		
29	External Operation(0:Disable, 1:Enable)	1
30	Control Word Address	[PLC1]D00000
31	Completion Bit Address	[PLC1]X00000
32		
33	Group Feature(0:Disable, 1:Enable)	1
34	No. of Alarms Write Start Address	[#INTERNAL]LS0000
35		
36	Enable Banner(0:Disable, 1:Enable)	1
37	Enable Summary(0:Disable, 1:Enable)	1
38		
39		
40	Blocks Setting	
41	Data Type(0:DEC, 1:HEX, 2:BCD)	0
42	Sign +/-(0: No Sign, 1: Sign)	0
43		

Print Setting (0: Disable, 1: Enable):Print Settings "0: Disable, 1: Enable"
Print Mode (0: Real Time, 1: Batch):Print Mode "0: Real-time, 1: Batch Print"
Print Word Address:Print Word Address (Input example, [PLC1] D00100)
Completion Bit Address:Completion Bit Address

Backup History (0: Disable, 1: Enable):Backup History "0: Disable, 1: Enable"
Continues Action (0: Display as a new Alarm, 1: Hide Continuing Alarms)
: Continue Alarm Operations at Power Up "0: Display as a New Alarm, 1: Hide Continuing Alarms"
External Operation (0: Disable, 1: Enable): External Operation
Control Word Address: Control Word Address
Completion Bit Address:Completion Bit Address

Group Feature (0: Disable, 1: Enable): Enable the Group Feature "0: Disable, 1: Enable"
Model of Alarms Write Start Address: Number of Alarms Write Start Address

Enable Banner (0: Disable, 1: Enable): Enable Banner "0: Disable, 1: Enable"
Enable Summary (0: Disable, 1: Enable): Enable Summary "0: Disable, 1: Enable"

- Blocks Setting

	A	B	C	D	E	F	G	H	I	J
40	Blocks Setting									
41	Data Type(0:DEC; 1:HEX; 2:BCD)	0								
42	Sign +/-(0: No Sign; 1: Sign)	0								
43										
44	Block1									
45	No. of Address	3								
46	Common Address1(0:Disable; 1:Enable)	1								
47	Common Address2(0:Disable; 1:Enable)	1								
48	Common Address3(0:Disable; 1:Enable)	1								
49	Common Address4(0:Disable; 1:Enable)	0								
50	Common Address5(0:Disable; 1:Enable)	0								
51	Common Address6(0:Disable; 1:Enable)	0								
52	Common Address7(0:Disable; 1:Enable)	0								
53	Common Address8(0:Disable; 1:Enable)	0								
54	Bit Log									
55	No.	Bit Address	Trigger Condition(0:OFF; 1:ON)	Message	Level	Group No.	Sub Display Screen No.	Address1	Bit Count	Data Type
56	1	[PLC1]X00000	1	Abnormal Temp.	0	0	0			
57	Word Log									
58	No.	Word Address	Trigger Trigger Condition(X: Word Address Value)	Bit Count(0:16, 1:32)	Message	Level	Group No.	Sub Display Screen No.		
59	1	[PLC1]D00000	X=0	0	Abnormal Pressure	0	0	0	[PLC1]D00000	0
60										
61	Block2									
62										
63	Block3									
64										
65	Block4									
66										
67	Block5									
68										
69	Block6									
70										
71	Block7									
72										
73	Block8									
74										
75										

Data Type (0: DEC, 1: HEX, 2: BCD): Data Type (When [Bit Monitoring] is set, the Data Type is "0".) "0:DEC, 1:HEX, 2:BCD"

Sign +/- (0: No Sign, 1: Sign): Sign (When [Bit Monitoring] is set, the Sign is "0".) "0: No Sign, 1: Sign"

Block1~8: Block Number 1~8 (Input the item name only for the disable block. Input the settings under the block number.)

Number of Address: Number of Address

Common Address1 to 8: Common Address "0: Disable, 1: Enable" (Input only when reading data)

Bit Log: Bit Monitoring

Group:Rung Number (The number is not required to be a sequence number.)

Bit Address:Bit Address

Trigger Condition:Trigger Condition

Message:Message

Level:Level

Group Number:Group

Sub Display Screen Number: Sub Display Screen Number

Address1 to 8: Address1 - 8 (Input only the Address value. Input the following items when setting Word Address.)

Bit Count: Settings for Bit Length of Address "0:16 Bit, 1:32 Bit"

Data Type: Data Type "0: DEC, 1: HEX, 2: BCD, 3: FLOAT" (You can set [FLOAT] of "3" only when Bit Count (Bit Length) is "1: 32 Bit".)

Sign: Sign "0: No Sign, 1: Sign"

Total Display Digits: Total Display Digits "1 to 11: DEC/HEX/BCD, 1 to 17: FLOAT"

Decimal Places: Decimal Places (Maximum input range is "Total Display Digits - 1")

Display Position: Display Position "0: Align Left, 1: Align Right"

Zero Suppress: Zero Suppress (Set whether "0" is displayed or not when the displayed value has less than the Total Display Digits.) "0: Enable 0, 1: Disable 0"

Round Off: Round Off (Set only when Data Type is "3: Float".) "0: Disable, 1: Enable"

Word Log:Word Monitoring

Group:Rung Number (The number is not required to be a sequence number.)

Word Address: Word Address

Trigger Condition (X: Word Address Value)

:Trigger Condition Settings (Set X=[Alarm Value])

Bit Count:Settings for Bit Length of Alarm Value "0:16 Bit, 1:32 Bit"

Message:Message

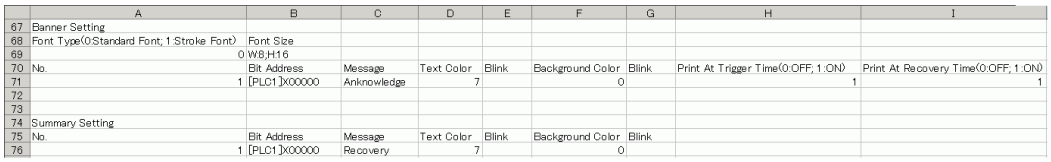
Level:Level

Group Number:Group

Sub Display Screen Number: Sub Display Screen Number

Address1 to 8: Address1 - 8 (Input the Address value only. Refer to Address1 - 8 of "Bit Log" when setting Word Addresses.)

- Banner Setting: Banner Display



	A	B	C	D	E	F	G	H	I
67	Banner Setting								
68	Font Type(0:Standard Font, 1:Stroke Font)	Font Size							
69	0	W8,H16							
70	No.	Bit Address	Message	Text Color	Blink	Background Color	Blink	Print At Trigger Time(0:OFF, 1:ON)	Print At Recovery Time(0:OFF, 1:ON)
71	1	[PLC1]X00000	Anknowledge	7		0		1	1
72									
73									
74	Summary Setting								
75	No.	Bit Address	Message	Text Color	Blink	Background Color	Blink		
76	1	[PLC1]X00000	Recovery	7		0			

Font Type (0:Standard Font, 1:Stroke Font)

: Font "0:Standard Font, 1:Stroke Font"

Font Size:Font Size (Example of Standard Font:8x16->W:8,H:16, set Stroke Font at 8, 16 or 32.)

Group:Rung Number (The number is not required to be a sequence number.)

Bit Address:Bit Address

Message:Message

Text Color:Text Color

Blink:Blink

Background Color:Background Color

Blink:Blink

Print At Trigger Time (0:OFF, 1:ON):Print at Trigger Time "0:OFF, 1:ON"

Print At Recovery Time(0:OFF; 1:ON)ÅFPrint at Recovery Time "0:OFF, 1:ON"

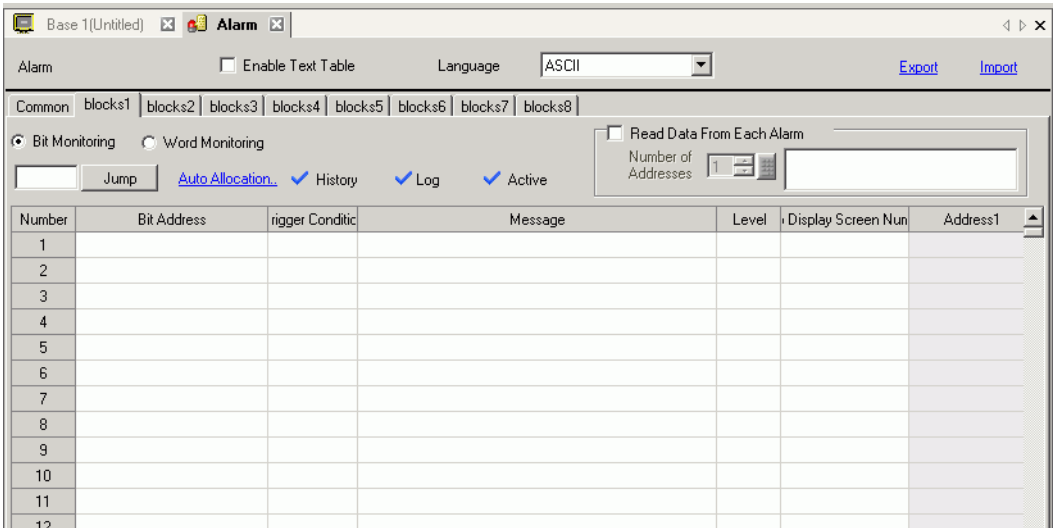
- Summary Setting: Summary Display (Please refer to "Banner Setting" for the setting item.)

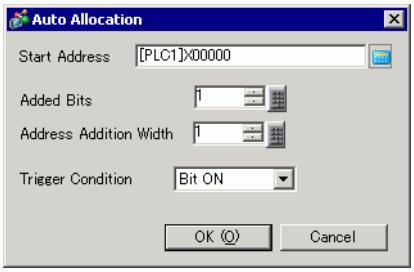
■ Alarm (Block 1) Settings Guide

There are two types of Trigger Methods for the Alarm History: [Bit Monitoring] and [Word Monitoring].

◆ Bit Monitoring

Configure settings to trigger the Alarm by monitoring a bit's ON/OFF state.

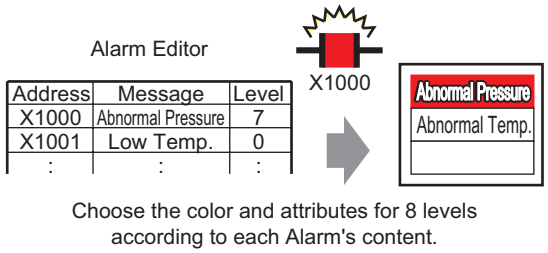
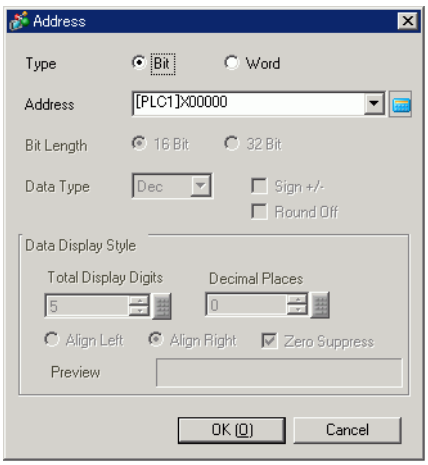


Setting	Description
Bit Monitoring	The alarm is triggered when the monitoring bit address turns ON (OFF).
Jump	Jump to a specific row number.
Auto Allocation	The [Auto Allocation] dialog box will appear. Configure settings to allocate designated addresses from [Start Address] by specified increments.  **NOTE** • When any previous address setting exists, it will be overwritten.
Start Address	Set the Bit Address that will start the Auto Allocation.
Number of Added Bits	Set the number of Bit Addresses (from 1 to "Alarm' limit - Current row position + 1") for Auto Allocation.
Address - Increment Each Address by	Set the number of bits to add during an Auto Allocation, from 0 to 4,096.

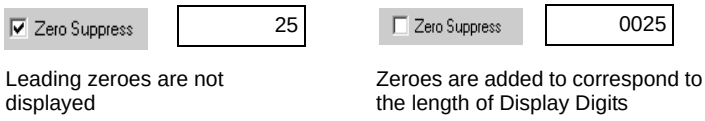
Continued

Setting	Description
Trigger Condition	Sets up if the alarm is triggered when the monitoring bit address turns ON or when the monitoring bit address turns OFF.
History/Log/Active	Displays current display mode set in the [Common] tab. ☞" ■ Alarm Guide" (page 19-73)
Read Data From Each Alarm	Specifies whether or not Alarm message data is read. 
Number of Addresses	Read data values from 1 to 8. Adds the [Common Address] setting rows to the set number of addresses. The address setting column will be available for input in the Alarm Register List.
Common Address	Sets whether or not address data values are read in all the messages in the block regardless of Alarm Messages. You cannot set anything in the second or later row of the address setting column.
Model	Displays the Alarm Message's registration number (Row Number) from 2048 to 8,999. **NOTE** • For Alarm Messages, up to 2,048 Monitor Bits and Monitor Words can be registered but the maximum number of Alarms that can be stored by the GP for the whole Alarm History is 768. • When IPC Series is selected, a maximum of 10,000 alarm messages can be registered in the alarm history.
Bit Address	Set the Bit Address to monitor the alarm's trigger. IMPORTANT • Please ensure that the total of [Monitoring Bit Address] and [Monitoring Word Address] for the whole Alarm History (Block 1 to Block 8) are within 256 words.
Trigger Condition	Sets up if the alarm is triggered when the monitoring bit address turns ON or when the monitoring bit address turns OFF.
Message	Set an alarm message within 160 single-byte characters. **NOTE** • When [Enable Text Table] is selected, this displays with the text table's number of index characters.

Continued

Setting	Description
Level	Each Alarm Message is ranked by importance from 0 (least important) to 7 (most important). The initial setting is "0". The Trigger, Acknowledged, and Recovery colors for each level can be set with the Alarm Part.  Choose the color and attributes for 8 levels according to each Alarm's content. ☞"19.10.2 Alarm Parts Settings Guide ■ Show History ◆ Color" (page 19-113)
Group Number	This item is displayed only when [Enable the Group feature] is selected in the [Common] tab. Set a group number to each alarm message within the range between 0 and 6,096. ☞" ■ Alarm Guide" (page 19-73) **NOTE** • When the [Group Number] is "0", it will not count.
Sub Display Screen Number	When using an Alarm part for a Sub Display, select the desired Base Screen Number from 0 to 9,999, or the Text File Number from 0 to 8,999. Specify the Index numbers of the play list file for playing movies. **NOTE** • If no Sub Display is required, enter "0". The initial setting is "0".
Address1 - 8	Sets Addresses to read Alarm Message data. The input rows become available for the addresses specified in [Number of Addresses]. 
Type	Selects the Address type from [Bit] or [Word].

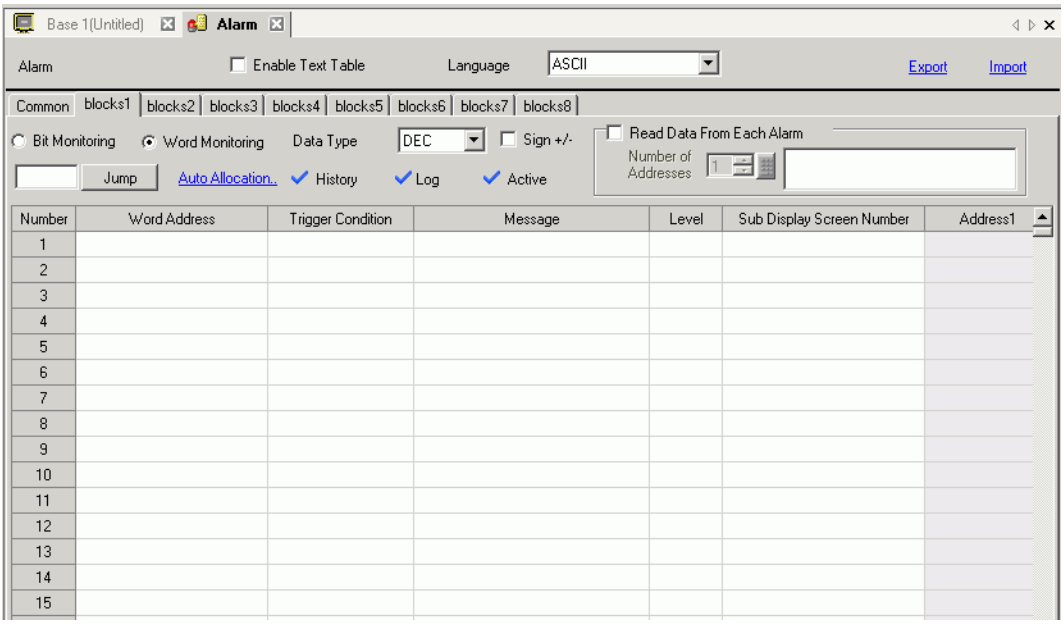
Continued

<table>
<tr><th colspan="2">Setting</th><th>Description</th></tr>
<tr><td rowspan="4">Address1 - 8</td><td>Address</td><td>Sets read data addresses.
NOTE
• You can set an external device/PLC address, an internal address, a symbol variable, and a system variable for a Bit Address.</td></tr>
<tr><td>Bit Length</td><td>Select [16 Bit] or [32 Bit].</td></tr>
<tr><td>Data Type</td><td>Select the data type of the value stored in [Word Address] from [Dec], [Hex], [BCD], and [Float].
• Sign +/–
Use for negative numbers. Available only when [Data Type] is [Dec].
• Round Off
Select whether or not fractions will be rounded off when data is displayed. Fractions will be discarded if rounding off is not selected. This can only be set when the [Data Type] is [Float].</td></tr>
<tr><td>Data Display Style</td><td>• Total Display Digits, Decimal Places
Specify digits for display values from 1 to 11. When selecting [Float], the range of the digits is from 1 to 17. "Total Display Digits - 1" is the maximum range for the number of digits after the decimal point.
The setting range differs depending on [Bit Length] and [Data Type].
<table>
<tr><th rowspan="2">Bit Length</th><th rowspan="2">Data Type</th><th>Total Display Digits</th><th>Decimal Places</th></tr>
<tr><th colspan="2">Setting Range</th></tr>
<tr><td rowspan="3">16 Bit</td><td>Dec</td><td>1 to 11</td><td>0 to 10</td></tr>
<tr><td>Hex</td><td>1 to 11</td><td>-</td></tr>
<tr><td>BCD</td><td>1 to 11</td><td>0 to 10</td></tr>
<tr><td rowspan="4">32 bit</td><td>Dec</td><td>1 to 11</td><td>0 to 10</td></tr>
<tr><td>Hex</td><td>1 to 11</td><td>-</td></tr>
<tr><td>BCD</td><td>1 to 11</td><td>0 to 10</td></tr>
<tr><td>Float</td><td>1 to 17</td><td>0 to 16</td></tr>
</table>
• Align Left/Align Right
Select the display position of a value from [Align Left] or [Align Right].
• Zero Suppress
If this option is selected, leading zeros are not displayed.
(For example, Number of Display Digits = 4)
 

Leading zeroes are not displayed
Zeroes are added to correspond to the length of Display Digits
• Preview
Displays the data image according to the settings.</td></tr>
</table>

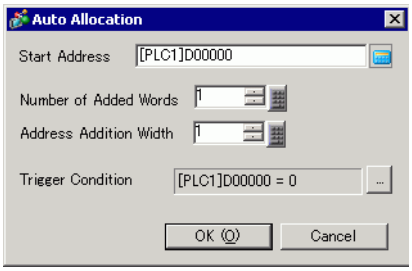
◆ Word Monitoring

Configure settings to trigger the Alarm by monitoring a word data's value.



Setting	Description
Word Monitoring	An alarm is triggered when the value of the monitoring word address matches with the specified alarm value, or is within the specified alarm range.
Data Type	Choose the data format of the value stored in [Word Address] from [Dec], [Hex], or [BCD]. **NOTE** • When the [Data Type] is changed during editing, the data (alarm value) which cannot be converted into the new [Data Type] will become "0". Example)Dec 10→Hex 000A Dec 10→BCD 0 (Cannot be converted and displayed as 0.)
Sign +/–	Select this if you will be using negative data for the alarm value. This can only be set when the [Data Type] is [Dec].
Jump	Jump to a specific row number.

Continued

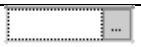
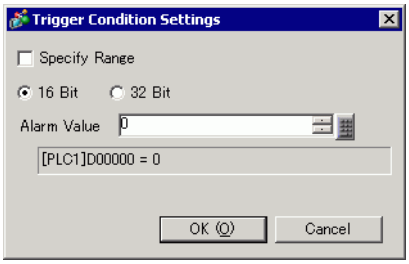
<table>
<tr><th colspan="2">Setting</th><th>Description</th></tr>
<tr><td colspan="2">Auto Allocation</td><td>The [Auto Allocation] dialog box will appear. Configure settings to allocate designated addresses from [Start Address] by specified increments.
 

NOTE
• When any previous address setting exists, it will be overwritten.</td></tr>
<tr><td rowspan="4">Auto Allocation</td><td>Start Address</td><td>Set the Word Address that will start the Auto Allocation.</td></tr>
<tr><td>Number of Added Words</td><td>Set the number of Word Addresses (from 1 to "Alarm" limit - Current row position + 1") for Auto Allocation.</td></tr>
<tr><td>Address - Increment Each Address by</td><td>Set the number of Words to add during an Auto Allocation, from 0 to 4,096.</td></tr>
<tr><td>Trigger Condition</td><td>Set the condition that triggers the alarm. Click [...] to display the [Trigger Condition] dialog box.</td></tr>
<tr><td colspan="2">History/Log/Active</td><td>Displays current display mode set in the [Common] tab.
☞" ■ Alarm Guide" (page 19-73)</td></tr>
<tr><td colspan="2">Read Data From Each Alarm</td><td>Specifies whether or not Alarm message data is read.
 
