Chapter 7

Alarm History Screen

Chapter 7 Alarm History Screen

7.1

Alarm History Screen

解説

What's the Alarm History Screen?

Displaying the history of the alarm messages with Triggered and/or Recovery Time on the screen can be useful for security of the assembly line and improvement of productivity. Also, each alarm's details or remedies can be shown on a sub-screen, so any operator can easily perform the Recovery Work.

① The alarm history is displayed in a list.
Touch a message, and its remedy/information will be displayed.

② Displayed details of the alarm history can be edited and the display order can be changed.


No reference to manuals…


No expensive call-ins…

No tech support calls…


Hint!

Switch for triggering an alarm

On the practice screen, if you touch the [Alarm SW] on the upper right of the screen, switches for triggering alarms will be displayed. Thus simulated operation of alarm bits is possible.

7.2

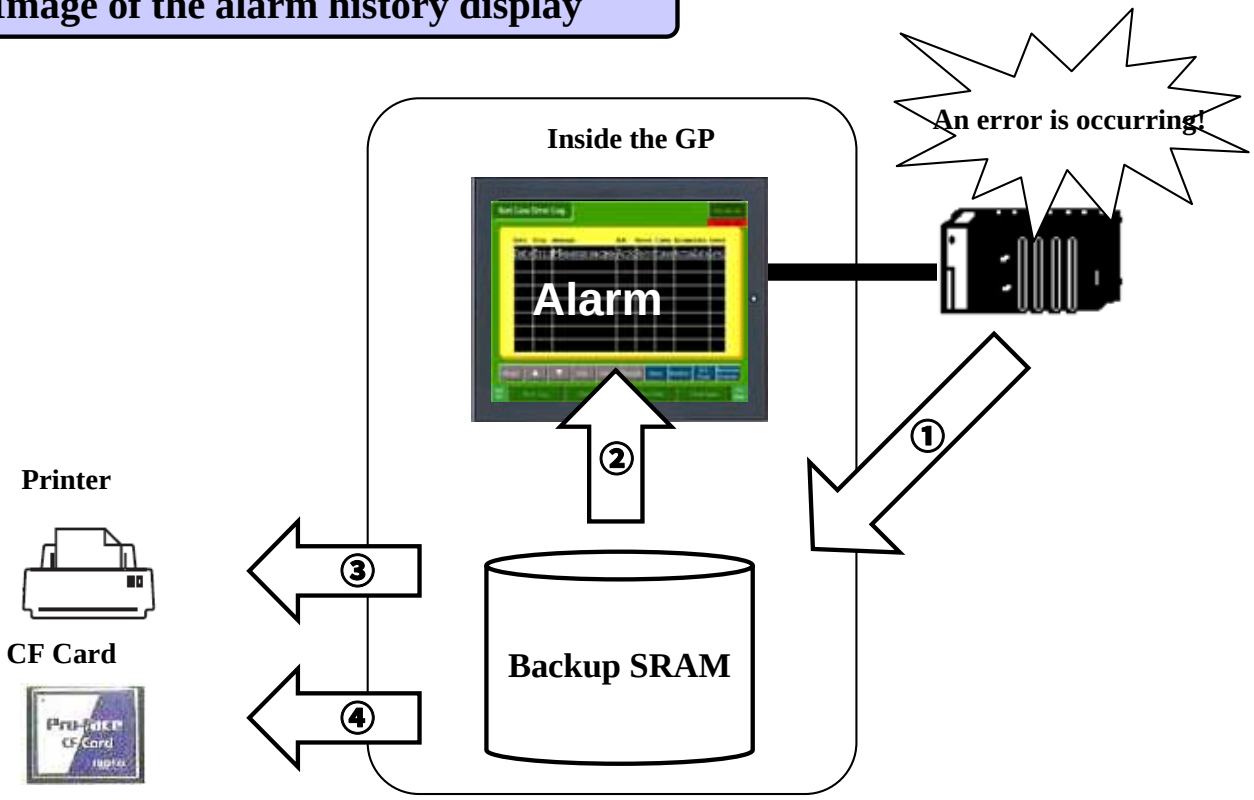
Alarm History Display

解説

How to display the alarm history in a list

Every time the registered PLC's address changes, the message and its time stamp is saved in GP's internal backup SRAM and displayed in a list.
The data in the backup SRAM can be printed and/or saved into the CF Card.

Image of the alarm history display



① **PLC->SRAM:** The alarm history is recorded in the GP's internal backup SRAM.

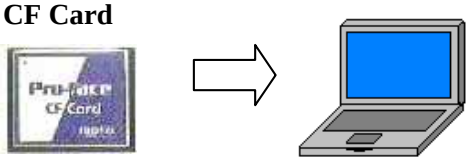
② **SRAM->Alarm:** The data in the backup SRAM is displayed on the screen.

③ **Print :** The data of the alarm history is printed from the GP.

④ **Save CF Card:** The alarm history is saved from the backup SRAM to the CF Card.

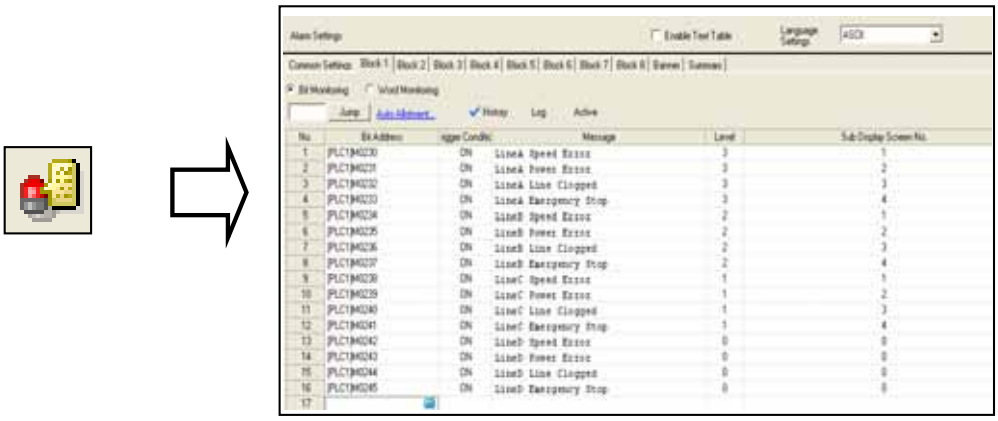
Hint!

The data backed up from the SRAM to the CF Card is saved in a CSV-format file and therefore editing on the PC is easy.

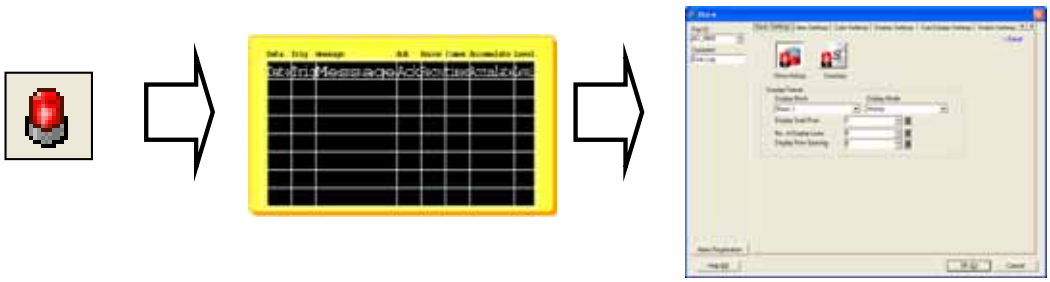


Alarm History Display Setting Procedure

①With [Bit Monitoring] of the Alarm Settings, register bit addresses and messages etc.



