

**SYSMAC**  
**WS02-LCMC1-EV2**

# **CX-Process Monitor Plus** **(Ver. 2)**

# **OPERATION MANUAL**

**OMRON**

# **WS02-LCMC1-EV2**

## **CX-Process Monitor Plus (Ver. 2)**

### **Operation Manual**

*Revised January 2007*



## Notice:

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

-  **DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
-  **WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
-  **Caution** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

## OMRON Product References

All OMRON products are capitalized in this manual. The word “Unit” is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation “Ch,” which appears in some displays and on some OMRON products, often means “word” and is abbreviated “Wd” in documentation in this sense.

The abbreviation “PLC” means Programmable Controller. “PC” is used, however, in some Programming Device displays to mean Programmable Controller.

## Visual Aids

The following headings appear in the left column of the manual to help you locate different types of information.

**Note** Indicates information of particular interest for efficient and convenient operation of the product.

**1,2,3...** 1. Indicates lists of one sort or another, such as procedures, checklists, etc.

## Before Installing the CX-Process Monitor Plus

Installing the CX-Process Monitor Plus signifies that you accept the software user’s license agreement displayed during the installation process. Do not install this software if you do not accept the user’s license agreement. Warranty and after-sales services are available only to users that register with the enclosed registration form. Please fill in the registration form and return it to OMRON.

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## About this Manual:

This manual describes the installation and operation of the WS02-LCMC1-EV2 CX-Process Monitor Plus software package and includes the sections described below. The CX-Process Monitor Plus is used to control and monitor the operation of the CS1W-LC001 Loop Control Unit, the CS1W-LCB01 Loop Control Board, the CS1W-LCB05 Loop Control Board, the CS1D-CPU□□P Process-control CPU Units, and the CJ1G-CPU□□P Loop-control CPU Units.

Please read this manual carefully and be sure you understand the information provided before attempting to install and operate the CX-Process Monitor Plus. Please read the following manuals carefully and be sure you understand the information provided before setting up or using an application for a Loop Control Unit or Loop Control Board.

| Product                                                                                                                               | Manual name                                         | Cat. No.           | Contents                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------|
| WS02-LCMC1-EV2                                                                                                                        | CX-Process Monitor Plus Operation Manual            | W428 (this manual) | Installation and operation procedures for the CX-Process Monitor Plus.                          |
| WS02-LCTC1-EV5<br>CX-Process Tool                                                                                                     | CX-Process Tool Operation Manual                    | W372               | Installation and operation procedures for the CX-Process Tool.                                  |
| CS1W-LC001<br>Loop Control Unit                                                                                                       | Loop Control Unit Operation Manual                  | W374               | Installation and operation procedures for the Loop Control Unit (except for function blocks).   |
| CS1W-LCB01/05<br>Loop Control Boards,<br>CS1D-CPU□□P<br>Process-control CPU<br>Units, and<br>CJ1G-CPU□□P<br>Loop-control CPU<br>Units | Loop Control Boards Operation Manual                | W406               | Installation and operation procedures for the Loop Control Boards (except for function blocks). |
| CS1W-LC001<br>Loop Control Unit                                                                                                       | Loop Control Unit Function Block Reference Manual   | W375               | Detailed information on function blocks for Loop Control Units.                                 |
| CS1W-LCB01/05<br>Loop Control Boards,<br>CS1D-CPU□□P<br>Process-control CPU<br>Units, and<br>CJ1G-CPU□□P<br>Loop-control CPU<br>Units | Loop Control Boards Function Block Reference Manual | W407               | Detailed information on function blocks for Loop Control Boards.                                |

**Section 1** introduces the CX-Process Monitor Plus.

**Section 2** describes installing the CX-Process Monitor Plus and connections to the PLC.

**Section 3** described data exchange for the CX-Process Monitor Plus

**Section 4** describes the monitor screens used with the CX-Process Monitor Plus.

**Section 5** describes the procedures to create screens and monitor using the CX-Process Monitor Plus.

**Section 6** describes errors that can occur while using the CX-Process Monitor Plus.

The **Appendix** provides a list of ITEM settings for function blocks.



**WARNING** Failure to read and understand the information provided in this manual may result in personal injury or death, damage to the product, or product failure. Please read each section in its entirety and be sure you understand the information provided in the section and related sections before attempting any of the procedures or operations given.





# PRECAUTIONS

This section provides general precautions for using the CX-Process Monitor Plus.

**The information contained in this section is important for the safe and reliable application of the CX-Process Monitor Plus. You must read this section and understand the information contained before attempting to set up or operate the CX-Process Monitor Plus.**

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## 1 Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent) and knowledge about instrumentation system.

- Personnel in charge of installing FA systems.
- Personnel in charge of designing FA systems.
- Personnel in charge of managing FA systems and facilities.

## 2 General Precautions

The user must operate the product according to the performance specifications described in the operation manuals.

Before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, petrochemical plants, and other systems, machines, and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.

Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.

This manual provides information for programming and operating the Unit. Be sure to read this manual before attempting to use the Unit and keep this manual close at hand for reference during operation.

 **WARNING** It is extremely important that a PC and all PC Units be used for the specified purpose and under the specified conditions, especially in applications that can directly or indirectly affect human life. You must consult with your OMRON representative before applying a PC System to the above-mentioned applications.

## 3 Safety Precautions

 **WARNING** Check the following items before starting Loop Control Unit operation:

Analog I/O Units used in combination with the Loop Control Unit must be mounted correctly, and the unit number set on the front panel of the Analog I/O Unit must be the same as the unit number set on the Field Terminal Function Block. If the unit numbers are not the same, I/O (read/write) will be performed on the data for another Special I/O Unit (i.e., the one whose unit number is set in the Field Terminal Function Block).

The initial settings of the System Common Block on the Loop Control Unit must be set correctly. In particular, make sure that the Data Memory for the Node Terminals in the CPU Unit controlling the Loop Control Unit is not used for other applications on the PC. If the same words in Data Memory are used for more than one application, the PC system may act unexpectedly and cause injury.

When writing data to the I/O memory in the CPU Unit with function blocks (e.g., using Send All Blocks, Expanded DO/AO Terminal to CPU Unit, or DO/AO Terminal to CPU Unit), be sure that the words written to in the I/O memory are not being used for any other purpose. If I/O memory words are allocated to more than one purpose, the PC system may act unexpectedly and cause injury.

 **WARNING** Check the following items before starting to run the Loop Control Board:

- Do not allow the bank of the EM Area with the number specified for allocation to the HMI (human-machine interface) data to be used by the CPU Unit or other Units for any other purpose. The bank allocated for the HMI is specified in ITEM 050 (EM Area Bank Allocated for HMI Memory = 0 to 12) of the System Common block. If the same memory area is used for more than one purpose, the system may operate in an unexpected fashion, which may result in injury.
- Do not allow the area to which user link table data is written to be used by the CPU Unit or other Units for any other purpose. If the same memory area is used for more than one purpose, the system may operate in an unexpected fashion, which may result in injury.
- Analog Input/Output Units used in combination with the Loop Control Board must be mounted correctly, and the unit number set on the front panel of the Analog Input/Output Unit must match the unit number set on the Field Terminal block. If the unit numbers do not match, input/output (read/write) will be performed on the data of another Special I/O Unit (i.e., the one whose unit number is set on the Field Terminal block).
- The defaults of the System Common block on the Loop Control Board must be set correctly.

 **WARNING** Always stop the operation of the Loop Control Board before converting any of the EM Area to file memory. If any part of the EM Area that is being used by the Loop Control Board for the HMI is converted to file memory during Board operation, the system may operate in an unexpected fashion, which may result in injury.

 **WARNING** Do not perform processing in such a way that the Loop Control Unit/Board and CPU Unit write to identical I/O memory words allocated to a contact output or analog output of an external Unit. If the same words are written to, the externally connected loads may act unexpectedly and cause injury.

 **WARNING** Fail-safe measures must be taken by the customer to ensure safety in the event of incorrect, missing, or abnormal signals caused by broken signal lines, momentary power interruptions, or other causes.

 **Caution** Before transferring function block data (initial setting data or operation data) to the Loop Control Unit/Board, confirm that the destination for the data is correct and also confirm the overall safety of the system (including the Loop Control Unit/Board). Not doing so may result in unexpected operation.

-  **Caution** After updating the tag settings or network configuration for CX-Process Monitor Plus, always confirm that the Monitor Plus screens will operate properly with the new settings or configuration before attempting actual operation. If the settings or configuration is not appropriate, unexpected operation may result.

## 4 Application Precautions

Observe the following precautions when using CX-Process Monitor Plus.

-  **Caution** Loop Control Unit/Board data is monitored and operated using CX-Process Monitor Plus based on the tag files for Monitor Plus created using CX-Process Tool. CX-Process Tool can be used on Microsoft Windows 95, 98, Me, 2000, or NT (Service Pack 4 or later). CX-Process Tool Ver. 3.2 or higher must be used to output tag files for the CX-Process Monitor Plus.
-  **Caution** Before using function block data in actual operation, confirm operation by monitoring run status (to check the load rate; select **Execute/Operation/Monitor Run Status**) and validating actions (select **Validate Action/Start**) with CX-Process Tool. In particular, be sure to confirm that the load rate will be less than 60%. (For details on the load rate, refer to the *Loop Control Unit/Board Operation Manual*.)
-  **Caution** The Loop Control Unit/Board can read and write I/O memory in the CPU Unit using the Field Terminal Function Blocks or CPU Terminal Blocks independent of the user program (Step Ladder Program) in the CPU Unit. Do not write to the same I/O memory words from both the Loop Control Unit/Board and the CPU Unit.
-  **Caution** To hold an analog output or contact output at a specific value (for example, the maximum value or minimum value) when the Loop Control Unit/Board stops running, create a Step Ladder Program in the CPU Unit so that the corresponding output bit allocated to Analog Output Unit or Contact Output Unit is set to the desired value using an NC condition of the Loop Control Unit/Board Running Flag (bit 00 in allocated CIO word “n”) as an input condition.
-  **Caution** If a fatal error occurs in the CPU Unit (including fatal errors created by execution of an FALS instruction), the Loop Control Unit/Board will also stop running. To hold analog outputs to the previous values before the stop occurred, and to set analog outputs to either the minimum value or maximum value, use the output hold function of the Analog Output Unit or Analog I/O Unit.
-  **Caution** Before turning ON the power to the PC, make sure that the facilities are safe. The analog output values and contact outputs from the Loop Control Unit/Board are updated when the power to the PC is turned ON regardless of the operating mode of the CPU Unit (including in the PROGRAM mode). (Internally, the analog output values and contact outputs are sent from the CPU Unit to Basic I/O Units and Analog Output Units.)
-  **Caution** Fail-safe measures must be taken by the customer to ensure safety in the event of incorrect, missing, or abnormal signals caused by broken signal lines, momentary power interruptions, or other causes.

 **Caution** Confirm that no adverse effect will occur in the system before attempting any of the following:

- Changing the operating mode of the PC (including the setting of the Start-up Mode)
- Force-setting/force-resetting any bit in memory
- Changing the present value or any set value in memory

 **Caution** Be sure that all mounting screws, terminal screws, and cable connector screws are tightened to the torque specified in the user manuals. Incorrect tightening torque may result in malfunction.

 **Caution** In the event of system or power failure, CX-Process function files (extension “.ist”) may not be saved. It is recommended that function files are saved regularly.

 **Caution** If the power supply is turned OFF while function block data is being backed up from RAM to flash memory, the backup will not be completed normally. If the power supply is turned back ON within 24 hours, however, the super capacitor will have held the RAM data. The backup operation will restart when power is turned ON and operation will start when the backup has been completed. If the power supply is turned OFF for more than 24 hours, however, RAM data will be lost and operation will be started with the data that was previously saved to flash memory. If this happens, the Cold Start Auto-execution Flag (A35807) will turn ON to show that the previous data has been used. Use this bit in programming to take whatever steps are necessary, such as downloading the most recent function block data.



# SECTION 1

## Introduction

This section introduces the CX-Process Monitor Plus.

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## 1-1 CX-Process Monitor Plus

### 1-1-1 Outline

The CX-Process Monitor Plus is a Windows NT-based application that monitors the Function Block data within a Loop Control Unit/Board using Control screens (on-site instrument images), Trend screens, Graphic screens, and Annunciator screens, etc., via the Controller Link, serial communications, or Ethernet. The CX-Process Monitor Plus is used together with the CX-Process Tool to create function blocks for Loop Control Units/Boards.

You can also perform the following four functions.

#### **Monitoring Function Blocks in a Loop Control Unit/Board**

Monitor PV, SP, and MV, etc., within the Control Block, monitor analog signals, and monitor contact signals.

Perform Run/Stop instructions in the Loop Control Unit/Board.

Display the status of the CPU Unit, such as the current operating mode.

#### **Controlling Function Blocks in a Loop Control Unit/Board**

Change settings, switch between auto and manual, and perform manual operations, tune PID constants, etc., in the Control Block.

You can perform stop block operation commands for each Control Block (when using the Tuning screen).

#### **Monitoring Function Block Alarm Status in a Loop Control Unit/Board**

Display Control Block and Alarm Block alarms if they occur, and store the alarms in the alarm history.

#### **Configuring CX-Process Monitor Plus Screens**

You can configure the screen to suit your needs.

## CX-Process Monitor Plus Functions

| ---                  | Screen             | Monitoring operating status                                                                                                                                                                    | Controlling operation                                                     | Monitoring alarm status                                     |
|----------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------|
| User-defined screens | Overview           | ---                                                                                                                                                                                            | ---                                                                       | OK                                                          |
|                      | Control            | OK (Display PV bar)                                                                                                                                                                            | OK (Change SP, switch between auto/manual, and perform manual operations) | OK                                                          |
|                      | Tuning             | OK (Display PV, SP, and MV trends for 1 loop)                                                                                                                                                  | OK (Change SP, and change P, I, D, etc.)                                  | OK (Change bar graph colors)                                |
|                      | Trend              | OK (Display Control Block or analog signal trends)                                                                                                                                             | ---                                                                       | OK                                                          |
|                      | Batch Trend        | OK (Display Control Block or analog signal trends)                                                                                                                                             | ---                                                                       | ---                                                         |
|                      | Segment Program 2  | OK (Display Segment Program 2 trends)                                                                                                                                                          | OK (Run/stop operation at the relevant Segment Program 2 Block)           | OK (Errors related to the relevant Segment Program 2 Block) |
|                      | Graphic            | OK (Display status for contact or analog signal graphics)                                                                                                                                      | OK (Turn ON/OFF the contact, and set the analog value)                    | OK                                                          |
|                      | Annunciator        | ---                                                                                                                                                                                            | ---                                                                       | OK (Use colors or sound to notify of an alarm)              |
|                      | Operation Guide    | OK (Display message when Internal Switch is turned ON)                                                                                                                                         | ---                                                                       | OK                                                          |
|                      | System Monitor     | OK (Display the run/stop status for the Loop Control Unit/Board, display Execution errors, RAM checksum errors, and battery errors, and monitor the status of the CPU Unit control mode, etc.) | OK (Run/stop command for the Loop Control Unit/Board)                     | OK                                                          |
| System screens       | Alarm Log          | ---                                                                                                                                                                                            | ---                                                                       | OK (Stored when an alarm occurs)                            |
|                      | Operation Log      | ---                                                                                                                                                                                            | OK (Stores run operation history, e.g., SP change, etc.)                  | OK                                                          |
|                      | System Monitor Log | OK (Displays run/stop command history and Execution error history when an error occurs)                                                                                                        | ---                                                                       | OK                                                          |

**Note** Only the following data can be monitored and set with the CX-Process Monitor Plus and tag names must be set to enable monitoring and setting. Use CX-Process Tool Ver. 3.2 or higher to set the tag names.

| Data set/monitored by CX-Process Monitor Plus |                       | Loop Control Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Loop Control Board |
|-----------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Function block data                           |                       | Control Blocks:<br>Basic PID (Block Model 011), Advanced PID (Block Model 012), Blended PID (Block Model 013), Batch Flowrate Capture (Block Model 014), Indication and Setting (Block Model 031), Indication and Operation (Block Model 032), Ratio Setting (Block Model 033), Indicator (Block Model 034), 2-position ON/OFF (Block Model 001), and 3-position ON/OFF (Block Model 002)<br><br>Operation Blocks:<br>High/Low Alarm (Block Model 111), Segment Program 2 (Block Model 157), ON/OFF Valve Manipulator (Block Model 221), Motor Manipulator (Block Model 222), Reversible Motor Manipulator (Block Model 223), Motor Opening Manipulator (Block Model 224), Timer (Block Model 205) and Counter (Block Model 208) |                    |
| Contact signals                               |                       | Contact signals through Contact Distributor (Block Model 201) + Internal Switch (Block Model 209)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |
| Analog signals                                | Sent to Monitor Plus  | Analog signals through Input Selector (Block Model 162)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |
|                                               | Set from Monitor Plus | Analog signals through Constant Generator (Block Model 166)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |

## 1-1-2 Screen Outlines

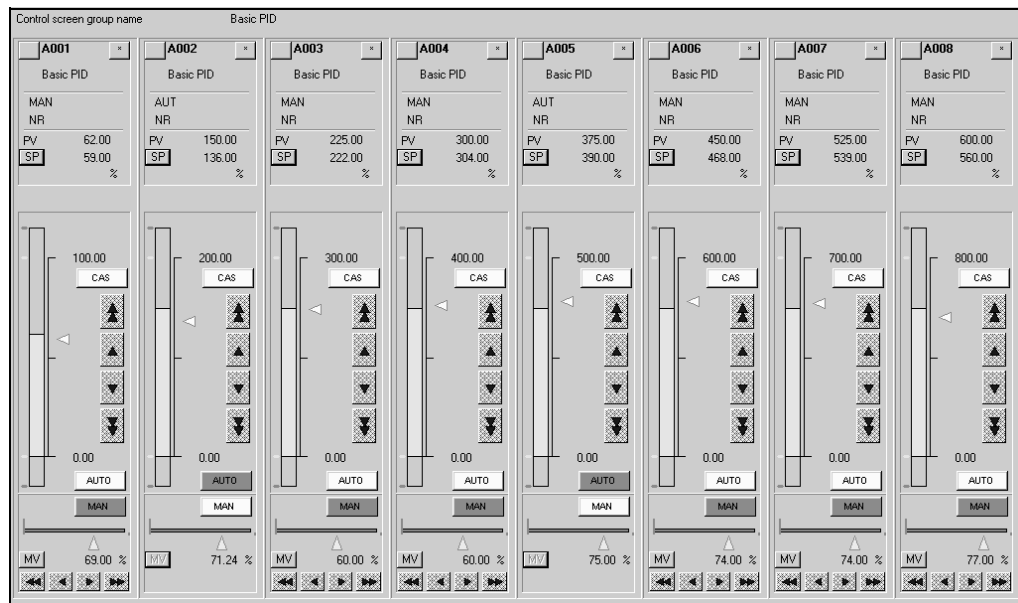
### Overview Screen

Possesses the functions of all menu screens and alarm display screens.



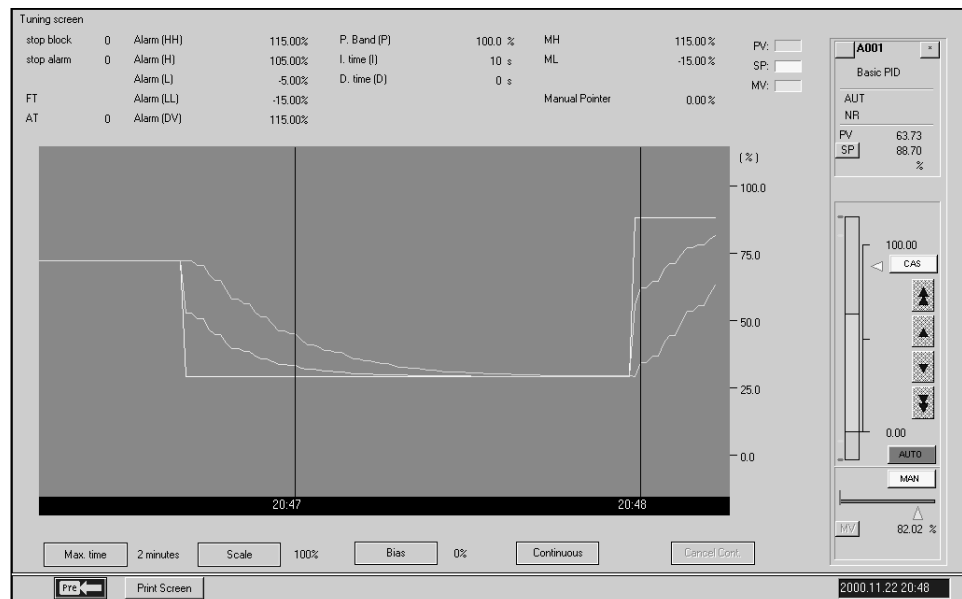
## Control Screens

Monitor and set the Control Block and part of the Operation Block, monitor analog signals, and monitor and set contact signals.