</td></tr>
<tr><td rowspan="2"></td><td>Number of Addresses</td><td>Read data values from 1 to 8.
Adds the [Common Address] setting rows to the set number of addresses. The address setting column will be available for input in the Alarm Register List.</td></tr>
<tr><td>Common Address</td><td>Sets whether or not address data values are read in all the messages in the block regardless of Alarm Messages. You cannot set anything in the second or later row of the address setting column.</td></tr>
</table>

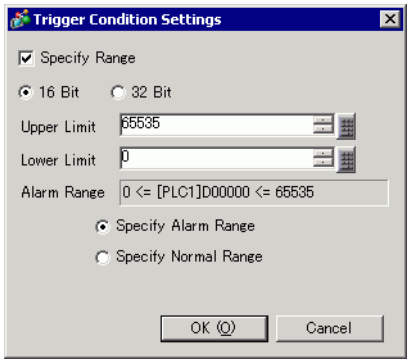
Continued

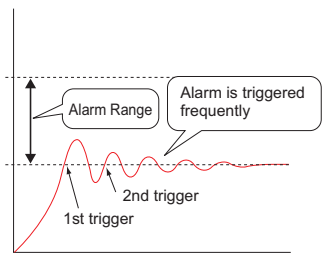
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Model</td><td>Displays the Alarm Message's registration number (Row Number) from 768 to 8,999.

NOTE
• For Alarm Messages, up to 2,048 Monitor Bits and Monitor Words can be registered but the maximum number of Alarms that can be stored by the GP for the whole Alarm History is 768.
• When IPC Series is selected, a maximum of 10,000 alarm messages can be registered in the alarm history.</td></tr>
<tr><td>Word Address</td><td>Set the Word Address to monitor the alarm's trigger.

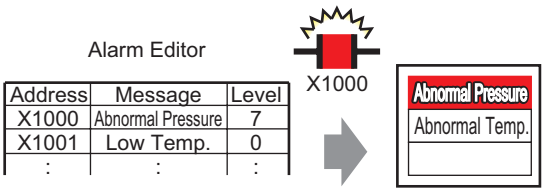
IMPORTANT
• Please ensure that the total of [Monitoring Bit Address] and [Monitoring Word Address] for the whole Alarm History (Block 1 to Block 8) are within 256 words.</td></tr>
<tr><td>Trigger Condition</td><td>Set the alarm value that will trigger the alarm. Click the cell  and the [Trigger Condition] dialog box appears.
 
</td></tr>
<tr><td>16 Bit/32 Bit</td><td>Choose the alarm value bit length from [16 Bit] or [32 Bit].</td></tr>
<tr><td>Alarm Value</td><td>Select which range of values stored in the monitoring Word Address will trigger the alarm. The set range varies depending on the [Data Type] and [Sign +/–].
<table>
<tr><th>Bit Length</th><th>Data Type</th><th>Sign +/–</th><th>Setting Range</th></tr>
<tr><td>16 Bit</td><td>Dec</td><td>Enable</td><td>–32768 to 32767</td></tr>
<tr><td></td><td></td><td>Disable</td><td>0 to 65535</td></tr>
<tr><td></td><td>Hex</td><td>—</td><td>0 to FFFF</td></tr>
<tr><td></td><td>BCD</td><td>—</td><td>0 to 9999</td></tr>
<tr><td>32 bit</td><td>Dec</td><td>Enable</td><td>–2147483648 to 2147483647</td></tr>
<tr><td></td><td></td><td>Disable</td><td>0 to 4294967295</td></tr>
<tr><td></td><td>Hex</td><td>—</td><td>0 to FFFFFFFF</td></tr>
<tr><td></td><td>BCD</td><td>—</td><td>0 to 99999999</td></tr>
</table></td></tr>
</table>

Continued

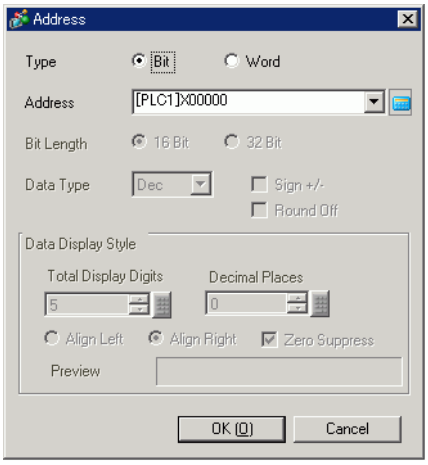
<table>
<tr><th colspan="3">Setting</th><th>Description</th></tr>
<tr><td rowspan="4">Trigger Condition</td><td>Area Specification</td><td></td><td>Select whether or not to set a range for the alarm value. The display will change as follows.
 
</td></tr>
<tr><td></td><td>Upper Limit/
Lower Limit</td><td>Select which range of values stored in the monitoring Word Address will trigger the alarm. The set range varies depending on the [Data Type] and [Sign +/–].
<table><tr><th>Bit Length</th><th>Data Type</th><th>Sign +/–</th><th>Setting Range</th></tr><tr><td rowspan="5">16 Bit</td><td rowspan="2">Dec</td><td>Enable</td><td>–32768 to 32767</td></tr><tr><td>Disable</td><td>0 to 65535</td></tr><tr><td>Hex</td><td>—</td><td>0 to FFFF</td></tr><tr><td>BCD</td><td>—</td><td>0 to 9999</td></tr><tr><td rowspan="5">32 bit</td><td rowspan="2">Dec</td><td>Enable</td><td>–2147483648 to 2147483647</td></tr><tr><td>Disable</td><td>0 to 4294967295</td></tr><tr><td>Hex</td><td>—</td><td>0 to FFFFFFFF</td></tr><tr><td>BCD</td><td>—</td><td>0 to 99999999</td></tr></table></td></tr>
<tr><td></td><td>Alarm Range</td><td>The specified alarm range is displayed.</td></tr>
<tr><td></td><td>Specify Alarm Range
Specify Normal Range</td><td>• Specify Alarm Range
Set the alarm range as "Lower Limit <= Address Value <= Upper Limit".
• Specify Normal Range
Set the alarm range as "Lower Limit >= Address Value" or "Address value >= Upper Limit".

NOTE
• If the alarm value stored in the [Word Address] fluctuates frequently, the alarm will be triggered often.
E.g.) When 50 ≤ Alarm Range ≤ 100
 
</td></tr>
</table>

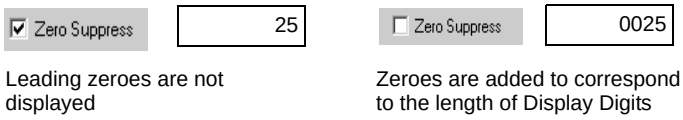
Continued

Setting	Description
Message	Set an alarm message within 160 single-byte characters. **NOTE** • When [Enable Text Table] is selected, this displays with the text table's number of index characters.
Level	Each Alarm Message is ranked by importance from 0 (least important) to 7 (most important). The initial setting is "0". The Trigger, Acknowledged, and Recovery colors for each level can be set with the Alarm Part.  Choose the color and attributes for 8 levels according to each Alarm's content. ☞"19.10.2 Alarm Parts Settings Guide ■ Show History ◆ Color" (page 19-113)
Group Number	This item is displayed only when [Enable the Group feature] is selected in the [Common] tab. Set a group number to each alarm message within the range between 0 and 6,096. ☞" ■ Alarm Guide" (page 19-73) **NOTE** • When the [Group Number] is "0", it will not count.
Sub Display Screen Number	When using an Alarm part for a Sub Display, select the desired Base Screen Number from 0 to 9999, or the Text File Number from 0 to 8999. Specify the Index numbers of the play list file for playing movies. **NOTE** • If no Sub Display is required, enter "0". The initial setting is "0".

Continued

Setting	Description
Address1 - 8	Sets Addresses to read Alarm Message data. The input rows become available for the addresses specified in [Number of Addresses]. 
Type	Selects the Address type from [Bit] or [Word].
Address	Sets read data addresses. **NOTE** • You can set an external device/PLC address, an internal address, a symbol variable, and a system variable for a Bit Address.
Bit Length	Select [16 Bit] or [32 Bit].
Data Type	Select the data type of the value stored in [Word Address] from [Dec], [Hex], [BCD], and [Float]. • Sign +/– Use for negative numbers. Available only when [Data Type] is [Dec]. • Round Off Select whether or not fractions will be rounded off when data is displayed. Fractions will be discarded if rounding off is not selected. This can only be set when the [Data Type] is [Float].

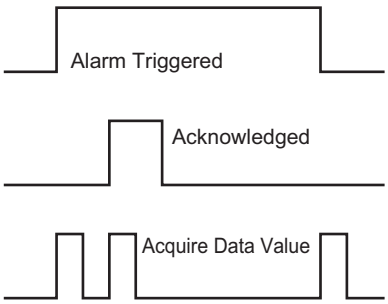
Continued

<table>
<tr><th colspan="2">Setting</th><th>Description</th></tr>
<tr><td>Address1 - 8</td><td>Data Display Style</td><td>
• Total Display Digits, Decimal Places
Specify digits for display values from 1 to 11. When selecting [Float], the range of the digits is from 1 to 17. "Total Display Digits - 1" is the maximum range for the number of digits after the decimal point.
The setting range differs depending on [Bit Length] and [Data Type].
<table>
<tr><td>Bit Length</td><td>Data Type</td><td>Total Display Digits</td><td>Decimal Places</td></tr>
<tr><td></td><td></td><td colspan="2">Setting Range</td></tr>
<tr><td rowspan="3">16 Bit</td><td>Dec</td><td>1 to 11</td><td>0 to 10</td></tr>
<tr><td>Hex</td><td>1 to 11</td><td>-</td></tr>
<tr><td>BCD</td><td>1 to 11</td><td>0 to 10</td></tr>
<tr><td rowspan="4">32 bit</td><td>Dec</td><td>1 to 11</td><td>0 to 10</td></tr>
<tr><td>Hex</td><td>1 to 11</td><td>-</td></tr>
<tr><td>BCD</td><td>1 to 11</td><td>0 to 10</td></tr>
<tr><td>Float</td><td>1 to 17</td><td>0 to 16</td></tr>
</table>
• Align Left/Align Right
Select the display position of a value from [Align Left] or [Align Right].
• Zero Suppress
If this option is selected, leading zeros are not displayed.
(For example, Number of Display Digits = 4)


Leading zeroes are not displayed
Zeroes are added to correspond to the length of Display Digits
• Preview
Displays the data image according to the settings.
</td></tr>
</table>

◆ Timing for reading data

[Address] column data is entered whenever an alarm is triggered, acknowledged, or recovered.



Alarm information is read according to Alarm Parts [Basic] tab [Display Mode] selections.

[History] : Displays data when Triggered

Date	Time	Message	Acknowledge	Recovered	Address1
07/07/05	10:10	Abnormal Pressure	10:12	10:13	50
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

[Log] : Displays data when Triggered, Acknowledged, and Recovered

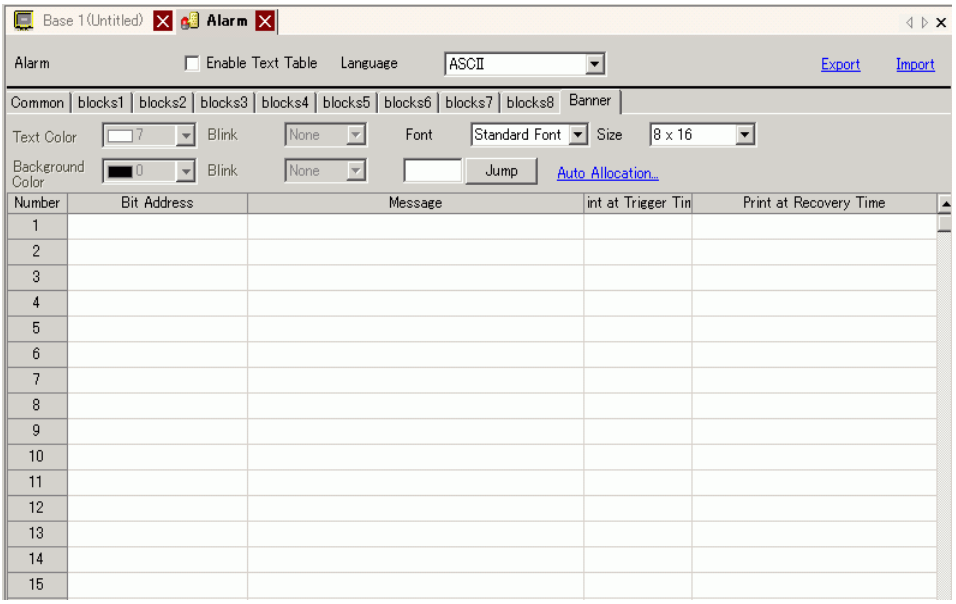
Date	Time	Message	Acknowledge	Recovered	Address1
07/07/05	10:10	Abnormal Pressure			50
07/07/05		Abnormal Pressure	10:12		50
07/07/05		Abnormal Pressure		10:13	100
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

[Active] : Displays data when Triggered

Date	Time	Message	Address1
07/07/05	10:10	abnormal pressure	50
.	.	.	.
.	.	.	.
.	.	.	.

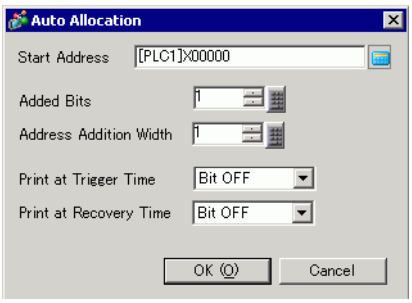
■ Alarm (Banner) Settings Guide

Configure Alarm Messages to display as scroll banners.

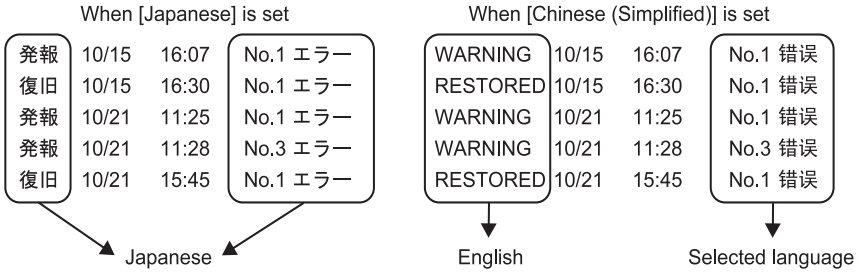


Setting	Description
Text Color	Select a color for the message text.
Background Color	Select a background color for the message text.
Blink	Select whether or not the Switch will blink, and the blink speed. You can choose different blink settings for [Text Color] and [Background Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors ■ List of Available Colors" (page 8-42)
Font	Choose a font type for the Alarm Message from [Standard Font] or [Stroke Font].
Size	Choose a text size for the Alarm Message. Each font type has a different range of styles. Standard Font: [8 x 16], [8 x 32], [8 x 64], [16 x 16], [16 x 32], [16 x 64], [32 x 16], [32 x 32], [32 x 64] Stroke Font: [8], [16], [32]
Jump	Jump to a specific row number.

Continued

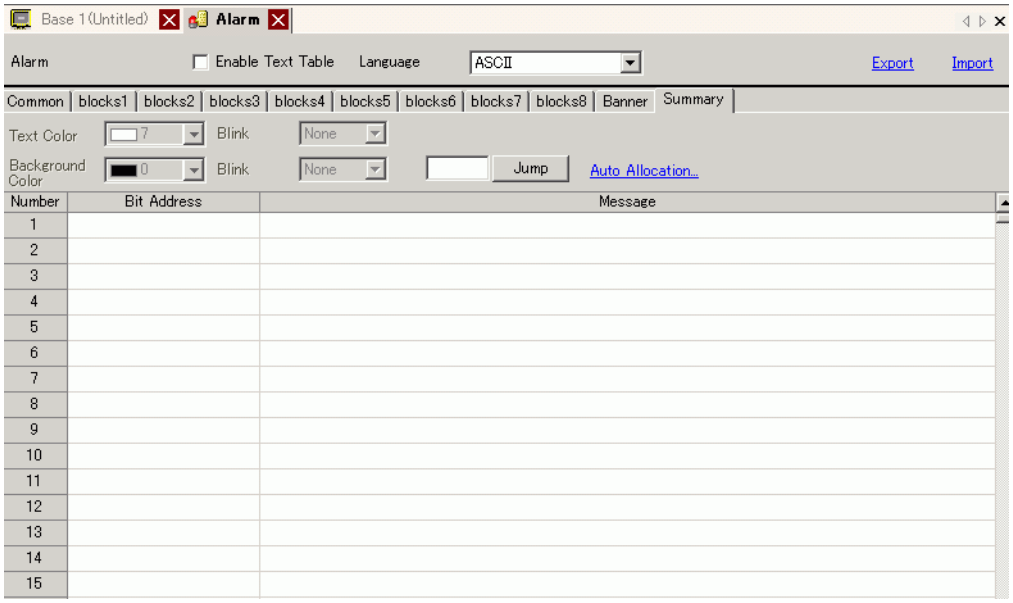
Setting		Description
Auto Allocation		The [Address Auto Allocation] dialog box appears. Configure settings to allocate designated addresses from the starting address.  **NOTE** • When any previous address setting exists, it will be overwritten.
	Start Address	Set the Bit Address that will start the Auto Allocation.
	Number of Added Bits	Set the number of Bit Addresses (from 1 to "Alarm' limit - Current row position + 1") for Auto Allocation.
	Address - Increment Each Address by	Set the number of bits to add during an Auto Allocation, from 0 to 4,096.
	Print Trigger Time	Select whether or not to print the trigger time or recovery time along with the Alarm Message when the alarm is triggered or recovered. Set this to [ON] to print.
	Print at Recovery Time	
Model		Displays the Banner Alarm Message registration number (row number) from 1 to 512.
Bit Address		Set the Bit Address to monitor the alarm trigger. When the Monitoring Bit Address turns ON (Trigger), the Alarm Message scrolls. When the Monitoring Bit Address turns OFF (Recovery), the Alarm Message display ends. **NOTE** • Set the monitoring bits within 128 Words for the whole Alarm Message (Banner).
Message		Set an alarm message within 160 single-byte characters. **NOTE** • When [Enable Text Table] is selected, this displays with the text table's number of index characters.

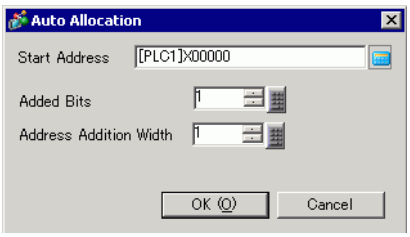
Continued

Setting	Description
Print at Trigger Time Print at Recovery Time	Select whether or not to print the trigger time or recovery time along with the Alarm Message when the alarm is triggered or recovered. Set this to [ON] to print. **NOTE** • The print color is limited to black. • Printing will use the font designated in the [Banner] tab of [Alarm]. • When that is set to other language but Japanese (ASCII, Chinese (Simplified), Korean, Chinese (Traditional), Cyrillic or Thai), they will be output in English.  • The GP unit can store printing information for a maximum of 1,000 Alarm Messages (Banner) and Alarm Histories (Real-time Print). If no printer is connected to the GP, it can still store up to 1,000 messages, but any messages over 1,000 will be lost while the GP is waiting to print. • If the printer goes offline during printing due to a paper jam, etc., fix the printer error without turning off the display unit's power. Print information stored in the GP will be sent to the printer when it comes back online. • If the printer's power goes off during printing, the data sent from the GP during that time will not be printed.

■ Alarm (Summary) Settings Guide

This setting displays triggered alarms in a list.



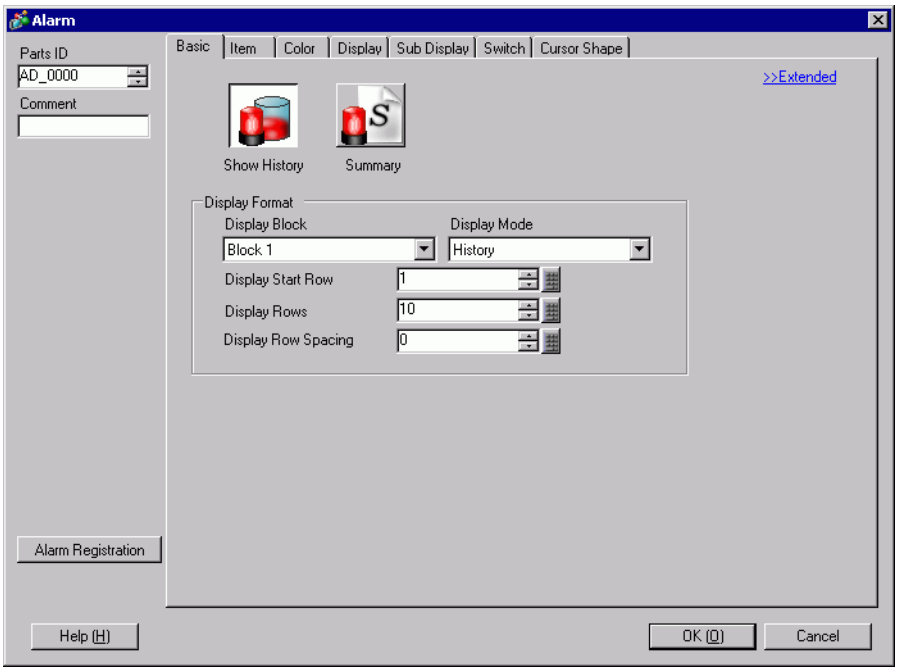
Setting	Description
Text Color	Select a color for the message text.
Background Color	Select a background color for the message text.
Blink	Select whether or not the Switch will blink, and the blink speed. You can choose different blink settings for [Text Color] and [Background Color]. **NOTE** • There are cases where you can and cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors ■ List of Available Colors" (page 8-42)
Jump	Jump to a specific row number.
Auto Allocation	The [Auto Allocation] dialog box will appear. Configure settings to allocate designated addresses from [Start Address] by specified increments.  **NOTE** • When any previous address setting exists, it will be overwritten.