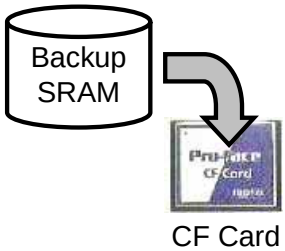
②Place the [Alarm] to display the alarm and configure it.



③Save the project and transfer it to the GP.

Important notes

The maximum number of messages that can be recorded in the backup SRAM is 768. Beyond that number, the data is deleted, with the oldest data being overwritten first. To save long term history, use the CF Card.



実習

Let's display the alarm history.

Let's register each line's alarm message and display the history of the alarms.

[Setup Flow]

1. Open the Alarm Settings.
2. Register the monitored addresses and the messages.
3. Select, place, and configure an Alarm on the base screen [7].

Open the base screen [7].

[For Exercise]

[Completed]

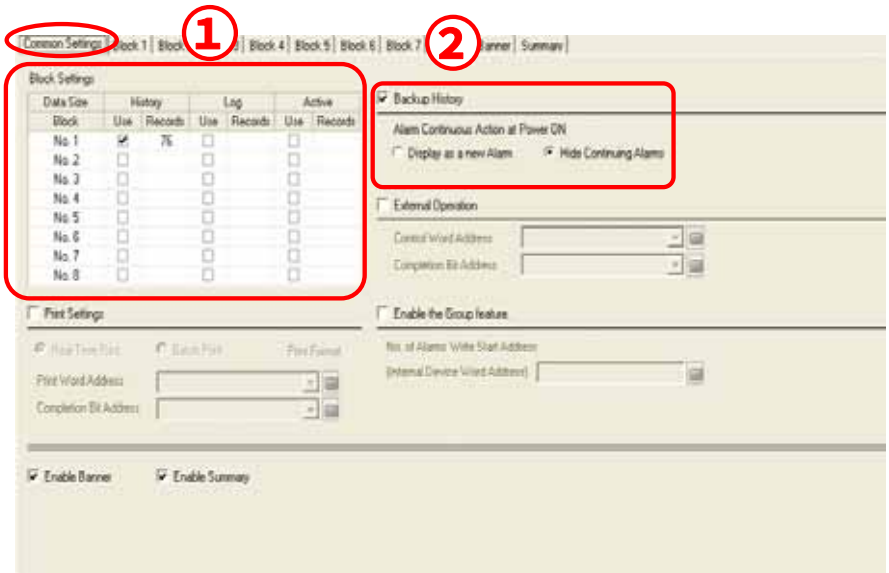
(1) Selecting the Alarm Settings

Select the [Alarm Settings] from the Tool Bar.

(2) Common Settings

① **Block Settings:** Set the display method of the alarm history from Block1 to 8 and the number of records.
Here, check [History:Use] of [Block:No.1] and set [76].

② **Backup History:**
Set whether or not to retain the history after the GP's power is turned off, then on again.

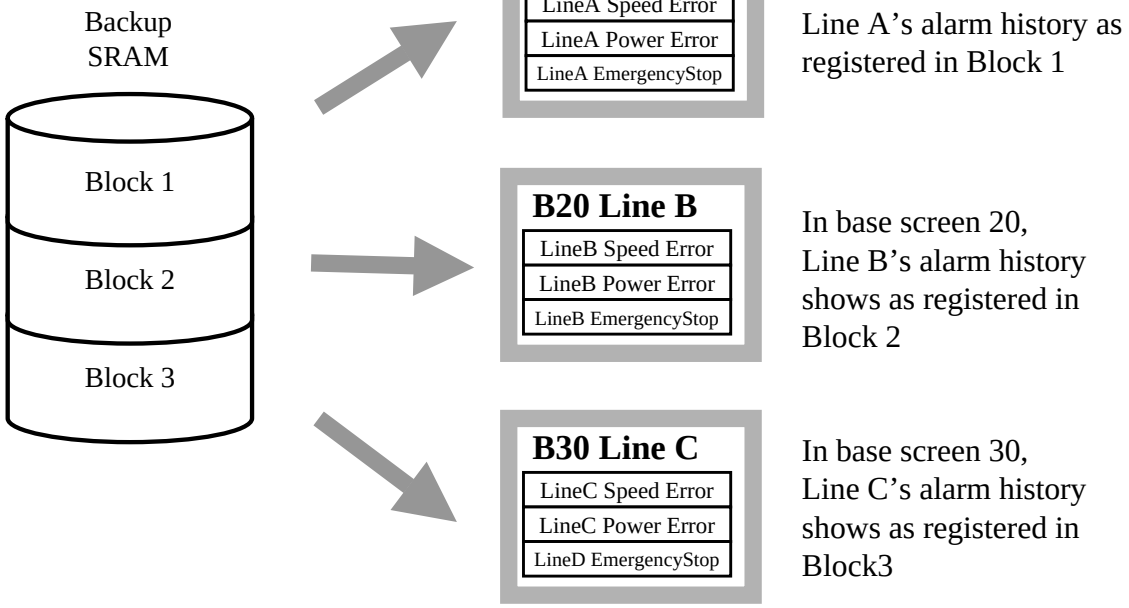


Hint!

About [Block]

It is possible to divide the alarm history memory and show it in multiple alarm displays each showing a different alarm type.

Ex.) Three screens each display a different line's messages.



In base screen 10, Line A's alarm history as registered in Block 1

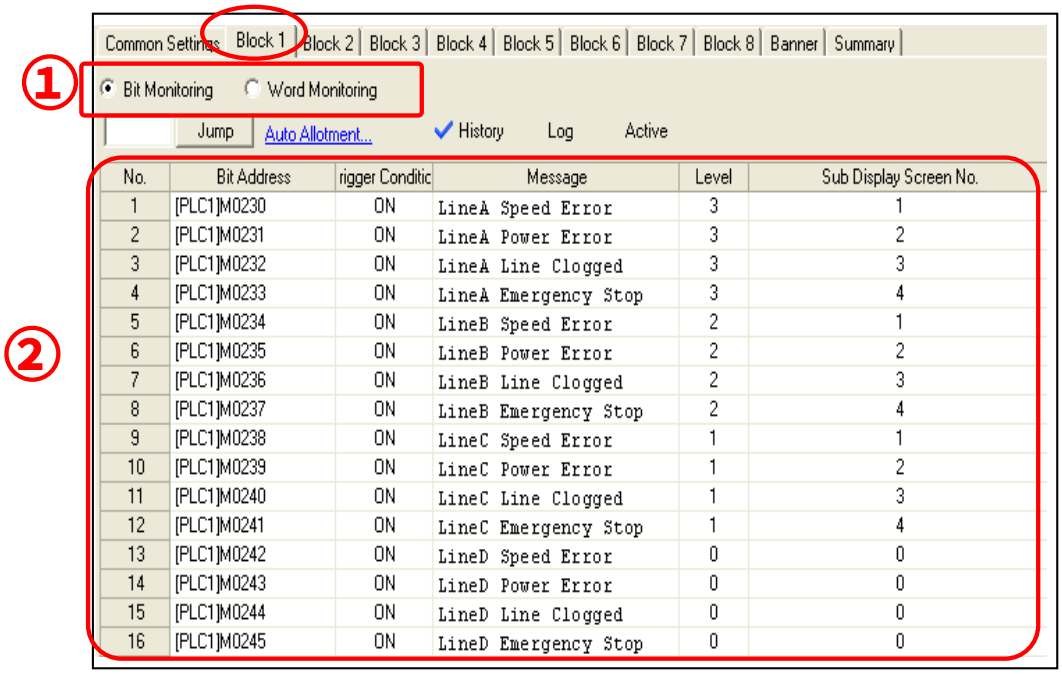
In base screen 20, Line B's alarm history shows as registered in Block 2

In base screen 30, Line C's alarm history shows as registered in Block3

*** It is possible to divide based on place of occurrence, the person in charge, the rating, etc.**

(3) Setting of Block 1's Bit Monitoring

Select [Block 1].