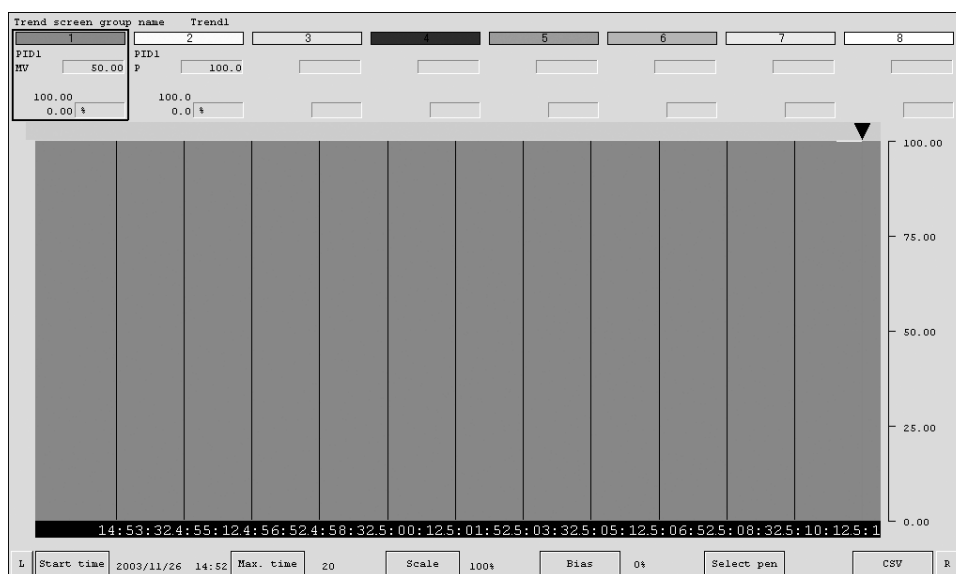
## Tuning Screens

Use this screen to change Control Block P, I, D constants.



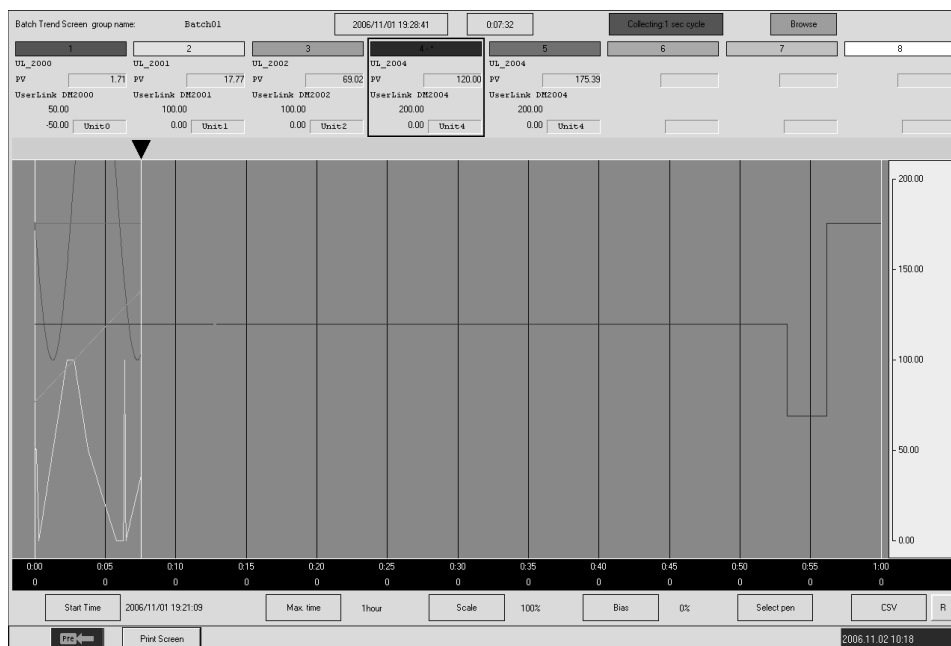
## Trend Screens

Display as an image changes due to the passage to time of the Control Block PV, SP, MV, or other analog signals.



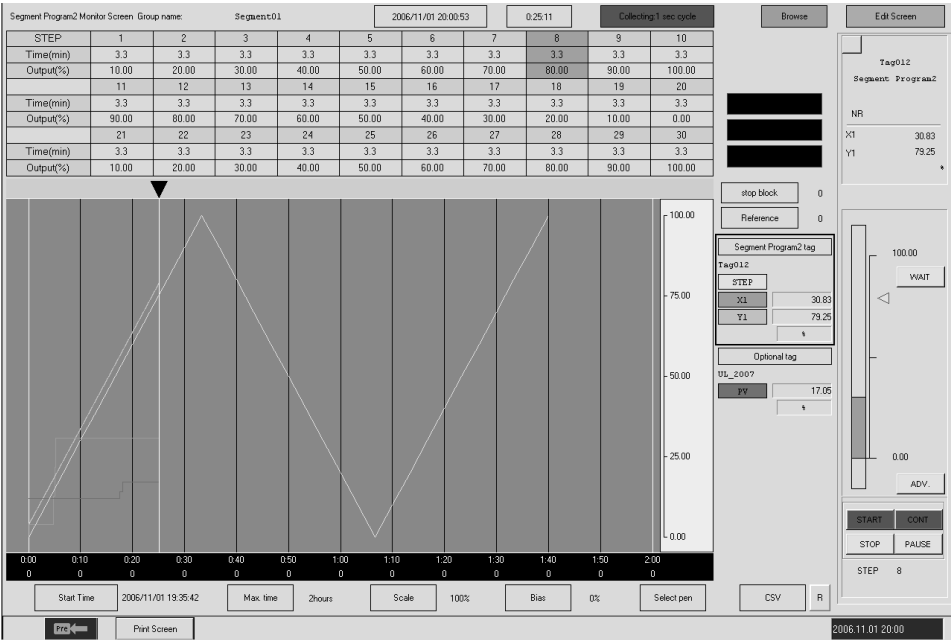
## Batch Trend Screens

Display a recorder image of the changes over time of the Control Block PV, SP, MV, or other analog signals. Trend sampling is started and ended with tag data (digital or analog) as the trigger.



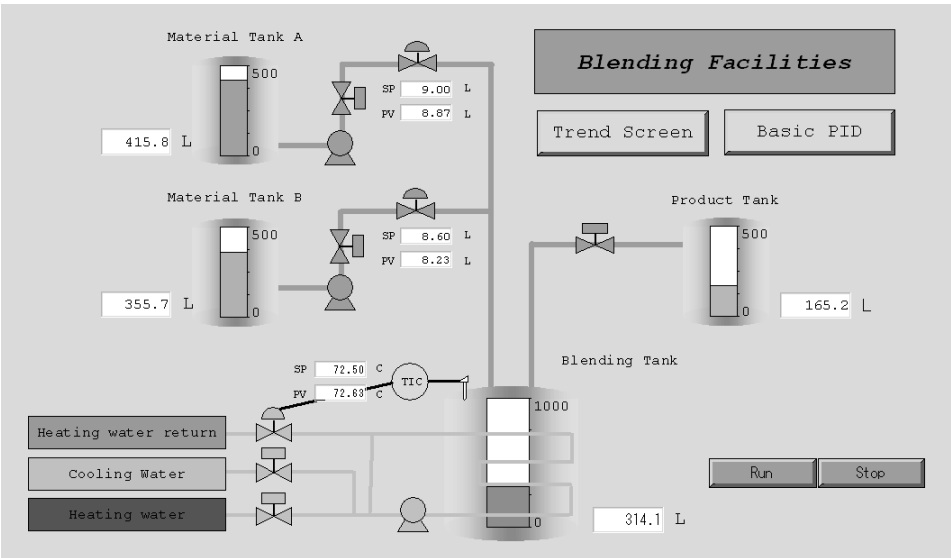
Segment Program 2 Screens

Display a recorder image of PV trends for Segment Program 2 (Block Model 157) set values. Segments can be set in table format while observing a time axis graph.



Graphic Screens

Use the screen to display the device status as a schematic.



**Annunciator Screens**

Use this screen to display comprehensively the status (mainly the alarm status) of the contacts.

Annunciator screen group name: Alarm Test

| Alarm Test       |                  |            |  |
|------------------|------------------|------------|--|
| Tank HH Alarm    | Tank L Alarm     | Tank Empty |  |
| Tank LL Alarm    | LiquidFlow Alarm | Tank Full  |  |
| LiquidLeak Alarm |                  |            |  |
| Tank H Alarm     |                  |            |  |

Reset Check

2000.11.22 11:03

**Operation Guide Screens**

Use this screen to display registered messages when the contact signal is ON.

Operation Guide Message screen DpgLog Mess 01 01/01

| Message                                                                     | Message MID |
|-----------------------------------------------------------------------------|-------------|
| 2000.11.15 14:39:11 Message TOP                                             | Message MID |
| 2000.11.15 14:39:09 Omron Technocult Co., LTD I Project Masamitsu Shibayama | Message MID |
| 2000.11.15 11:08:24 Message TOP                                             | Message MID |
| 2000.11.15 11:08:22 Omron Technocult Co., LTD I Project Masamitsu Shibayama | Message MID |
| 2000.11.15 10:16:41 Message TOP                                             | Message MID |
| 2000.11.15 10:16:39 Omron Technocult Co., LTD I Project Masamitsu Shibayama | Message MID |
| 2000.11.15 10:12:58 Message TOP                                             | Message MID |
| 2000.11.15 10:12:54 Omron Technocult Co., LTD I Project Masamitsu Shibayama | Message MID |

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2000.11.22 20:50

## Alarm Log Screens

Use this screen to display the alarm history.

| Alarm Log screen group name |         | AlnLog Mess 01   |         | 01/04                           |  |
|-----------------------------|---------|------------------|---------|---------------------------------|--|
| 2000.11.22 14:36:20         | b031    | Blend-PID        | 0.00 %  | Deviation Low limit alarm reset |  |
| 2000.11.22 14:36:20         | B030    | 3-positionON/OFF | 0.00 %  | PV Low limit alarm occurred     |  |
| 2000.11.21 19:09:12         | dummy-2 | dummy-2          | 15.00 % | PV Low/Low limit alarm reset    |  |
| 2000.11.21 19:09:12         | dummyt  | dummyt           | 15.00 % | PV Low/Low limit alarm reset    |  |
| 2000.11.21 19:09:12         | A006    | Basic PID        | 90.00 % | PV Low/Low limit alarm reset    |  |
| 2000.11.21 19:09:12         | A001    | Basic PID        | 15.00 % | PV Low/Low limit alarm reset    |  |
| 2000.11.21 19:08:58         | A006    | Basic PID        | 90.00 % | PV Low/Low limit alarm occurred |  |
| 2000.11.21 19:08:58         | A001    | Basic PID        | 15.00 % | PV Low/Low limit alarm occurred |  |
| 2000.11.21 19:08:56         | dummy-2 | dummy-2          | 15.00 % | PV Low/Low limit alarm occurred |  |
| 2000.11.21 19:08:56         | dummyt  | dummyt           | 15.00 % | PV Low/Low limit alarm occurred |  |
| 2000.11.21 19:07:38         | A006    | Basic PID        | 90.00 % | PV Low/Low limit alarm reset    |  |
| 2000.11.21 19:07:38         | A001    | Basic PID        | 15.00 % | PV Low/Low limit alarm reset    |  |
| 2000.11.21 19:07:36         | dummy-2 | dummy-2          | 15.00 % | PV Low/Low limit alarm reset    |  |
| 2000.11.21 19:07:36         | dummyt  | dummyt           | 15.00 % | PV Low/Low limit alarm reset    |  |
| 2000.11.21 18:38:03         | A006    | Basic PID        | 90.00 % | PV Low/Low limit alarm occurred |  |
| 2000.11.21 18:38:03         | A001    | Basic PID        | 15.00 % | PV Low/Low limit alarm occurred |  |
| 2000.11.21 18:38:02         | dummy-2 | dummy-2          | 15.00 % | PV Low/Low limit alarm occurred |  |
| 2000.11.21 18:38:02         | dummyt  | dummyt           | 15.00 % | PV Low/Low limit alarm occurred |  |
| 2000.11.21 18:37:53         | A006    | Basic PID        | 90.00 % | PV Low limit alarm reset        |  |
| 2000.11.21 18:37:53         | A001    | Basic PID        | 15.00 % | PV Low limit alarm reset        |  |

CSV

ALL

HEAVY

LIGHT

CONTINUE

PREV PAGE

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PRC

Print Screen

Print

2000.11.22 20:51

## Operation Log Screens

Use this screen to display the operation history.

| Operation Log screen group name |      | Control Mess 01 |        | 01/08 |         |
|---------------------------------|------|-----------------|--------|-------|---------|
| 2000.11.22 20:47:56             | A001 | Basic PID       | LP_SP  | 88.70 | 29.00 % |
| 2000.11.22 20:46:39             | A001 | Basic PID       | LP_SP  | 29.70 | 72.00 % |
| 2000.11.22 20:45:03             | A001 | Basic PID       | LP_SP  | 72.70 | 87.00 % |
| 2000.11.22 20:45:03             | A001 | Basic PID       | LP_SP  | 73.70 | 87.00 % |
| 2000.11.22 20:45:02             | A001 | Basic PID       | LP_SP  | 74.70 | 87.00 % |
| 2000.11.22 20:45:02             | A001 | Basic PID       | LP_SP  | 75.70 | 87.00 % |
| 2000.11.22 20:45:02             | A001 | Basic PID       | LP_SP  | 76.70 | 87.00 % |
| 2000.11.22 20:45:02             | A001 | Basic PID       | LP_SP  | 77.70 | 87.00 % |
| 2000.11.22 20:44:55             | A001 | Basic PID       | LP_SP  | 87.70 | 81.00 % |
| 2000.11.22 20:44:52             | A001 | Basic PID       | LP_SP  | 81.70 | 45.00 % |
| 2000.11.22 20:44:47             | A001 | Basic PID       | LP_SP  | 45.70 | 29.00 % |
| 2000.11.22 20:43:46             | A001 | Basic PID       | LP_SP  | 29.70 | 66.00 % |
| 2000.11.22 20:43:40             | A001 | Basic PID       | A/M_SW | 1     | 1 %     |
| 2000.11.22 20:43:40             | A001 | Basic PID       | R/L_SW | 0     | 1 %     |
| 2000.11.22 16:30:15             | A001 | Basic PID       | A/M_SW | 1     | 1 %     |
| 2000.11.22 16:30:15             | A001 | Basic PID       | R/L_SW | 0     | 0 %     |
| 2000.11.22 15:53:45             | A001 | Basic PID       | LP_SP  | 80.00 | 0.00 %  |
| 2000.11.22 15:27:12             | A001 | Basic PID       | LP_SP  | 0.00  | 80.00 % |
| 2000.11.22 15:27:11             | A001 | Basic PID       | LP_SP  | 1.00  | 80.00 % |
| 2000.11.22 15:27:10             | A001 | Basic PID       | LP_SP  | -7.00 | 80.00 % |

CSV

PREV PAGE

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2000.11.22 20:52



**System Monitor Screens**

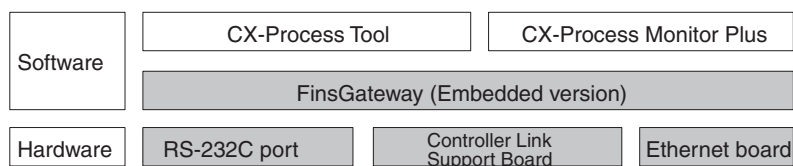
Use this screen to display the system status, and run/stop the Loop Control Unit/Board.

**System Monitor Log Screens**

Use this screen to display the run/stop history and Execution error history, and to record the time at which they occurred.

**1-1-3 CX-Process Monitor Plus System Requirements****FinsGateway**

As shown below, the CX-Process Monitor Plus uses the communications driver FinsGateway (Embedded version) to communicate with the PLC (Programmable Controller) mounted to the Loop Control Unit/Board.



You can use any one of the FinsGateway (Embedded version) given below.

- Serial Unit driver
- Controller Link driver
- CLK (PCI) driver
- ETN\_UNIT driver

- Note**
1. You cannot start CX-Process Monitor Plus if FinsGateway (Embedded version) is not installed.
  2. CX-Process (Monitor Plus and Tool) cannot use FinsGateway Version 1 as a communications driver. Be sure to use Version 3 or later.
  3. If CX-Programmer, CX-Protocol, CX-Motion, or other Support Software (i.e., CX-Server communications software), or applications that use special serial drivers, are connected online, they use the same COM port, so CX-Process (Monitor Plus and Tool) cannot connect online (i.e., initialize serial communications) using the Host link (SYSWAY). First disconnect offline other Support Software or applications that use special serial drivers, before reconnecting online (i.e., initializing serial communications) CX-Process. Conversely, while CX-Process is connected online (i.e., initializing serial communications), other Support Software that communicate using CX-Server cannot connect online.
  4. You cannot install CX-Process and FinsGateway Version 1 on the same IBM PC/AT or compatible.
  5. If using Windows NT 4.0 as your OS, you must use Service Pack 6a or later.
  6. Both FinsGateway Version 3 and Version 2003 (Embedded version) are bundled with the CX-Process Monitor Plus software.  
When using FinsGateway for the communications driver, install one of these versions. The FinsGateway Runtime Version can also be used. If the runtime version is already installed, it is not necessary to install the embedded version.

**Set Network Address,  
Node Address, and Unit  
Address.**

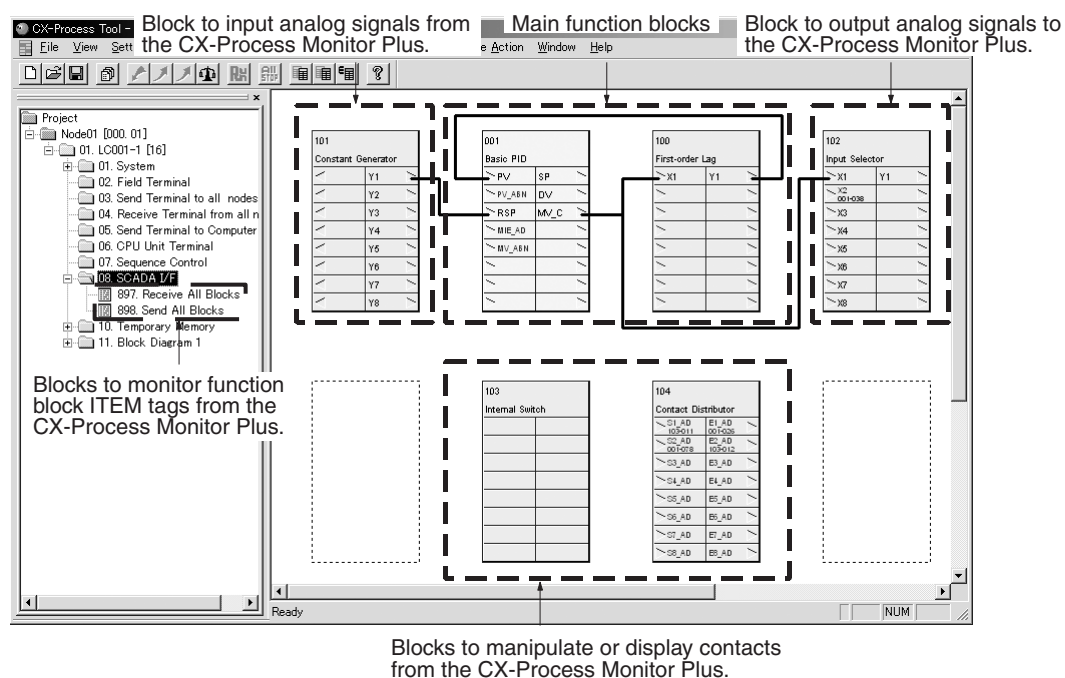
The network address, node address, and unit address for communications between the CX-Process Monitor Plus and PLC are set using the CX-Process Tool address settings (**Settings/Network Settings**).

- Note**
- The CX-Process Monitor and CX-Process Monitor Plus use FinsGateway as the communications driver for connections with the PLC. When using the CX-Process Monitor or CX-Process Monitor Plus, always set FinsGateway as the communications driver for the CX-Process Tool. If the CX-Server is set, the CX-Process Monitor or CX-Process Monitor Plus will not be able to go online with the PLC.