Continued

Setting		Description
Auto Allocation	Start Address	Set the Bit Address that will start the Auto Allocation.
	Number of Added Bits	Set the number of Bit Addresses (from 1 to "Alarm' limit - Current row position + 1") for Auto Allocation.
	Address - Increment Each Address by	Set the number of bits to add during an Auto Allocation, from 0 to 4,096.
Model		Displays the Alarm Message registration number (Row Number) from 1 to 8,999.
Bit Address		Set the Bit Address to monitor the alarm trigger. When the Monitoring Bit Address turns ON, the alarm triggers and the Alarm Message is displayed. When the Monitoring Bit Address turns OFF, the alarm recovers and the Alarm Message is erased. **NOTE** • For the Monitoring Bit Address, please use a Word-designated Bit device, or a Bit-designated Word device. Please allocate the Monitoring Bit Addresses of the Alarm Messages displayed in a single Alarm Part (Summary) as continuous addresses inside the same device. It cannot be set over different types of devices.
Message		Set an alarm message within 160 single-byte characters. **NOTE** • When [Enable Text Table] is selected, this displays with the text table's number of index characters.

19.10.2 Alarm Parts Settings Guide

Configure settings for the Part to display the Alarm Messages registered in [Alarm]. There are two types of display methods: [Show History] and [Summary].



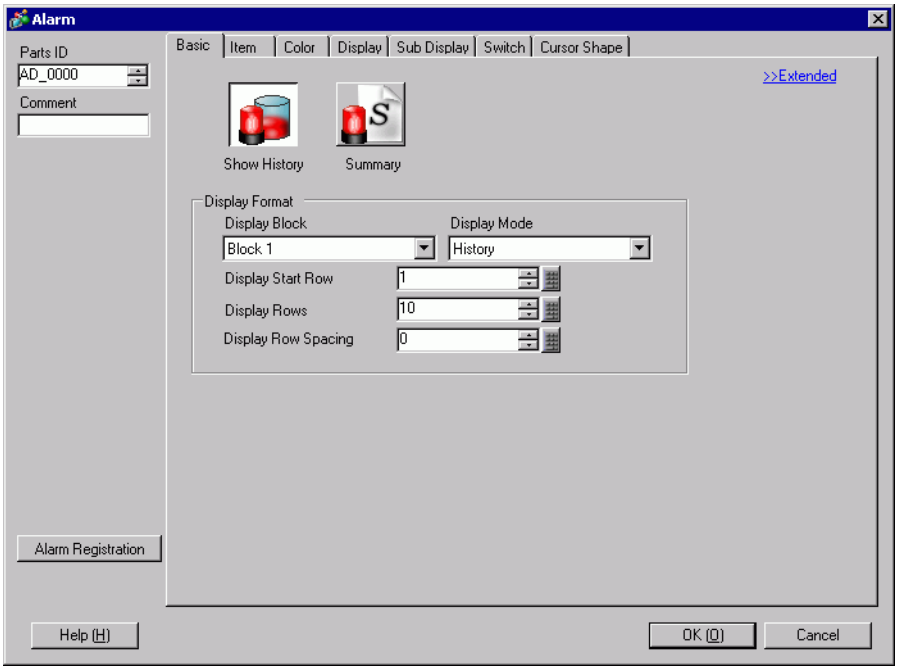
Setting	Description
Part ID	Parts are automatically assigned an ID number. Alarm Part ID: AD_**** (4 digits) The alphabetic portion is fixed. You can change the number part within the range of 0000-9999.
Comment	The comment for each Part can be up to 20 characters long.
Alarm Registration	Change to the Common' [Alarm].
Display Unit	Select the Alarm part type. • Show History Alarm Messages are displayed in a row in order of when they were triggered. ☞" ■ Show History" (page 19-106) • Summary Alarm Messages that are currently active are displayed in a list. ☞" ■ Summary" (page 19-140)

■ Show History

Alarm Messages are displayed in a row in order of when they were triggered.

◆ Basic Settings/Basic

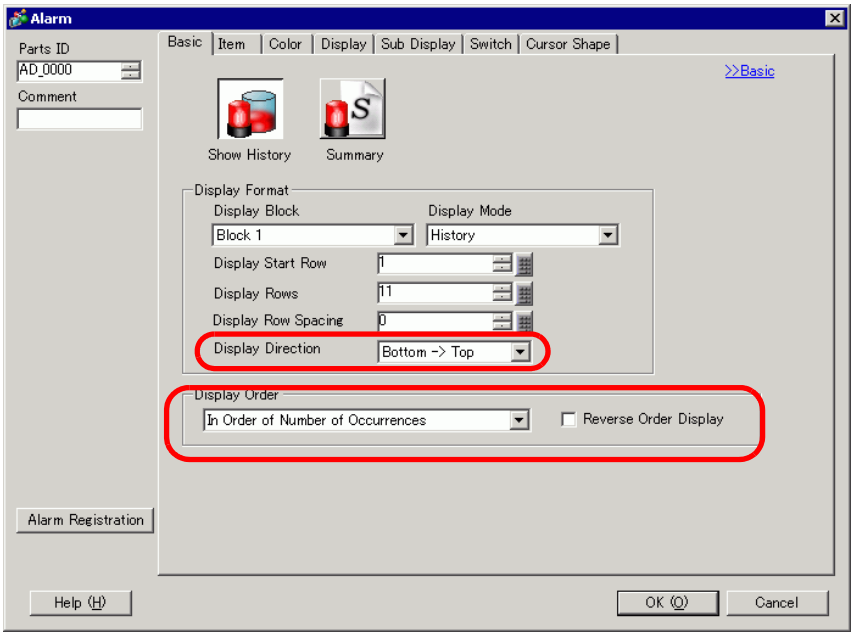
Set the display format of the Alarm Messages.



Setting		Description
Display Format		Set the format of the Alarm History display.
	Display Block	Choose the block with which the desired Alarm Messages are registered from [Block 1] to [Block 8].
	Display Mode	Choose the Alarm Message display method from [History], [Log], or [Active]. ☞"19.10.1 Common (Alarm) Settings Guide ■ Alarm Guide" (page 19-73)
	Display Start Row	Set the row where the Alarm Message will start displaying from 1 to 768.
	Display Rows	Set how many Alarm Message rows will display on one screen from 1 to 50.
	Display Row Spacing	Set the space between Alarm Messages from 0 to 7 dots. A From 0 to 7 dots. A

◆ Basic/Details

You can change the Alarm Message Display Direction and Sort Order.



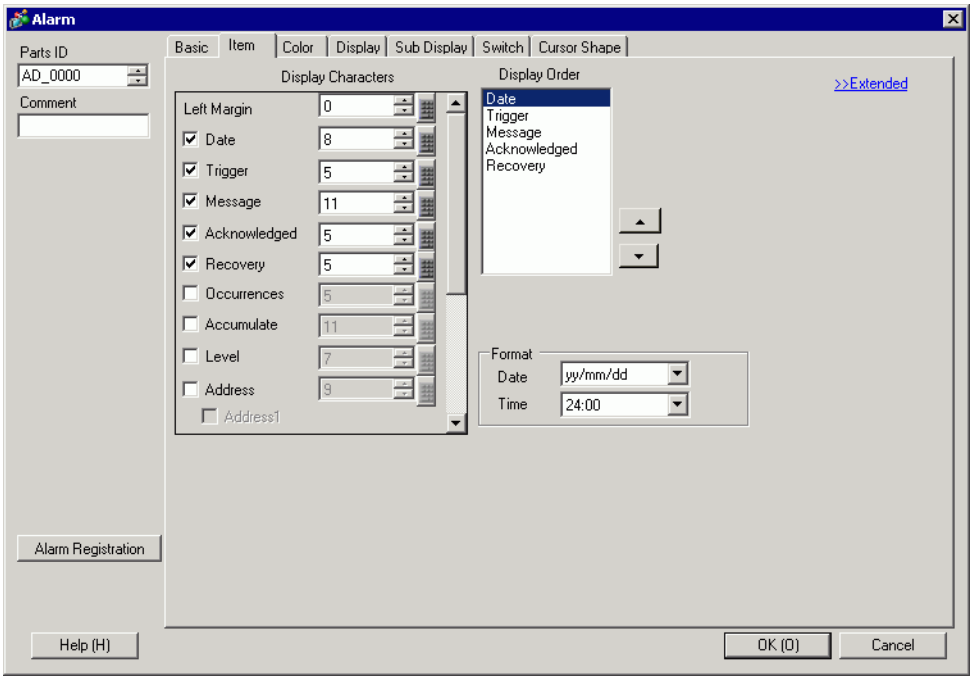
Setting	Description
Display Direction	Choose the scroll direction for the Alarm Message from [Bottom →Top] or [Top→ Bottom]. Registered message No. 1 Pump Closed Tank A Low Water Tank B Abnormal Pressure : : Trigger order : Tank B Abnormal Pressure→Pump 1 Closed →Tank A Low Water Sort order : In Reverse Order of Trigger Date and Time · When scroll direction is [Bottom→Top] Scroll direction ↑ Start position → 04/07/25 09:19 Tank B Abnormal Pressure 04/07/25 14:20 No. 1 Pump Closed 04/07/25 20:23 Tank A Low Water · When scroll direction is [Top→Bottom] Start position → Scroll direction ↓ 04/07/25 20:23 Tank A Low Water 04/07/25 14:20 No. 1 Pump Closed 04/07/25 09:19 Tank B Abnormal Pressure

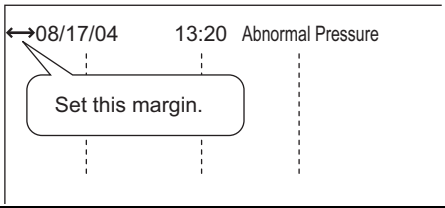
Continued

Setting	Description
Display Order	Select the display order for Alarm Messages from [In Reverse Order of Trigger Date], [In Number of Occurrences Order], [In Descending Order of Accumulated Time], [Level & In Reverse Order of Trigger Date], [Level & In Descending Order of Number of Occurrences], or [Alarm Registration Order].
Reverse Order	Display items in reverse [Display Order].

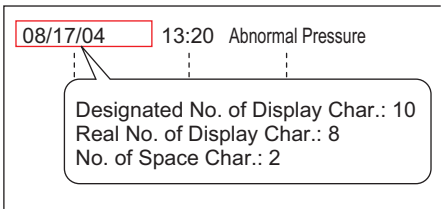
◆ Item/Basic

Configure the items, the number of characters, and the date/time format displayed in the Alarm Part. The item names are not displayed on the GP screen. To display the item names, set them by selecting [Details].

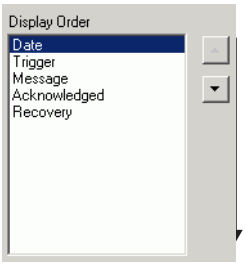
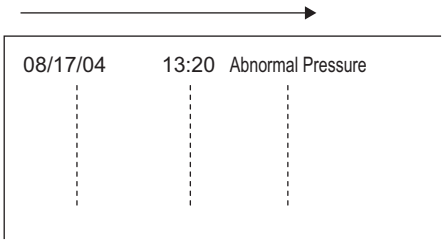
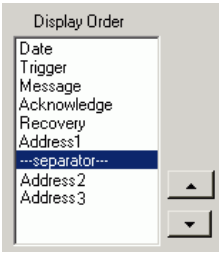


Setting	Description
Left Margin	Select the spacing between the left-most item name and the border. Set a value so that the total of [Display Characters] and [Left Margin] is within 160 single-byte characters. 

Continued

Setting	Description
Select Items to Display	Select the items to be displayed in Alarm Parts from [Date], [Trigger], [Message], [Acknowledged], [Recovery], [Occurrence], [Accumulate], [Level], and [Address]. • Date Displays the date and time when the alarm was triggered. • Trigger Displays the time when alarm was triggered. • Message Displays Alarm Message. • Acknowledged Displays the time when alarm message was confirmed. • Recovery Displays alarm recovery time. • Cycles Displays the number of times alarm was triggered. The maximum count is 65,535. • Accumulate Displays the total duration of time when the alarm was in the triggered state. The maximum duration is 9,999 hours 59 minutes 59 seconds. • Level Displays the Alarm Message set importance level. • Address Displays data when an Alarm is triggered. **NOTE** • Once the values of [Cycles] and [Duration] reach the maximum, they will remain there.
Display Characters	Set the number of characters displayed for each item. Set a value so that the total of [Display Characters] and [Left Margin] for the item is within 160 characters. **NOTE** • When you want to provide spaces between the items, set a value larger than the number of characters that will actually be displayed. 

Continued

Setting	Description
Display Order	Set the display order of all items. Items starting from the top of this list are displayed on the Alarm part from left to right.   **NOTE** • When you select [Address], a scrolling position separator is displayed. On the Display, you can display the items above the separator without scrolling.  • The separator and Address1 - 8 cannot be moved between Date and Level.
Format	Set the date and time format.
Date	Select the Date display format: [mm/dd/yy], [mm/dd], [yy/mm/dd], or [dd/mm/yy].
Sampling	Choose a format for the time from [12:00], [24:00], [12:00:00], [24:00:00]

◆ Item/Details

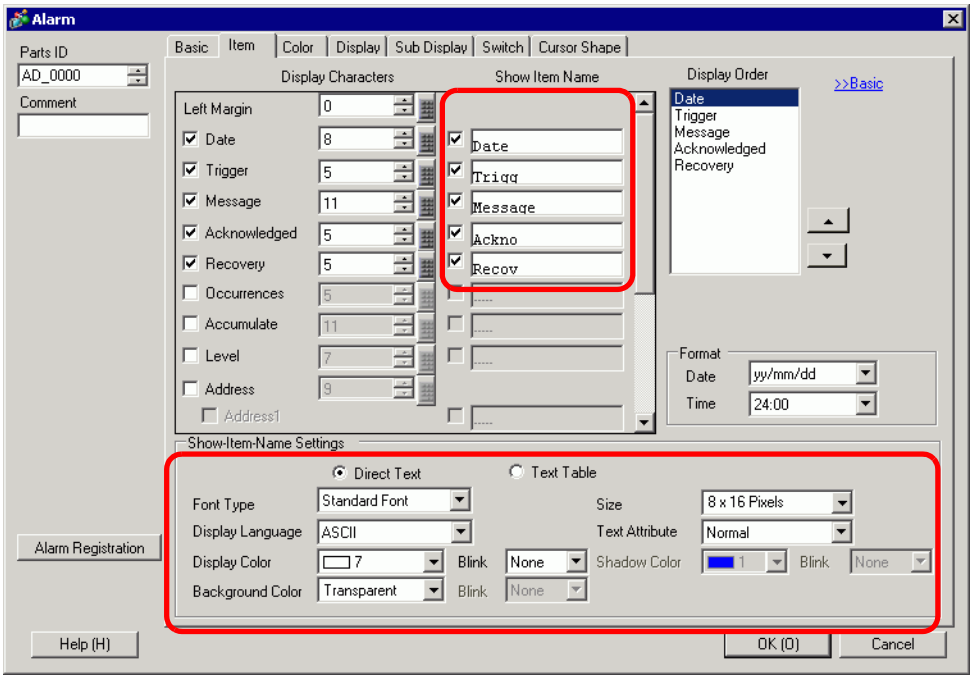
Set the Item Names to display in the Alarm part.

No Item Names

08/17/04	15:10	Tank A ...
08/17/04	16:23	Tank B ...

Has Item Names

Date	Trigger	Message
08/11/04	15:10	Tank A ...
08/11/04	16:23	Tank B ...



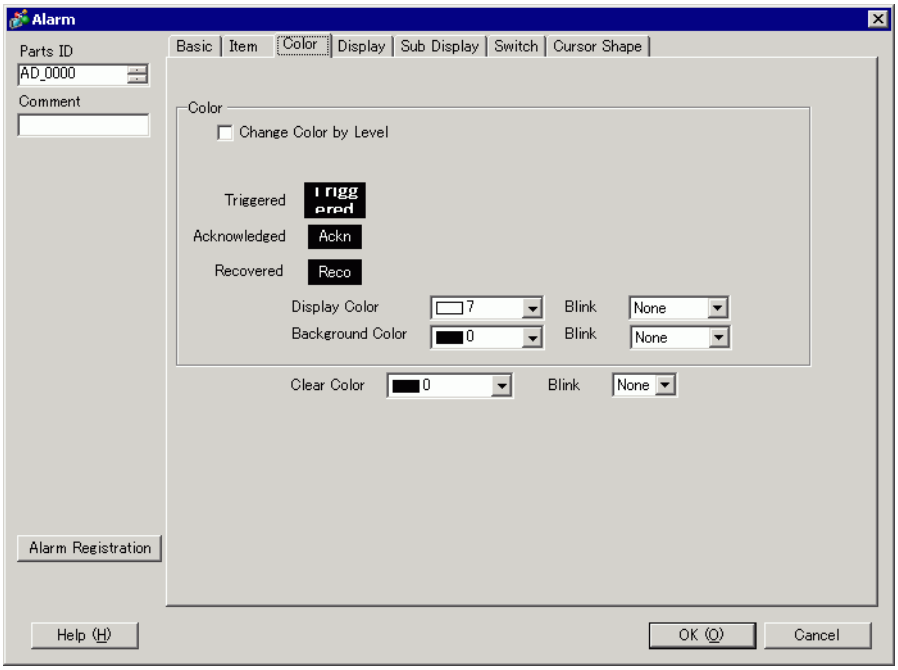
Setting		Description
Show Item Name		Select the check box for the item names to be displayed, and enter the item name text.
Show-Item-Name Settings		Configure settings for Item Name display.
	Direct Text/Text Table	Set whether to input directly for item names or to reference text registered in a Text Table. • Direct Text Directly input the item name to be displayed. • Text Table Use an Item Name registered in a Text Table. ☞"17.7.6 Alarm Part - Item/Details (Text Table) Settings Guide" (page 17-63)
	Font Type	Choose a font type for the item names from [Standard Font] or [Stroke Font].

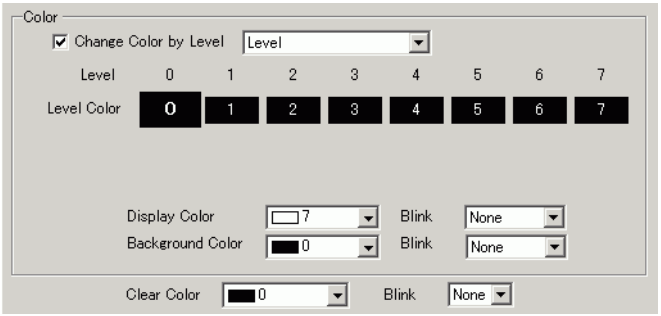
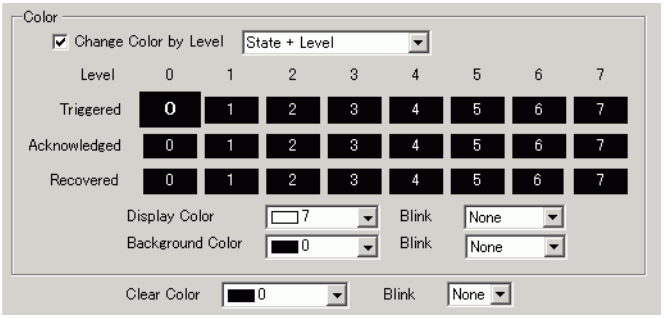
Continued

Setting		Description
Show-Item-Name Settings	Size	Choose a font size for the Item Names. Choose a font size for the Item Names. Stroke Font: 6 to 127
	Display Language	If you select [Direct Text], select the language for item names: [Japanese], [ASCII], [Chinese (Simplified)], [Chinese (Traditional)], [Korean], [Cyrillic] or [Thai].
	Text Attribute	Select the text attributes. Standard Font: Choose from [Standard], [Bold], [Shadow] (When a fixed size [6 x 10] is selected, choose from [Standard] or [Shadow].) Stroke Font: Choose from [Standard], [Bold], [Outline]
	Clear Color	Choose a color for the Item Names.
	Blink	Select whether or not the part will blink, and the blink speed. **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 ■ List of Available Colors" (page 8-42)
	Background Color	Set the Alarm part background color. This is displayed only when [Address] is set. **NOTE** • When there are items to be scrolled, choose a solid background color for the item names. If the items have no background color, they may overlap in the display.
	Shadow Color	Enabled when [Shadow] is selected from [Text Attribute]. Sets the color of text shadow.
	Blink	Select whether or not Shadow Color will blink, and the blink speed. **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 ■ List of Available Colors" (page 8-42)

◆ Color

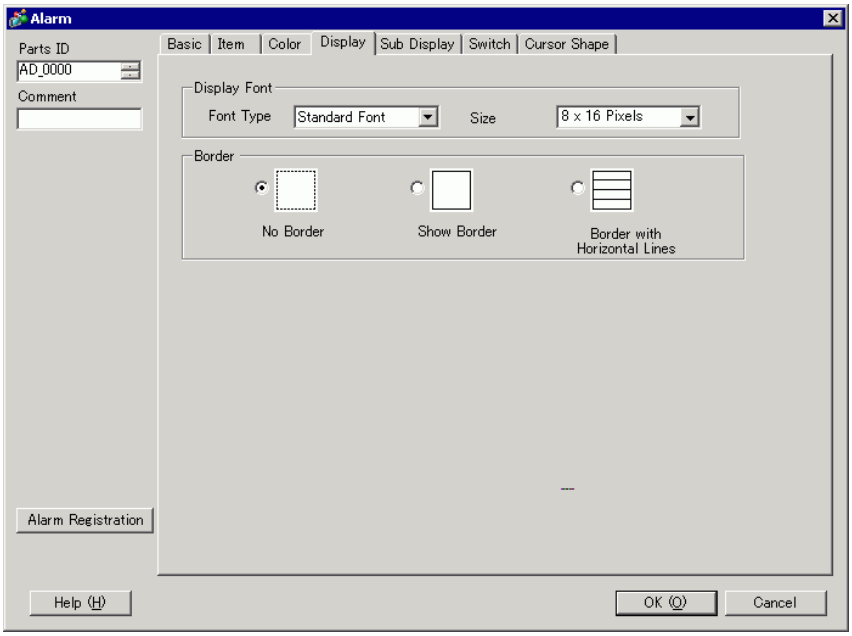
Alarm Messages can be color-coded according to whether they are in the [Trigger], [Acknowledged], or [Recovery] state.
When Alarm Messages have levels attached during the registration, the levels can also be color-coded.