No.	Bit Address	rigger Conditic	Message	Level	Sub Display Screen No.
1	[PLC1]M0230	ON	LineA Speed Error	3	1
2	[PLC1]M0231	ON	LineA Power Error	3	2
3	[PLC1]M0232	ON	LineA Line Clogged	3	3
4	[PLC1]M0233	ON	LineA Emergency Stop	3	4
5	[PLC1]M0234	ON	LineB Speed Error	2	1
6	[PLC1]M0235	ON	LineB Power Error	2	2
7	[PLC1]M0236	ON	LineB Line Clogged	2	3
8	[PLC1]M0237	ON	LineB Emergency Stop	2	4
9	[PLC1]M0238	ON	LineC Speed Error	1	1
10	[PLC1]M0239	ON	LineC Power Error	1	2
11	[PLC1]M0240	ON	LineC Line Clogged	1	3
12	[PLC1]M0241	ON	LineC Emergency Stop	1	4
13	[PLC1]M0242	ON	LineD Speed Error	0	0
14	[PLC1]M0243	ON	LineD Power Error	0	0
15	[PLC1]M0244	ON	LineD Line Clogged	0	0
16	[PLC1]M0245	ON	LineD Emergency Stop	0	0

① Select the monitored address type for the alarms from [Bit Monitoring]/[Word Monitoring].

Bit Monitoring: If the designated bit address turns ON or OFF, the registered message will be displayed.

Word Monitoring: If the designated word address's data is equal to the alarm value or out of the range, the registered message will be displayed.

Here, select [Bit Monitoring].

② Here are the configuration details of [Bit Monitoring].
Bit Address: Register the bit address to be monitored.

Trigger Condition: Set whether the alarm is triggered when the monitored bit address turns ON or turns OFF.

Message: Register the alarm message to be displayed.

Level: Set each alarm's level in the range from 0 to 7.

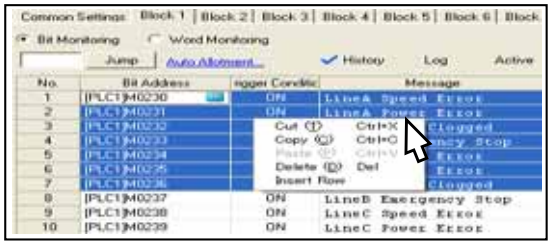
Sub Display Screen No.: Set the number of the screen to be displayed as a sub screen.

*When displaying no sub screen, set [0].

Here, enter the data in [Bit Address], [Trigger Condition], [Message], [Level], and [Sub Display Screen No.] as shown in the image above.

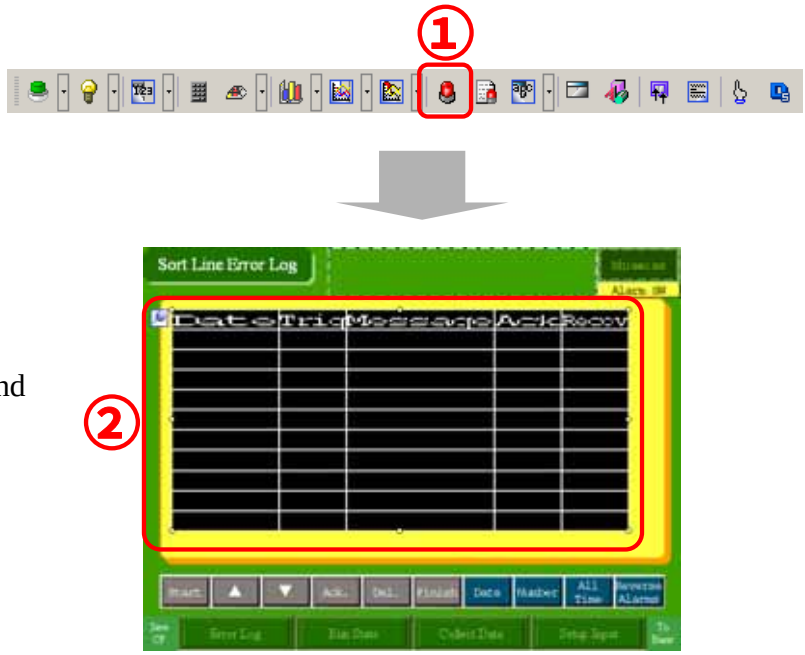
Hint!

On the Alarm Settings, right-clicking causes the short cut menu for edit to display and it's possible to cut, copy, or paste the addresses or messages.



(4) Selecting/Placing Alarm

① Click the [Alarm] icon from the Tool Bar.



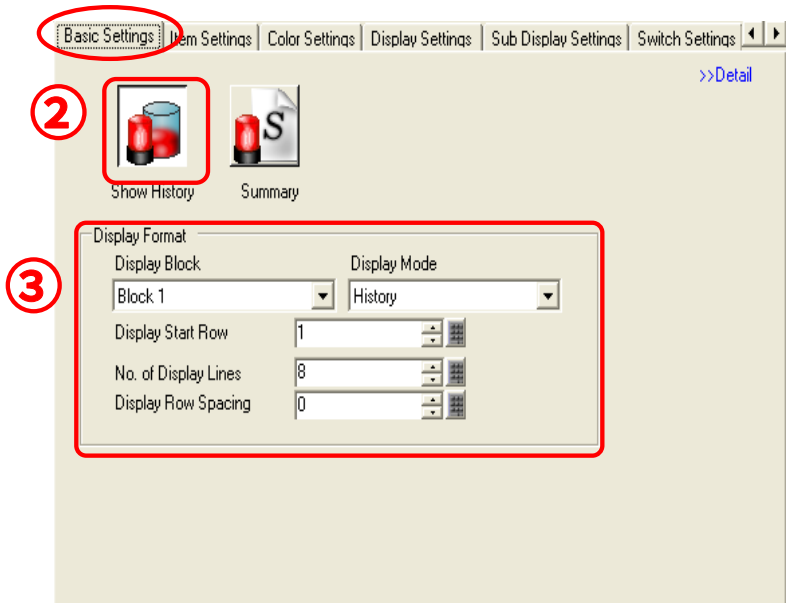
② Drag the pointer for the desired range and place the alarm.

(5) Basic Settings

① Double-click the placed alarm.

② Select [Show History].

③ Set [Block 1] for [Display Block], [History] for [Display Mode], [1] for [Display Start Row], [8] for [No. of Display Lines], and [0] for [Display Row Spacing].



Hint!

Display Mode (Active, History, Log) Display Examples

[Active]: Only displays messages for currently occurring alarms.
After recovered, the message disappears and the history does not remain.

Ex.)

Trigger Date	Trigger Time	Message
11/01	9:00	The temperature is too high.
11/01	12:00	Run Time exceeded.

[History]: Every time an alarm triggers, a new line is started and the message displays.
When they occur, Acknowledge and Recovery Times will be added to the same line.
When the alarm recovers, the message remains visible.