### Register the Function Blocks to Exchange Data with the CX-Process Monitor Plus.

Register and connect the function blocks to exchange data with the CX-Process Monitor Plus. The following function blocks can be used depending on the items to be monitored.

| Items to monitor    | Registrations and connections             | Loop Control Unit                                                                      | Loop Control Board                                       |
|---------------------|-------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------|
| Function block data | Only register the function blocks.        | Send All Blocks block (Block Model 462) and Receive All Blocks block (Block Model 461) | HMI settings in the System Common block (Block Mode 000) |
| Contact signals     | Register and connect the function blocks. | Contact Distributor (Block Model 201) or Internal Switch (Block Model 209)             |                                                          |
| Analog signals      | Register and connect the function blocks. | Input Selector block (Block Model 162) and Constant Generator block (Block Model 166)  |                                                          |



### Set CSV Tags and Tags for CX-Process Monitor Plus.

The CX-Process Monitor Plus uses tags set from the CX-Process Tool (Ver. 3.2 or higher) to read and write data in Loop Control Units/Boards. To use the CX-Process Monitor Plus, therefore, CSV tags and tags for the CX-Process Monitor Plus must be set.

#### Loop Control Units

1,2,3...

1. Register the Send All Blocks block (Block Model 642) and Receive All Blocks block (Block Model 641).
2. Set tags as follows:
  - Function block data: Set CSV tags.
  - Individual contact signals: Set tags for Monitor Plus for the contacts in the Internal Switch block (Block Model 209).
  - Individual analog signals from LCU to computer: Set tags for Monitor Plus for the analog signals in the Input Selection block (Block Model 162).
  - Individual analog signals from computer to LCU: Set tags for Monitor Plus for the analog signals in the Constant Generator block (Block Model 166).

**Loop Control Boards**

- 1,2,3...
1. Make the settings for the HMI in the System Common block (Block Model 000).
  2. Set tags as follows:
    - Function block data: Set CSV tags.
    - Individual contact signals: Set tags for Monitor Plus for the contacts in the Internal Switch block (Block Model 209).
    - Individual analog signals from LCU to computer: Set tags for Monitor Plus for the analog signals in the Input Selection block (Block Model 162).
    - Individual analog signals from computer to LCU: Set tags for Monitor Plus for the analog signals in the Constant Generator block (Block Model 166).

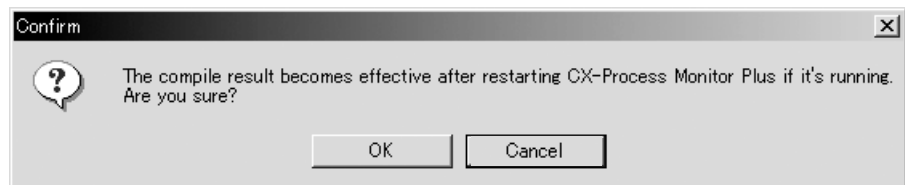
**Note** For both the Loop Control Unit and Loop Control Board, the following function blocks must be created and connected separately to enable monitoring and setting individual contact signals and individual analog signals (i.e., other than function block data).

- To monitor and set individual contact signals, contact signals must be input/output using the Contact Distributor block (Block Model 201) and Internal Switch block (Block Model 209).
- To monitor individual analog signals, analog signals must be output from the Input Selection block (Block Model 162).
- To set individual analog signals, analog signals must be input to the Constant Generator block (Block Model 166).

**Compile the Tag File for the CX-Process Monitor Plus.**

The tag file for Monitor Plus must be compiled (**Execute – Create Tag File – Monitor Plus Tag**).

**Note** The following dialog box will be displayed if a tag file for Monitor Plus is output while the CX-Process Monitor Plus is running.



Tag information will not be updated if a tag file for Monitor Plus is output during CX-Process Monitor Plus operation. To update the tag file, restart the CX-Process Monitor Plus.

**Download Function Block Data to the Loop Control Unit/Board.**

Download the function blocks.

**Compile the Monitor Tag Files.**

Start the CX-Process Monitor Plus. In the Main Window, click the **Run** Button or the **Setup** Button. The monitor tag files (mtagmst and mtagsubmst) will be automatically generated based on the tag file for Monitor Plus (monitor.csv).

## 1-1-4 Relationship to CX-Process Tool

### Tag Names

As shown earlier in *CX-Process Monitor Plus Conditions of Use*, if monitoring or operating Function Blocks using CX-Process Monitor Plus, you must first perform the following steps using CX-Process Tool.

1,2,3...

1. Set the network address, node address, and unit address.
2. Register the blocks for which data is to be exchanged with the CX-Process Monitor Plus.
3. Set the CSV tags and tags for Monitor Plus.
4. Generate the tag file for Monitor Plus.
5. Download the function block data to the Loop Control Unit/Board.
6. Compile the monitor tag file.

CX-Process Monitor Plus handles all items allocated tag names as one string. CX-Process Monitor Plus does not differentiate which Function Block was used to specify the tag names.

### ITEM Settings

Function block ITEMS are set as shown in the following table. The CX-Process Tool is normally used to set initial data S and the CX-Process Monitor Plus is normally used to set operation data O.

| CX-Process Tool data classification | Type | ITEM                                              | Example: PID Block                                                      | CX-Process Tool      | CX-Process Monitor Plus |
|-------------------------------------|------|---------------------------------------------------|-------------------------------------------------------------------------|----------------------|-------------------------|
| Initial settings                    | S    | Initial setting parameter for each function block | Forward/Reverse direction, SP setting method, compensation method, etc. | Set                  | Cannot be set           |
| Operation data                      | O    | Operation parameters for each function block      | Example: PID Block SP, alarm settings, PID constants, etc.              | Set in special cases | Set                     |

**Note** Initial settings O and operation data S classifications are displayed on ITEM Setting Screens of the CX-Process Tool. For details on the ITEMS set each function block, refer to the *Function Block Reference Manual*.

### Example

| ITEM type | ITEM | Contents                                                     | R: Read, W: Write, R/W: Read/write, ---: R/W disabled<br>r, t/w: CX-Process Tool operation monitor/Operation monitor read and write<br>(S): Initial setting, (O): Operation data |                         |
|-----------|------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|           |      |                                                              | CX-Process Tool                                                                                                                                                                  | CX-Process Monitor Plus |
| Parameter | 004  | Operation cycle (s)                                          | R/W (S)                                                                                                                                                                          | ---                     |
| Parameter | 008  | High/Low alarm                                               | R/W (O)                                                                                                                                                                          | R/W                     |
|           | 012  | Hysteresis set value                                         | R/W (S)                                                                                                                                                                          | ---                     |
| Parameter | 023  | Local SP set value                                           | R/W (O)                                                                                                                                                                          | R/W                     |
|           | 024  | SP set method (Initial setting)<br>0: Local, 1: Remote/Local | R/W (S)                                                                                                                                                                          | R                       |

**Note** Analog values are normally set with the CX-Process Monitor Plus. They can be set with the CX-Process Tool provided that they are in percentage increments between 0% and 100%. Scaling engineering units cannot be set with the CX-Process Tool.

### 1-1-5 Relation between Screens and Function Blocks

The relation between screens and function blocks is shown below.

| Screen               |                            | Loop Control Unit: Register Send All Blocks and Receive All Blocks blocks<br>Loop Control Boards: Make HMI settings in the System Common block                                                                                                                                                                                                                              | Input Selector block (Block Model 162)          | Internal Switch block (Block Model 209)                                      | Constant Generator block (Block Model 166)      |
|----------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------|
| User-defined screens | Overview Screen            | ---                                                                                                                                                                                                                                                                                                                                                                         | ---                                             | ---                                                                          | ---                                             |
|                      | Control Screens            | Basic PID, Advanced PID, Blended PID (Block Model 013), Batch Flowrate Capture (Block Model 014), Indication and Setting, Indication and Operation, Ratio Setting, Indicator, 2-Position ON/OFF, 3-Position ON/OFF, High/Low Alarm, Segment Program 2, ON/OFF Valve Manipulator, Motor Manipulator, Reversible Motor Manipulator, Motor Opening Manipulator, Timer, Counter | Analog signal or analog value parameters        | Contact signal or contact parameters                                         | Analog output                                   |
|                      | Tuning Screens             | Segment Program 2                                                                                                                                                                                                                                                                                                                                                           | ---                                             | ---                                                                          | ---                                             |
|                      | Trend Screens              | Basic PID, Advanced PID, Blended PID (Block Model 013), Batch Flowrate Capture (Block Model 014), Indication and Setting, Indication and Operation, Ratio Setting, Indicator, 2-Position ON/OFF, 3-Position ON/OFF (PV, SP, MV only), Segment Program 2, ON/OFF Valve Manipulator, Motor Manipulator, Reversible Motor Manipulator, Motor Opening Manipulator               | Analog signal or analog value parameters        | Contact signal or contact parameters                                         | Analog output                                   |
|                      | Batch Trend Screen         |                                                                                                                                                                                                                                                                                                                                                                             |                                                 |                                                                              |                                                 |
|                      | Segment Program 2 Screen   | Segment Program 2                                                                                                                                                                                                                                                                                                                                                           | Can be designated as expansion measurement tags | Can be designated as expansion measurement tags                              | Can be designated as expansion measurement tags |
|                      | Graphic Screens            | Same tag ITEMS as for Control screens.                                                                                                                                                                                                                                                                                                                                      | Analog signal or analog value parameters        | Contact signal or contact parameters                                         | Analog output                                   |
|                      | Annunciator Screens        | Same tag ITEMS as for Control screens.                                                                                                                                                                                                                                                                                                                                      | ---                                             | Contact signal or contact parameters                                         | ---                                             |
|                      | Operation Guide Screens    | ---                                                                                                                                                                                                                                                                                                                                                                         | ---                                             | Contact signal or contact parameters                                         | ---                                             |
|                      | System Monitor Screens     | ---                                                                                                                                                                                                                                                                                                                                                                         | ---                                             | ---                                                                          | ---                                             |
| System screens       | Alarm Log Screens          | Contacts for which alarms were automatically allocated when registering tags                                                                                                                                                                                                                                                                                                | ---                                             | Contacts for which alarms were automatically allocated when registering tags | ---                                             |
|                      | Operation History Screens  | ---                                                                                                                                                                                                                                                                                                                                                                         | ---                                             | ---                                                                          | ---                                             |
|                      | System Monitor Log Screens | ---                                                                                                                                                                                                                                                                                                                                                                         | ---                                             | ---                                                                          | ---                                             |

## 1-1-6 CX-Process Monitor Plus Software Specifications

### CX-Process Monitor Plus Specifications

| Item                                              |                                                                | Descriptions                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product name                                      |                                                                | CX-Process Monitor Plus                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Model                                             |                                                                | WS02-LCMC1-EV2                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Applicable PLC-series                             |                                                                | CS/CJ-series                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Applicable Unit                                   |                                                                | Loop Control Unit Ver. 2.0 or later<br>Loop Control Board<br>Process-control CPU Unit<br>Loop-control CPU Unit                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Applicable computer                               | Personal computer                                              | IBM PC/AT or compatible                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | CPU                                                            | Min. required: Pentium MMX233 MHz or faster, Recommended: Celeron 400 MHz or faster                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | OS                                                             | Microsoft Windows NT 4.0 (Service Pack 6a or higher), Windows 2000 Professional (Service Pack 4 or higher), Windows XP Professional (Operation is not supported on Windows 95, 98, or ME.)                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | Memory                                                         | Min. required: 128 Mbytes, Recommended: 256 Mbytes or more                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | Hard disk drive                                                | Min. required: 650 Mbytes of free space, Recommended: 800 Mbytes or more of free space                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | Monitor                                                        | Min. required: XGA, Recommended: XGA or higher, min. 1024 × 768 dots, 256 colors                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | CD-ROM drive                                                   | At least one                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | Mouse                                                          | Recommended: Microsoft mouse or compatible pointing device                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | Printer                                                        | Any printer supported by Microsoft Windows                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                   | Sound board                                                    | 1 board                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Required software                                 |                                                                | FinsGateway (One of the following must be installed according to the communications method with the PLC.)<br>Serial Unit driver (Host Link)<br>Controller Link driver (Controller Link)<br>CLK (PCI) driver (Controller Link, PCI bus)<br>ETN_UNIT driver (Ethernet) |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Connecting method                                 | Connection with CPU Unit (or Serial Communications Board/Unit) | Using Fins-Gateway Serial Unit version                                                                                                                                                                                                                               | The computer is connected to the CPU Unit peripheral ports or integrated RS-232C port, or RS-232C port of the Serial Communications Unit. (Only a 1:1 connection is possible.)<br>– Connector cable:<br>When connecting to the CPU Unit peripheral ports: Model CS1W-CN□□□ (2 m, 6 m)<br>When connecting to the CPU Unit's RS-232C port: Model XW2Z□□□-□ (2 m, 5 m)<br>– Communications protocol with PLC: Host Link (not supported on Peripheral bus) |
|                                                   | Connection via Controller Link                                 | Using Fins-Gateway CLK (PCI) Driver                                                                                                                                                                                                                                  | Install the driver in a computer equipped with a Controller Link Support Board (PCI slot) to support communications between the computer and PLCs equipped with a Controller Link Unit.                                                                                                                                                                                                                                                                |
|                                                   |                                                                | Using Fins-Gateway Controller Link driver                                                                                                                                                                                                                            | Install the driver in a computer equipped with a Controller Link Support Board (ISA slot) to support communications between the computer and PLCs equipped with a Controller Link Unit.                                                                                                                                                                                                                                                                |
|                                                   | Connection via Ethernet                                        | Using Fins-Gateway ETN_UNIT driver                                                                                                                                                                                                                                   | Install the FinsGateway ETN_UNIT driver on the computer on which an Ethernet board is mounted to enable to enable communications with the PLC on which the Ethernet Unit is mounted.                                                                                                                                                                                                                                                                   |
| Loop Control Unit/Board data specification method |                                                                | CSV tags and tags for Monitor Plus (CSV monitor tags) are set using the CX-Process Tool. These tags are used to specify Loop Control Unit/Board data.                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Offline operation functions                       |                                                                | Prepare user configuration screens for use in the online operation screen.                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Item                       |                           | Descriptions    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------|---------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Online operation functions | User Configuration screen | Overview screen | Place buttons for progressing to the Control screen, Trend screen and other screens. 4 columns and 8 lines are displayed on each screen (max. 32 screens).                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                          |
|                            |                           | Control screen  | <p>Control blocks such as the PID blocks and Indication blocks, and some Operation blocks are displayed for up to 8 loops in a single screen in the form of a field device. The maximum number of screens is 400.</p> <p>This screen displays the Set Point, PV and MV numeric values, displays PV as a bar graph, and can be used for changing Set Point, MAN and other setting values. The color of bar graphs changes when an alarm occurs.</p> <p>You can progress to the Tuning screen from the Control screen.</p> <p>Fine tuning according to the degree specified by the user is possible for PID constants.</p> |                                                                                                                                                                                                                                                                                                                                                          |
|                            |                           | Tuning screen   | <p>This screen is for setting P, I, D parameters in Control blocks such as the PID blocks, and for setting alarm setting values. PV, Set Point and MV can be tuned while their trends are monitored. The maximum number of screens is 3200.</p> <p>Run stop/stop cancellation are possible on each function block.</p> <p><b>Note</b> Only the Control block that is designated as the source at the 1-Block Send Terminal to Computer block can be registered.</p>                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                          |
|                            |                           | Trend screen    | The analog signals output from each function block tag ITEM are collected at fixed intervals and saved to a file. If necessary, up to 8 analog signals can be displayed on one screen in the form of a multi-dot recorder.                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                          |
|                            |                           |                 | Data collected (logger function)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Real time trend<br/>10, 20, 50, 100, or 300 hours of data is saved at 1, 2, 5, 10, or 30-second intervals for up to 480 tags.</p> <p>Historic trend<br/>30, 150, 300, 900, or 1,800 days of data is saved at 1, 5, 10, 30, or 60-minute intervals for up to 960 tags.</p>                                                                             |
|                            |                           |                 | Data display                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>Horizontal (time) axis: 2, 4, 8, 12 and 24 hour time units can be scrolled</p> <p>Vertical (8-point common) axis: Graduation can be enlarged by a factor of 1, 2, 5 and 10.</p> <p>Data is displayed from the time when the specified display start time is reached.</p> <p>Display color: red, yellow, green, blue, magenta, purple, cyan, white</p> |



| Item                       |                           |                          | Descriptions                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                              |
|----------------------------|---------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Online operation functions | User Configuration screen | Batch Trend Screen       | The analog signals output from each function block tag ITEM are collected at fixed intervals when tag data conditions are satisfied, and the data is automatically saved. Data can be displayed in combination with past data. |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                              |
|                            |                           |                          | Data collection                                                                                                                                                                                                                | Four hours or ten days of data is saved at 1-second or 1-minute intervals for up to 960 tags.                                                                                                                                                                                                                                                                                         | Data can be manually saved in CSV format by button operations or automatically saved at the completion of each batch. Past data can be automatically saved in binary format. |
|                            |                           |                          | Data display                                                                                                                                                                                                                   | Horizontal (time) axis: The following time units can be scrolled.<br>1, 2, 4, 6, 8, 12, 24, 36, 48, and 72 hours; 7 or 10 days<br><br>Vertical (8-point common) axis: Gradation can be enlarged by a factor of 1, 2, 5, or 10.<br><br>When a display start time is specified, data is displayed from that time. Display color: Red, yellow, green, blue, magenta, purple, cyan, white |                                                                                                                                                                              |
|                            |                           | Segment Program 2 Screen | Displays PV trends for Segment Program 2 (Block Model 157) set values. Segments can be set in table format while observing a time axis graph.                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                              |
|                            |                           |                          | Data collection                                                                                                                                                                                                                | 3, 30, or 180 days of data is saved at 1-, 10-, or 60-second intervals.                                                                                                                                                                                                                                                                                                               | Data can be manually saved in CSV format by button operations or automatically saved with each batch completion. Past data can be automatically saved in binary format.      |
|                            |                           |                          | Data display                                                                                                                                                                                                                   | Horizontal (time) axis: 2, 4, 8, 12, 24, 72 hour time increments can be scrolled.<br><br>Vertical axis: Gradation can be enlarged by a factor of 1, 2, 5, or 10.<br><br>When a display start time is specified, data is displayed from that time.<br><br>Display color: Yellow, light blue, green, purple                                                                             |                                                                                                                                                                              |

| Item                       |                           |                           | Descriptions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------|---------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Online operation functions | User Configuration screen | Graphic screen            | <p>Graphic elements representing plant process control can be pasted to Graphic Screens from a library. These elements can be used to display changes in plant status. Up to 200 Graphic Screens can be created.</p> <ul style="list-style-type: none"> <li>• Library Figures and Image Elements<br/>Text displays, straight lines, rectangles, rectangle with round corners, ellipses, polygons, images</li> <li>• Library Functional Objects <ul style="list-style-type: none"> <li>• Fixed Graphic Display Elements:<br/>Text, instruments, thermometers, transmitters, orifices</li> <li>• Changeable Graphic Display Elements:<br/>Analog displays: Bar graph displays, numeric displays, tanks<br/>Analog settings: Numerical settings<br/>Contact display: Pumps, valves, pipes<br/>Contact operation: Switches</li> <li>• Elements for Screen Display:<br/>Screen jump elements<br/>FP switch (faceplate popup) elements</li> <li>• Individual graphic screens can be saved as files or read.</li> <li>• Multiple graphic elements can be grouped and saved as files or read.</li> </ul> </li> </ul> |
|                            |                           | Annunciator screen        | <p>This screen notifies the operator of alarms or errors that occur by changing the display color and emitting sound. At the same time, a 32-character message is displayed over two lines on screen elements.</p> <p>A total of 16 screen elements (4 columns × 4 lines) can be displayed on each screen. The maximum number of screens is 5.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                            |                           | Operation Guide Screen    | <p>This screen displays pre-registered 128-character messages over two lines together with the date of occurrence when the specified internal switch is set to ON.</p> <p>Max. number of registerable messages: 1000, Number of display colors: 16<br/>Up to 1000 messages are displayed in a single screen.<br/>Output possible in CSV format.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                            | System Fixed screen       | Alarm Log screen          | <p>A record of alarms (time of error occurrence, tag name, PV or MV current value at occurrence, alarm type, etc.) that occur and that are input from the Control and Alarm blocks is saved and displayed as a list later.</p> <p>Up to 1000 alarm messages are displayed in a single screen.<br/>Output possible in CSV format.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                            |                           | Operation Log screen      | <p>A record of operations using graphic screen data and switch objects and changes made to ITEM data in the Loop Control Unit/Board in the Control or Tuning Screen can be saved and later displayed as an operation log. The operation log includes the date and time of change, tag name, original ITEM data setting, new ITEM data setting, etc.</p> <p>Up to 1000 operation messages are displayed in a single screen.<br/>Output possible in CSV format.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                            |                           | System Monitor screen     | <p>This screen displays the Loop Control Unit/Board system error information.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                            |                           | System Monitor Log screen | <p>This screen displays a log of the run/stop history and a history of execution errors that occur on the Loop Control Unit/Board together with the date of occurrence.</p> <p>Output possible in CSV format.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

The Loop Control Unit/Board does not itself have HMI functionality. To monitor function block operation status, it is thus necessary to connect and use the CX-Process Monitor Plus.