Setting	Description
Color	Configure color settings to correspond to the states of Alarm Messages (Trigger, Acknowledged, and Recovery).
Change Color By Level	Select this to color code the various Alarm Messages by their attached level set in [Alarm]. Choose the color-coding criteria from [Level] or [State+Level]. • Level Display the color based on the level (8 levels from 0 to 7) set in the [Block] in [Alarm].  • State+Level Display the color based on the level (8 levels from 0 to 7) set in the [Block] in [Alarm], and divide each level into colors based on the state [Trigger], [Acknowledged], and [Recovery]. 
Trigger/ Acknowledged/ Recovery	Specify the state to set a color. **NOTE** • When a recovered alarm message is acknowledged, the message is displayed in the color specified to the recovery state.
Clear Color	Select a color for the Alarm Message text.
Background Color	Select a background color for the Alarm Message.
Clear Color	Select a color used when an Alarm Message is cleared or not displayed.
Blink	Select whether or not the Switch will blink, and the blink speed. You can choose different blink settings for [Text Color], [Background Color], and [Clear 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 ■ List of Available Colors" (page 8-42)

◆ Display

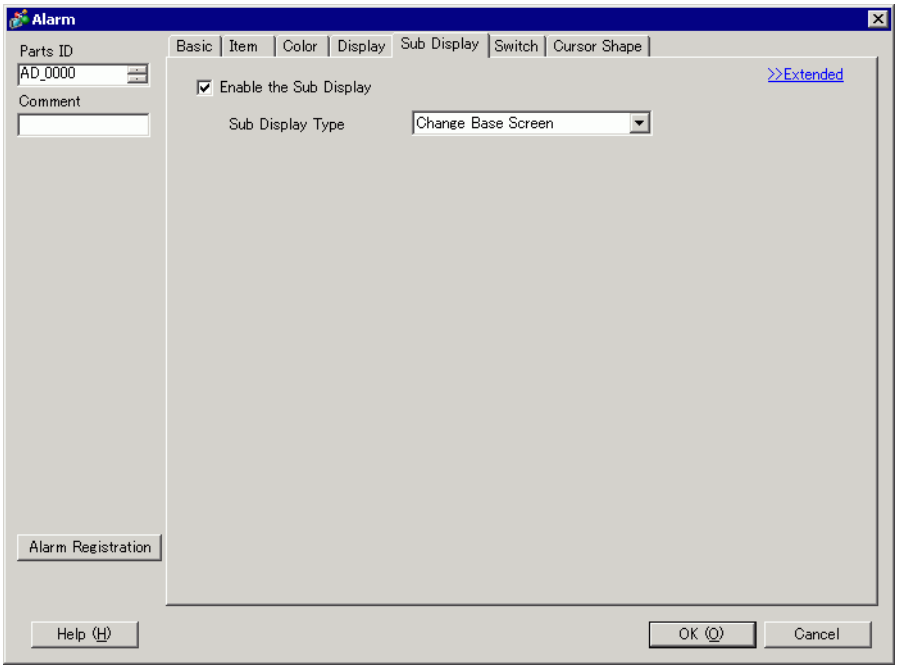
Set a font and border for the Alarm Message.

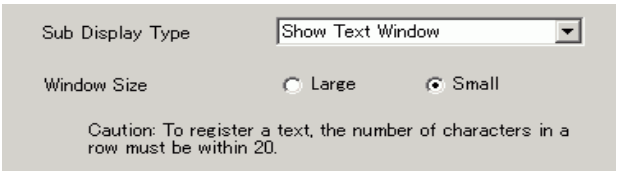


Setting		Description
Display Font		Set a font for the text.
	Font Type	Choose a font type for the Alarm Message from [Standard Font] or [Stroke Font].
	Size	Choose a font size for the Item Names. Choose a font size for the Item Names. Stroke Font: 6 to 127
Border		Choose the Alarm Message border from [No Border], [Show Border], or [Show Border + Horizontal Ruled Line]. **NOTE** • The color of the border and ruled line is fixed to white. • When [Show Border + Horizontal Ruled Line] is selected, set the [Display Row Spacing] to"1" or a larger value. When "0"is set, the horizontal ruled lines cannot be displayed.

◆ Sub Display/Basic

You can set a different Sub Screen to display when each Alarm Message is touched.

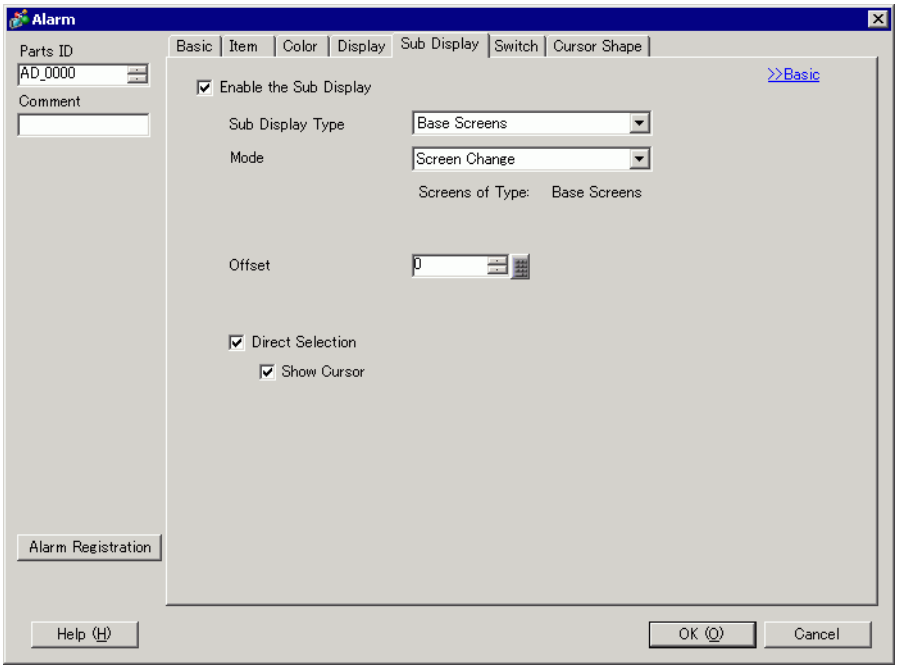


Setting	Description
Enable the Sub Display	Select whether or not to use a Sub Display.
Sub Display Unit	Select the Sub Displays Type. • Change Base Screen This setting changes the entire screen to another screen. It works the same as a normal screen change. In [Alarm], set the [Sub Display Screen Number] to the destination [Base Screen Number]. • Show Text Window Display [Text] in a Window. In [Alarm], set the [Sub Display Screen Number] to the [Text File Number] you want to display in the window. 
Window Size	When the [Sub Display Unit] is [Show Text Window], select [Big] or [Small] to choose the window size. **NOTE** • The maximum number of text characters on one line of a window is as follows. Big Window Size: Up to 30 characters Small Window Size: Up to 20 characters

◆ Sub Display/Details

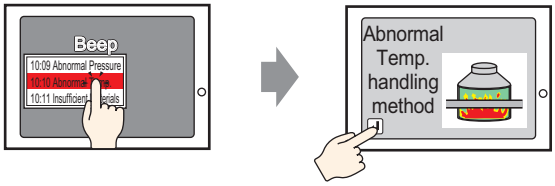
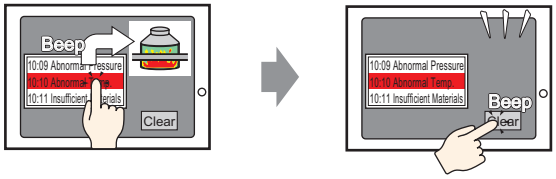
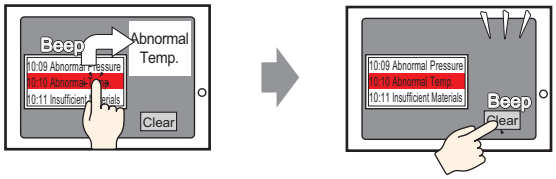
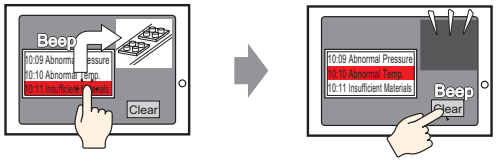
You can set up a sub-display that changes the Base screen or Window screen, or a sub-display that shows a picture display, message display, or movie player on a Base or Window screen.

☞ "19.11.2 Restrictions for Sub Display/Details" (page 19-161)

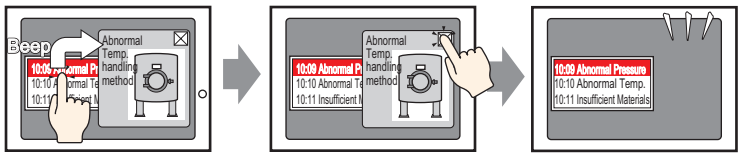
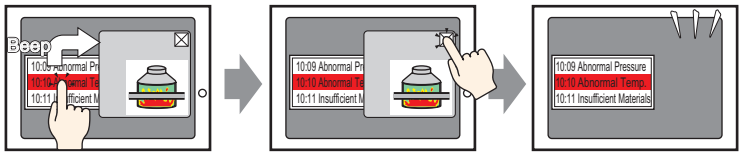
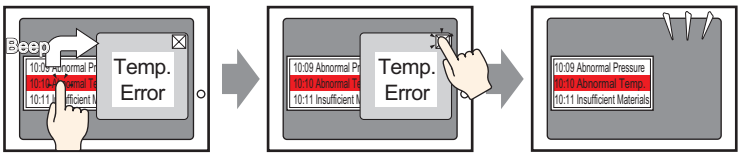
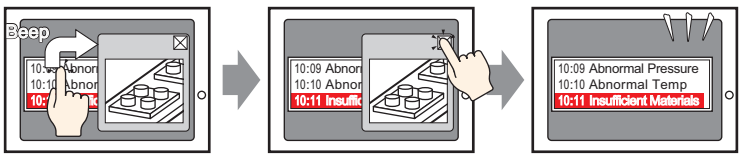


Setting	Description
Enable the Sub Display	Select whether or not to use a Sub Display.
Sub Display Unit	Select the Sub Displays Type. • Base Change the display to other screen, or display a picture or text directly on a base screen. • Window Screens Display a Sub Screen in a Window. Change the window to another one, or display a picture or text in the Window. **NOTE** • An alarm message with a [Sub Display Screen Number] equal to "0" will not display a Sub Screen.

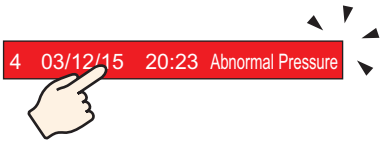
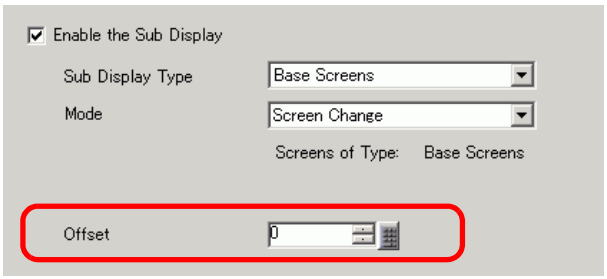
Continued

Setting	Description
Action (Base Screen)	When the [Sub Display Unit] is [Base Screen], select one of the following actions: [Screen Change], [Change Picture Display], [Text Display Change], or [Play Movie]. • Change Panel Change the screen to display the sub screen.  Touch the alarm message, and the screen changes to the screen corresponding to the message is displayed. Touch the Change Screen Switch to return to the alarm screen. • Change Picture Display Use a Picture Display to display the sub screen.  Touch the alarm message, and a picture corresponding to the message is displayed. Touch the Clearing Switch created separately to erase the sub display. • Text Display Change Use a Message Display to display the sub screen.  Touch the alarm message, and a text corresponding to the message is displayed. Touch the Clearing Switch created separately to erase the sub display. • Movie Use Movie Player to display the sub screen.  Touch the alarm message, and the movie corresponding to the movie file of the message is played. Touch the clearing switch created separately, (turning the Play Bit OFF), to close the sub-screen.

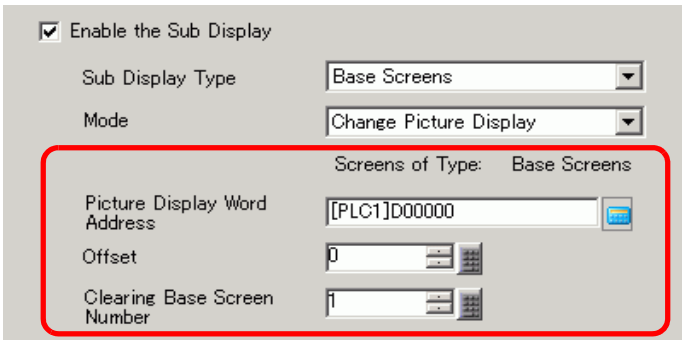
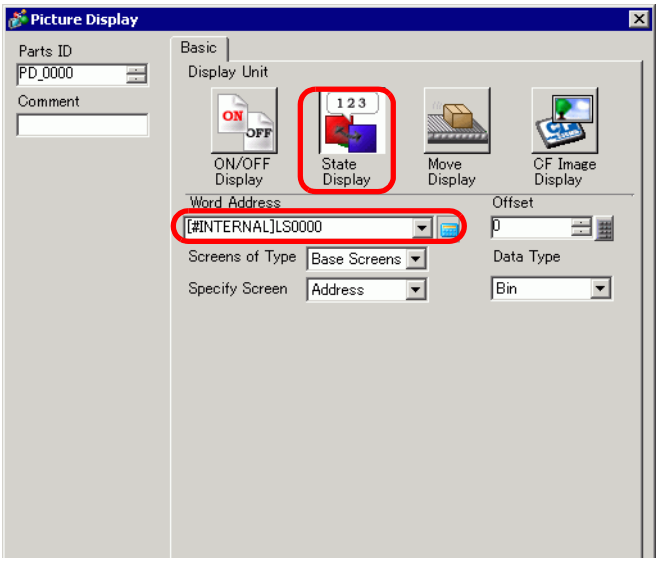
Continued

Setting	Description
Action (Window)	When the [Sub Display Unit] is [Window], select one of the following actions: [Window Change], [Change Picture Display], [Text Display Change], or [Play Movie]. • Window Change Change the Window Screen to display the sub screen.  Touch the alarm message, and a Window Screen corresponding to the message is displayed. Touch the switch specially created to delete the window. Window display is erased • Change Picture Display Use a Picture Display to display the sub screen.  Touch the alarm message, and a picture corresponding to the message is displayed in a window. Touch the switch specially created to delete the window. Window display is erased • Text Display Change Use a Message Display to display the sub screen.  Touch the alarm message, and a text corresponding to the message is displayed in a window. Touch the switch specially created to delete the window. Window display is erased • Movie Use a Movie Player to display the sub screen.  Touch the alarm message. The window changes to display the corresponding movie file. Touch the Clearing Switch created separately. Window display is erased.

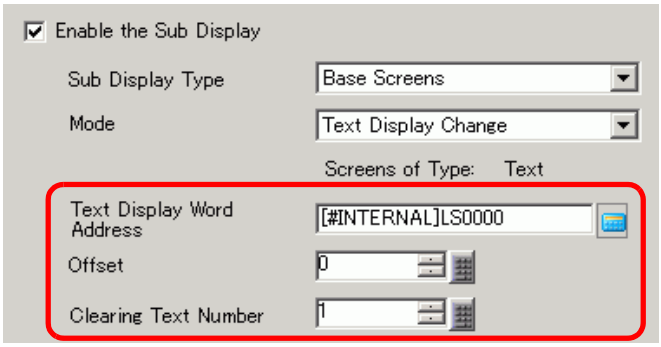
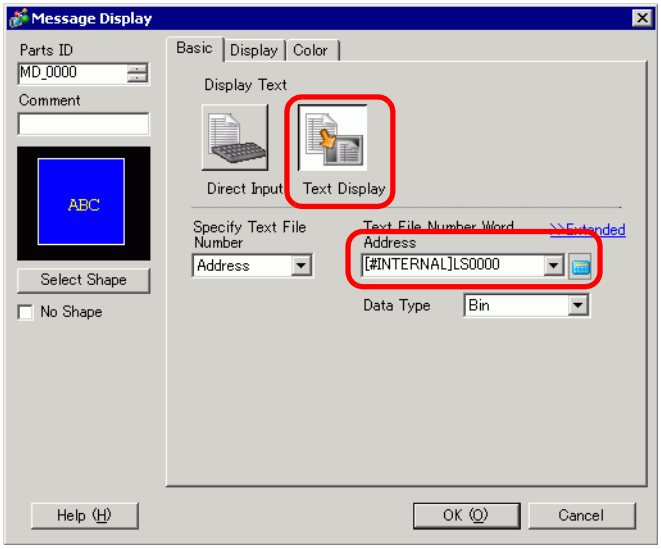
Continued

Setting	Description
Direct Selection	The Alarm Message displayed on the screen can be selected by touching it directly. When the Alarm Message to which a Sub screen has been set is touched, the Sub screen is displayed.  When this option is not designated, use the [Switch] tab and place a [Sub Display] switch to display a sub screen.
Show Cursor	If [Direct Selection] is designated, set whether or not to display the cursor when the Alarm Message is touched.
[Base Screen] - [Screen Change]	This setting changes the entire screen to another screen. This operation works the same as a normal screen change. 
Offset	Set the offset value for the Sub Display Screen Number from 0 to 9999. The screen designated as "[Sub Display Screen Number] in [Alarm] + Offset value" appears.

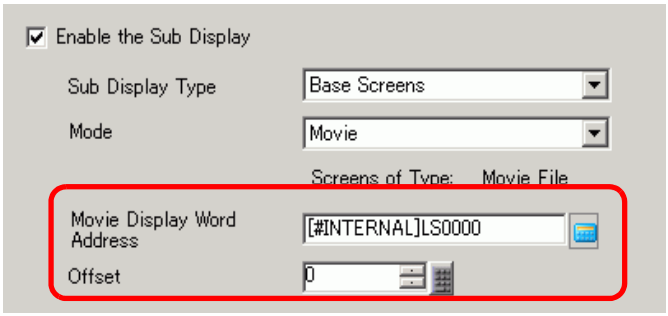
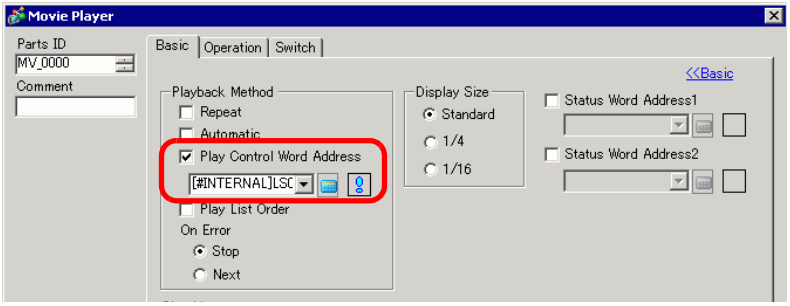
Continued

Setting	Description
[Base Screen] - [Screen Change]	Display a picture corresponding to the Alarm Message in the Picture Display placed on the same screen as the Alarm Part. 
Picture Display Word Address	Specify the address of the GP internal device (LS area, user area) to store the number which has been set in [Sub Display Screen Number] in [Alarm]. The number stored in this address is the base screen Number displayed on the Picture Display. Set the same address to the [Word Address] of the Picture Display placed on the same screen as the Alarm Part.  **NOTE** • Set the Picture Display's [Screens of Type] to [Base Screen], [Specify Screen] to [Address], and [Data Type] to [Bin].
Offset	Set the offset value for the Sub Display Screen Number from 0 to 9999. The screen designated as "[Sub Display Screen Number] in [Alarm] + Offset value" appears.
Clearing Base Screen Number	When you select the [Sub Display Screen Number] in [Alarm] to be Alarm Message "0", the base screen designated here will be called and the previous screen will be erased. Set the screen number that has been created to clear the contents (such as a screen with a black-filled square) from 1 to 9,999.

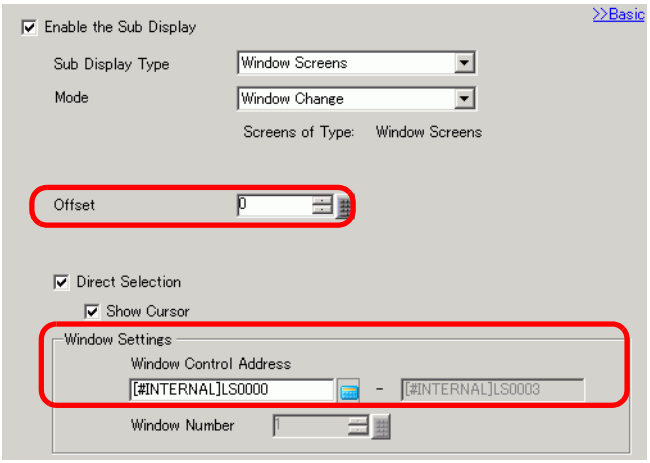
Continued

Setting	Description
[Base Screen] - [Text Display Change]	Display a text corresponding to the Alarm Message in the Message Display placed on the same screen as the Alarm Part. 
Text Display Word Address	Specify the address of the GP internal device (LS area, user area) to store the number which has been set in [Sub Display Screen Number] in [Alarm]. The number stored in this address is the text Number displayed on the Message Display. Set the same address to the [Text File Number Word Address] of the Message Display placed on the same screen as the Alarm Part.  **NOTE** • Set the Message Display [Text Display]'s [Specify Text File Number] to [Address], and [Data Type] to [Bin].
Offset	Set the offset value for the Sub Display Screen Number from 0 to 8,999. The text designated as "[Sub Display Screen Number] in [Alarm] + Offset value" appears.
Clearing Text File Number	When you select the [Sub Display Screen Number] in [Alarm] to be Alarm Message "0", the text designated here will be called and the previous text will be erased. Set the text number that has been created to clear the contents (such as text with no content) from 1 to 8,999.