Ex)

Trigger Date	Trigger Time	Message	Ack. Time	Recovery Time
11/01	9:00	The temperature is too high.	15:30	16:00
11/01	12:00	Run Time exceeded.		18:00
11/01	14:00	Pressure Error	14:30	

[Log]: Every time an alarm is triggered, recovered, or acknowledged, a new line is started and its message is displayed. It shows more accurate date and time for alarms that occur over a change of date.

Ex.)

Trigger Date	Trigger Time	Message	Ack. Time	Recovery Time
11/01	9:00	The temperature is too high.		
11/01	12:00	Run Time exceeded.		
11/01	14:00	Pressure Error		
11/01		Pressure Error	14:30	
11/01		The temperature is too high.	15:30	
11/01		The temperature is too high.		16:00
11/01		Run Time exceeded.		18:00

* When using multiple blocks, the display modes can be divided for each block. For example, it's possible to set [Active] that does not record History for the low importance line and [Log] that keeps History for the high importance line.

(6) Item Settings

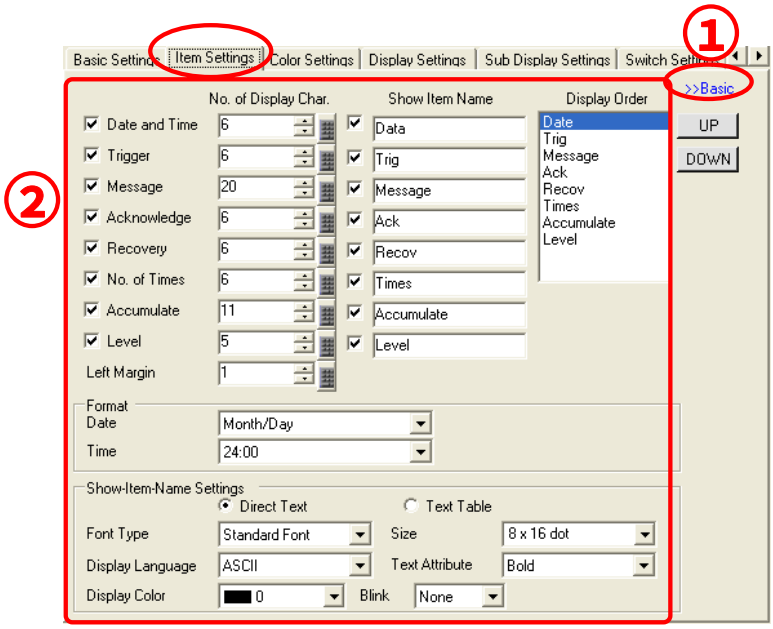
① Click [Basic] and change it to [Detail].

② Here, set display/non-display of items, display/register of item names, and display order.

Check all items from [Date and Time] to [Level].

Make the following settings for [No. of Display Char.]

[Date and Time]: 6
[Trigger]: 6
[Message]: 20
[Acknowledge]: 6
[Recovery]: 6
[No. of Times]: 6
[Accumulate]: 11
[Level]: 5
[Left Margin]: 1



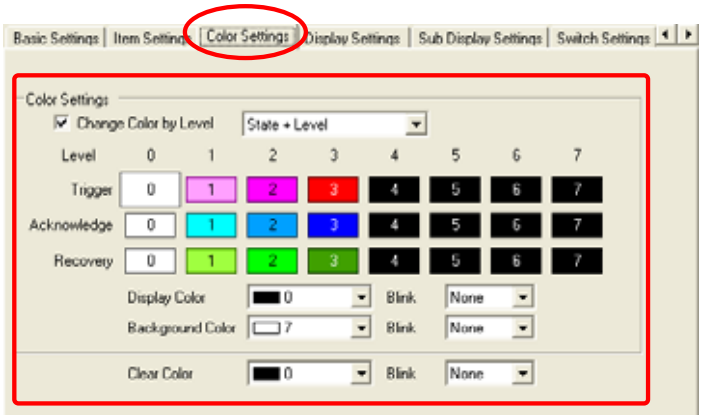
Check all of [Show Item Name] and register the item names to be displayed as shown above.
For [Format], set [Month/Day] for [Date] and [24:00] for [Time].
For [Show Item Names Settings], select [Direct Text], [Standard Font] for [Font Type], [8x16 dot] for [Size], [ASCII] for [Display Language], [Bold] for [Text Attribute], [Black:0] for [Display Color], and [None] for [Blink].

(7) Color Settings

Check [Change Color by Level] and select [State + Level].

Set [Display Color], [Background Color], and [Blink] as you like for each combination of State + Level.

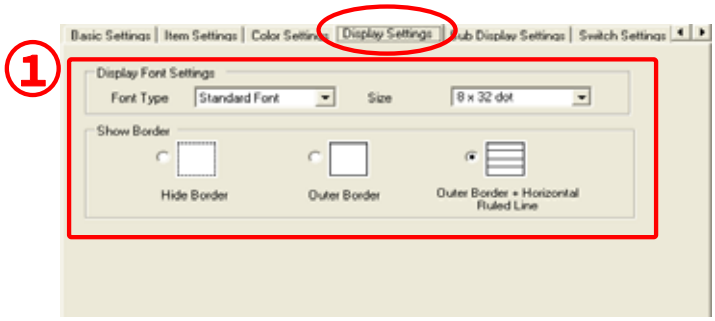
Set the color you like for [Clear Color].



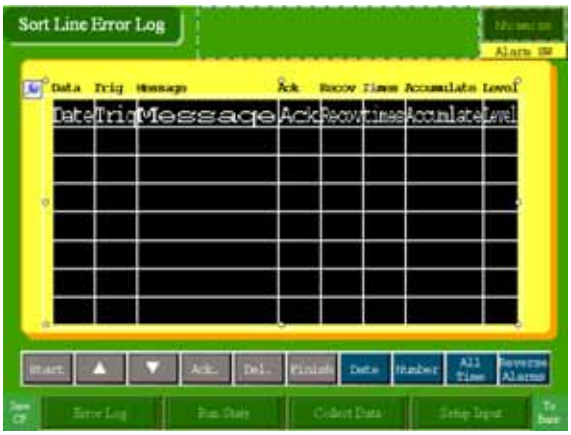
(8) Display Settings

① Set [Standard Font] for [Font Type] and [8 x 32 dot] for [Size].

Set [Outer Border + Horizontal Ruled Line] for [Show Border].



② Click [OK] to complete the settings.



(9) Checking the operation

After transferring the data, touch the Alarm switch on the upper right of the screen and check the display of the alarm history.

7.3

Sub Screen Display

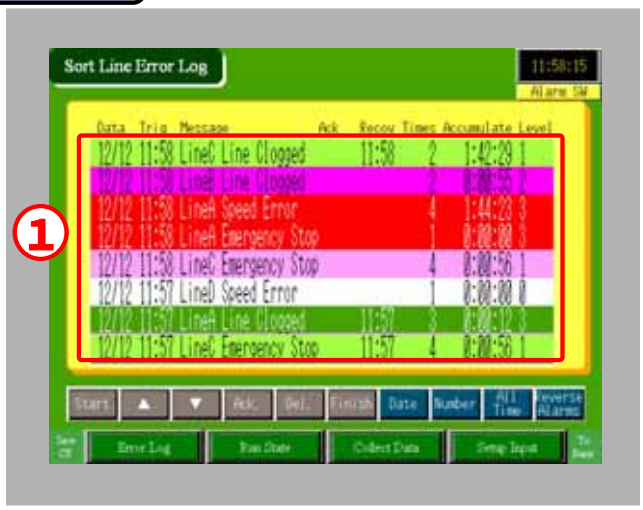
解説

How to display each alarm's details and remedy

In order to display details and remedy for each alarm message, use [Sub Display]. Directly touching the displayed alarm message causes the sub screen to display.