## 1-1-7 CX-Process Monitor Plus Setting and Monitoring Capabilities

The data that can be set and monitored using the CX-Process Monitor Plus is listed in the following table.

| Item                |                       | Loop Control Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Loop Control Board |
|---------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Function block data |                       | Control Blocks:<br>Basic PID (Block Model 011), Advanced PID (Block Model 012), Blended PID (Block Model 013), Batch Flowrate Capture (Block Model 014), Indication and Setting (Block Model 031), Indication and Operation (Block Model 032), Ratio Setting (Block Model 033), Indicator (Block Model 034), 2-position ON/OFF (Block Model 001), and 3-position ON/OFF (Block Model 002)<br><br>Operation Blocks:<br>High/Low Alarm (Block Model 111), Segment Program 2 (Block Model 157), ON/OFF Valve Manipulator (Block Model 221), Motor Manipulator (Block Model 222), Reversible Motor Manipulator (Block Model 223), Motor Opening Manipulator (Block Model 224), Timer (Block Model 205) and Counter (Block Model 208) |                    |
| Contact signals     |                       | Contact signals through Contact Distributor (Block Model 201) + Internal Switch (Block Model 209)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |
| Analog signals      | Sent to Monitor Plus  | Analog signals through Input Selector (Block Model 162)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |
|                     | Set from Monitor Plus | Analog signals through Constant Generator (Block Model 166)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |

The following items must be set in advance using the CX-Process Tool.

| Item                                                    |                              | Loop Control Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Loop Control Board                                         |
|---------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| 1. Register the function blocks used for data exchange. | Function block data exchange | Receive All Blocks (Block Model 461) and Send All Blocks (Block Model 462)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | HMI functions in the System Common block (Block Model 000) |
|                                                         | Contact signal data exchange | Contact Distributor block (Block Model 201) + Internal Switch block (Block Model 209)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |
|                                                         | Analog signal data exchange  | Input Selector block (Block Model 162) and Constant Generator block (Block Model 166)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |
| 2. Set the tag names.                                   |                              | Function Block Data:<br>CSV tags are set in the CX-Process Tool by selecting the function blocks and then selected <b>Settings – Tag Setting – CSV Tags</b> .<br>Contact Signals:<br>tags for Monitor Plus are set for each contact in the Internal Switch blocks. The function blocks are then selected, the right mouse button clicked, and <b>Tag Setting – Monitor Plus Tag</b> is selected.<br>Analog Signals:<br>tags for Monitor Plus are set for each analog signal in the Variable ITEM Setting and Constant Generator blocks. The function blocks are then selected, the right mouse button clicked, and <b>Tag Setting – Monitor Plus Tag</b> is selected. |                                                            |
| 3. Create the monitor tag file.                         |                              | Start the CX-Monitor Plus and click the <b>Run</b> or <b>Setup</b> Button.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                            |

**Note** Using CX-Process Monitor Plus, you can monitor and set only the data given above to which tag names have been allocated. Also, be sure to use CX-Process Tool to make tag name settings.

## 1-1-8 Files Created Using CX-Process Monitor Plus

The following data can be created using the CX-Process Monitor Plus

| Data type                                        | Contents                                                                                                                                               |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Graphic screen data<br>(filename extension: grf) | Graphic screen data, created for each screen.                                                                                                          |
| Object data<br>(filename extension: itm)         | Grouped object data (functional objects, figures, images), created when a group file is saved. (Does not include jump elements or FP switch elements.) |

## 1-1-9 Version Upgrade

The CX-Process Monitor Plus has been upgraded from version 1.0 to version 2.0. The following table lists the contents of the version upgrade.

| Item                     |                                                                          | Previous (version 1.0)                                                                                                                                                                                                                                                                              | New (version 2.0)                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Startup method           |                                                                          | There were two modes: Engineer Mode and Operator Mode.<br><ul style="list-style-type: none"> <li>• Setup (Engineer Mode)<br/> <b>Start</b> Button → <b>Engineer</b> Button → <b>Setup</b> Button → Password input</li> <li>• Operation<br/> <b>Start</b> Button → <b>Operator</b> Button</li> </ul> | Startup has been divided into setup and operation.<br><ul style="list-style-type: none"> <li>• Setup<br/> <b>Setup</b> Button → Password input → <b>Run</b> Button</li> <li>• Operation<br/> <b>Run</b> Button</li> </ul>                                                                                                                                                                                                      |
| Monitor display          |                                                                          | Maximum size: XGA 1,024 × 768                                                                                                                                                                                                                                                                       | Individual monitor screens can be displayed on the entire desktop.                                                                                                                                                                                                                                                                                                                                                             |
| Segment Program 2 Screen |                                                                          | No                                                                                                                                                                                                                                                                                                  | Yes<br><ul style="list-style-type: none"> <li>• PV trends for values set in the Segment Program 2 Monitor Screen are displayed.</li> <li>• Collection cycle: 1, 10, or 60 s<br/>Maximum retention period: 3, 30, or 180 days, past data automatically saved, or CSV data automatically saved</li> <li>• Segments can be set in table format on the Segment Program 2 Edit Screen.</li> <li>• Past data can be read.</li> </ul> |
| Batch Trend Screens      |                                                                          | No                                                                                                                                                                                                                                                                                                  | Yes<br><ul style="list-style-type: none"> <li>• Trend function that can start or end collecting with tag data (contact or analog) as a trigger.</li> <li>• Collection cycle: 1 min or 1 s<br/>Maximum retention period: 10 days, 4 hours, past data automatically saved, or CSV data automatically saved</li> <li>• Data can be overlapped with past data.</li> </ul>                                                          |
| Trend Screens            | Data collection cycle and maximum retention period for realtime trends   | Collection cycle: 10 s<br>Maximum retention period: 12 hours                                                                                                                                                                                                                                        | Collection cycle: 1, 2, 5, 10, or 30 s<br>Maximum retention period: 10, 20, 50, 100, or 300 hours                                                                                                                                                                                                                                                                                                                              |
|                          | Data collection cycle and maximum retention period for historical trends | Collection cycle: 1 min<br>Maximum retention period: 10 days                                                                                                                                                                                                                                        | Collection cycle: 1, 5, 10, 30, or 60 min<br>Maximum retention period: 30, 150, 300, 900, or 1,800 days                                                                                                                                                                                                                                                                                                                        |
| Graphic Screens          | Graphic screen saving and reading                                        | Yes (No filename extension)                                                                                                                                                                                                                                                                         | Yes (Filename extension: GRF)                                                                                                                                                                                                                                                                                                                                                                                                  |

| Item                   |                             |                                           | Previous (version 1.0)                                                             | New (version 2.0)                                                                                                                                                                                                                              |
|------------------------|-----------------------------|-------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Graphic screen objects | Function objects            | Jumps (screen call) objects               | No                                                                                 | Yes                                                                                                                                                                                                                                            |
|                        |                             | FR switch (face plate popup) objects      | No                                                                                 | Yes                                                                                                                                                                                                                                            |
|                        | Figures and images          | Figures                                   | No                                                                                 | Yes<br>(Text display, straight lines, rectangle, rectangles with round corners, ellipses, and polygons) Color changes, displaying/hiding, and flashing can be enabled by allocating tags.                                                      |
|                        |                             | Images                                    | No                                                                                 | Objects are provided for displaying images (BMP or JPEG) in frames rectangles. Color changes, displaying/hiding, and flashing can be enabled by allocating tags.                                                                               |
|                        | Individual graphics objects | Grouping                                  | No                                                                                 | Functional objects, figures and images (except for jump objects and FP switch objects) can be grouped, and groups can be cut, moved, deleted, saved in files, or loaded from files (filename extension: ITM).                                  |
|                        |                             | Displaying/hiding according to tag values | No                                                                                 | Yes<br>(Tanks, pipes, pumps, valves, meter bars, data, parts, switches, and text boxes)<br><b>Note:</b> Also enabled for figures (text display, straight lines, rectangles, rectangles with round corners, ellipses, and polygons) and images. |
|                        |                             | Flashing according to tag values          | No                                                                                 | Yes<br>(Tanks, pipes, pumps, valves, meter bars, data, parts, switches, and text boxes)<br><b>Note:</b> Also enabled for figures (text display, straight lines, rectangles, rectangles with round corners, ellipses, and polygons) and images. |
|                        |                             | Color changes according to tag values     | No                                                                                 | Yes<br>(Text display, straight lines, rectangles, rectangles with round corners, ellipses, and polygons)                                                                                                                                       |
|                        |                             | Image changes according to tag values     | No                                                                                 | Yes<br>(Images)                                                                                                                                                                                                                                |
|                        |                             | Full color settings                       | No<br>(16 colors)                                                                  | Yes<br>(Tanks, meter bars, data, parts, switches, and text boxes)                                                                                                                                                                              |
|                        |                             | Font specifications                       | Fonts cannot be specified                                                          | Fonts can be specified.                                                                                                                                                                                                                        |
|                        |                             | Alignment and fine position adjustment    | Vertical and horizontal alignment of multiple objects, and alignment to grid lines | The following functions have been added: Arranging multiple objects with even spacing, and fine adjustment of positions (using the cursor) when moving objects.                                                                                |

| Item                                                                             |                                                            |                                                                                       | Previous (version 1.0)                                       | New (version 2.0)                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Graphic screen objects                                                           | Data objects                                               | Data input range checks                                                               | No                                                           | Yes<br>(Upper and lower limits can be checked for inputs.)                                                                                                                                                                                                                             |
|                                                                                  |                                                            | Text string positions                                                                 | Left justified and centered vertically.                      | The following are possible: Left justified, horizontally centered, right justified, top aligned, vertically centered, and bottom aligned.                                                                                                                                              |
|                                                                                  | Switch objects                                             | Text string specification                                                             | Only ON, OFF, START, and STOP can be specified.              | Any text string can be specified.                                                                                                                                                                                                                                                      |
|                                                                                  | Data and text box objects                                  | Background color transparency                                                         | No                                                           | Yes                                                                                                                                                                                                                                                                                    |
|                                                                                  | Data and switch objects                                    | Operation log                                                                         | No                                                           | Yes                                                                                                                                                                                                                                                                                    |
|                                                                                  | Number of simultaneous Graphic Builder screens for editing |                                                                                       | One screen only                                              | Multiple Graphic Builder screens can be displayed simultaneously for editing, and objects can be copied between screens.                                                                                                                                                               |
|                                                                                  | Logs                                                       | CSV file output (operation logs, alarm logs, operation logs, and system monitor logs) | Single lines are output without separating individual items. | Each item can be separated in the output (making later analysis easier).                                                                                                                                                                                                               |
| Operation guide messages                                                         | Number of operation guide messages registered              | 100 max.                                                                              | 1,000 max.                                                   |                                                                                                                                                                                                                                                                                        |
| Starting external applications and starting/resetting from external applications |                                                            |                                                                                       | A portion of the CX-Process Monitor Plus display remains.    | The CX-Process Monitor Plus Window is completely cleared and the external application is started. (The CX-Process Monitor Plus runs in the background and collects data.)<br><br>The CX-Process Monitor Plus can be reset by starting the execution file from an external application. |
| Confirmation message when exiting the CX-Process Monitor Plus                    |                                                            |                                                                                       | Exits with no message.                                       | A dialog box is displayed to confirm whether the Monitor Process is to be ended during execution.                                                                                                                                                                                      |

**Note** The CX-Process Monitor Plus does not support Loop Control Units earlier than version 2.0.

## 1-2 Basic Operating Procedure

This section explains the procedure up to monitoring using CX-Process Monitor Plus.

- 1,2,3...**
1. Install CX-Process Monitor Plus. (Refer to *Section 2 Setup*.)
    - Install CX-Process Monitor Plus.
  2. Make Settings and Transfer Using CX-Process Tool. (Refer to the *CX-Process Tool Operation Manual (W372)*.)
    - a. Set the network address, node address, and unit address (**Settings – Network**).
    - b. Register and connect the function blocks that exchange data with the CX-Process Monitor Plus.
    - c. Set the CSV tags and the tags for Monitor Plus.

- CSV tags: **Settings – Tag Setting – CSV Tag**
  - Tags for Monitor Plus: **Settings – Tag Setting – Monitor Plus Tag**
- d. Generate the tag file for Monitor Plus: **Execute – Create Tag File – Monitor Plus Tag**
  - e. Download the function block data to the Loop Control Unit/Board.
  - f. Compile the monitor tags. Start the CX-Process Monitor Plus and click the **Setup** Button.
  - g. Enter password.
- Note** (a) If the above steps are not performed using CX-Process Tool, you cannot monitor using CX-Process Monitor Plus.
- (b) The network address, node address, and unit address settings made with CX-Process Tool are also used by the CX-Process Monitor Plus.
3. Configure the Screen Using CX-Process Monitor Plus. (Refer to *Section 4 Screen Configuration*.)
    - Design the monitor system using CX-Process Monitor Plus.
    - Create and register the Control screens, Trend screens, Graphic screens, and Annunciator screens on Overview screens.
    - When registering, specify on the screen the Loop Control Unit/Board data by selecting the tags (CSV tags and tags for Monitor Plus) set using CX-Process Tool.
    - Set the communications conditions with the PLC using the system monitor setting window (if using serial communications).Perform the following procedure.
    - a. Select **Omron – CX-Process Monitor Plus – CX-Process Monitor Plus** from the Windows Start Menu.
    - b. Click the **Setup** Button in the Main Window.
    - c. Enter password.
    - d. Click the **System Monitor Builder** Button in the Setup Dialog Box, and make settings using the System Monitor Setting Window.
    - e. Click the **Graphic Builder** Button in the Setup Dialog Box, create the Graphic Screen Create Window (including tag name specifications), and save.
    - f. Click the **CRT Builder** Button in the Setup Dialog Box, and register the screen using the Builder Window (including Tag name specifications).
    - g. From the Builder Window **Settings** menu, select **Save**, and then click the **OK** Button.
  4. Check Screen Configuration Using CX-Process Monitor Plus. (Refer to *5-7 Checking Configurations*.)
    - Check if you can monitor the Loop Control Unit/Board using the configured screen.
    - Start FinsGateway Serial Unit communications according to the communications conditions set using the System monitor setting window by starting the monitoring process (i.e., start FinsGateway Controller Link and Ethernet manually).Perform the following operation.
    - a. Click the **Setup** Button in the Main Window.
    - b. Enter password.

- c. In the Setup Dialog Box, click the **Run** Button (to start the monitoring process for the configured screen, and to start communications).
  - d. Select the screens using the Overview Screen, and check that each function is operating normally.
5. Start the Monitor Operation to monitor the Loop Control Unit/Board. (Refer to *Section SECTION 4 Monitor Screen Functions and Operations* for details.)

Perform the following operation.

- a. Click the **Run** Button in the Main Window.
- b. Click the screens using the Overview Screen.





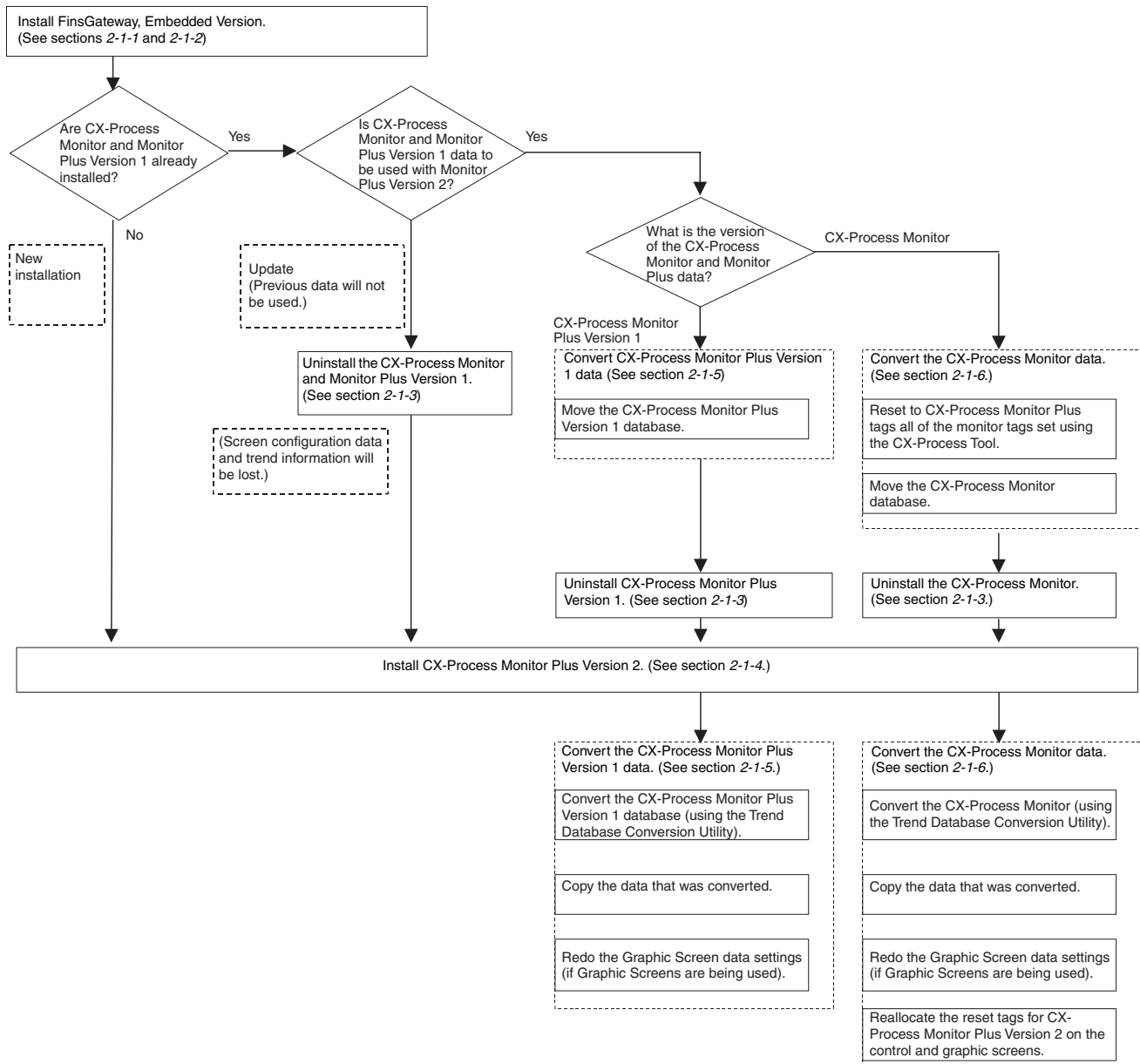
## SECTION 2 Setup

This section describes installing the CX-Process and connections to the PLC.

|       |                                                                    |    |
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## 2-1 Installation

Install the CX-Process Monitor Plus using the following procedure.



- Note**
1. This software must be installed on a computer using Windows NT 4.0, 2000, or XP as its OS. It will not operate on Windows 95, 98, or Me.
  2. Be sure to install FinsGateway Embedded before installing CX-Process Monitor Plus. You cannot install CX-Process Monitor Plus first.
  3. You cannot start CX-Process Monitor Plus if FinsGateway Embedded is not installed.
  4. If connecting CX-Process online using a PLC and Host Link, you cannot install and use CX-Process on the same computer as FinsGateway Version 1.

## 2-1-1 Before Installing FinsGateway

To use the CX-Process Monitor Plus software, the communications driver (FinsGateway) must be installed in the computer in which the CX-Process Monitor Plus software is installed.

### FinsGateway Versions

Both FinsGateway Version 3 and Version 2003 (Embedded version) are bundled with the CX-Process Monitor Plus software. When using FinsGateway for the communications driver, install one of these versions.

The FinsGateWay Runtime version can also be used. If the Runtime version is already installed, it is not necessary to install the Embedded version.

### Selecting the Communications Driver

The CX-Process Monitor Plus software supports the following communications drivers.

- FinsGateway Ver. 3.12
- FinsGateway Ver. 2003

Select the communications driver to install according to the user's application. The following tables show the main factors to use in selecting the driver.