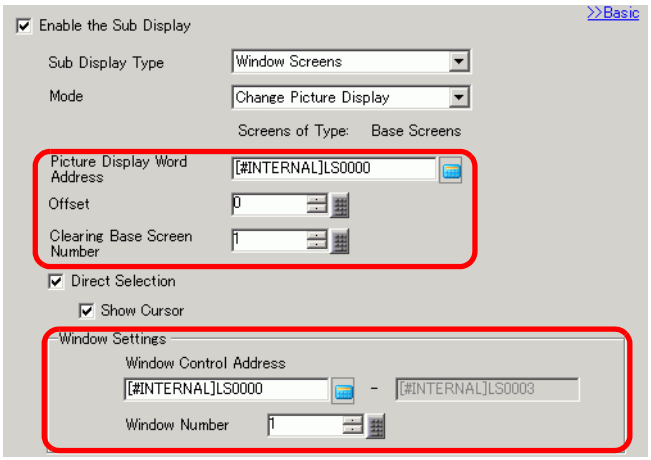
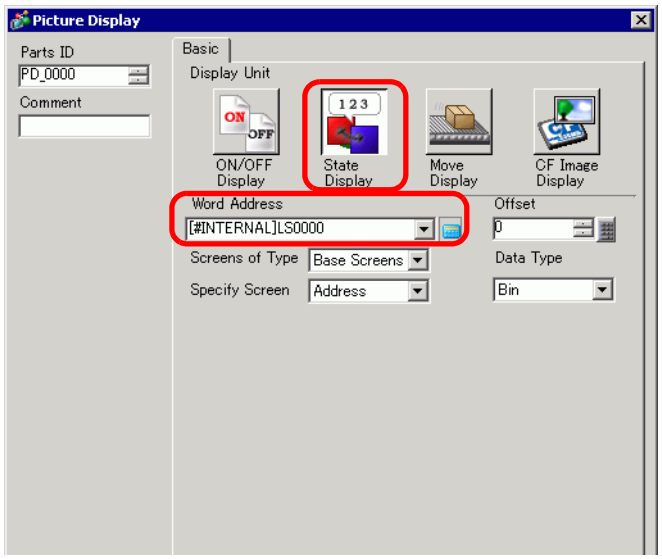
Continued

Setting	Description
[Base Screen] - [Play Movie]	Switch to Base Screen set up with a Movie Player. This operation works the same as a normal screen change. 
Movie Display Word Address	Specifies the GP internal device address (LS area, USR area) that stores the [Sub Display Screen Number] as defined in the [Alarm]. This number can act as the index number of the movie file to display in the movie player. Set the same address to the Movie Player [Play Control Word Address] property.  **NOTE** • In the Movie Player [Play Mode] properties, set [Repeat Play] and [Auto Play] off and [Play List Order] to Individually, and set [On Error] to [Stop].
Offset	Set the Offset Value of the Sub Display Screen Number to 0 to 99. The number which was set at [Sub Display Screen Number] of [Alarm] and the Movie File of the Index Number of the Offset Value appears.

Continued

Setting	Description
[Window] - [Window Change]	Displays the Window Screen which corresponds to the Alarm Message. 
Offset	Set the offset value for the Sub Display Screen Number from 0 to 2000. The screen designated as "[Sub Display Screen Number] in [Alarm] + Offset value" appears.
Window Settings	Configure settings to display a Window Part placed on the same screen as the Alarm Part.
Window Control Address	Specify the address to control the Window display. Four consecutive Words will be used, starting from the designated address. Only the address of the GP internal device (LS area, user area) can be used. The number set at [Sub Display Screen Number] in [Alarm] is written to the address identified as "the address designated here + 1", and treated as the Window Screen to be displayed. Set the same address to the [Window Control Address] of the Window Part placed on the same screen as the Alarm Part. ☞ "12.7.2 Word Action" (page 12-23) **NOTE** • Set the Window Part [Window Specification] to [Address], and [Data Type] to [Bin].

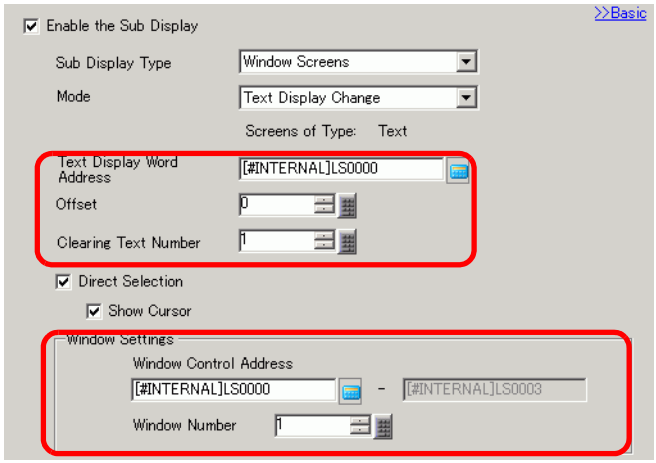
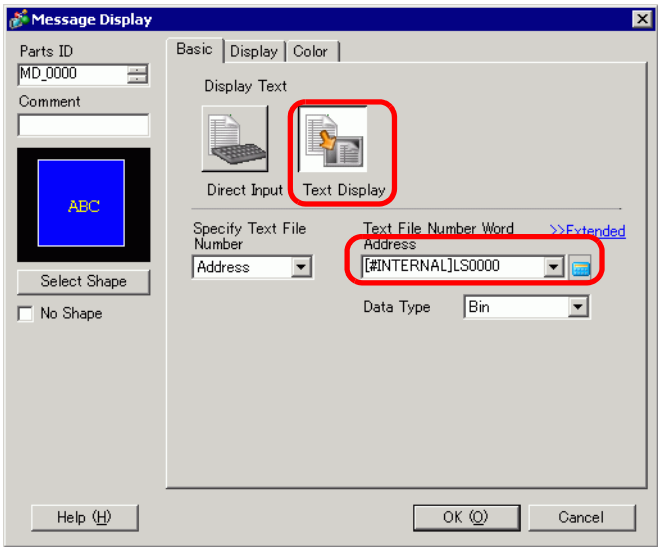
Continued

Setting	Description
[Window] - [Change Picture Display]	Display a picture corresponding to the Alarm Message in the Picture Display placed on the Window Screen. 
Picture Display Word Address	Specify the address of the GP internal device (LS area, user area) to store the number which has been set in [Sub Display Screen Number] in [Alarm]. The number stored in this address is the screen Number displayed on the Picture Display. Set the same address to the [Word Address] of the Picture Display placed on the Window Screen.  **NOTE** • Set the Picture Display's [Screens of Type] to [Base Screen], [Specify Screen] to [Address], and [Data Type] to [Bin].
Offset	Set the offset value for the Sub Display Screen Number from 0 to 9999. The screen designated as "[Sub Display Screen Number] in [Alarm] + Offset value" appears.

Continued

Setting			Description
Change Picture Display	Clearing Base Screen Number		When you select the [Sub Display Screen Number] in [Alarm] to be Alarm Message "0", the base screen designated here will be called and the previous screen will be erased. Set the screen number that has been created to clear the contents (such as a screen with a black-filled square) from 1 to 9,999.
	Window Settings		Configure settings to display a Window Part placed on the same screen as the Alarm Part.
		Window Control Address	Specify the address to control the Window display. Four consecutive Words will be used, starting from the designated address. Only the address of the GP internal device (LS area, user area) can be used. Set the same address to the [Window Control Address] of the Window Part placed on the same screen as the Alarm Part. ☞ "12.7.2 Word Action" (page 12-23) **NOTE** • Set the Window Part [Window Specification] to [Address], and [Data Type] to [Bin].
		Window Screens	Set the Window Screen to display (the window which contains the Picture Display) from 1 to 2,000. This number is written to the address identified as "designated [Window Control Address] + 1".

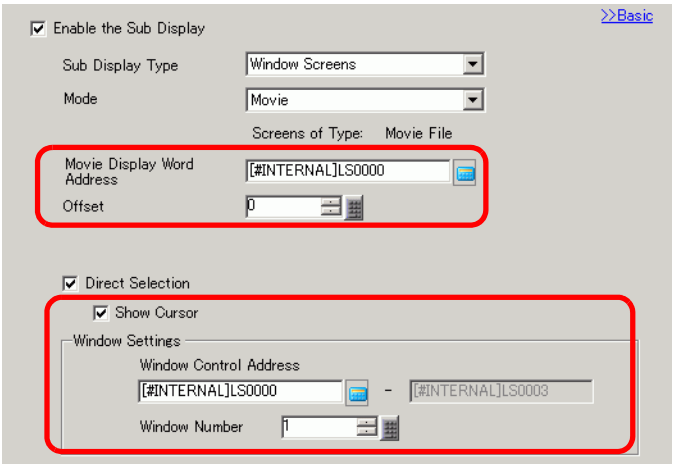
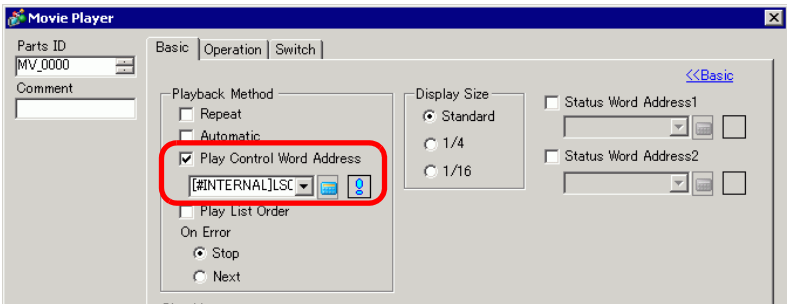
Continued

Setting	Description
[Window] - [Text Display Change]	Display a text corresponding to the Alarm Message in the Message Display [Text Display] placed on the Window Screen. 
Text Display Word Address	Specify the address of the GP internal device (LS area, user area) to store the number which has been set in [Sub Display Screen Number] of [Alarm]. The number stored in this address is the text Number displayed on the Message Display. Set the same address to the [Text File Number Word Address] of the Message Display placed on the Window Screen.  **NOTE** • Set the Message Display [Text Display]'s [Specify Text File Number] to [Address], and [Data Type] to [Bin].
Offset	Set the offset value for the Sub Display Screen Number from 0 to 8,999. The text designated as "[Sub Display Screen Number] in [Alarm] + Offset value" appears.

Continued

Setting			Description
Text Display Change	Clearing Text File Number		When you select the [Sub Display Screen Number] in [Alarm] to be Alarm Message "0", the text designated here will be called and the previous text will be erased. Set the text number that has been created to clear the contents (such as text with no content) from 1 to 8,999.
	Window Settings		Configure settings to display a Window Part placed on the same screen as the Alarm Part.
		Window Control Address	Specify the address to control the Window display. Four consecutive Words will be used, starting from the designated address. Only the address of the GP internal device (LS area, user area) can be used. Set the same address to the [Window Control Address] of the Window Part placed on the same screen as the Alarm Part. ☞ "12.7.2 Word Action" (page 12-23) **NOTE** • Set the Window Part [Window Specification] to [Address], and [Data Type] to [Bin].
		Window Screens	Set the Window Screen to display (the window which contains the Message Display) from 1 to 2,000. This number is written to the address identified as "designated [Window Control Address] + 1".

Continued

Setting	Description
[Window] - [Play Movie]	Sub-display Movie Player that is positioned on the Window Screen. 
Movie Display Word Address	Specifies the GP internal device address (LS area, USR area) that stores the [Sub Display Screen Number] as defined in the [Alarm]. This number can act as the index number of the movie file to display in the movie player. Set the same address to the Movie Player [Play Control Word Address] property.  **NOTE** • In the Movie Player [Play Mode] properties, set [Repeat Play] and [Auto Play] off, [Play List Order] to [Individually], and set [On Error] to [Stop].
Offset	Set the Offset Value of the Sub Display Screen Number to 0 to 99. The number which was set at [Sub Display Screen Number] of [Alarm] and the Movie File of the Index Number of the Offset Value appears.

Continued

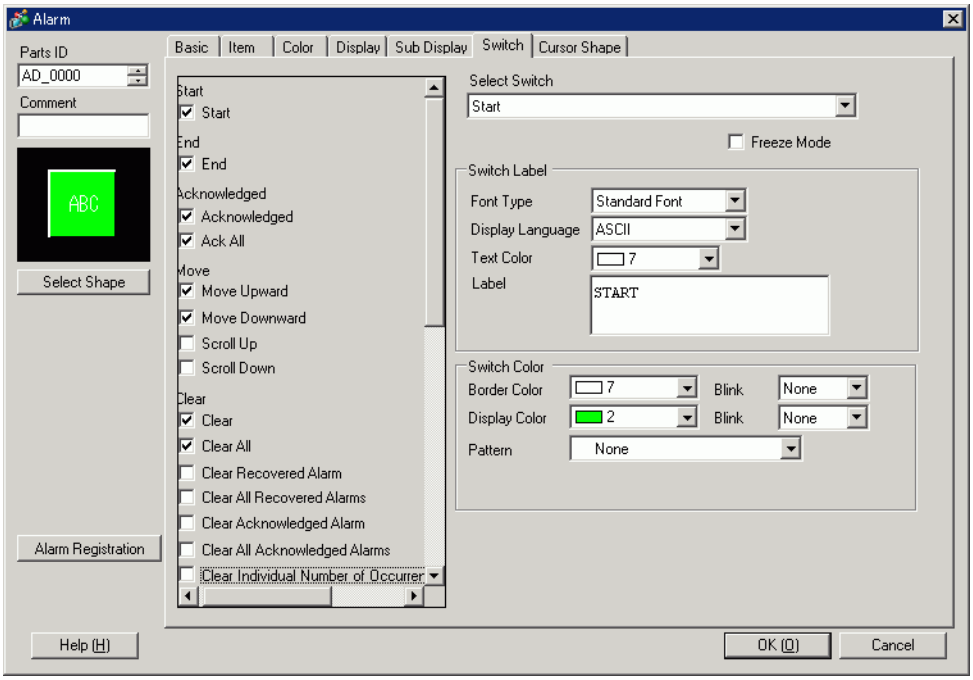
Setting			Description
Movie	Window Settings		Configure settings to display a Window Part placed on the same screen as the Alarm Part.
		Window Control Address	Specify the address to control the Window display. Four consecutive Words will be used, starting from the designated address. Only the address of the GP internal device (LS area, user area) can be used. The number set at [Sub Display Screen Number] in [Alarm] is written to the address identified as "the address designated here + 1", and treated as the Window Screen to be displayed. Set the same address to the [Window Control Address] of the Window Part placed on the same screen as the Alarm Part. ☞ "12.7.2 Word Action" (page 12-23) **NOTE** • Set the Window Part [Window Specification] to [Address], and [Data Type] to [Bin].
		Window Screens	Defines the number, from 1 to 2000, of the Window Screen (set up with a Movie Player) that you want to display. This number is written to ([Window Control Address]+1).

NOTE

- The GP internal device [#INTERNAL] consists of two areas: the [LS] area and [USR] area. For the available addresses in the LS area, refer to the following:
  ☞ "A.1.4 LS Area (Direct Access Method)" (page A-9)

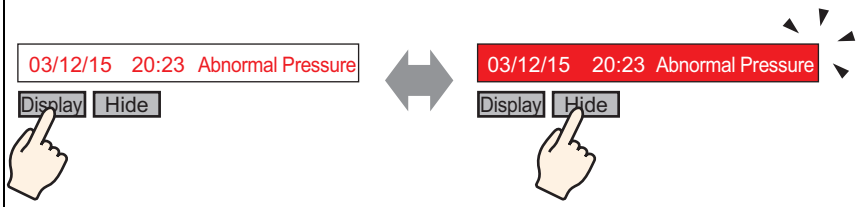
◆ Switch

Set operation switches to display Alarm Messages.

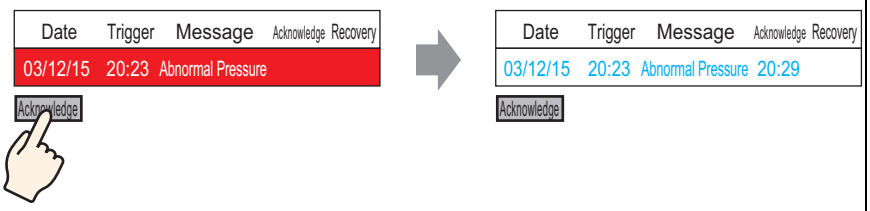
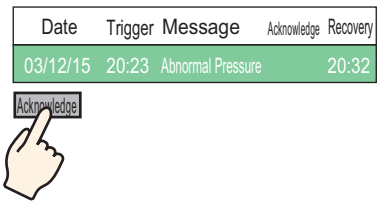
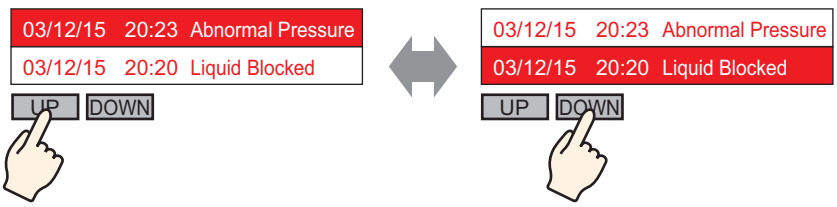
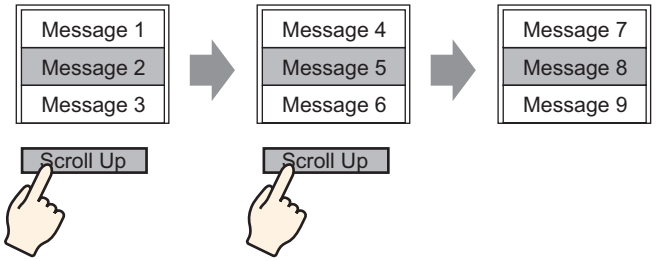


NOTE

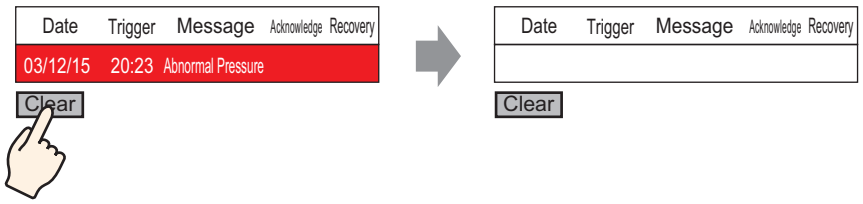
- The same Switch as the one set on this tab can be created with a Switch Lamp Part [Special Switch] - [Alarm History Switch].
☞"10.14.4 Special Switch ■ Switch Feature ◆ Alarm History Switch" (page 10-66)

Setting	Description
Switch Preview	Displays the selected switch shape.
Select Shape	Open the Select Shape dialog box to choose the Part shape.
Types of Switches	Set the Switch type.
Start/End	Set a switch to start/end operation.
Start/End	Touch [Start] and the cursor will appear to operate the other switches. Touching [End] cancels the cursor. 

Continued

Setting			Description
Types of Switches	Acknowledge		Set up the Acknowledge switch.
		Acknowledge	Acknowledges the alarm in the current cursor position. Press [Acknowledge] and the selected Alarm Message's acknowledge time is displayed.  Alarms that have already recovered will not change when [Acknowledge] is touched.  **NOTE** • If an Alarm Message is already displayed with the acknowledge time, the time will not be updated.
		Acknowledge All	Acknowledges all Alarm Messages that are currently triggered.
	Move		Set the Move switches.
		Move Upward Move Downward	Moves the cursor 1 row up or down. 
		Scroll Up Scroll Down	Alarm Messages that are currently displayed are scrolled up or down by a given number of rows. For example, Number of Active Alarms: 9, Display Rows: 3, Number of Scroll: 3 

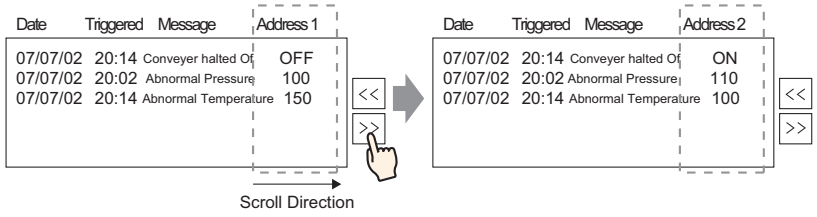
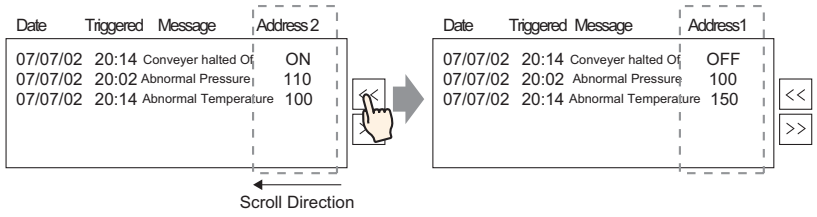
Continued

Setting			Description
Types of Switches	Clear		Set a switch to clear the display. The Bit or Word data of the host (PLC) will not be cleared.
		Clear	Touch [Clear] to erase the Alarm Message display at the current cursor position. 
		Clear All	Erases all displayed Alarm Messages, regardless of whether they are in the [Trigger], [Acknowledged], or [Recovery] state.
		Clear Recovery Alarm	Erases the recovered alarm message at the current cursor position. The message is not erased if it is not in the Recovery state.
		Clear All Recovery Alarms	Erases all recovered Alarm Messages.
		Clear Acknowledged Alarm	Erases the acknowledged alarm message at the current cursor position. The message is not erased if it is not in the Acknowledged state.
		Clear All Acknowledged Alarms	Erases all Acknowledged Alarm Messages.
		Clear Individual Number of Occurrences	Clears the Number of Occurrences for the alarm in the cursor's current position and replace that value with "0".
		Clear All Number of Occurrences	Clears the Number of Occurrences for all displayed alarms and replace that value with "0".
		Clear Individual Accumulated Time	Clears the accumulated time for the alarm in the cursor's current position and replace that value with "0".
		Clear All Accumulated Time	Clears the accumulated time for all displayed alarms and replace that value with "0".