Operation Example of Sub Display

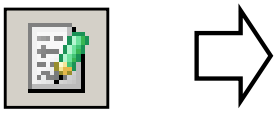
① Touch a displayed alarm message directly.

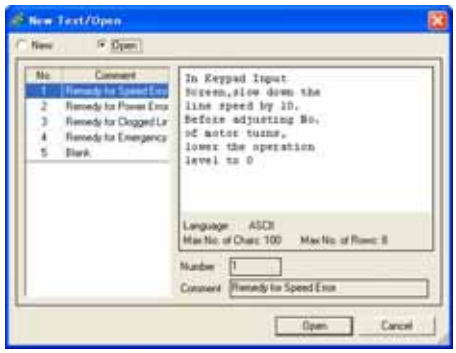


② The sub screen corresponding to the selected alarm message will display.

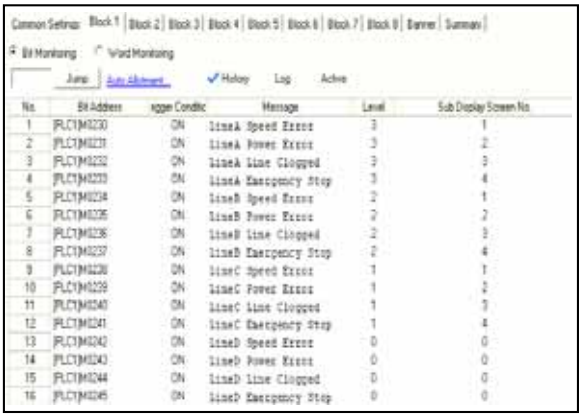
Sub Screen Display Setting Procedure

①Create a sub screen to be displayed (Text this time).

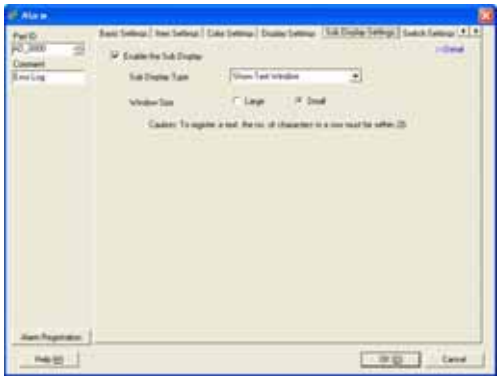




②Set the number of the text object to be displayed in [Sub Display Screen No.] of the Alarm Settings.



③Set the Alarm's [Sub Display Settings].



④Save the project and transfer it to the GP.

実習

Let's display each alarm message's details.

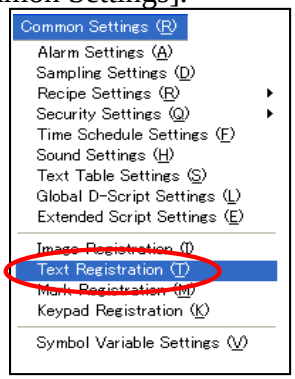
Let's touch each alarm message directly and display the details.

[Setup Flow]

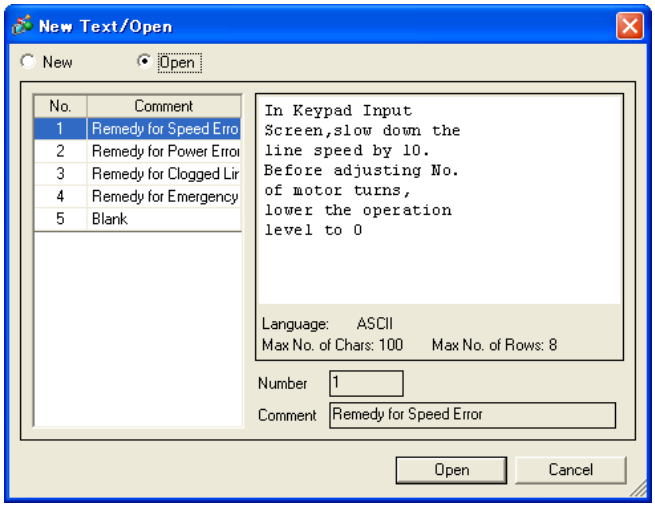
1. Create a sub screen.
2. Register the sub display screen No.
3. Set the Alarm's [Sub Display Settings].

(1) Creating a sub screen

Select [Text Registration] from the menu bar's [Common Settings].



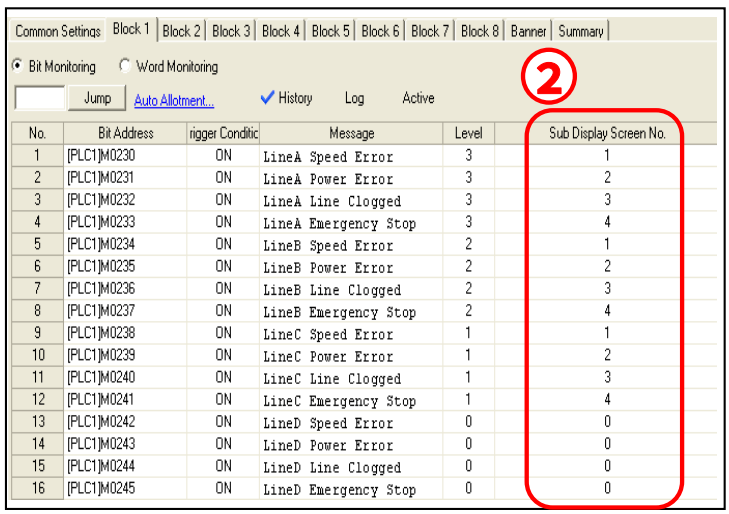
* For the data of this practice, Text (Sub Screen) has been registered in Text Registration.



(2) Setting Sub Display Screen Number

① Select [Alarm Settings] from the Tool Bar.

② Register [Sub Display Screen No.] in each alarm message as in the image at right.



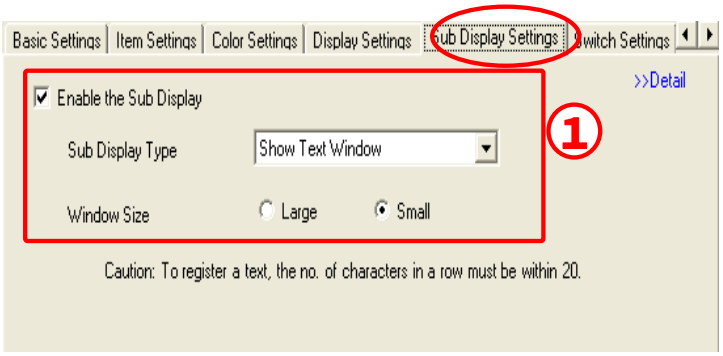
No.	Bit Address	rigger Conditic	Message	Level	Sub Display Screen No.
1	[PLC1]M0230	ON	LineA Speed Error	3	1
2	[PLC1]M0231	ON	LineA Power Error	3	2
3	[PLC1]M0232	ON	LineA Line Clogged	3	3
4	[PLC1]M0233	ON	LineA Emergency Stop	3	4
5	[PLC1]M0234	ON	LineB Speed Error	2	1
6	[PLC1]M0235	ON	LineB Power Error	2	2
7	[PLC1]M0236	ON	LineB Line Clogged	2	3
8	[PLC1]M0237	ON	LineB Emergency Stop	2	4
9	[PLC1]M0238	ON	LineC Speed Error	1	1
10	[PLC1]M0239	ON	LineC Power Error	1	2
11	[PLC1]M0240	ON	LineC Line Clogged	1	3
12	[PLC1]M0241	ON	LineC Emergency Stop	1	4
13	[PLC1]M0242	ON	LineD Speed Error	0	0
14	[PLC1]M0243	ON	LineD Power Error	0	0
15	[PLC1]M0244	ON	LineD Line Clogged	0	0
16	[PLC1]M0245	ON	LineD Emergency Stop	0	0

(3) Sub Display Settings

Open the base screen [7] and double-click the placed [Alarm].