#### OS

| Driver                | OS                              |                               |                             |
|-----------------------|---------------------------------|-------------------------------|-----------------------------|
|                       | Windows NT 4.0<br>(See note 1.) | Windows 2000<br>(See note 2.) | Windows XP<br>(See note 3.) |
| FinsGateway Ver. 3.12 | Supported                       | Supported                     | Supported                   |
| FinsGateway Ver. 2003 | Not supported                   | Supported                     | Supported                   |

- Note**
1. Supported for CX-Process Monitor Plus only with Windows NT 4.0 and Service Pack 6a.
  2. Supported for CX-Process Monitor Plus only with Windows 2000 Professional and Service Pack 4.
  3. Supported for CX-Process Monitor Plus only with Windows XP Professional.

#### Communications

| Driver                | Communications method |                             |
|-----------------------|-----------------------|-----------------------------|
|                       | Toolbus connection    | Duplex Ethernet in computer |
| FinsGateway Ver. 3.12 | Not supported         | Not supported               |
| FinsGateway Ver. 2003 | Supported             | Supported (See note.)       |

- Note**
- When duplex Ethernet is used in the computer, the difference software is stored in the following folder:  
<CD-ROM drive>:\Fgw2003\Duplex\FgwEtnUpdate200301\setup.exe.

### Items to Check before Installing FinsGateway

**If a FinsGateway version earlier than Version 2 is already installed:**

Start the procedure from *Step 1: Backing Up the FinsGateway Settings*.

**Installing FinsGateway for the First Time:**

Start the procedure from *Step 4: Internet Explorer Installation*.

## Steps to Perform before Installing FinsGateway

### Step 1: Backing Up the FinsGateway Settings

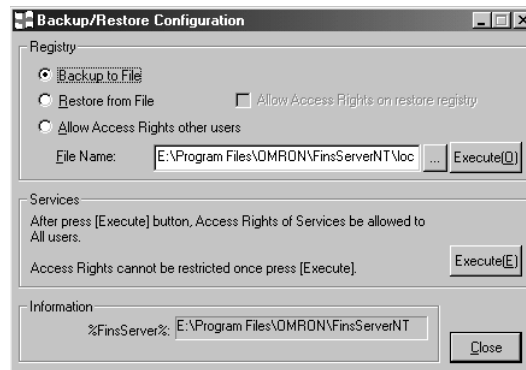
If necessary, back up the previous FinsGateway settings, as follows:

- Note**
- If FinsGateway is removed (uninstalled) without backing up the setting data, the previous setting data will all be lost.

1,2,3...

1. Execute the Backup/Restore FinsGateway Setting Data program on the CD.

<CD-ROM drive>:\Fgwv3\FgwUtils\SettingSalvage.exe



2. Select the Backup to File option, and click OK Button.

## Step 2: Removing the Previous FinsGateway

Remove the previous version of FinsGateway by referring to that manual for details.

### Note

The FinsGateway removal process does not delete all of the FinsGateway files and registry data used by FinsGateway. As a result, the FinsGateway reinstallation process sometimes fails. If this happens, execute the following program from the distribution CD to remove all the files and registry data used by FinsGateway.

<CD-ROM drive>:\Fgwv3\FgwUtils\FgwRemover3.exe

## Step 3: System Restart

After removing FinsGateway, restart the computer. If the following steps are performed without restarting the computer, the installation will not be completed properly.

## Step 4: Internet Explorer Installation

If Internet Explorer is not already installed, or if the version is old, the FinsGateway installation will display a warning to update it. Update Internet Explorer.

Internet Explorer is not included with FinsGateway. Refer to the Microsoft website for details, and install the newest version.

## Step 5: ComCtl32.dll Update

If using Windows NT 4, use the following procedure to update ComCtl32.dll for systems where the display or other operations do not function properly.

For Windows 2000 and Windows XP no update is necessary for this file.

Microsoft provides an update program called 401comupd.exe.

## Step 6: Updating the HTML Help Runtime Component

If the HTML Help runtime component is not already installed, or if the version is old, the FinsGateway installation will display a warning to update it. Update the HTML Help runtime component using the following procedure.

If a warning is not displayed, then there is no need to update. The FinsGateway Installer will display the appropriate instructions.

1,2,3...

1. Execute the following program from the FinsGateway CD:

<CD-ROM drive>:\Fgwv3\Update\hhupd.exe

2. Update the HTML Help runtime component according to the instructions displayed on the screen.

- The program will suggest a system restart when it finishes.  
Do not proceed to the next step without restarting the computer. If the installation is continued without restarting the computer, the FinsGateway will not operate properly.

## 2-1-2 Installing FinsGateway

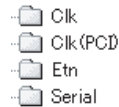
### Using FinsGateway Version 3

After installing FinsGateway Version 3, install FinsGateway Update 3.12.

#### Installation of FinsGateway Version 3

1,2,3...

- Select one of the following directories from within the Fgww3\FGW3ee folder in the CD-ROM. (Select the directory corresponding to the communications method being used in the PLC.)



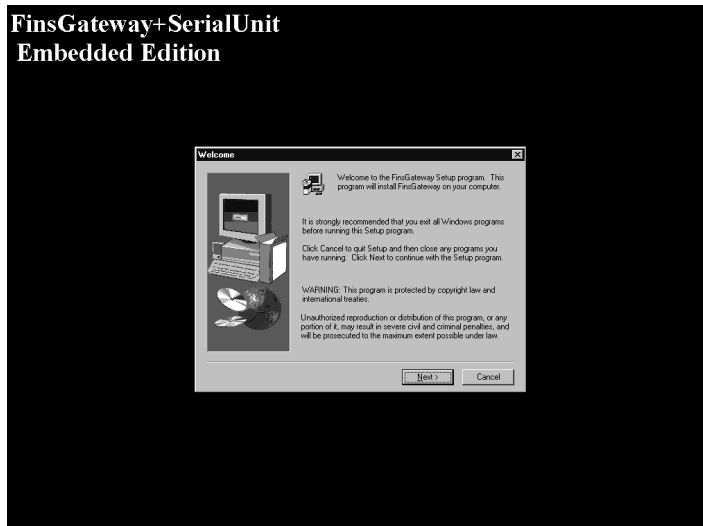
| Folder name | Contents                                                                                                                                                                                                                 |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clk         | Select this directory when connecting the PLC and personal computer (the CX-Process Tool and the CX-Process Monitor Plus) via Controller Link using a Controller Link Support Board (ISA bus) installed in the computer. |
| Clk (PCI)   | Select this directory when connecting the PLC and personal computer (the CX-Process Tool and the CX-Process Monitor Plus) via Controller Link using a Controller Link Support Board (PCI bus) installed in the computer. |
| Etn         | Select this directory to connect the personal computer (the CX-Process Tool and the CX-Process Monitor Plus) to the PLC via Ethernet.                                                                                    |
| Serial      | Select this directory to connect the personal computer (the CX-Process Tool and the CX-Process Monitor Plus) to the PLC via the Host Link.                                                                               |

The following step applies to Host Link SYSWAY connections.

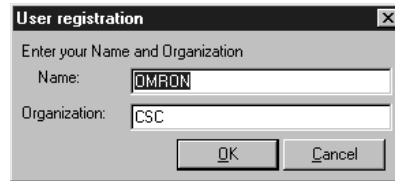
- Use a program such as Windows Explorer to open the CD-ROM and double-click the following icon to start the **Setup.exe** file in the CD-ROM's **Serial/disk1** directory.



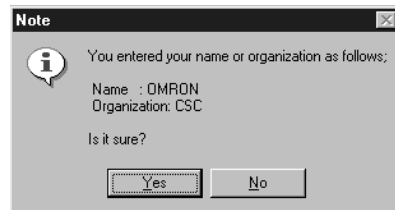
The following screen will be displayed.



3. Click the **Next** Button. The User Registration Dialog Box will be displayed.



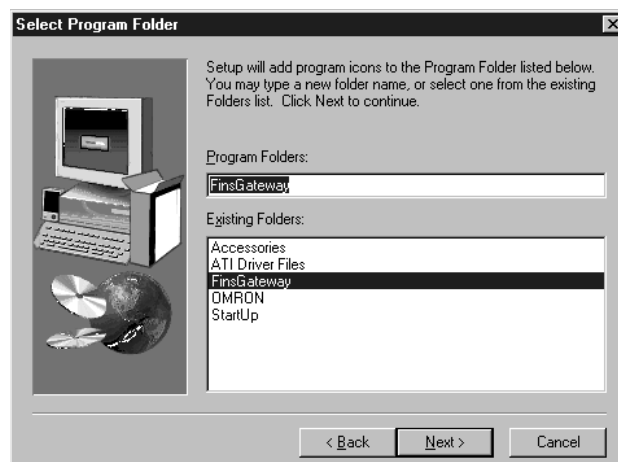
4. Enter your name and organization, and then click the **OK** Button. The Note Dialog Box will be displayed.



5. Click the **Yes** Button. The Choose Destination Location Dialog Box will be displayed.



6. Click the **Next** Button. The Select Program Folder Dialog Box will be displayed.



7. Check the installation destination is correct, and then click the **Next** Button. Installation will start automatically.

When installation is completed, the following dialog box will be displayed.



Click the **Finish** Button.

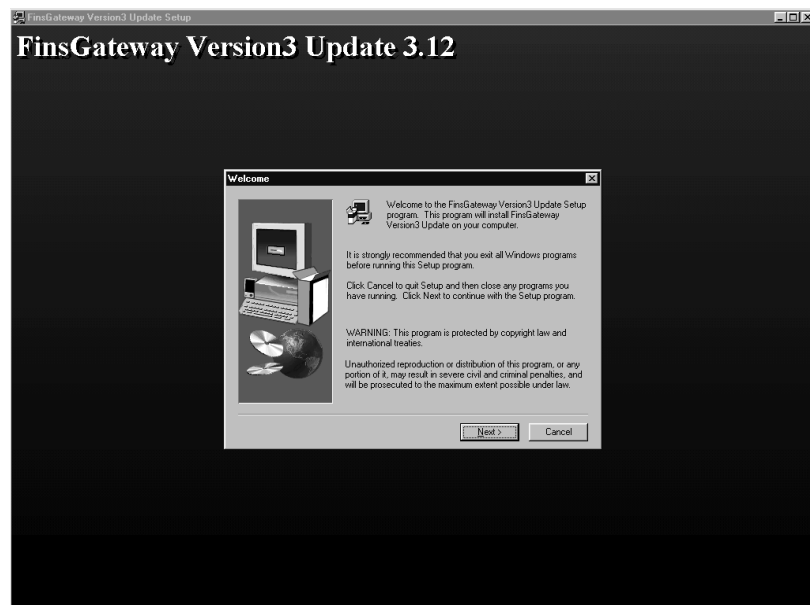
### Installing FinsGateway Update 3.12

**1,2,3...**

1. Use a program such as Windows Explorer to open the CD-ROM and double-click the following icon in the CD-ROM's **Fgwv3\FgwUpdate** directory.

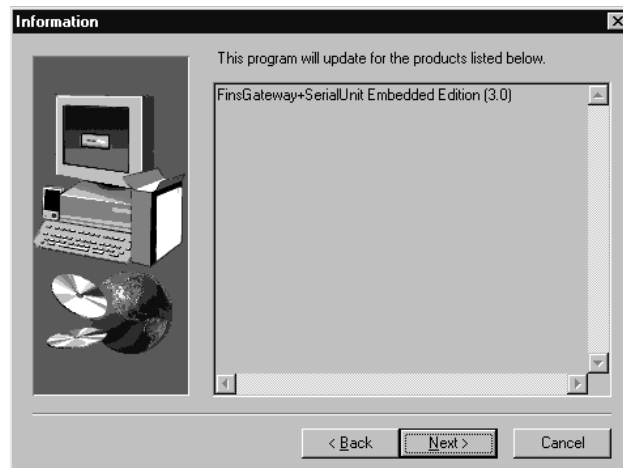


2. The following dialog box will be displayed.





- Click the **Next** Button. The Select Program Folder Dialog Box will be displayed.

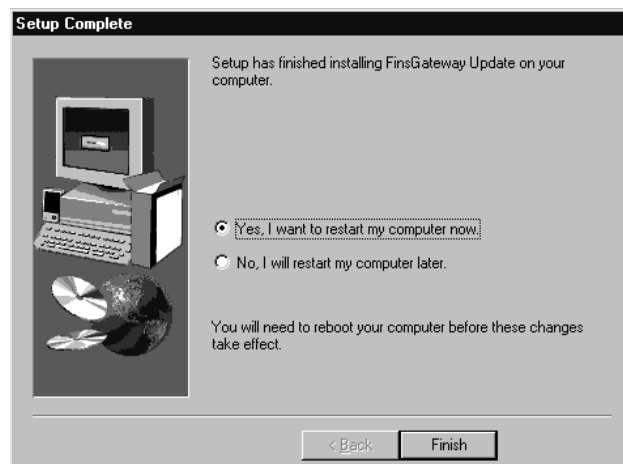


- Check the installation destination is correct, and then click the **Next** Button. The Start Copying Files Dialog Box will be displayed.



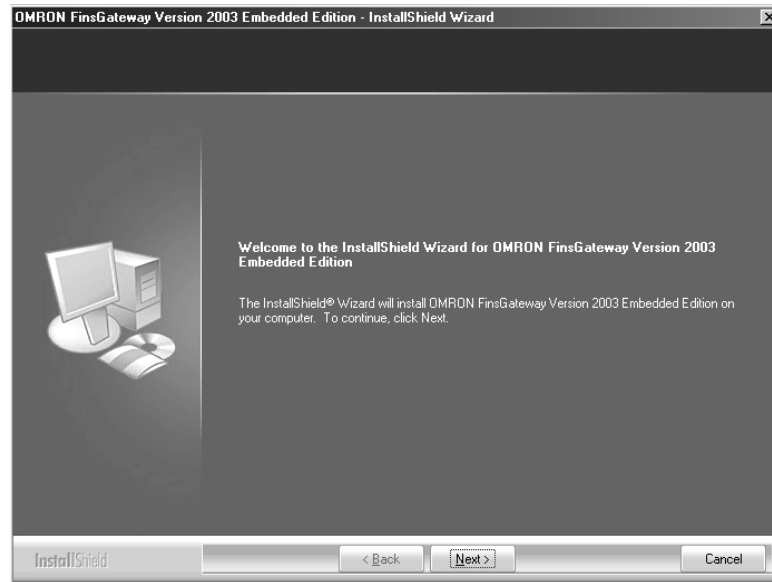
- Check the installation destination is correct, and click the **Next** Button. Installation will start automatically.

When installation is completed, the following dialog box will be displayed. Click the **Finish** Button.

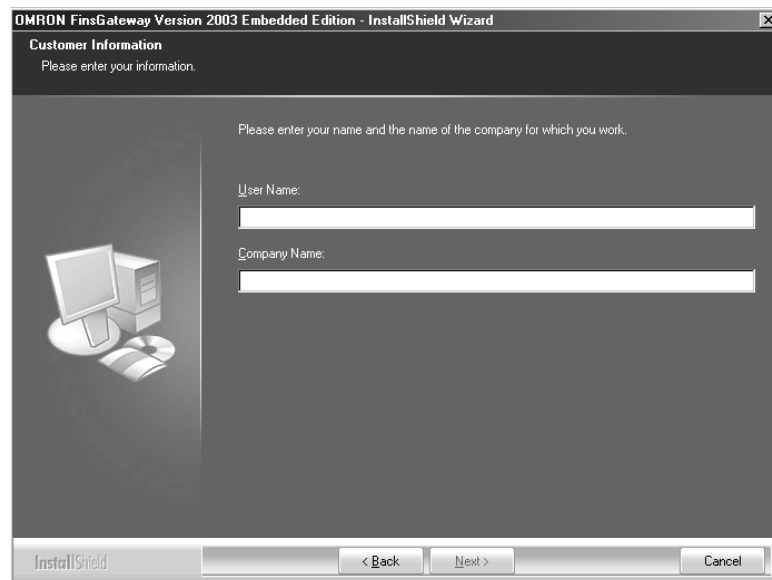


**Using FinsGateway  
Version 2003**

- 1,2,3...**
1. Open the CD-ROM and double-click the setup.exe file in the CD-ROM's Fgw2003 folder (Fgw2003\Fgw2003\Disk Images\Embed\setup.exe) to start the setup program.  
The following window will be displayed.  
Click the **Next** Button.

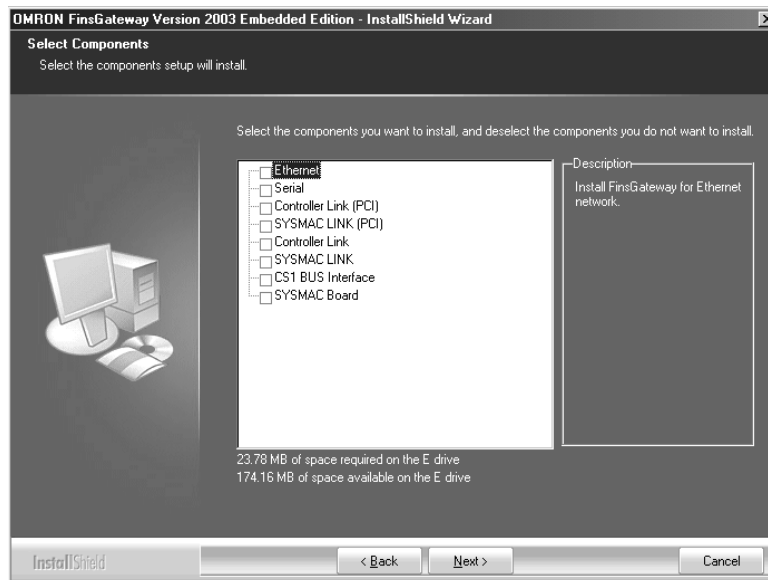


2. The following dialog box will be displayed.



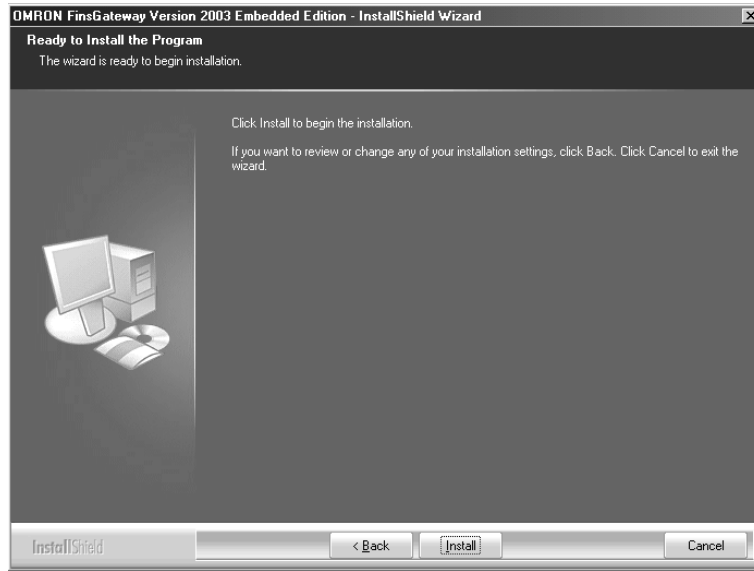
3. Enter the user name and the organization and click the **Next** Button.

4. Select the required communications drivers for the CX-Process Monitor Plus.  
As long as there is no problem, select all of them and then click the **Next** Button.

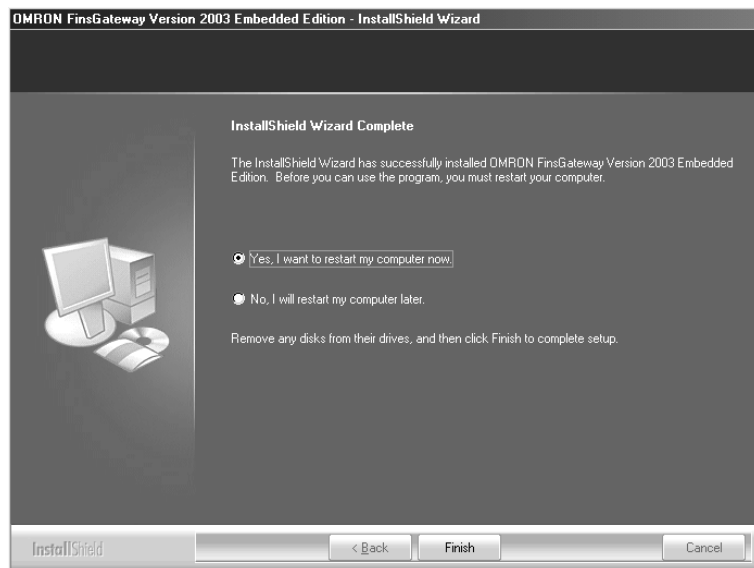


5. Specify the destination for the installation.  
If there is no need to change the default destination, just click the **Next** Button.