Continued

Setting			Description
Types of Switches	Sort		Set a switch to sort Alarm Messages. **NOTE** • This setting is disabled when the Display Mode is set to [Log]. • Even when the display order of the messages changes on the screen, the Alarm History data is printed or saved to the CF Card in the order of occurrence.
		In Reverse Order of Trigger Date	Displays Alarm Messages in the order of occurrence, according to the scroll direction.
		In Number of Occurrences Order	Displays Alarm Messages in the order starting with the largest occurrence frequency, according to the scroll direction. **NOTE** • If multiple alarms with the same frequency exist, they will display in the decreasing order of the accumulated time, according to the scroll direction. If multiple alarms have the same frequency and accumulated time, the newest alarm will display first.
	Sort	In Descending Order of Accumulated Time	Displays Alarm Messages in the order starting with the largest accumulated time, according to the scroll direction. **NOTE** • If multiple alarms with the same accumulated time exist, they will display in the decreasing order of the number of occurrences, according to the scroll direction. If multiple alarms have the same number of occurrences and accumulated time, the newest alarm will display first.
		Level & In Reverse Order of Trigger Date	Displays Alarm Messages in the order starting with the highest registered level, according to the scroll direction. If multiple Alarm Messages with the same level exist, messages will display in the order starting with the latest occurrence date.
		Level & In Descending Order of Number of Occurrences	Displays Alarm Messages in the order starting with the highest registered level, according to the scroll direction. If multiple Alarm Messages with the same level exist, messages will display in the decreasing order of the alarm frequency, according to the scroll direction. **NOTE** • If multiple alarms with the same frequency exist, they will display in the decreasing order of the accumulated time.
		Alarm Registration Order	Displays Alarm Messages in ascending order of the registration number (Row Number) set in [Alarm], according to the scroll direction.

Continued

Setting			Description
Types of Switches		Reverse Order	Displays Alarm Messages in the reverse order of the specified sorting order.
	Scroll		Set the scroll switch used by the [Address] column.
		Scroll Right Value	Scrolls displayed data to the right. 
		Scroll Left Value	Scrolls displayed data to the left. 
	Sub Display		Set the Sub Display switch.
		Sub Display	Displays the sub screen registered to the Alarm Message at the current cursor position.
	Alarm Number Acquisition		Set the Alarm Number Acquisition switch.
		Alarm Number Acquisition	Obtains the Alarm Message Number (the row number registered in [Alarm]) of the message at the current cursor position.
	Ladder Monitor Start		Sets up a switch to start ladder monitoring.
		Ladder Monitor Start	If you have purchased and installed the Ladder monitor, use the Ladder Monitor to search the step that uses the device address that corresponds to the selected alarm.
Configure Switch			Choose a switch to set the label or scroll count.
Samples to Scroll			Set the number of rows to scroll up or down from 1 to 768 when you place the [Scroll Up]/[Scroll Down] switch.

Continued

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Freeze Mode</td><td>Specify whether to use Freeze Mode when you place the [Start] switch. Freeze Mode suspends the currently displayed alarms and prohibits the screen display from refreshing. This can be used to temporarily stop the display when alarms are triggered too often to be seen.
When Freeze Mode is set, touch [Start] twice to begin freeze mode, and touch [End] to cancel it.

When the following operations are performed in freeze mode, the management and display will be as follows.

<table>
<tr><td>Action/Switch operation</td><td>processing</td><td>Display.</td></tr>
<tr><td>Alarm: Trigger, Recovery
Switch Operation: [Acknowledge], [Clear]</td><td>O</td><td>X</td></tr>
<tr><td>Switch Operation: [Move Upward], [Move Downward], [Scroll Up], [Scroll Down], [Sort], [Sub Display]</td><td>O</td><td>O</td></tr>
<tr><td>Switch Operation: [Alarm Number Acquisition Key]</td><td>O</td><td>-</td></tr>
</table>

NOTE
• Note that executing a clear while Freeze Mode is activated will clear the messages stored inside the GP, even though the messages remain on the display.
• When the message stored in the GP has been cleared as mentioned above, the sub display is not displayed in the Freeze Mode.</td></tr>
<tr><td>Switch Label</td><td>Set the text to display on the switch label.</td></tr>
<tr><td>Font Type</td><td>Choose a font type for the switch label from [Standard Font] or [Stroke Font].</td></tr>
<tr><td>Display Language</td><td>Select a language for the switch label from [Japanese], [Western], [Chinese (Traditional)], [Chinese (Simplified)], [Korean], [Cyrillic], or [Thai].</td></tr>
<tr><td>Text Color</td><td>Select a color for the switch label.</td></tr>
<tr><td>Label</td><td>Input the text to display on the switch label.</td></tr>
<tr><td>Switch Color</td><td>Set the Switch color.</td></tr>
<tr><td>Border Color</td><td rowspan="2">Designate the switch border color and background color.

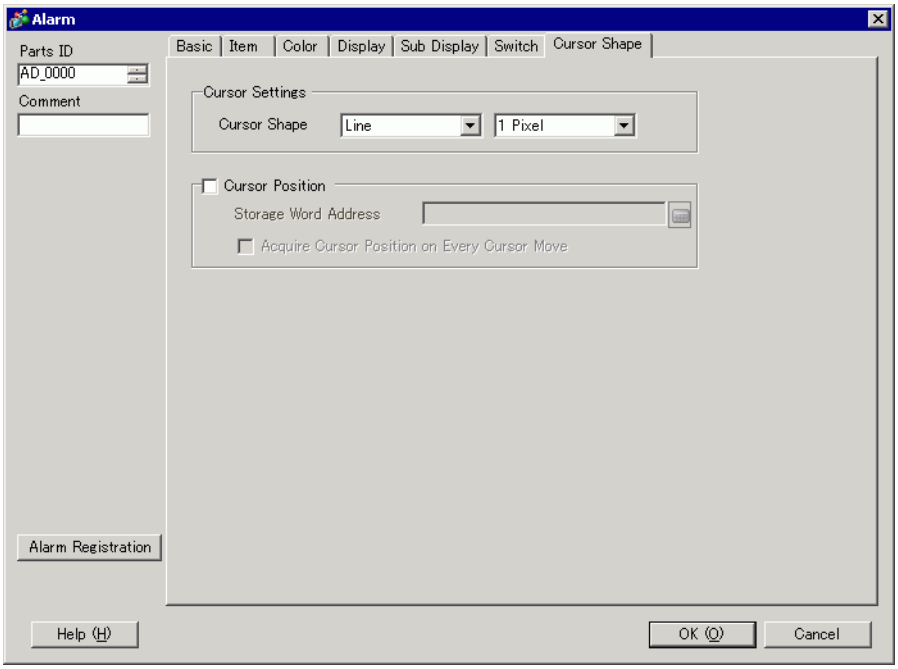
NOTE
• The Switch Color setting is common to all Alarm parts, regardless of the switch type selected.</td></tr>
<tr><td>Clear Color</td></tr>
</table>

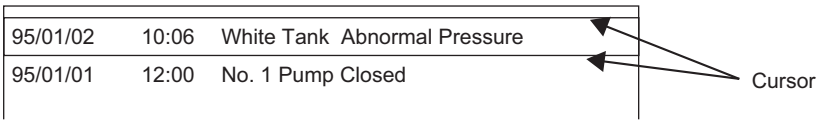
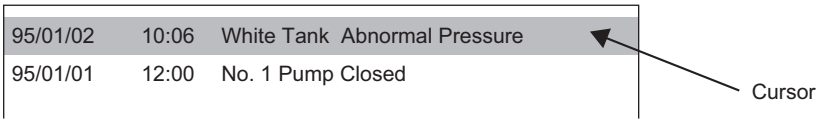
Continued

Setting		Description
Switch Color	Blink	Select whether or not the Switch 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 cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors ■ List of Available Colors" (page 8-42)
	Pattern	Select the switch pattern from 9 types.
	Pattern Color	Specify the pattern color when you select options other than [No Pattern].

◆ Cursor Shape

If handling Alarm Messages, choose the cursor display shape. Also, select cursor settings for when the Alarm Message confirmation is sent from the device/PLC.



Setting		Description
Cursor Settings		If handling Alarm Messages, choose the cursor display shape.
	Cursor Shape	Choose the cursor shape from [Vertical] or [Mirror]. Up/Down  Reverse 
	Number of Dots	If the cursor shape is [Vertical], choose the cursor thickness from [1 dot] or [2 dots].

Continued

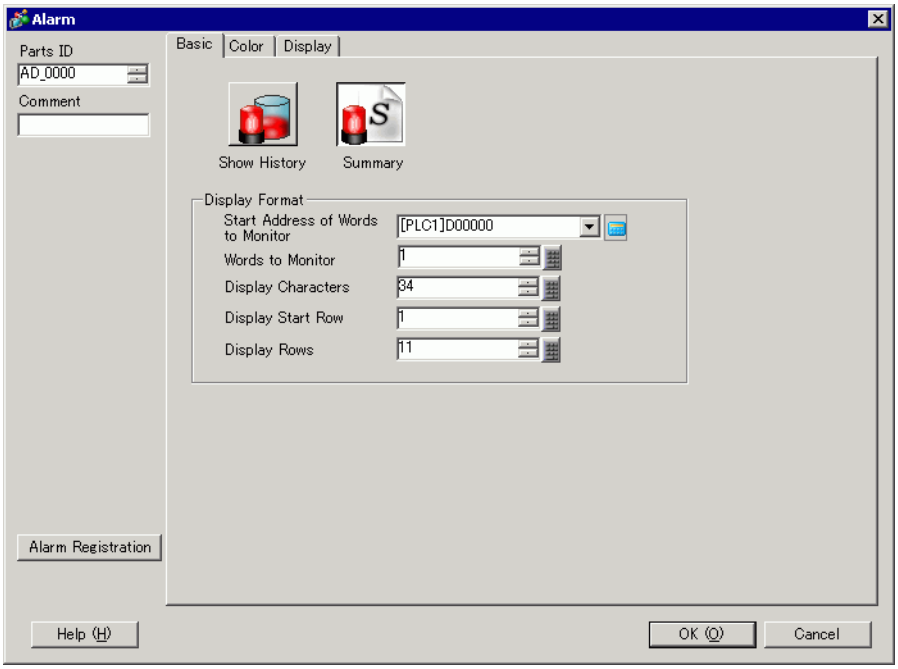
Setting		Description
Cursor Position		Configure settings for the notification of the registration number (Row Number) of the Alarm Message selected with the cursor.
	Storage Word Address	Set the address where the registration number (Row Number) of the selected Alarm Message will be stored. When Alarm Messages are registered with [Bit Monitoring], the value of the registration number (Row Number) will be directly stored. When Alarm Messages are registered with [Word Monitoring], the value of "the registration number (Row Number) + 10,000". will be stored. For example, When an Alarm Message is registered with Word Monitoring and the registration number (Row Number) of the Alarm Message is 152: Value stored in the [Storage Word Address] = 152 + 10000 = 10152 **NOTE** • While in [Freeze Mode], the notification of the current cursor position for cleared data is not provided.
	Acquire Cursor Position on Every Cursor Move	Stores the Alarm Message registration number (Row Number) to [Storage Word Address] every time the cursor moves. **NOTE** • To provide the notification of the alarm cursor position without designating this option, you need to place the [Alarm Number Acquisition Key] switch.

■ Summary

Alarm Messages that are currently triggered are displayed in a list.

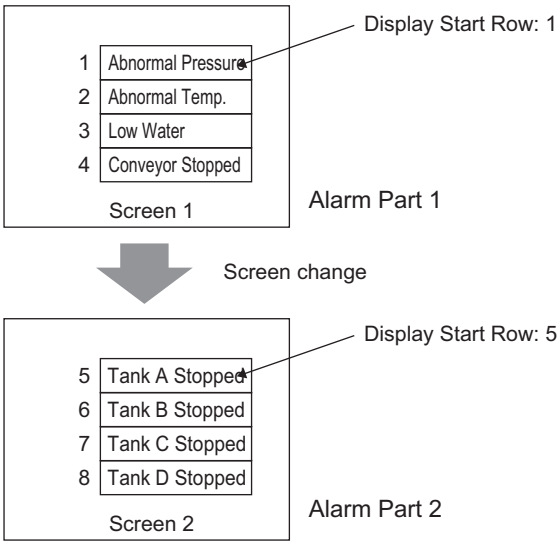
◆ Basic Setting

Set the format of the Alarm Summary display.



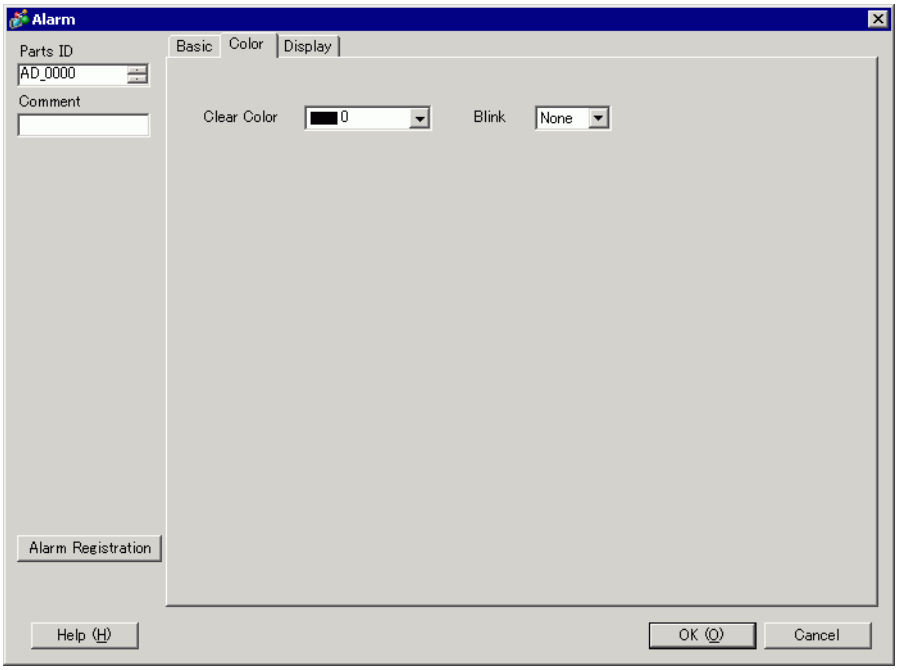
Setting		Description
Display Format		Set the format of the Alarm Summary display.
	Start Address of Words to Monitor	Set the top address of the monitoring bit for the Alarm Message designated in [Alarm].
	Words to Monitor	Set the number of Words allotted for the Monitoring Bits from 1 to 100. **NOTE** • For the number of monitoring words, 1 word is treated as 16 bits. For 32 bit devices, set the number of monitoring words to multiples of 2 (2, 4, 6, and so on).
	Display Characters	Set the maximum number of Alarm Message characters that can display on one row from 1 to 100.

Continued

Setting		Description
Display Format	Display Start Row	Designate the row of the currently active Alarm Messages to start a display from 1 to 1,600. When multiple alarms are triggered, the extra rows that did not fit into a single Alarm part can be seen by setting a different display start row for several Alarm parts. 
	Display Rows	Set how many Alarm Message rows will display at maximum on one screen from 1 to 50.

◆ Color

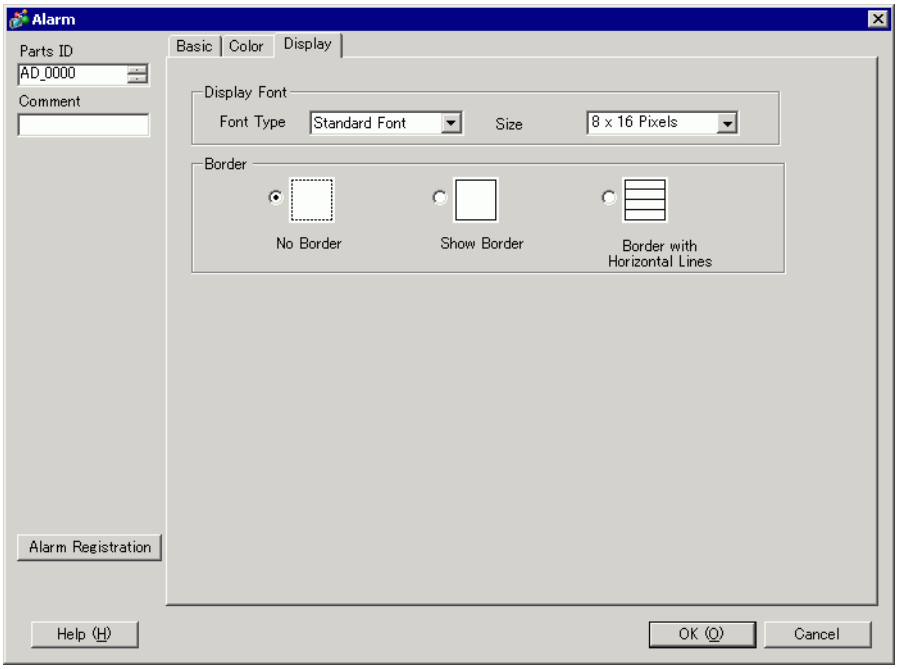
Select the color when the Alarm Message is not displayed. (The Alarm Message text color and background color are designated in [Alarm].)



Setting	Description
Clear Color	Select a color used when an Alarm Message is cleared (or not displayed). **NOTE** • The Alarm Message text color and background color are designated in [Alarm].
Blink	Select whether or not the switch will blink, and the blink speed. You can choose blink settings for [Clear 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 ■ List of Available Colors" (page 8-42)

◆ Display

Set a font and border for the Alarm Message.



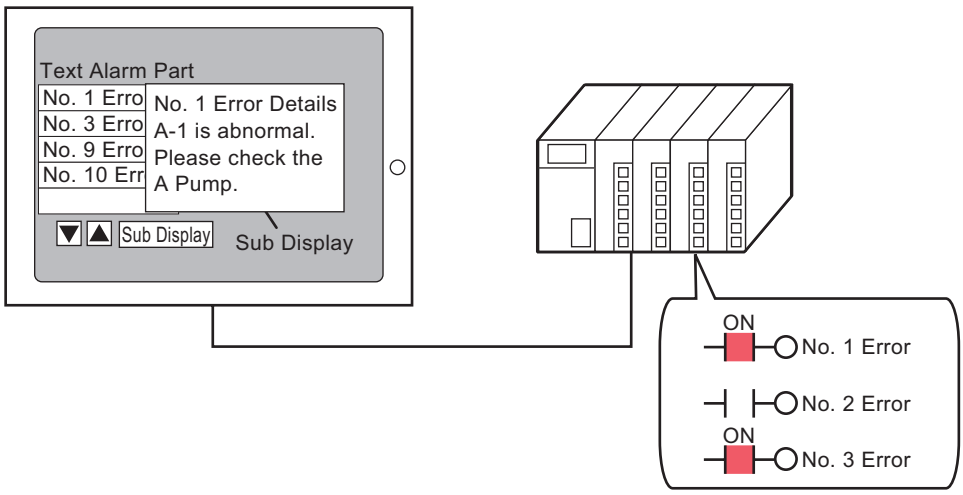
Setting		Description
Display Font		Configure font settings.
	Font Type	Choose a font type for the Alarm Message from [Standard Font] or [Stroke Font].
	Size	Choose a font size for the Alarm Message. Standard Font:Specify "Width x Height" within the range between [8 x 8] to [64 x 128] in the unit of 8 dots, or select a fixed size from [6 x 10], [8 x 13], [13 x 23]. The fixed sizes can be selected for displaying single-byte alphanumeric characters only. Stroke Font: 6 to 127
Border		Choose the Alarm Message border from [No Border], [Show Border], or [Show Border + Horizontal Ruled Line]. **NOTE** • The color of the border and ruled line is fixed to white.

19.10.3 Text Alarm Part Settings Guide

■ Text Alarm

A Message registered on a Text Screen is displayed by each row. (It does not need to be registered in Common [Alarm].
Among the Messages registered as a batch on a Text Screen, only the necessary rows are listed on the screen. Each message can be displayed as a Sub Screen so this is useful for showing troubleshooting guides.