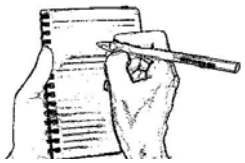
① Check [Enable the Sub Display] and set [Show Text Window] for [Sub Display Type] and [Small] for [Window Size].

② Click [OK] and complete the settings.



(4) Checking the operation

After transferring the data, touch the alarm message displayed on the screen and check that the sub screen appears.



7.4

Alarm Message Operation

実習

Let's interact with the alarm display.

Let's place the switch for handling alarm messages.

[Setup Flow]

1. Open the base screen [7].
2. Set the Alarm's [Switch Settings].

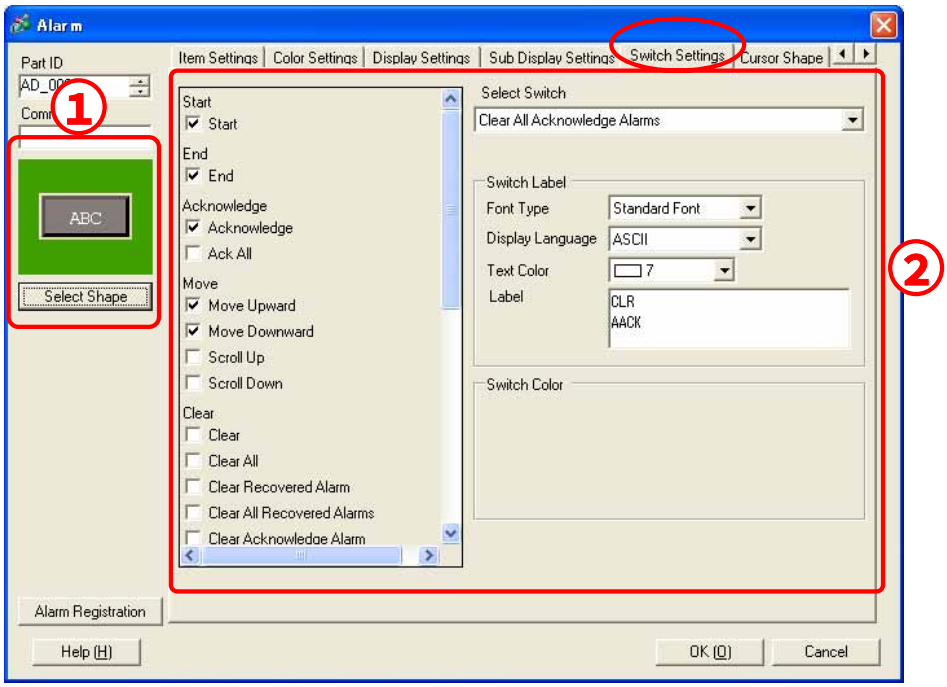
(1) Switch Settings

Open the base screen [7] and double-click the already placed [Alarm].

① Click [Select Shape] and select a desired picture for the switch to be placed.

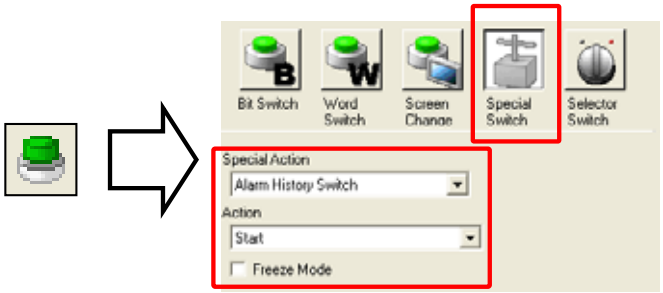
② Configure the items for the switch to be placed.

* For the the practice screen, a special switch is used and an operation switch is placed.



Hint!

The shape and color of the switch created with [Switch Settings] of [Alarm] are common for all. To set shapes and colors individually, use Switch Parts. Select [Switch]->[Special Switch]->[Alarm History Switch] and make settings.



Hint!

Alarm History Switch Types and Operations

Item Name		Details
Start		Pressing this Start key causes a cursor to appear in the Alarm and enables history operations. If Freeze Mode is enabled, touching the Start key twice holds the Alarm's display and even when alarms are triggered, acknowledged, or recovered, the display is not updated. In order to release the Freeze Mode, press the Finish key. When it's released, the alarms triggered, acknowledged, or recovered during the Freeze Mode are all displayed at one time.
End		This key ends key entry operations and the cursor disappears.
Ack	Acknowledge	Pressing the Ack key will record the current time as the Ack time on the selected message.
	Ack All	Pressing the Ack All key will attach (and display) the current time as the Ack time on all displayed messages.
Move	Move Upward	Moves the cursor up by one line.
	Move Downward	Moves the cursor down by one line.
	Scroll Up	Scrolls the displayed data up by the specified number of lines.
	Scroll Down	Scrolls the displayed data down by the specified number of lines.
Clear	Clear	Erases the currently selected messages.
	Clear All	Erases all the displayed messages.
	Clear Recovered Alarm	Recovered alarms will be erased from the currently selected messages.
	Clear All Recovered Alarms	Erases all the recovered alarms.
	Clear Acknowledge Alarm	Acknowledged alarms will be erased from the currently selected messages.
	Clear All Acknowledge Alarms	Erases all the acknowledged alarms.
	Clear Individual No. of Occurrences	Erases the occurrence count of the currently selected message.
	Clear All No. of Occurrences	Erases all occurrence counts.
	Clear Individual Accumulated Time	Erases the accumulated time of the currently selected message.
	Clear All Accumulated Time	Erases accumulated times for all messages.
Sort	In Reverse Order of Trigger Date	Displays the alarms in reverse order of trigger date.
	In No. of Occurrences Order	Displays the alarms in descending order by the number of occurrences.
	In Descending Order of Accumulated Time	Displays the alarms in descending order by the accumulated time of alarm occurrences.
	Level & In Reverse Order of Trigger Date	Displays alarms in descending order, according to the alarm levels. When multiple alarms have the same level, they are displayed in reverse order of trigger date.
	Level & In Descending Order of No. of Occurrences	Displays alarms in descending order, according to the alarm levels. When multiple alarms have the same level, the alarms are displayed in descending order by the number of alarm occurrences.
	Alarm Registration Order	Displays alarms in registration order of alarm settings.
	Reverse Order Display	Displays alarms in the reverse order of the sorting in the current display.
Sub Display		Displays the sub screen of the currently selected message.
Alarm No. acquisition		Acquires the alarm message No.(the number of lines that have been registered in [Alarm Settings]) on the cursor's position.

(2)Checking the operation

After transferring the data, check the operation of the switches on the alarm messages displayed on the screen.