6. The following window will be displayed.  
Click the **Install** Button to start the installation.



7. When the installation has been completed, the following dialog box will be displayed.  
Click the **Finish** Button to restart the computer.



This completes the installation.

### 2-1-3 Uninstalling the CX-Process Monitor/Monitor Plus Version 1

If the CX-Process Monitor or CX-Process Monitor Plus Version 1 is already installed on the computer, uninstall it before installing CX-Process Monitor Plus Version 2. CX-Process Monitor Plus Version 2 cannot be installed on the same computer as the CX-Process Monitor or CX-Process Monitor Plus Version 1. Use the procedure given below.

**Note** The screen configuration data, trend information, and other data will be deleted when the CX-Process Monitor or Monitor Plus Version 1 is uninstalled. If this data needs to be saved, copy the data from the directory where

the CX-Process Monitor or CX-Process Monitor Plus Version 1 is installed to a suitable directory. Refer to *2-1-6 Converting Data from CX-Process Monitor*.

- Screen Configuration Data and Trend Data:

If the database path has not been changed from its default, the data will be saved in one of the following folders.

Copy the folder as is, and back it up.

- CX-Process Monitor Plus: Program Files\Omron\CX-Process Monitor Plus\DB

- CX-Process Monitor: Program Files\Omron\CX-Process Monitor\DB

If the database path has been changed, the data will not be deleted even if the application is uninstalled. Save the data if it is needed.

- Graphic Screen Data:

Graphic screen data created by the Graphic Builder is saved in a user-specified folder specified when files were created. The data in this folder will not be deleted even if the application is uninstalled. Remove the data manually if it is not required.

**1,2,3...**

1. Start the tool to add and delete applications from the Windows Control Panel.
2. Select the CX-Process Monitor or CX-Process Monitor Plus.
3. Click the button to delete the application.
4. Click the **OK** Button. The application will be uninstalled.
5. When processing has been completed, click the **OK** Button.

## 2-1-4 Installing CX-Process Monitor Plus

**1,2,3...**

1. Insert the CX-Process Monitor Plus installation CD-ROM disk in the CD-ROM drive.
2. Using a program such as Windows Explorer, select **CX-Process Monitor Plus** on the CD-ROM, and then **Disk1**, and then double-click the **Setup.exe** icon shown below.



The Preparing Setup Dialog Box will be displayed, and then the Install Shield Wizard will be displayed. Click the **Next** Button.



**Note** If the CX-Process Monitor or Monitor Plus Version 1 is already installed on the computer, the new installation will be aborted and a message will be displayed prompting you to first uninstall the CX-Process Monitor or Monitor Plus Version 1 program.

Uninstall the CX-Process Monitor or Monitor Plus Version 1 and then again install the CX-Process Monitor Plus Version 2.

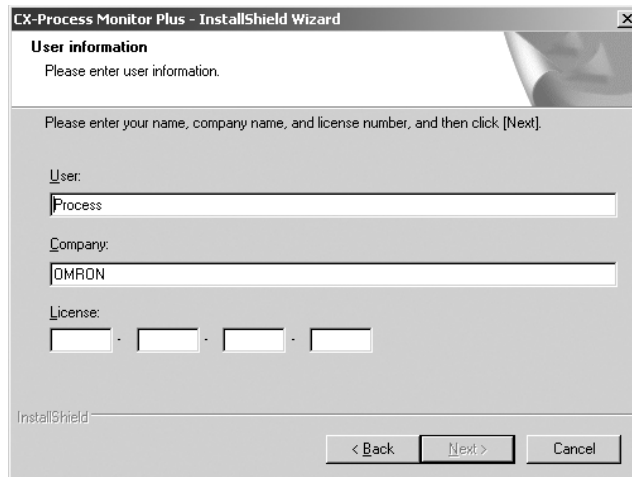
For details on uninstalling CX-Process Monitor and Monitor Plus, refer to 2-1-3 *Uninstalling the CX-Process Monitor/Monitor Plus Version 1*.

3. The License Agreement Dialog Box will be displayed.



Carefully read the product license agreement. If you accept all of the terms of the agreement, select that option and then click the **Next** Button.

4. The User Information Dialog Box will be displayed.



The user name and organization name registered on the computer are entered by default.

Enter the license number and then click the **Next** Button.

The license number is written on the software license agreement and user register that is included with the product.

5. The Choose Destination Location Dialog Box will be displayed.



Check the installation destination and click the **Next** Button.

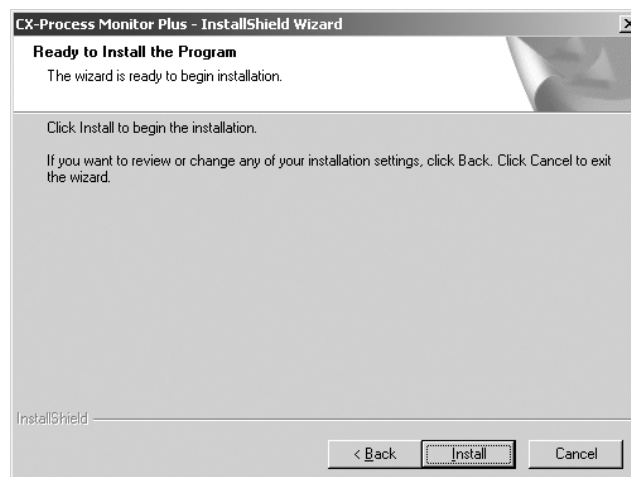
The default directory is C:\Program Files\OMRON\CX-Process Monitor Plus\

6. The Select Program Folder Dialog Box will be displayed.



Specify the location for adding a new shortcut to the program folder in the Start Menu, and then click the **Next** Button.

7. The Ready to Install the Program Dialog Box will be displayed.



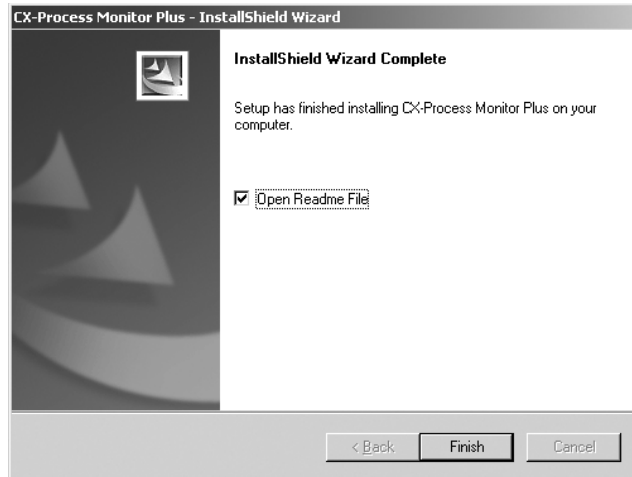
Click the **Install** Button.

The installation will be started by the installation program.

To check or make changes to the installation contents, click the **Return** Button.

To abort the installation, click the **Cancel** Button.

8. When the installation has been completed, the following dialog box will be displayed. Click the **Finish** Button.



**Note** Windows may have to be restarted after the installation. If required, restart Windows in response to the Install Shield Wizard message.

9. After the computer has been restarted, a ReadMe file will be displayed.

**Note** Be sure to read the ReadMe file before using CX-Process Monitor Plus.

This completes the CX-Process Monitor Plus installation.

## 2-1-5 Converting CX-Process Monitor Plus Data

The following procedure must be used to convert data from the CX-Process Monitor Plus software currently installed in the computer so that it can be used with the new CX-Process Monitor Plus version.

**Check the CX-Process Monitor Plus version.**

Check the version of the CX-Process Monitor Plus program currently installed on the computer.

**Move the CX-Process Monitor Plus database.**

Move the folder where data is saved for the CX-Process Monitor Plus program currently installed on the computer to a safe location. (See note 1.)

**Note** This is the folder set for the database path in the File System Setup. The default setting is C:\Program Files\Omron\CX-Process Monitor Plus\DB.

**Convert the CX-Process Monitor Plus database (using the Trend DB Conversion Utility).**

Use the Trend DB Conversion Utility to convert the trend group definition file for use with the new version of CX-Process Monitor Plus.

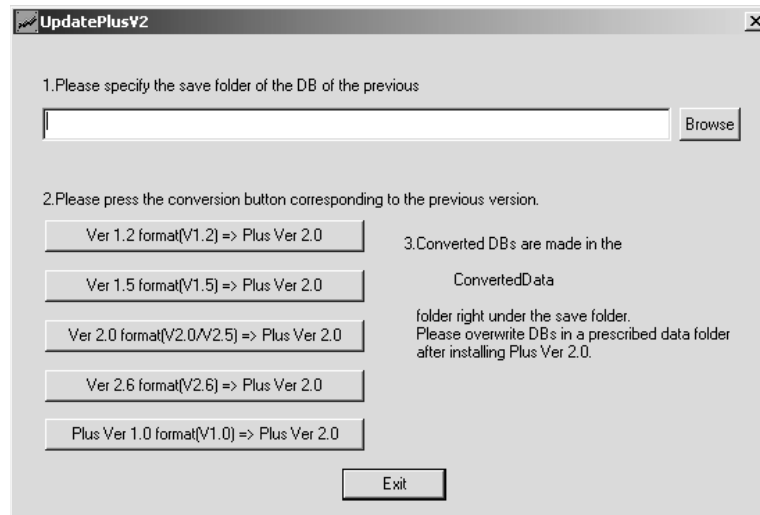
**1,2,3...**

1. Start the Trend DB Conversion Utility. The Trend DB Conversion Utility is stored at the following location:

CD-ROM drive:\MonitorPlusUpDate\UpDatePlusV2.exe

The following dialog box will be displayed:





2. Click the **Browse** Button and specify the folder where the CX-Process Monitor Plus database was moved earlier in this procedure.
3. Click the conversion button corresponding to the CX-Process Monitor Plus version confirmed earlier in this procedure.

Monitor Plus Version 1.0: Plus Ver 1.0 format (V1.0) → Plus Ver 2.0

**Note** Some data cannot be converted by the Trend DB Conversion Utility. Refer to *2-1-7 CX-Process Monitor Plus Conversion Specifications* for details on conversion specifications when converting to CX-Process Monitor Plus.

### Install the CX-Process Monitor Plus.

#### Copy the converted data.

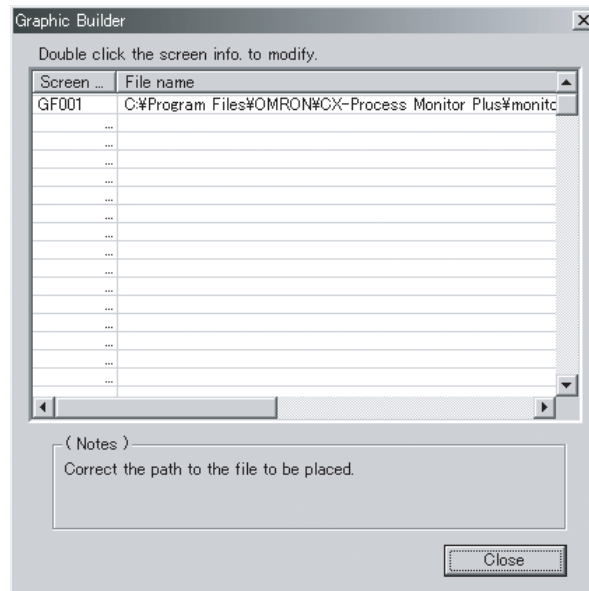
When the CX-Process Monitor Plus database is converted, the utility creates a folder named ConvertedData in the folder where the CX-Process Monitor Plus database was moved earlier in this procedure. Copy all of the files in this folder, including the GRF folder and all files in the GRF folder, and paste them in the newly installed CX-Process Monitor Plus database folder, overwriting any files already there. (The default for the CX-Process Monitor Plus database folder is C: \Program Files\Omron\CX-Process Monitor Plus\DB.)

#### Reset the Graphic Screen data (if Graphic Screens are being used).

If Graphic Screens are being used, the Graphic Screen data must be reset in the CX-Process Monitor Plus.

#### 1,2,3...

1. Start the CX-Process Monitor Plus.
2. Start the Graphic Builder and select the command from the File Menu to change the file information.
3. A list of registration information for previous graphic screens will be displayed. Specify each graphic file for each screen in the GRF folder in the Monitor Plus' DB folder.



## 2-1-6 Converting Data from CX-Process Monitor

The following procedure can be used to convert data from the CX-Process Monitor for use with the CX-Process Monitor Plus.

### Check the Version of the CX-Process Monitor.

Check the version of the CX-Process Monitor currently installed on the computer.

### Reset CX-Process Monitor Tags Set with CX-Process Tool as Tags for Monitor Plus.

Monitor tags used on the CX-Process Monitor cannot be used on the CX-Process Monitor Plus. The following procedure must thus be used to reset all of the CX-Process Monitor tags set with CX-Process Tool as tags for Monitor Plus. If the same tag names as used for the CX-Process Monitor tags are used for the CX-Process Monitor Plus, the work required in the last step of this data conversion procedure can be minimized.

1,2,3...

1. Display a monitor tag list on the CX-Process Tool (**Execute – Output Tag File – Monitor Tags**) and confirm the monitor tags that are being used.
2. Register the function blocks for data exchange with the CX-Process Monitor Plus that correspond to the function blocks for data exchange with the CX-Process Monitor.
3. For all of the tags set in the function blocks for data exchange with the CX-Process Monitor, set corresponding tags in the function blocks for data exchange with the CX-Process Monitor Plus.
4. Output the tag file for Monitor Plus (**Execute – Output Tag File – Monitor Plus Tag**).

### Move the CX-Process Monitor Database

Move the CX-Process Monitor Database from the folder (see note) where CX-Process Monitor data is saved to another folder on the computer.

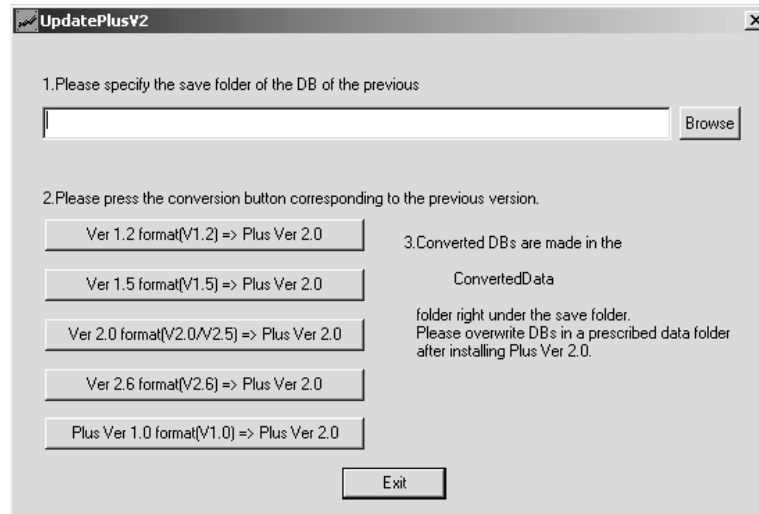
#### Note

This folder is set in the DB Path setting in the File System Setup. The default setting is C:\Program Files\Omron\CX-Process Monitor\DB

### Convert the CX-Process Monitor Database

Use the Trend DB Conversion Utility to convert the trend group definitions file for use with the CX-Process Monitor Plus.

- 1,2,3...**
1. Start the Trend DB Conversion Utility. The Trend DB Conversion Utility is stored at the following location:  
CD-ROM drive: \MonitorPlusUpDate\UpDatePlusV2.exe  
The following window will be displayed.



2. Click the **Browse** Button and specify the folder where the CX-Process Monitor database was moved earlier in this procedure.
3. Click the conversion button corresponding to the CX-Process Monitor version confirmed earlier in this procedure.
  - Monitor Version 1.2:  
Ver 1.2 format (V1.2) → Plus Ver 2.0
  - Monitor Version 1.5:  
Ver 1.5 format (V1.5) → Plus Ver 2.0
  - Monitor Version 2.0 or 2.5:  
Vers 2.0 format (V2.0/V2.5) → Plus Ver 2.0
  - Monitor Version 2.6:  
Ver 2.6 format (V2.6) → Plus Ver 2.0

**Note** Some data cannot be converted by the Trend DB Conversion Utility. Refer to *2-1-7 CX-Process Monitor Plus Conversion Specifications* for details on conversion specifications when converting to CX-Process Monitor Plus.

**Uninstall the CX-Process Monitor.**

**Install the CX-Process Monitor Plus.**

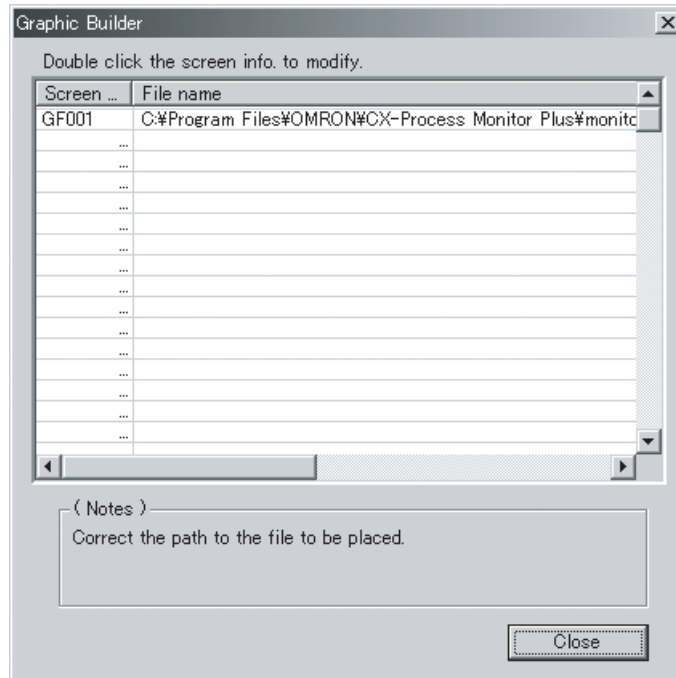
**Copy the Converted Data.** When the CX-Process Monitor database was converted, a folder called *ConvertedData* will have been created in the folder where the CX-Process Monitor database was moved earlier in this procedure. Copy all of the files in this folder, including the GRF folder and all files in the GRF folder, and paste them in the newly installed CX-Process Monitor Plus database folder, overwriting any files already there. (The default for the CX-Process Monitor Plus database folder is C: \Program Files\Omron\CX-Process Monitor Plus\DB.)

**Redo the Graphic Screen Data Settings.**

If Graphic Screens are being used, the Graphic Screen data must be reset in the CX-Process Monitor Plus.

- 1,2,3...**
1. Start the CX-Process Monitor Plus.
  2. Start the Graphic Builder and update the file information using the command on the File Menu.

3. A list of registration information for previous graphic screens will be displayed. Specify each graphic file for each screen in the GRF folder in the Monitor Plus' DB folder.



#### Re-allocate the Tags for Monitor Plus That Have Been Reset on the Control Screens and Graphic Screens

- 1,2,3...**
1. If different tag names were used when the tags were reset for the CX-Process Monitor Plus, use the CRT Builder to set the tag names in Control Screens and Trend Screens to the new tag names.
  2. Reset all of the tag names allocated to objects (e.g., meters and tanks) on Graphic Screens to the ones used when the tags were reset for the CX-Process Monitor Plus.