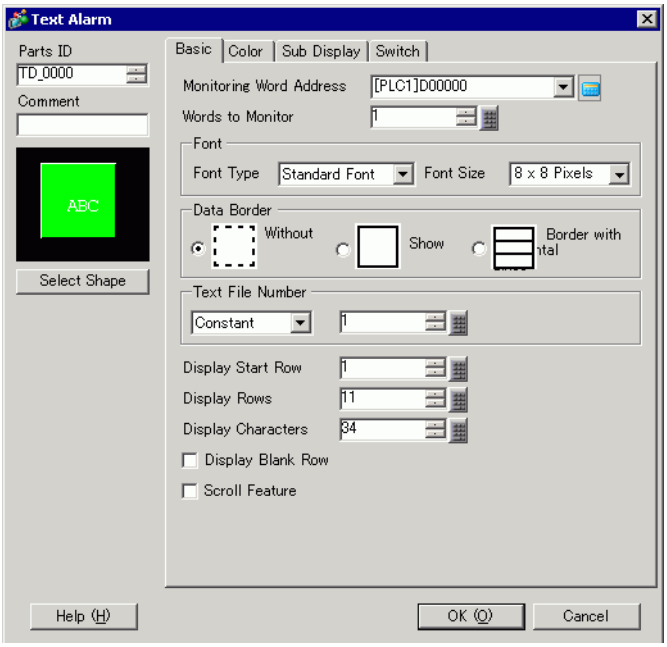
☞ "19.11.4 Text Alarm Part Restrictions" (page 19-165)

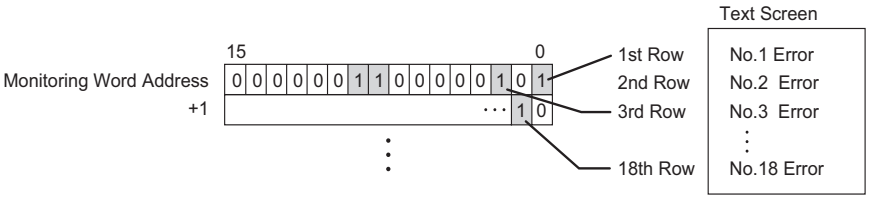


When the bit turns ON, the message is displayed. When the bit turns OFF, the message is erased.

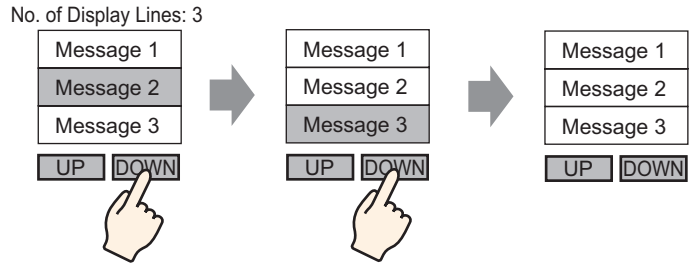
◆ Basic Setting

Configure settings to display alarm messages registered on a Text Screen.



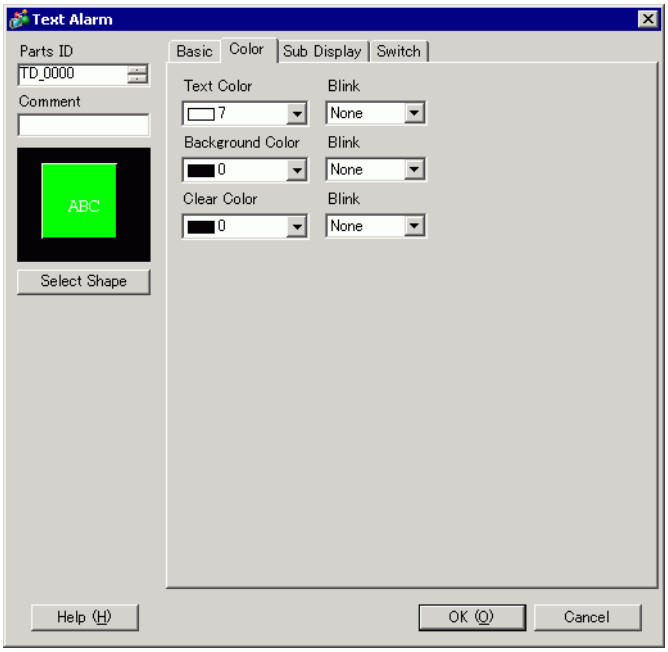
Setting	Description
Monitoring Word Address	Set the word which contains the monitoring bit top address. When the Monitoring Word Address is set, one monitoring bit is allotted to each row of the text. 
Words to Monitor	Set the number of words allotted for the Monitoring Bits from 1 to 32. Set the number according to the number of rows inputted in the text. When the device address is expressed as 32 bits, one address contains two words.
Font	Set a font for the Alarm Message to be displayed.
Font Type	Choose a font type for the Alarm Message from [Standard Font] or [Stroke Font].
Font Size	Choose a font size for the Alarm Message. Standard Font:Specify "Width x Height" within the range between [8 x 8] to [64 x 128] in the unit of 8 dots, or select a fixed size from [6 x 10], [8 x 13], [13 x 23]. The fixed sizes can be selected for displaying single-byte alphanumeric characters only. Stroke Font: 6 to 127

Continued

Setting	Description
Data Border	Choose the ruled line of the Text Alarm Part from [Without Ruled Line], [Show Border], or [Show Border + Horizontal Ruled Line]. **NOTE** • The color of the border and ruled line is fixed to white.
Text Number	Set the text Number of the text to be displayed.
Constant/ Address	Select the designation method of the text Number from [Constant] or [Address]. • Constant Designate a set constant as the Text File Number (Direct Specification) • Address Specify the address where the Text File Number will be stored. (Indirect Specification)
Text Screen Number	Set the text Number from 1 to 8,999.
Display Start Row	Designate the row of the currently active Alarms to start a display from 1 to 512. **NOTE** • When [Show Blank Row] is selected, the maximum number of rows is 512 including blank rows.
Display Rows	Set how many Alarm Message rows will display at maximum on one screen from 1 to 50.
Display Characters	Set the maximum number of Alarm Message characters that can display on one row from 1 to 100.
Show Blank Row	Specify whether to display any blank lines in the text as an Alarm Message.
Scroll Feature	Set whether to use the scroll feature or not. When the scroll feature is not used, touching the cursor moving switch does not move the cursor to the messages out of the display area, and the cursor disappears. 

◆ Color

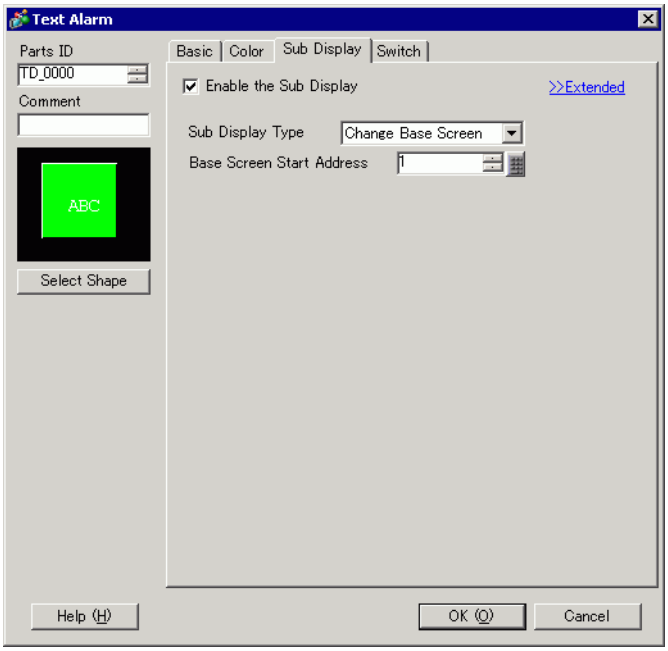
Set the color of the Alarm Message.

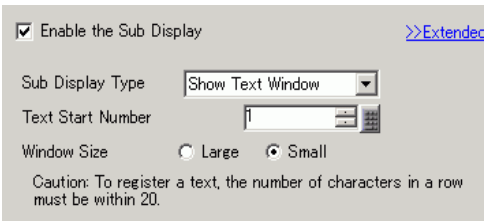


Setting	Description
Text Color	Select a color for the message text.
Background Color	Select a background color for the message text.
Clear Color	Select a color used when an Alarm Message is cleared (or not displayed).
Blink	Select whether or not the Part will blink, and the blink speed. You can choose different blink settings for [Text Color], [Background Color], and [Clear 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 ■ List of Available Colors" (page 8-42)

◆ Sub Display/Basic

Configure settings to display a sub screen corresponding to each Alarm Message.



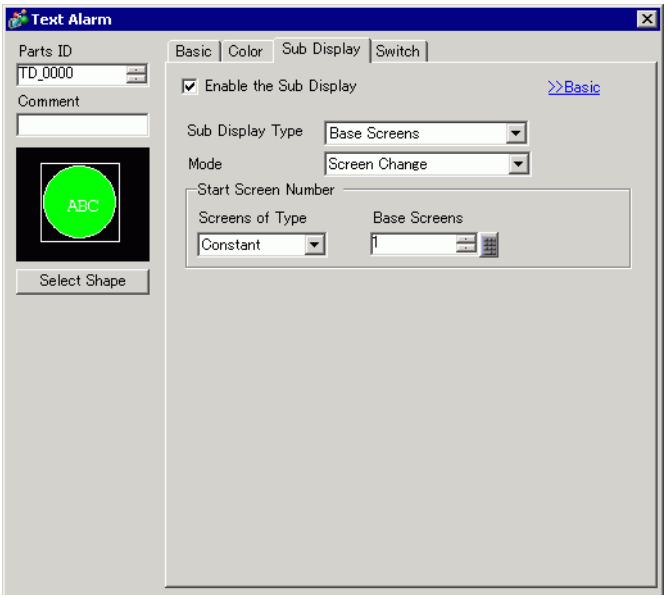
Setting	Description
Enable the Sub Display	Select whether or not to use a Sub Display.
Sub Display Type	Select the Sub Displays Type. • Change Base Screen This setting changes the entire screen to another screen. It works the same as a normal screen change. • Show Text Window Display the registered text in a Window. 
Base Screen Start Address	When setting [Sub Display Type] to [Change Base Screen], set the Start Base Screen Number to change screens with the Sub Display from 1 to 9,999.
Text Start Number	When setting [Sub Display Type] to [Show Text Window], set the Start Text File Number to display in the Sub Screen from 1 to 8,999.

Continued

Setting	Description
Window Size	When the [Sub Display Type] is [Show Text Window], select [Big] or [Small] to choose the window size. **NOTE** • The maximum number of text characters on one line of a window is as follows. Big Window Size: Up to 30 characters Small Window Size: Up to 20 characters

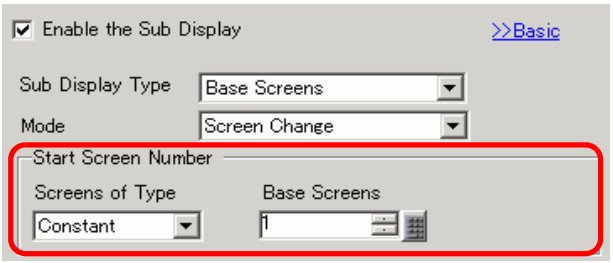
◆ Sub Display/Details

Configure settings to change a Base or Window Screen into a Sub Screen, or to use a Picture Display or a Message Display to display a sub screen on a Base or Window Screen.

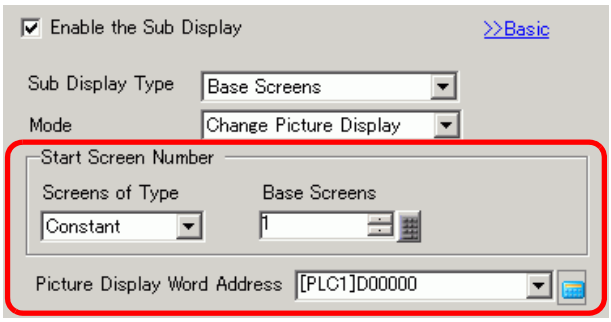
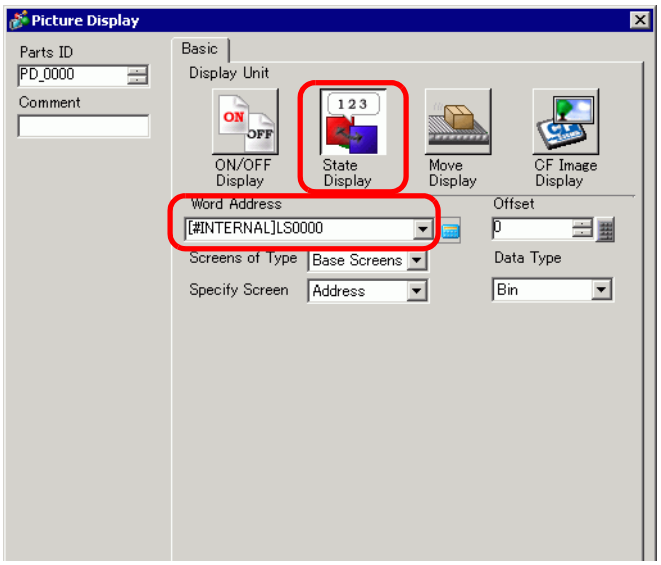


Setting	Description
Enable the Sub Display	Select whether or not to use a Sub Display.
Sub Display Unit	Select the Sub Displays Type. • Base Change the display to other screen, or display pictures or text on a base screen. • Window Screens Display a Sub Screen in a Window. Change the window to another one, or display a picture or text in the Window.

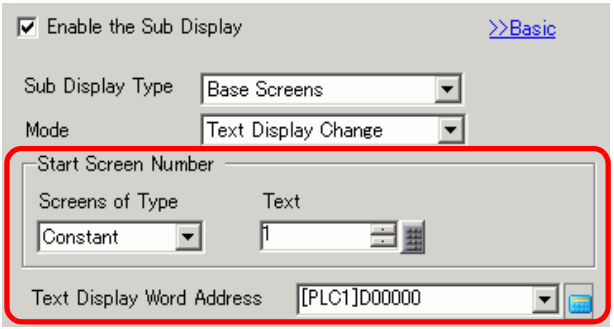
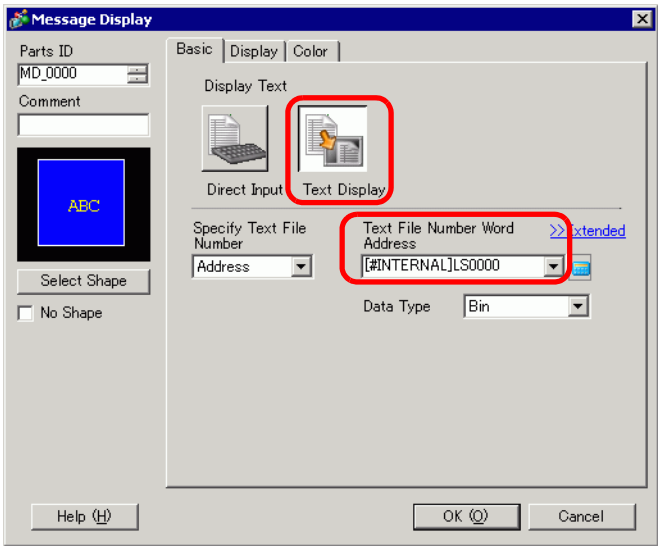
Continued

Setting	Description
Action	Select the Sub Display action type. "When [Base Screen] is selected for [Sub Display]" • Change Panel Change the Base Screen to display the sub screen. • Change Picture Display Use a Picture Display to display the sub screen. • Text Display Change Use a Message Display to display the sub screen. "When [Window] is selected for [Sub Display]" • Window Change Change the Window Screen to display the sub screen. • Change Picture Display Use a Picture Display on the Window Screen to display the sub screen. • Text Display Change Use a Message Display on the Window Screen to display the sub screen.
[Base Screen] - [Screen Change]	This setting changes the entire screen to another screen. This operation works the same as a normal screen change. 
Start Screen	Set the Base Screen Start Number to display a sub screen. Select the method to designate the screen Number from [Constant] or [Address]. • Constant Designate a set constant as the Base Screen Start Number The value can be from 1 to 9,999. • Address Select a word address that stores the Base Screen Start Number

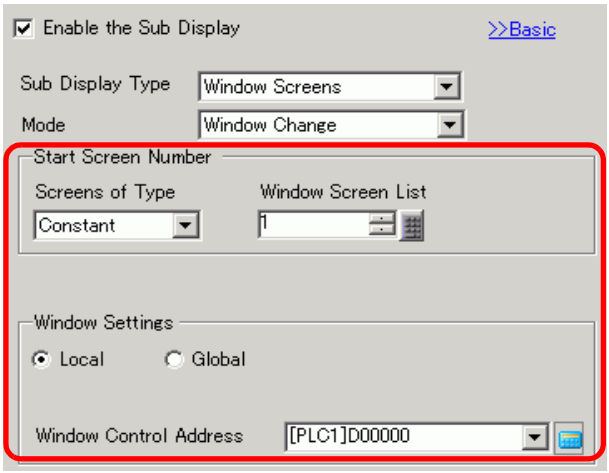
Continued

Setting	Description
[Base Screen] - [Screen Change]	Display a picture corresponding to the Alarm Message in the Picture Display placed on the same screen as the Text Alarm Part. 
Start Screen	Set the start number of the Base Screen for the sub display in the Picture Display Select the method to designate the screen Number from [Constant] or [Address]. • Constant Designate a set constant as the start Number of the screen used for picture display. The value can be from 1 to 9,999. • Address Select a word address that stores the start Number of the screen used for picture display.
Picture Display Word Address	Set a word address to store the screen Number of the screen displayed in a Picture Display. Set the same address as the [Word Address] of the Picture Display placed on the same screen as the Text Alarm Part.  **NOTE** • With [State Display] selected, in [Screens of Type] select [Base Screen], in [Specify Screen] select [Address], and in [Data Type] select [Bin].

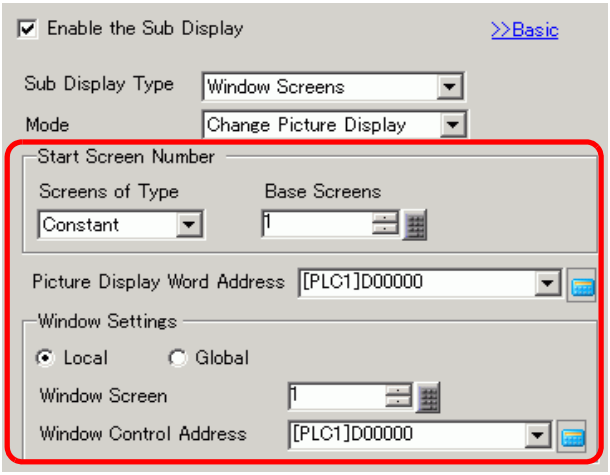
Continued

Setting	Description
[Base Screen] - [Text Display Change]	Display a text corresponding to the Alarm Message in the Message Display placed on the same screen as the Text Alarm Part. 
Start Screen	Sets up the start number for the sub display's text that will appear in the "Message Display". Select the method to designate the text Number from [Constant] or [Address]. • Constant Designate a set constant as the Text's Start Number The value can be from 1 to 8,999. • Address Select a word address that stores the Text's Start Number
Text Display Word Address	Set a word address to store the Text File Number of the text displayed in a Message Display. Set the same address as the [Text File Number Word Address] of the Message Display placed on the same screen as the Text Alarm Part.  **NOTE** • Set the Message Display [Text Display]'s [Specify Text File Number] to [Address], and [Data Type] to [Bin].

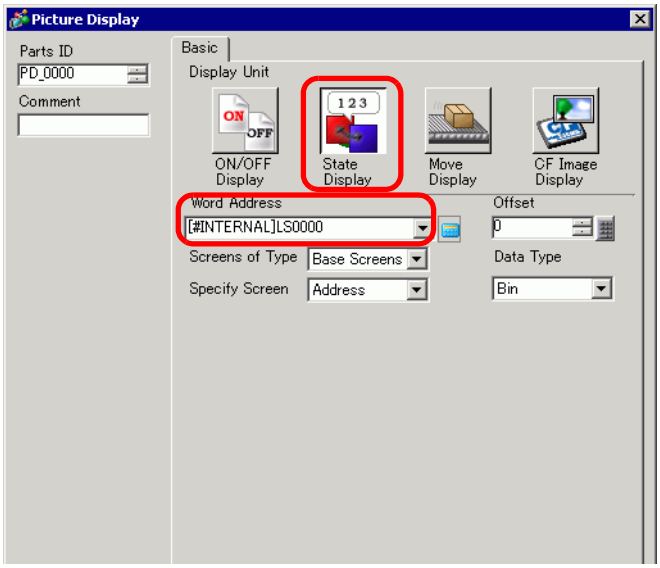
Continued

Setting	Description
[Window] - [Window Change]	Displays the Window Screen which corresponds to the Alarm Message. 
Start Screen	Defines the sub display window screen start number Select the method to designate the Window Screen from [Constant] or [Address]. • Constant Designate a set constant as the start Number of the Window Screen used for a Sub Display. The value can be from 1 to 2,000. • Address Set the address where the Start Screen of the Window Screen used for a Sub Display is stored.
Window Settings	Configure the Window settings.
Local/Global	Defines whether to use a local window or global window for the Sub-Display. **NOTE** • To use a global window, refer to "12.6.2 Setup Procedure" (page 12-18). On the [System Settings] - [Display Unit] - [Action] tab, set [Global Window Operation] to [Indirect], and [Data Type] to [Bin]. Use LS16 to display or erase the Window.
Window Control Address	To use a local window for a Sub Display, designate the address used to control the window display. Four consecutive words will be used, starting from the designated address. Set the same address as the [Window Control Address] of the Window Part placed on the same screen as the Text Alarm Part. ☞ "12.7.2 Word Action" (page 12-23) **NOTE** • Set the Window Part [Window Specification] to [Address], and [Data Type] to [Bin].

Continued

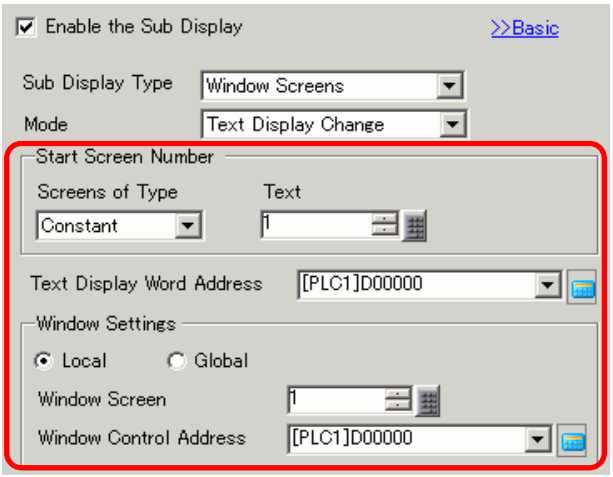
Setting	Description
[Window] - [Change Picture Display]	Display a picture corresponding to the Alarm Message in the Picture Display placed on the Window Screen. 
Start Screen	Set the Base Screen Start Number to display a sub screen for a Picture Display on the Window Screen. Select the method to designate the screen Number from [Constant] or [Address]. • Constant Designate a set constant as the start Number of the screen used for picture display. The value can be from 1 to 9,999. • Address Select a word address that stores the start Number of the screen used for picture display.