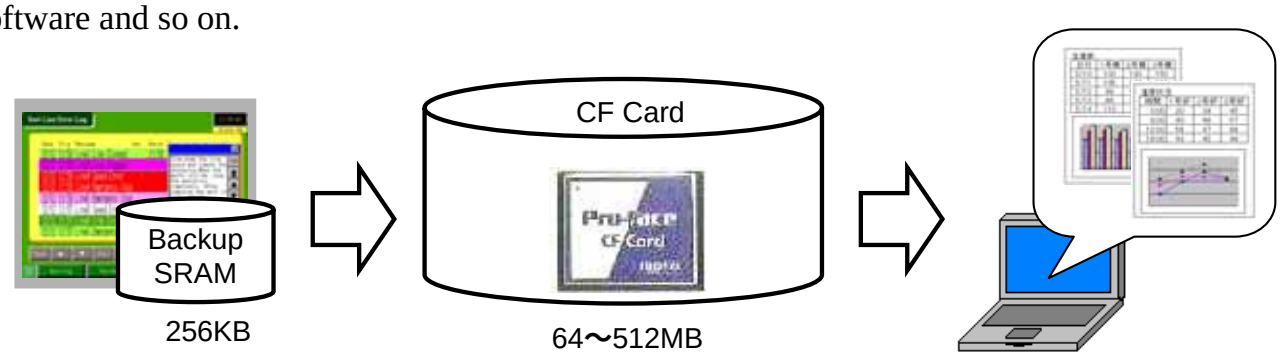
7.5

CF Card Storage Settings

解説

How to save data in the SRAM into the CF Card

To save a large quantity of information for a long time, save the data in the SRAM into the CF Card. The data is saved as a CSV file. Therefore, it's easy to edit it with PC-based spread-sheet software and so on.



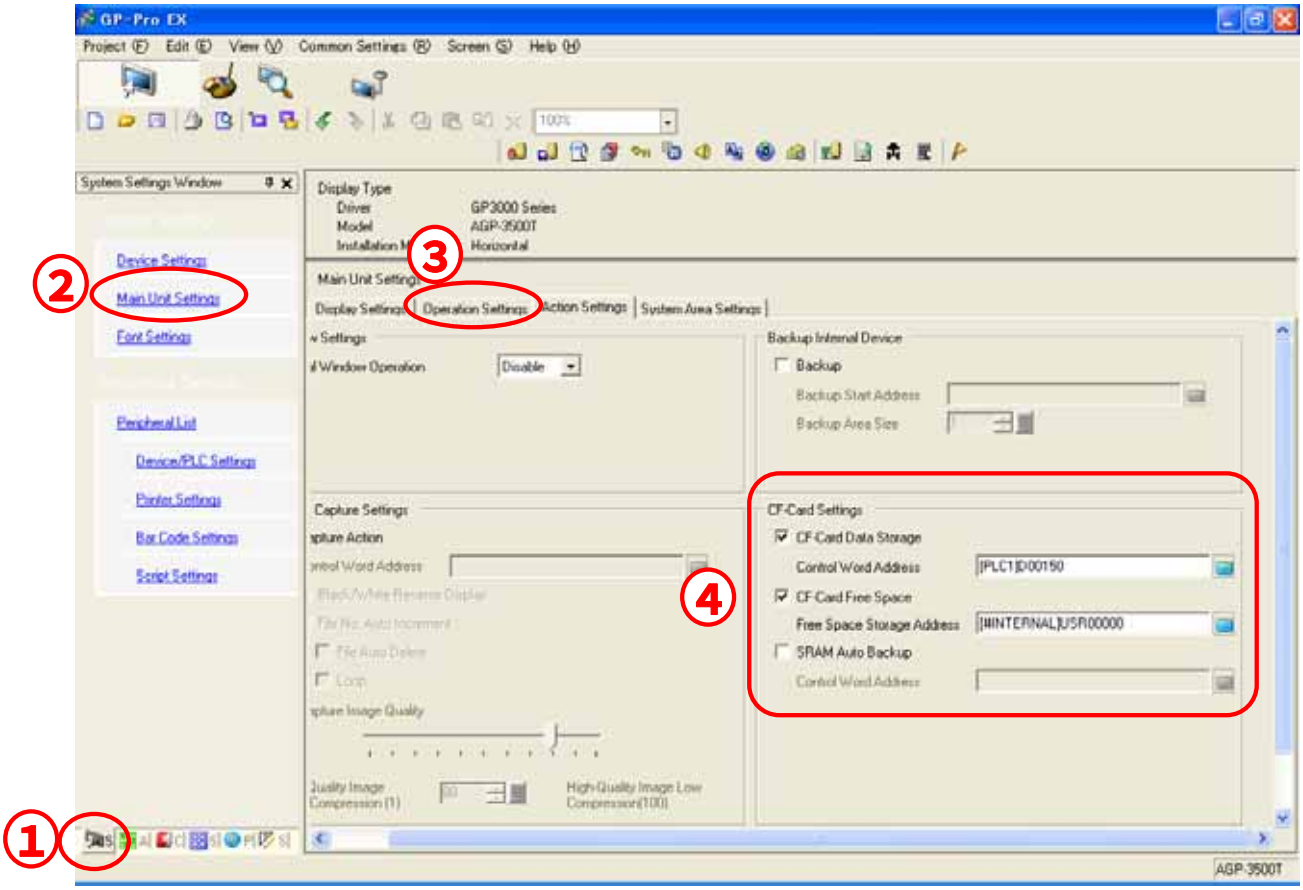
(1) Selecting CF Card Settings

① Select [System Settings Window] from the work space.

② Select [Main Unit Settings].

③ Select the [Operation Settings] tab.

④ Check [CF-Card Data Storage] and set the control word address.

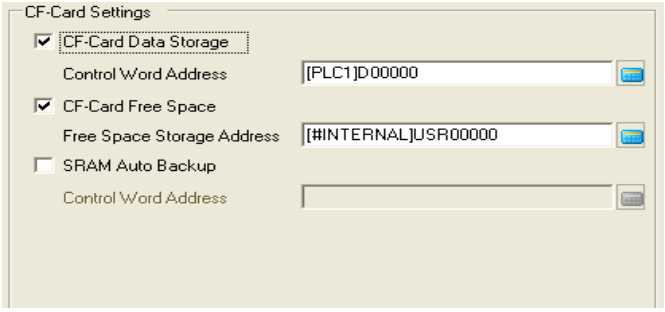


Note

For Sampling Data, the CF Storage Method differs. (For details, see P7-28)

(2) CF Card Data Storage

To copy the SRAM's data to the CF Card, write a [Command] to the control word address. The [Status] will overwrite this word as a result.
The word address of the control word + 1 is the address that designates the [File No.] in the CF Card.



Ex.) When the control word address is [D150],

Control Word Address	Command/Status	=D150
+1	File No.	=D151

Save the data of the alarm block 1 in the CF Card.

Save the alarm history data in the SRAM with the file No. 555 in the CF Card.

① D150 0000h
D151 **555** <-Write the file No. [555].

② D150 **0005h** <-Write the command [5h].
D151 555
*h=hexadecimal

SRAM → Project (CF Card)
The data is copied at this moment.

③ D150 **0000h** <-The status result [0h] is written by the GP. (Normal completion)
D151 555

The data is saved in the [ALARM] folder in the CF Card under the file name of [ZL00555.CSV].

Display Example of the spread-sheet software

	A	B	C	D	E	F	G	H
1	Number of Message(s)	9						
2								
3	Trigger Date	Trigger Tim	Message(s)	Acknowled	Recovery T	No. of occ.	Acc. time	Level
4	2005/12/12	12:14:57	LineB Power Error			1	0:00:00	2
5	2005/12/12	12:14:53	LineC Power Error		12:14:53	3	0:01:34	1
6	2005/12/12	12:14:51	LineD Power Error			2	0:00:56	0
7	2005/12/12	12:14:50	LineD Line Clogged			1	0:00:00	0
8	2005/12/12	12:14:49	LineA Power Error			3	0:01:16	3

Hint!