## 2-1-7 CX-Process Monitor Plus Conversion Specifications

The following table shows the conversion specifications when using the Trend DB Conversion Utility to convert CX-Process data to the latest CX-Process Monitor Plus data format. When necessary, set the converted data into the latest version of CX-Process Monitor Plus again.

| Setting or screen          |                       | Data convertible?                      |                         | Remarks                                                                                                                                                                                                               |
|----------------------------|-----------------------|----------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            |                       | CX-Process Monitor Plus Version 1 data | CX-Process Monitor data |                                                                                                                                                                                                                       |
| Tag information            |                       | Yes                                    | No                      | When CX-Process Monitor data is converted, the tags for CX-Process Monitor Plus must be created again.                                                                                                                |
| System Information setting |                       | Yes                                    | Yes                     | Settings added during version upgrades will be set to their default values.                                                                                                                                           |
| System Monitor Log Screen  |                       | Yes                                    | Yes                     | ---                                                                                                                                                                                                                   |
| Overview Screen            |                       | Yes                                    | Yes                     | ---                                                                                                                                                                                                                   |
| Control Screen             |                       | Yes                                    | Yes                     | ---                                                                                                                                                                                                                   |
| Tuning Screen              |                       | ---                                    | ---                     | ---                                                                                                                                                                                                                   |
| Trend Screen               | Tag settings          | Yes                                    | Yes                     | ---                                                                                                                                                                                                                   |
|                            | Historical trend data | No                                     | No                      | Past log data is discarded.                                                                                                                                                                                           |
|                            | Real time trend data  | No                                     | No                      | Past log data is discarded.                                                                                                                                                                                           |
| Graphic Screen             | Graphic screen data   | Yes                                    | Yes                     | The path to the graphic screen data must be set again. For details, refer to the instructions on resetting graphic screen data in 2-1-5 or 2-1-6.                                                                     |
|                            | Graphic objects       | Yes                                    | Yes                     | The earlier version's data is converted as-is, but new functions added during version upgrades cannot be used. When you want to use new functions, the data must be created again in the new version of Monitor Plus. |
| Annunciator Screen         |                       | Yes                                    | Yes                     | ---                                                                                                                                                                                                                   |
| Operation Guide Screen     |                       | Partially convertible                  | Partially convertible   | <ul style="list-style-type: none"> <li>• The Operation Guide Message settings are converted.</li> <li>• Past log data is discarded.</li> </ul>                                                                        |
| Alarm Log Screen           |                       | Partially convertible                  | Partially convertible   | <ul style="list-style-type: none"> <li>• The alarm messages and alarm tag settings are converted.</li> <li>• Past log data is discarded.</li> </ul>                                                                   |
| Operation Log Screen       |                       | No                                     | No                      | Past log data is discarded.                                                                                                                                                                                           |
| System Monitor Log Screen  |                       | No                                     | No                      | Past log data is discarded.                                                                                                                                                                                           |

## 2-2 Connecting the PLC

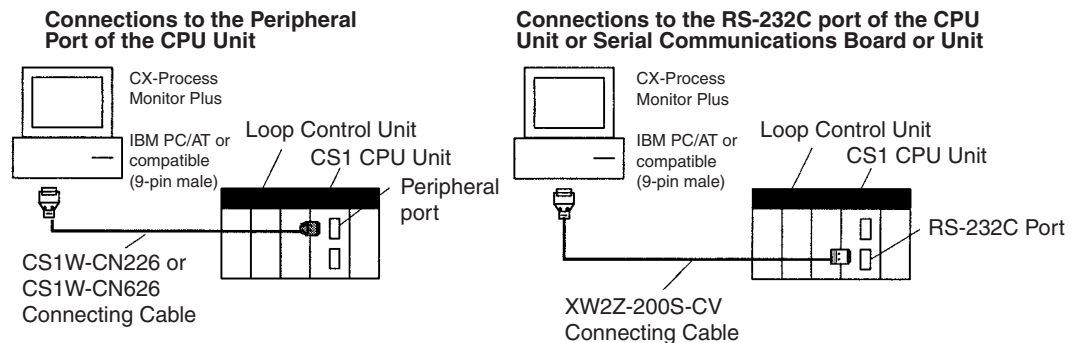
The following three methods can be used to connect to the PLC. Regardless of the connection method, the FinsGateway communications driver (embedded version) is used.

| Communications network           | FinsGateway communications driver                                 | Contents                                                                                           |
|----------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Host Link Network<br>(See note.) | Serial Unit Driver                                                | Connecting to the peripheral or RS-232C port of the PLC over Host Link.                            |
| Controller Link Network          | CLK (PCI slot) Driver<br>(Not supported by FinsGateway Version 2) | Connecting through the Controller Link Support Board to a PLC with a Controller Link Unit mounted. |
| Ethernet Network                 | ETN_UNIT Driver                                                   | Connecting through the Ethernet Board to a PLC with an Ethernet Unit mounted.                      |

**Note** Host Link communications use FINS commands wrapped in header and terminator data (i.e., SYSWAY-CV for FinsGateway). Host Link communications (SYSMAC WAY) is set for the CPU Unit.

### 2-2-1 Connecting via Host Link

The personal computer uses the FinsGateway's Serial Unit Driver to connect to the peripheral or RS-232C port of the PLC via Host Link communications.



- Note**
1. The Serial Communications Mode must be set to Host Link. Host Link communications use FINS commands wrapped in header and terminator data (i.e., SYSWAY-CV for FinsGateway). The peripheral bus cannot be used.
  2. The FinsGateway Serial Unit Driver must be installed to enable connecting the PLC via Host Link communications.
  3. The following Connecting Cables are used to connect the CX-Process Tool (personal computer) to the PLC (CPU Unit or Serial Communications Board/Unit).

## Connecting Cables

| Unit     | Port on Unit                                | Computer                 | Port on computer | Serial Communications Mode | Model                              | Length       | Remarks               |                       |
|----------|---------------------------------------------|--------------------------|------------------|----------------------------|------------------------------------|--------------|-----------------------|-----------------------|
| CPU Unit | Built-in peripheral port                    | IBM PC/ AT or compatible | Male 9-pin D-SUB | Host Link                  | CS1W-CN226                         | 2.0 m        | ---                   |                       |
|          |                                             |                          |                  |                            | CS1W-CN626                         | 6.0 m        |                       |                       |
|          | Built-in RS-232C port<br>Female 9-pin D-SUB |                          |                  |                            | XW2Z-200S-CV                       | 2 m          | Anti-static connector |                       |
|          |                                             |                          |                  |                            | XW2Z-500S-CV                       | 5 m          |                       |                       |
|          | Serial Communications Board or Unit         |                          |                  |                            | RS-232C port<br>Female 9-pin D-SUB | XW2Z-200S-CV | 2 m                   | anti-static connector |
|          |                                             |                          |                  |                            |                                    | XW2Z-500S-CV | 5 m                   |                       |

**Note** Touch a grounded metal to discharge all static electricity from your body before connecting any of the above cable connectors to the RS-232C port of the PLC.

The XW2Z-□□□S-CV Cable uses the anti-static XM2S-0911-E Connector Hood. For safety sake, however, discharge all static electricity from your body before touching the connector.

The following components are used to connect RS-232C cable to the peripheral port.

| Unit     | Port on Unit             | Computer                | Port on computer | Serial Communications Mode | Model                             | Length             | Remarks                                       |
|----------|--------------------------|-------------------------|------------------|----------------------------|-----------------------------------|--------------------|-----------------------------------------------|
| CPU Unit | Built-in peripheral port | IBM PC/AT or compatible | Male 9-pin D-SUB | SYSMAC WAY (Host Link)     | CS1W-CN118 + XW2Z-200S-CV/500S-CV | 0.1 m + (2 or 5 m) | The XW2Z-□□□S-CV is an anti-static connector. |
|          |                          |                         |                  |                            | CS1W-CN118 + XW2Z-200S-V/500S-V   |                    | ---                                           |

The following components are available for connecting the CQM1-CIF01 or CQM1-CIF02 Cable to the peripheral port.

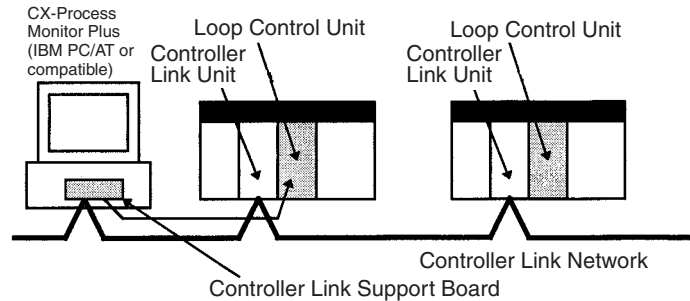
| Unit     | Port on Unit             | Computer                | Port on computer | Serial Communications Mode | Model                   | Length         | Remarks |
|----------|--------------------------|-------------------------|------------------|----------------------------|-------------------------|----------------|---------|
| CPU Unit | Built-in peripheral port | IBM PC/AT or compatible | Male 9-pin D-SUB | SYSMAC WAY (Host Link)     | CS1W-CN114 + CQM1-CIF02 | 0.05 m + 3.3 m | ---     |

The following components are available for connecting the IBM PC/AT or compatible over RS-232C

| Unit                                 | Port on Unit                                | Com-puter                | Port on com-puter | Serial Com-munications Mode | Model       | Length | Remarks |
|--------------------------------------|---------------------------------------------|--------------------------|-------------------|-----------------------------|-------------|--------|---------|
| CPU Unit                             | Built-in RS-232C port<br>Female 9-pin D-SUB | IBM PC/AT or compati-ble | Male 9-pin D-SUB  | SYSMAC WAY (Host Link)      | XW2Z-200S-V | 2 m    | ---     |
|                                      |                                             |                          |                   |                             | XW2Z-500S-V | 5 m    |         |
| Serial Com-munications Board or Unit | RS-232C Port<br>Female 9-pin D-SUB          |                          |                   |                             | XW2Z-200S-V | 2 m    |         |
|                                      |                                             |                          |                   |                             | XW2Z-500S-V | 5 m    |         |

### 2-2-2 Connecting through a Controller Link Support Board

The personal computer uses the FinsGateway Controller Link Driver to connect to the PLC over a Controller Link Network.



**Note** The FinsGateway CLK (PCI) Driver or Controller Link Driver with FinsGateway version 2 or higher must be installed to enable connecting the PLC via a Controller Link Network.

#### Controller Link Unit Models

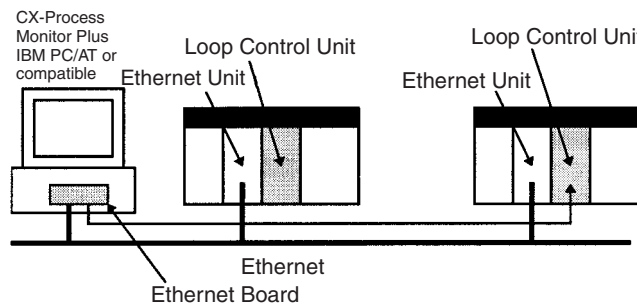
| Controller Link Unit | PLC | Unit         | Type         | Transmission path      |
|----------------------|-----|--------------|--------------|------------------------|
| CS1W-CLK21-V1        | CS1 | CPU Bus Unit | Wired        | Twisted-pair cable     |
| CS1W-CLK12-V1        |     |              | Optical Ring | Optical fiber cable    |
| CS1W-CLK52-V1        |     |              | Optical      | GI Optical fiber cable |
| CJ1W-CLK21-V1        | CJ  | CPU Bus Unit | Wired        | Twisted-pair cable     |

#### Controller Link Support Boards

| Controller Link Support Board | Transmission medium                      | Computer                           | FinsGateway Driver                                               |
|-------------------------------|------------------------------------------|------------------------------------|------------------------------------------------------------------|
| 3G8F7-CLK12-V1                | Optical fiber cable (ring configuration) | IBM PC/AT or compatible (PCI slot) | CLK (PCI slot) Driver<br>(FinsGateway Version 2 cannot be used.) |
| 3G8F7-CLK52-V1                |                                          |                                    |                                                                  |
| 3G8F7-CLK21-V1                | Wire                                     |                                    |                                                                  |
| 3G8F5-CLK11-V1                | Optical fiber cable                      | IBM PC/AT or compatible            | Controller Link Driver                                           |
| 3G8F5-CLK21-V1                | Wire                                     |                                    |                                                                  |

### 2-2-3 Connections via Ethernet

The personal computer uses the FinsGateway ETN\_UNIT Driver to connect to the PLC via Ethernet.



**Note** The FinsGateway ETN\_UNIT Driver must be installed to enable connecting the PLC via Ethernet.



**Ethernet Unit Model**

| Model      | PLC       | Unit         | Transmission path |
|------------|-----------|--------------|-------------------|
| CS1W-ETN01 | CS Series | CPU Bus Unit | Ethernet 10Base-5 |
| CS1W-ETN11 |           |              | Ethernet 10Base-T |
| CS1W-ETN21 |           |              | Ethernet 10Base-T |
| CJ1W-ETN11 | CJ        | CPU Bus Unit | Ethernet 10Base-T |
| CJ1W-ETN21 |           |              | Ethernet 10Base-T |

## SECTION 3

# Exchanging Data with Monitor Plus

This section explains how to exchange analog and digital (contact) data between Monitor Plus and the function blocks in Loop Control Units and Boards.

|       |                                                     |    |
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## 3-1 Data Exchange Method

### 3-1-1 Overview

The function blocks listed in the following table must be registered/connected in the Loop Control Unit/Board in order for the Monitor Plus Software to access data in the Loop Control Unit/Board. Data is exchanged using the function blocks and the tags set in those function block.

There are 4 possible cases, as shown in the following table.

| Case | Data exchanged             | Loop Control Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Loop Control Board                                                                                                       |
|------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 1    | Function block (See note.) | 1. Register Send All Blocks (Block Model 462) and Receive All Blocks (Block Model 461).<br>2. Set CSV tags in the function blocks.                                                                                                                                                                                                                                                                                                                                                                                                    | 1. Set the HMI function settings in the System Common Block (Block Model 000).<br>2. Set CSV tags in the function block. |
| 2    | Analog signals             | When monitoring analog signals:<br>1. Register the Input Selector (Block Model 162).<br>2. Set the tags for Monitor Plus in the Input Selector (Block Model 162).<br>3. Connect the function block's analog signals in the Input Selector (Block Model 162).<br>When setting analog signals:<br>1. Register the Constant Generator (Block Model 166).<br>2. Set the tags for Monitor Plus in the Constant Generator (Block Model 166).<br>3. Connect the function block's analog signals in the Constant Generator (Block Model 166). |                                                                                                                          |
| 3    | Contact signals            | 1. Register the Contact Distributor (Block Model 201) and Internal Switch (Block Model 209).<br>2. Set the target and source designations in the Contact Distributor (Block Model 201).<br>3. Set the tags for Monitor Plus.<br>When setting contact signals:<br>Specify the Internal Switch's (Block Model 209) ITEM tags as settings<br>When monitoring contact signals:<br>Specify the Internal Switch's (Block Model 209) ITEM tags as displays.                                                                                  |                                                                                                                          |
| 4    | User link table            | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Set the user link table.                                                                                                 |

**Note** Each function block's ITEM list indicates which ITEMS will be read or written. (An ITEM will not be read or written if "—" is indicated for the R/W Mode in the *According to HMI* or *According to Monitor Plus* columns.)

### 3-1-2 Exchanging Data with Function Blocks

This section explains how to use Monitor Plus to read and write data in function blocks within the Loop Control Unit or Board.

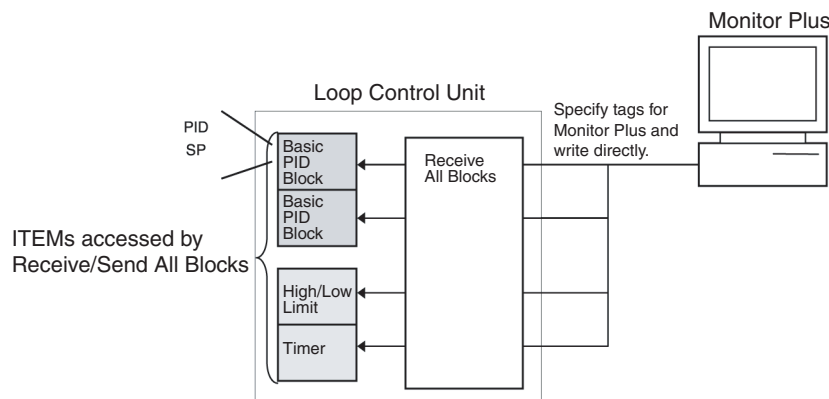
#### Loop Control Unit

Monitor Plus can be used to set function block data with Receive All Blocks (Block Model 461) and monitor function block data with Send All Blocks (Block Model 462).

#### Setting Function Block Data from Monitor Plus

Monitor Plus writes data directly to the specified function block's tag. The Receive All Blocks (Block Model 461) function block must be registered in advance.

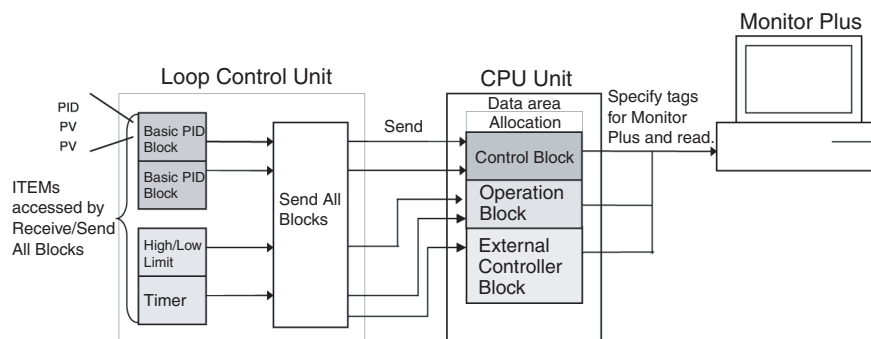
Setting Example:



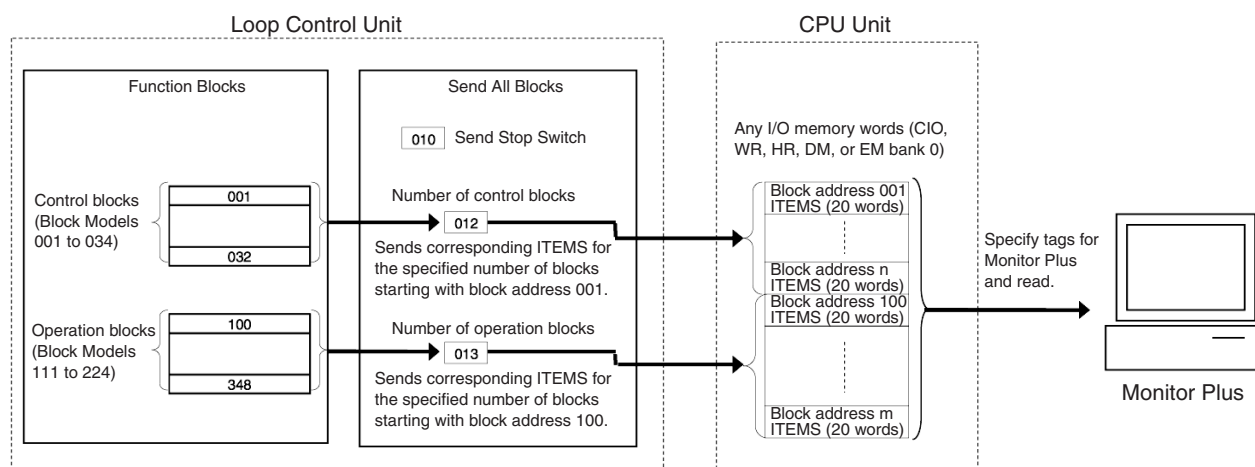
### Monitoring Function Block Data from Monitor Plus

Monitor Plus monitors the Loop Control Unit's function block data through the Send All Blocks (Block Model 462) function block.

Monitoring Example:

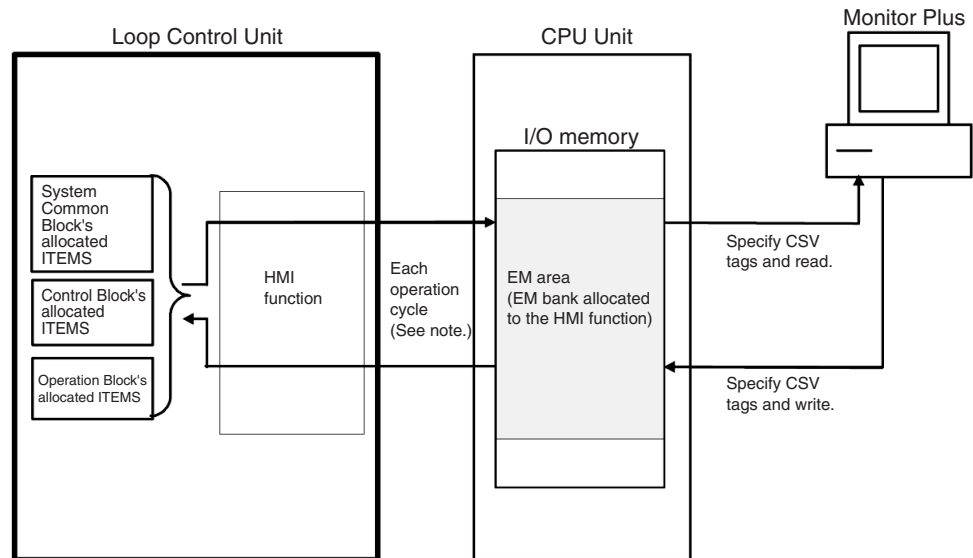


Monitor Plus actually monitors data as shown in the following diagram.