Continued

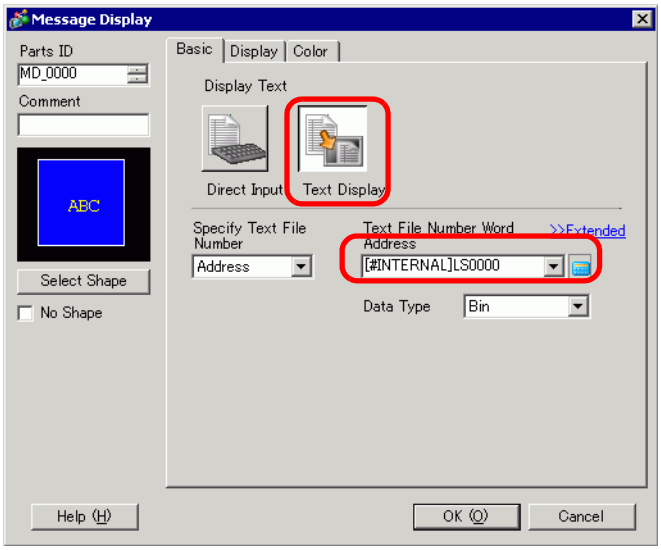
<table>
<tr><th colspan="3">Setting</th><th>Description</th></tr>
<tr><td rowspan="2">[Window] - [Change Picture Display]</td><td>Picture Display Word Address</td><td></td><td>Set a word address to store the screen Number of the screen displayed in a Picture Display.
Set the same address as the [Word Address] of the Picture Display placed on the Window Screen.
 

NOTE
• With [State Display] selected, in [Screens of Type] select [Base Screen], in [Specify Screen] select [Address], and in [Data Type] select [Bin].</td></tr>
<tr><td rowspan="4">Change Picture Display</td><td colspan="2">Window Settings</td><td>Configure the Window settings.</td></tr>
<tr><td></td><td>Local/Global</td><td>Set whether to use a local window or global window for a Sub Display.
NOTE
• To use a global window, refer to "12.6.2 Setup Procedure" (page 12-18). On the [System Settings] - [Display Unit] - [Action] tab, set [Global Window Operation] to [Indirect], and [Data Type] to [Bin]. Use LS16 to display or erase the Window.</td></tr>
<tr><td></td><td>Window Screen No.</td><td>Designate the Screen Number of the window used for a Sub Display from 1 to 2,000.</td></tr>
<tr><td></td><td>Window Control Address</td><td>To use a local window for a Sub Display, designate the address used to control the window display. Four consecutive words will be used, starting from the designated address.
Set the same address as the [Window Control Address] of the Window Part placed on the same screen as the Text Alarm Part.
☞ "12.7.2 Word Action" (page 12-23)
NOTE
• Set the Window Part [Window Specification] to [Address], and [Data Type] to [Bin].</td></tr>
</table>

Continued

Setting	Description
[Window] - [Text Display Change]	Display a text corresponding to the Alarm Message in the Message Display placed on the Window Screen. 
Start Screen	Set the Start Number of the text for a sub screen displayed in a Message Display on the Window Screen. Select the method to designate the text Number from [Constant] or [Address]. • Constant Designate a set constant as the Text's Start Number The value can be from 1 to 8,999. • Address Select a word address that stores the Text's Start Number

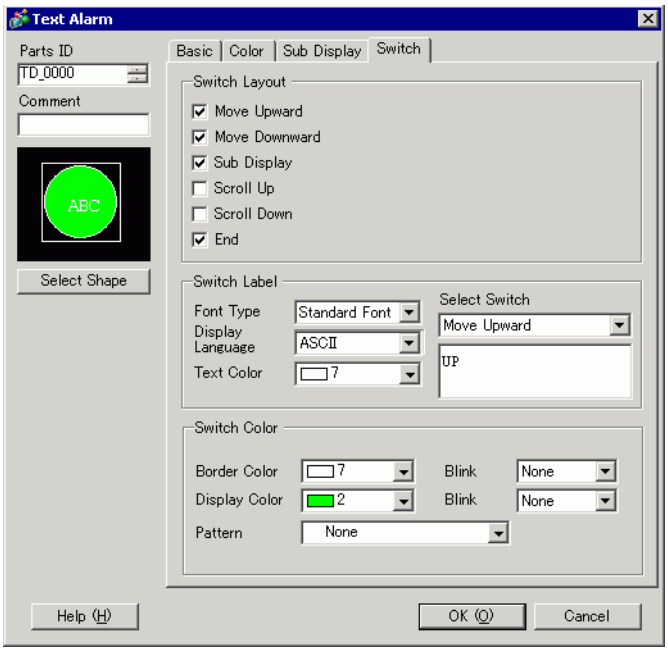
Continued

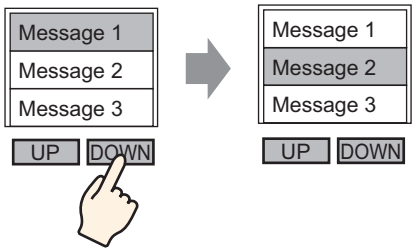
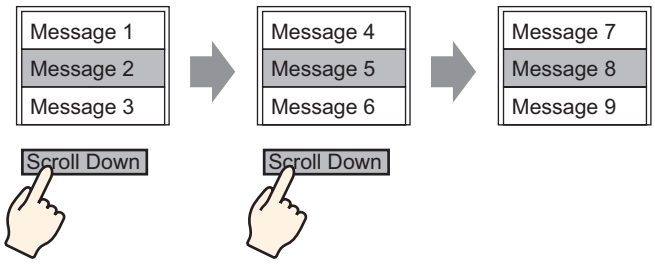
Setting			Description
Text Display Change	Text Display Word Address		Set a Word Address to store the Text File Number of the text displayed in a Message Display. Set the same address as the [Text File Number Word Address] of the Message Display placed on the Window Screen.  **NOTE** • Set the Message Display [Text Display]'s [Specify Text File Number] to [Address], and [Data Type] to [Bin].
	Window Settings		Configure the Window settings.
		Local/Global	Set whether to use a local window or global window for a Sub Display. **NOTE** • To use a global window, refer to "12.6.2 Setup Procedure" (page 12-18). On the [System Settings] - [Display Unit] - [Action] tab, set [Global Window Operation] to [Indirect], and [Data Type] to [Bin]. Use LS16 to display or erase the Window.
		Window Screen No.	Designate the Screen Number of the window used for a Sub Display from 1 to 2,000.
		Window Control Address	To use a local window for a Sub Display, designate the address used to control the window display. Four consecutive words will be used, starting from the designated address. Set the same address as the [Window Control Address] of the Window Part placed on the same screen as the Text Alarm Part. ☞ "12.7.2 Word Action" (page 12-23) **NOTE** • Set the Window Part [Window Specification] to [Address], and [Data Type] to [Bin].

Continued

◆ Switch

Select an operation switch to display an Alarm Message. Using a Sub Display requires an operation switch to designate the message to display its sub display.



Setting	Description
Switch Layout	Set the Switches to be placed.
Move Upward/ Move Downward	Moves the cursor 1 row up or down. 
Sub Display	Shows the Sub Display of the message currently selected with the cursor.
Scroll Up/Scroll Down	Alarm Messages that are currently displayed are scrolled up or down by a given number of rows. For example, Number of Active Alarms: 9, Display Rows: 3, Rows to Move: 3 

Continued

Setting			Description
		Rows to Move	Set the number of rows to scroll up and scroll down from 1 to 512.
	Exit		Set a switch to end the Text Alarm. Touching the switch erases the cursor as well as the Sub Display.
Switch Label			Set the Switch label.
	Font Type		Choose a font type for the switch label from [Standard Font] or [Stroke Font].
	Display Language		Select a language for the switch label from [Japanese], [Western], [Chinese (Traditional)], [Chinese (Simplified)], [Korean], [Cyrillic], or [Thai].
	Text Color		Select a color for the switch label.
	Configure Switch		Select the switch to which the label is set.
	Label		Input the text of the label.
Switch Color			Set the switch color. **NOTE** • The Switch Color setting is common to all Text Alarm parts, regardless of the switch type selected.
	Border Color		Select a border color for the Switch.
	Clear Color		Set the switch color.
	Pattern		Select the switch pattern from 9 types.
	Pattern Color		Specify the pattern color when you select options other than [No Pattern].
	Blink		Select whether or not the Switch 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 cannot set Blink depending on the Display Unit and System Settings' [Color Settings]. ☞"8.5.1 Setting Colors ■ List of Available Colors" (page 8-42)

NOTE

- If you want to change the shape and color of each switch, create a switch with a Switch Lamp Part Special Switch (Text Alarm Switch).
  ☞"10.14.4 Special Switch ■ Switch Feature ◆ Text Alarm Switch" (page 10-67)
- If [Scroll Feature] is not set on the [Basic] tab, the messages are not scrolled even when the [Move Upward], [Move Downward], [Scroll Up], or [Scroll Down] switch is touched. The cursor moves only within the display area.

19.11 Restrictions

19.11.1 Restrictions for Printing Alarm History

- If you select colors other than black and white from the Print Format Settings - [Trigger Color], [Acknowledged Color], or [Recovery Color] options, or if the text to print goes beyond the page margins, some printers may not print out normally.

◆ [Real-time Print]

- In the Real-time Print, block names such as "Message", "Date", and "Trigger" are not printed.
- The GP unit can store printing information for a maximum of 1,000 Alarm Messages (Banner) and Alarm Histories. If no printer is connected to the GP, it can still store up to 1000 messages, but any messages over 1000 will be lost while the GP is waiting to print.
- If the printer goes offline during printing due to a paper jam, etc., fix the printer error without turning off the display unit's power. Print information stored in the GP will be sent to the printer when it comes back online.
- If the printer's power goes off during printing, the data sent from the GP during that time will not be printed.
- Some printers cannot print every line even with real-time print, because they do not support paper feed for every line.
- In Real-time, data is not printed.

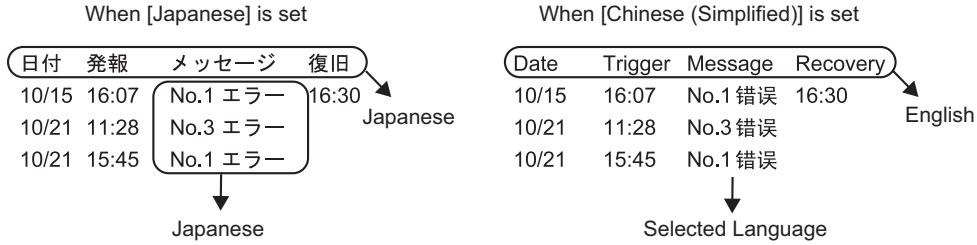
◆ [Batch Print]

- Alarms that are triggered or recover during printing will not be printed. Alarm information which exists when printing starts will be printed.
- If the GP unit turns OFF during printing, printing will not continue when power is turned back ON. If the trigger bit is ON when power is turned back ON, printing will start from the beginning.
- When turning the print trigger bit from ON to OFF or from OFF to ON, be sure to allow at least one communication cycle[*1] or one Display Scan Time period[*2], whichever is longer.
- If the number of stored alarms is set to "0" on the [Alarm] - [Common] tab, or if no alarms have yet been triggered, "Number of Messages = 0" will be printed.
- If the number of stored alarms is set to "0" on the [Alarm] - [Common] tab, the [Completion Bit] will not turn ON.

*1 The communication cycle time is the time it takes to request and take in data from the display unit to the device/PLC. It is stored in the internal device area LS2037 as binary data. The unit is 10 milliseconds (ms).

*2 Display Scan Time is the time required to process one screen. This value is stored in internal device LS2036 as a binary value, in millisecond units.

- Only the first 2 lines of block names, such as [Messages], [Date], [Trigger], etc. will be printed. However, even if the line extends over several pages, block names will only be printed on the first page.
- When the alarm message language is set to Japanese, item names such as "Message", "Date", or "Trigger" are output in Japanese. When using any other language (ASCII, Korean, Chinese (Simplified), Chinese (Traditional), Cyrillic or Thai), the item names are output in English.



19.11.2 Restrictions for Sub Display/Details

- The Message Display [Text Display] and Picture Display [State Display] Word Addresses as well as Window Part window control addresses used for a Sub Display are set only in the address of the internal device (LS area, user area).
- The cursor movement and sub display are not linked. Even when the cursor moves, the sub display remains the same.
- Sub displays will not be cleared automatically. Even when an Alarm Message in the sub screen is cleared, the sub display still remains. When, however, the screen is changed, "0" is written to the word address of the Picture Display [State Display] and Message Display [Text Display], and window control address used for the sub display, and the sub display is cleared.
- When displaying a sub screen, only one Alarm Part (History Display) can be set on each base screen. If multiple Alarm Parts (History Display) are set, a sub display is disabled.
- When [Direct Selection] is set, buttons may be hard to touch depending on the calibration of the touch panel[*1] and the message line spacing.
- When [Play Movie] is selected as the Sub Display, the [Sub Display Screen Number] specified in the [Alarm] acts as the index number of the Movie File played on the [Movie Player]. Define a value from 0 to 99.
  Assigning "0" to the Sub Display Screen Number specifies Index Number "0" in the Movie File. For alarms not requiring a Sub Display, assign "9999" to the Sub Display Screen Number.
  If you assign the index number of a Movie File that does not exist, then the player will stop.
- Bit 8 (Play Bit) of the specified [Play Control Word Address] is used to control play operations. To stop playing the movie, create a switch to turn the Play Bit OFF instead of using a typical stop operation.

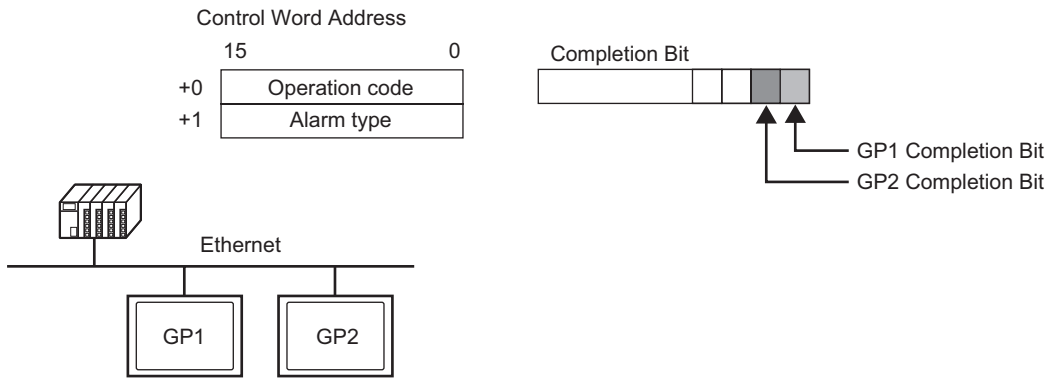
*1 The adjustment of the touch panel's touch area and display so that their settings synchronize. This can be set in the GP unit.

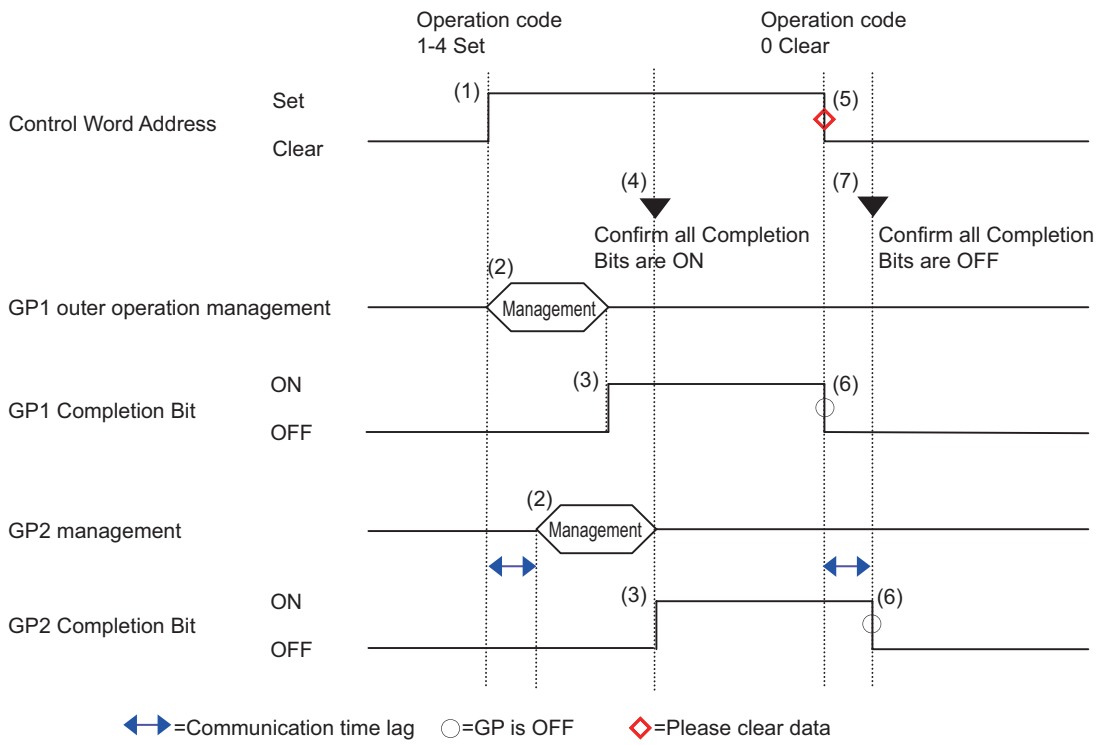
- When the Video Display bit is ON, the Video Display takes precedence over the Alarm Sub Display. The Alarm Sub Display is hidden but continues operating. When the Video Display turns OFF, the Alarm Sub Display video continues playing from the elapsed period of time.

19.11.3 Restrictions for Running External Operations from Multiple Display Units

External operations can be performed by multiple GP units at the same time. However, a time lag will occur due to each display unit's read time, and the order in which the operations are performed and the [Completion Bit] turns ON will differ. Set the operation code after verifying that every [Completion Bit] in each GP has turned OFF.
Also, when clearing the operation code to "0", ensure that every [Completion Bit] in every GP has turned ON.

For example:
Set the external operation [Control Word Address] for several GP units (GP1, GP2) to the same address, and set the [Completion Bit] to separate addresses.





(1) Set the operation code and alarm type in the [Control Word Address] from the PLC.
(2) GP1 and GP2 process orders from the PLC.
(3) When the operations finish, the GP1 and GP2 [Completion Bit] turns ON.
(4) The PLC verifies that each [Completion Bit] in all the GP units is now turned ON.
(5) Run the [Control Word Address]'s [Operation Code] "0" (no operation) from the PLC.
(6) When the GP writes "0" as the [Operation Code], the [Completion Bit] turns OFF.
(7) The PLC verifies that each [Completion Bit] in all the GP units is now turned OFF.

NOTE

- In case the power gets turned OFF during the process, set the [Control Word Address] to 0 clear and turn OFF [Completion Bit] for all settings.
- While running operations on multiple GP units from the PLC, alarms that are triggered or recovered may not be the same on each GP unit.
- In [Alarm], [Common], when [Print Settings] is set to [Real-time Print], if you run an external operation to acknowledge all within a block, the acknowledge order will be [History]→[Log]→[Active]. If the same message is registered in both [History] and [Log], the History acknowledge time and Log acknowledge time will both be printed in Real-time, so the same acknowledgment message will be printed twice.

19.11.4 Text Alarm Part Restrictions

- Only one Text Alarm can be set to a single Base Screen. To display two or more Text Alarm Parts on one screen, use a Window Screen.
- The maximum number of display characters on one row is decided by the GP model and the text size.
- If the Alarm Message is wider than the display area, the portion that exceeds the area is truncated and is not displayed.
- When the Text File Number of the text displayed in the Text Alarm Part is changed during operation, the cursor and sub display are cleared.
- When too many alarms arise simultaneously, you can place Text Alarm Parts on multiple screens and designate [Display Start Row] as follows to view the messages by changing screens.

  1st screen: Start row (normally "1")
  2nd screen: Number of display rows on one screen + Start row
  nth screen: Number of display rows on one screen x (n-1) + Start row
- The Base Screen Number or Text File Number used for a sub display should be created in sequential numbers in the same order as the text rows to which Alarm Messages are registered.
- The Base Screen and Text used for a Sub Display use screens equal to "(16 x Words to Monitor) + 1". These screens cannot be used for other purposes.
- When the cursor is cleared during a sub display (the cursor is moved to the place outside of the display area, or the "End" switch is touched), the sub display is also be cleared.
- The value of "the designated [Start Screen] + (Words to Monitor x 16)" is used as the Clear Base Screen Number or Clear Text File Number to clear the sub display.
  For example, when the Start Screen is "100" and the Words to Monitor is "1", Screen Nos. 100 to 115 are used for the sub display screen and Screen Number 116 is used for the clearing screen.
- When a sub screen is displayed with a Message Display [Text Display] and no clearing text is provided, the sub screen is cleared with [Clear Color] designated for the Message Display.
- When a screen with a sub screen is changed, the sub screen is cleared. The GP writes "0" to the designated word addresses of the Picture Display [State Display], Message Display [Text Display], and Window Part used for a Sub Display.
- When [Start Screen] of the sub display is designated with [Address], do not change the Start Screen while the sub screen is displayed. This may interfere with proper sub display.
- While a Sub Screen is displayed, communication time may increase.

19.12 Alarm Feature List