The contents of the CSV file can be displayed on the GP screen too. (For details, see P7-29)

(3) Command and Status Codes

When the [Command] is written to the control word address, the [Status] returns.

	Data	Details
Command	**0001h**	**Filing Data**
	0002h	For GP-PRO/PB**III** compatibility
	0003h	For GP-PRO/PB**III** compatibility
	0004h	For GP-PRO/PB**III** compatibility
	0005h	**Alarm History Block 1 Data**
	0006h	**Alarm History Block 2 Data**
	0007h	**Alarm History Block 3 Data**
	0008h	**Alarm History Block 4 Data**
	0009h	**Alarm History Block 5 Data**
	000Ah	**Alarm History Block 6 Data**
	000Bh	**Alarm History Block 7 Data**
	000Ch	**Alarm History Block 8 Data**
	0020h	For GP-PRO/PB**III** compatibility
	0021h	For GP-PRO/PB**III** compatibility
Status	**0000h**	**Normal Completion**
	0100h	**Write Error**
	0200h	**No CF Card or Not accessible**
	0300h	**Write Data does not exist**
	0400h	**File No. Error**

In the practice screen, [5h] is written and the data of the alarm history block 1 in the SRAM is saved into the CF Card.

(4) Folder and File Name of Alarm History Data

These are the folders and the file names in the CF Card where the alarm history data is written.

Folder Name	Data to be saved	File Name
¥ALARM	Block 1 Data	Z1*****.CSV
	Block 2 Data	Z2*****.CSV
	Block 3 Data	Z3*****.CSV
	Block 4 Data	Z4*****.CSV
	Block 5 Data	Z5*****.CSV
	Block 6 Data	Z6*****.CSV
	Block 7 Data	Z7*****.CSV
	Block 8 Data	Z8*****.CSV

Beside these, various kinds of folders can be created in the CF Card.
For details, refer to the Reference Manual.

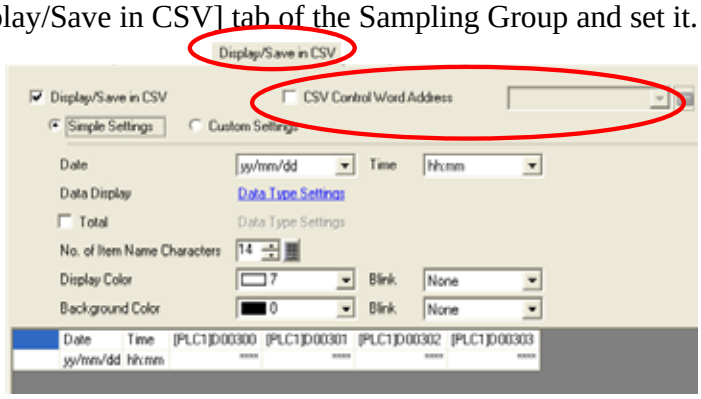
(5) CF Storage of Sampling Data

Set the address for CF Storage of sampling data in the place shown below.

*Refer to Chapter 9 for Sampling Data.

Check [CSV Control Word Address] in the [Display/Save in CSV] tab of the Sampling Group and set it.

Like the CF Card Data Storage of the System Settings, write a [Command] to the Control Word Address, and the [Status] will be written by the GP as a result.
The word address of the Control Word + 1 is the address that designates the [File No.] in the CF Card.



Ex.) When the control word address for Save in CSV is [D160],

Control Word Address for Save in CSV

	Command/Status =D160
+1	File No. =D161

***The operation method up to Save is the same as P7-26.**

(6) Command and Status Codes for Sampling Data

	Data	Details
Command	0001h	Normal Save
	0020h	Automatic Save Start
	0003h	Automatic Save End
Status	0000h	Normal Completion
	0100h	Write Error
	0200h	No CF Card or Not Accessible
	0300h	Write Data does not exist
	0400h	File No. Error
	2000h	Automatically being saved

In the practice screen, [20h] is written and the sampling data in the SRAM is automatically saved.

(7) Folder Name and File Name of Sampling Data

Folder Name	File Name
¥SAMP01 ～ ¥SAMP54	SA*****.CSV

Stored in the different folders of 1 to 64 for each sampling group.

Important notes

Use a different address from the control address of [CF Card Data Storage] in the System Settings. If the same address is used, incorrect operation may result.

Hint!

About Save CF Card Screen, CSV Display Screen

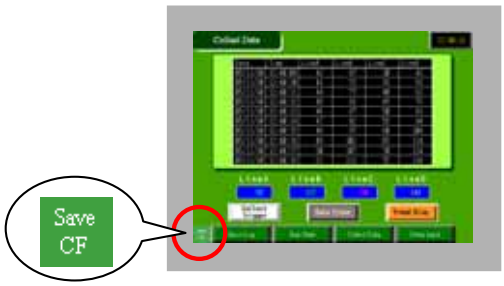
Execute [File No.] and [Command] from the GP screen and save the data of the SRAM into the CF Card. Then select the file in the CF Card on the CSV Display Screen and display it.

*How to open the Save CF Screen

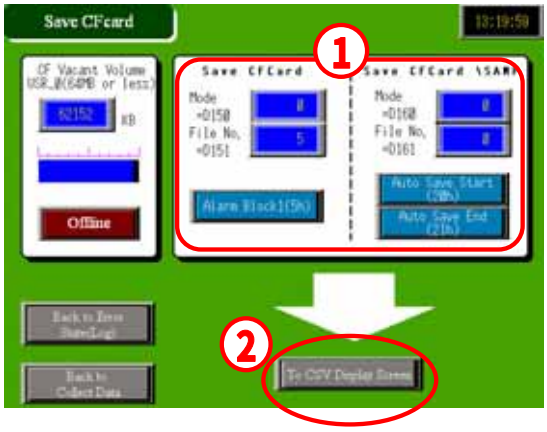
Touch the characters of [Save CF] at the bottom left of the base screen [7] or [9], and the screen will change to the Save CF Card screen.

B7 Alarm History Screen

B9 Data-Collecting Screen



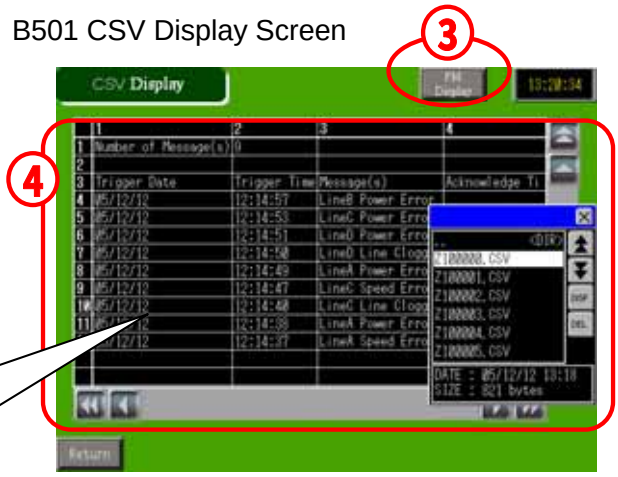
B500 Save CF Card Screen



① Write [File No.] and [Command] via the word switch.

② Check the status and if it's Normal Completion, go to the CSV Display Screen.

B501 CSV Display Screen



③ Select the folder and the file in the CF Card from the file manager display.

④ Check the data displayed in the CSV Display.

Using the file manager display and the CSV Display, you can display and edit the details of the CSV file on the GP screen.