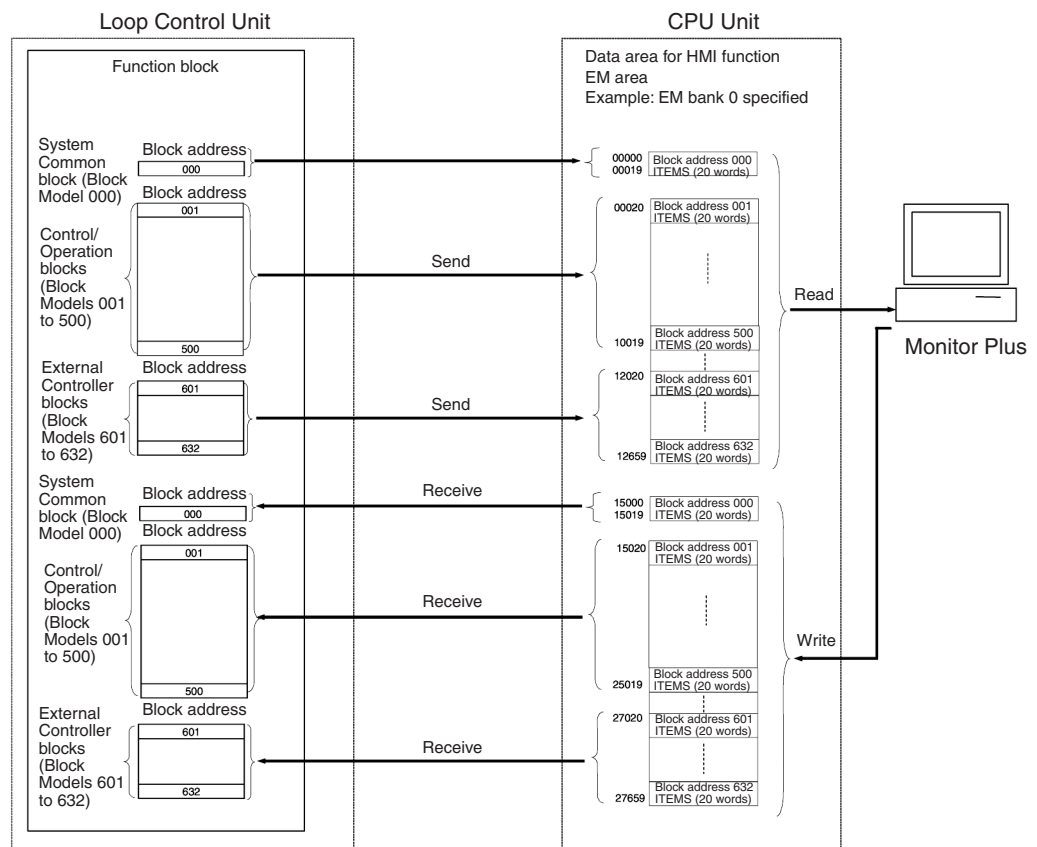


## Loop Control Board

Monitor Plus uses the HMI function to set and monitor function block data.

**HMI Function**

The HMI function constantly exchanges ITEM data (20 words/block) of Control Blocks, Operation Blocks, External Controller Blocks, and the System Common Block with the specified words in an EM bank in the CPU Unit in the order of function block addresses.



### 3-1-3 Exchanging Analog Signal Data

The Loop Control Unit or Board's analog signal data can be read and written as follows:

- Setting (Writing) Analog Signal Data

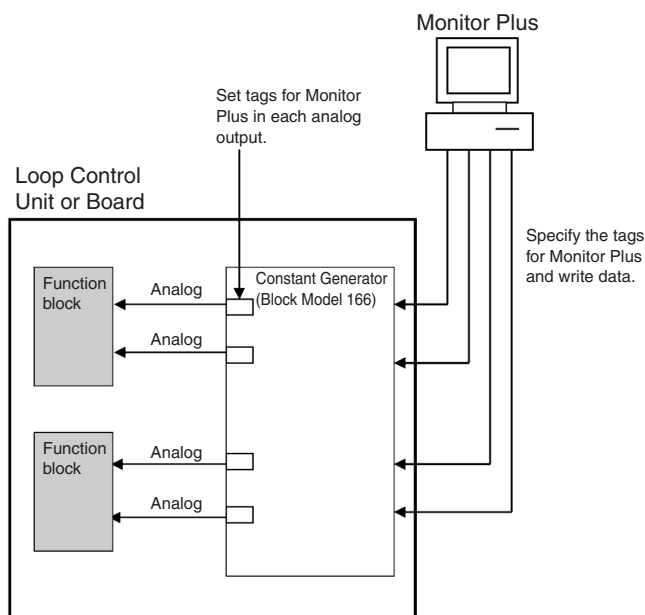
The Constant Generator (Block Model 166) must be registered and data must be written to each function block's analog item. Set the tags for Monitor Plus in the Constant Generator (Block Model 166) function block's analog ITEMS.

- Monitoring (Reading) Analog Signal Data

The Input Selector (Block Model 162) must be registered and data must be read from each function block's analog item. Set the tags for Monitor Plus in the Input Selector (Block Model 162) function block's analog ITEMS.

#### Setting Analog Signals from Monitor Plus

Write data through the tags for Monitor Plus set in the Constant Generator block (Block Model 166) from Monitor Plus. By writing to the Constant Generator block from Monitor Plus, it is possible to set analog values in the function blocks.



**1,2,3...**

1. Output (connect) the Constant Generator (Block Model 166) to the contact input ITEMS in which you want to set analog values.

- Set the tags for Monitor Plus in the Constant Generator (Block Model 166).  
Set a tag name for each ITEM (Y1 to Y8).

LCU/LCB: LC001-1

Group: 11. Block Diagram 1

Function Block: 101. Constant Generator

Tag Name: AnalogIn1

Comment:

Scaling Upper Limit: 10000 DP: 2

Scaling Lower Limit: 0 Unit:

☐ Alarm ☒ Setting ☐ Display

Register Delete

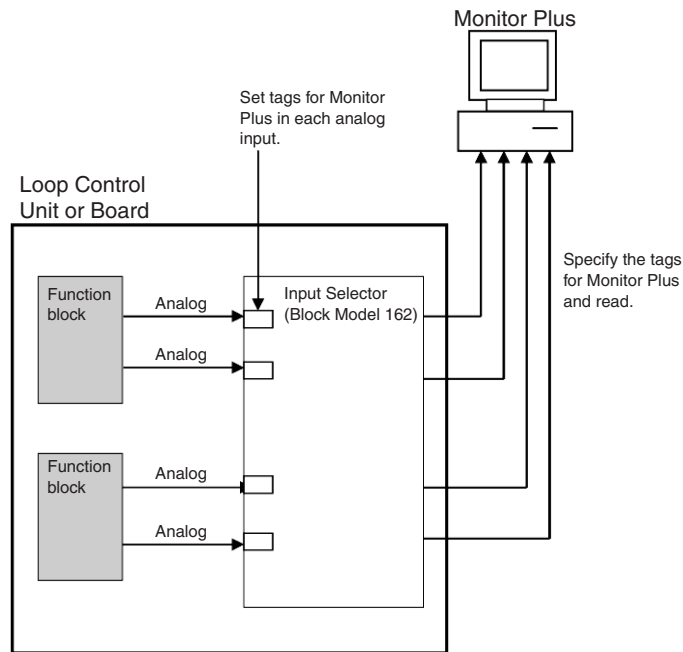
| No  | ITEM | Tag name  | Comment |
|-----|------|-----------|---------|
| 001 | Y1   | AnalogIn1 |         |
| 002 | Y2   |           |         |
| 003 | Y3   |           |         |
| 004 | Y4   |           |         |
| 005 | Y5   |           |         |
| 006 | Y6   |           |         |
| 007 | Y7   |           |         |
| 008 | Y8   |           |         |

OK Cancel

- Use Monitor Plus to specify the Constant Generator's tags for Monitor Plus and write the data to each ITEM (Y1 to Y8).
- Use the Contact Distributor (Block Model 201) to write each internal switch's bit data to the specified function block's bits.
- In the end, the analog values are set in the function block's contact input ITEM.

### Monitoring Analog Signals from Monitor Plus

Write data through the tags for Monitor Plus set in the Input Selector block (Block Model 162) from Monitor Plus. By reading the analog values that are input to the Input Selector, it is possible to monitor the analog values in the function blocks.



**1,2,3...**

1. Input (connect) the analog inputs to the Input Selector (Block Model 162) from the function block's contact input ITEMS containing analog values that you want to monitor.
2. Set the tags for Monitor Plus in the Input Selector (Block Model 162). Set a tag name for each ITEM (X1 to X8).

Edit Monitor Plus Tag

LCU/LCB: LC001-1

Group: 11. Block Diagram 1

Function Block: 102. Input Selector

Tag Name: AnalogOut1

Comment:

Scaling Upper Limit: 10000 DP: 2

Scaling Lower Limit: 0 Unit:

☐ Alarm ☒ Setting ☒ Display

Register Delete

| No  | ITEM | Tag name   | Comment |
|-----|------|------------|---------|
| 001 | X1   | AnalogOut1 |         |
| 002 | X2   |            |         |
| 003 | X3   |            |         |
| 004 | X4   |            |         |
| 005 | X5   |            |         |
| 006 | X6   |            |         |
| 007 | X7   |            |         |
| 008 | X8   |            |         |

OK Cancel

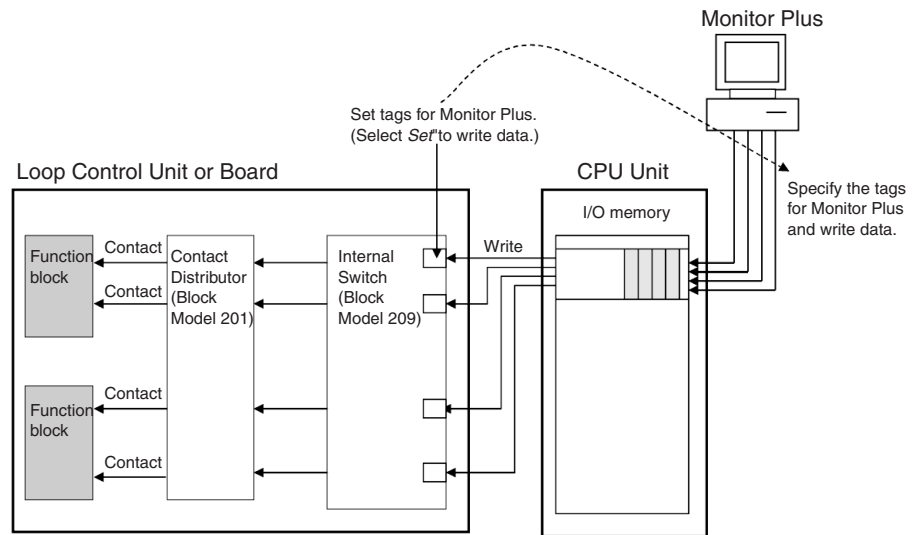
3. Use Monitor Plus to specify the Input Selector's tags for Monitor Plus and read the data from each ITEM (X1 to X8).
4. Use the Contact Distributor (Block Model 201) to write each internal switch's bit data to the specified function block's bits.
5. In the end, the analog values are monitored.



### 3-1-4 Exchanging Contact Signal Data

In order to read/write the Loop Control Unit or Board's contact signal data, the Contact Distributor (Block Model 201) and Internal Switch (Block Model 209) blocks must be registered as a set and the Contact Distributor (Block Model 201) must be connected to each function block's contact ITEMS. Set the tags for Monitor Plus in the Internal Switch (Block Model 209) block's bits.

#### Setting Bits from Monitor Plus



1,2,3...

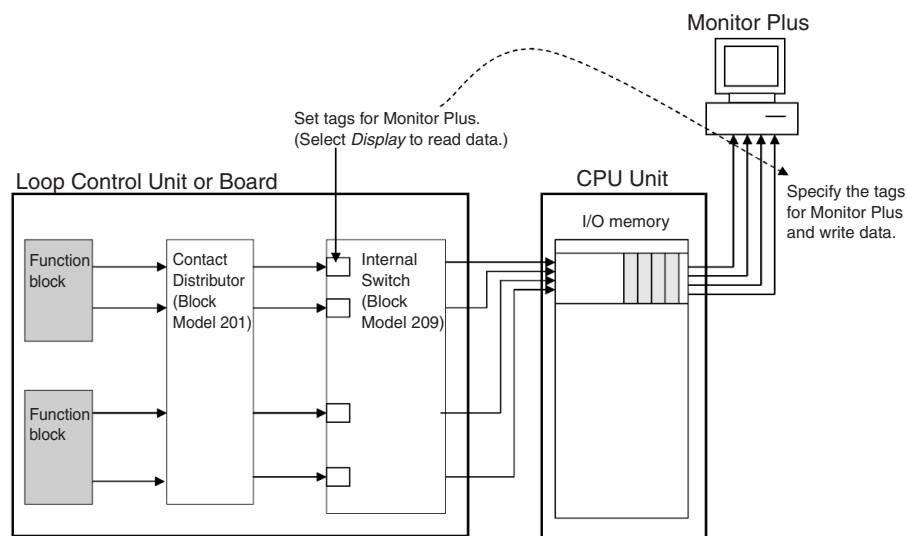
1. Connect the Contact Distributor (Block Model 201) as the destination for the function block's contact input ITEM that you want to set. At the same time, input (connect) the Internal Switch (Block Model 209) from the Contact Distributor (Block Model 201).
2. Set the tags for Monitor Plus in the Internal Switch (Block Model 209). Set a tag name for each ITEM (S1 to S8).

| No  | ITEM | Tag name | Comment |
|-----|------|----------|---------|
| 001 | S1   | RLSW     |         |
| 002 | S2   |          |         |
| 003 | S3   |          |         |
| 004 | S4   |          |         |
| 005 | S5   |          |         |
| 006 | S6   |          |         |
| 007 | S7   |          |         |
| 008 | S8   |          |         |
| 009 | S9   |          |         |
| 010 | S10  |          |         |
| 011 | S11  |          |         |
| 012 | S12  |          |         |
| 013 | S13  |          |         |
| 014 | S14  |          |         |
| 015 | S15  |          |         |
| 016 | S16  |          |         |
| 017 | S17  |          |         |

When setting data, select the *Set* Option.

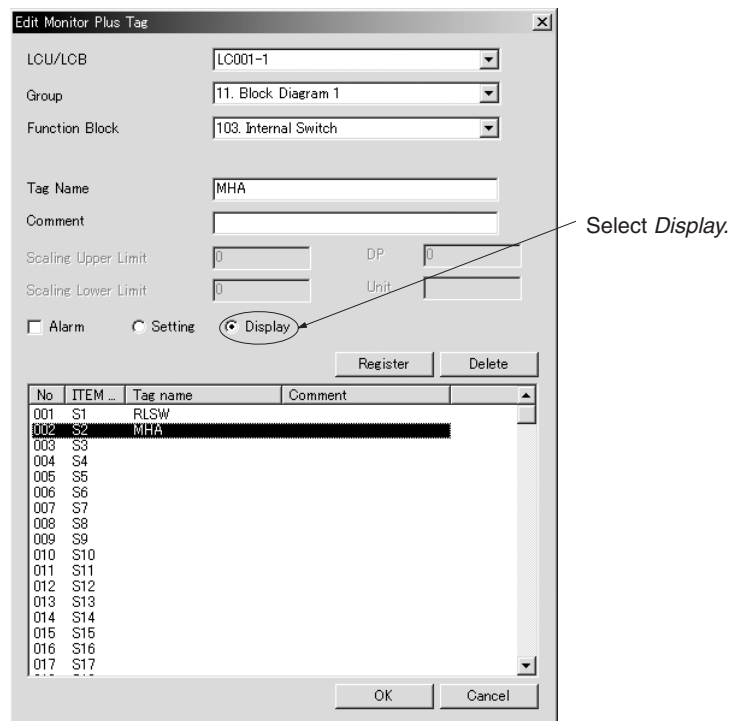
3. Use Monitor Plus to specify the Internal Switch's tags for Monitor Plus and write the data to the Internal Switch's bits through the CPU Unit's data area.
4. Use the Contact Distributor (Block Model 201) to write each internal switch's bit data to the specified function block's bits.
5. In the end, the bits will be set to the function block's contact input ITEMS.

### Monitoring Bits from Monitor Plus



**1,2,3...**

1. Connect the Contact Distributor (Block Model 201) as the source for the function block's contact input ITEM that you want to monitor. At the same time, output (connect) from the Contact Distributor (Block Model 201) to the Internal Switch (Block Model 209).
2. Set the tags for Monitor Plus in the Internal Switch (Block Model 209). Set a tag name for each ITEM (S1 to S8).

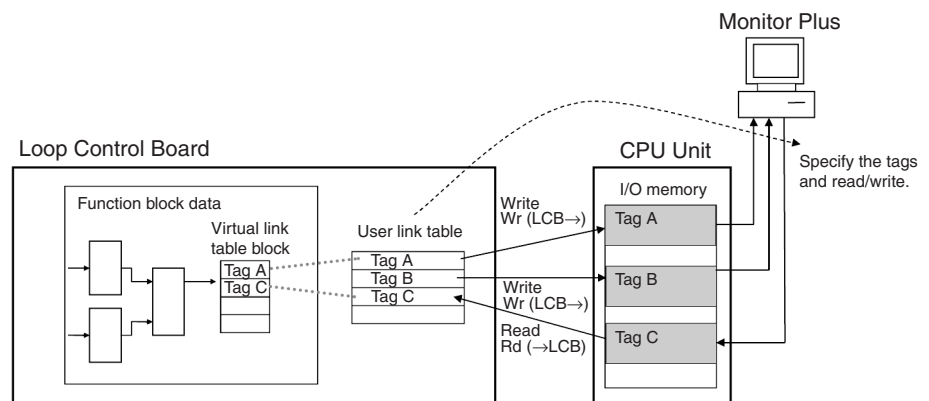


When monitoring data, select the *Display* option.

3. Use the Contact Distributor (Block Model 201) to read data to each internal switch's bit.
4. Use Monitor Plus to specify the Internal Switch's tags for Monitor Plus and read Internal Switch's bit data through the CPU Unit's data area.
5. The bit data will monitored.

### 3-1-5 Exchanging Data with the User Link Table

The user link table can be used to read/write data in the CPU Unit's memory. The CPU Unit's memory data areas can be read/written from Monitor Plus by setting tags in this user link table.



### Setting/Monitoring Digital Data through the User Link Table

Number: 1  
Refresh period: 2.00 sec  
Link counts: 0 Counts  
Tag name: ContactRead  
Comment:

**Specify Link memory**  
Link Mode: Constant  
Memory type: CIO  
Memory address: 0  
A/D: Digital  
Bit Position: 00  
R/W: Wr(LCB→)

**Range Conversion**  
ON OFF  
0% 0 100% 10000

**Contact Synchronization**  
Sync Signal:

**Reading ITEM**  
ON OFF  
ITEM Specified:

☒ Output as CSV Tag information  
Scaling upper limit: 0  
Scaling lower limit: 0  
DP position: 0  
Unit:

☐ Alarm Set  
☒ Monitor Plus Tag setting

Buttons: Back, Next, OK, Cancel

Annotations:  
Specify the CPU Unit's data area. → Memory type  
Select Contact or Analog. → A/D  
When monitoring, select Wr (LCB\*). When setting, select Rd (\*LCB). → R/W  
Always select this option. → Output as CSV Tag information  
Select this option when specifying an alarm tag. → Alarm Set  
Always select this option. → Monitor Plus Tag setting

### Setting/Monitoring Analog Data through the User Link Table

Number: 2  
Refresh period: 2.00 sec  
Link counts: 0 Counts  
Tag name: AnalogRead  
Comment:

**Specify Link memory**  
Link Mode: Constant  
Memory type: CIO  
Memory address: 100  
A/D: Analog  
Bit Position:  
R/W: Wr(LCB→)

**Range Conversion**  
ON OFF  
0% 0 100% 4000

**Contact Synchronization**  
Sync Signal:

**Reading ITEM**  
ON OFF  
ITEM Specified:

☒ Output as CSV Tag information  
Scaling upper limit: 10000  
Scaling lower limit: 0  
DP position: 2  
Unit:

☐ Alarm Set  
☒ Monitor Plus Tag setting

Buttons: Back, Next, OK, Cancel

Annotations:  
Specify the CPU Unit's data area. → Memory type  
Select Contact or Analog. → A/D  
When monitoring, select Wr (LCB\*). When setting, select Rd (\*LCB). → R/W  
Always select this option. → Output as CSV Tag information  
Always select this option. → Monitor Plus Tag setting  
Set the range for analog data. Always make these settings. → Scaling upper and lower limits

#### Note

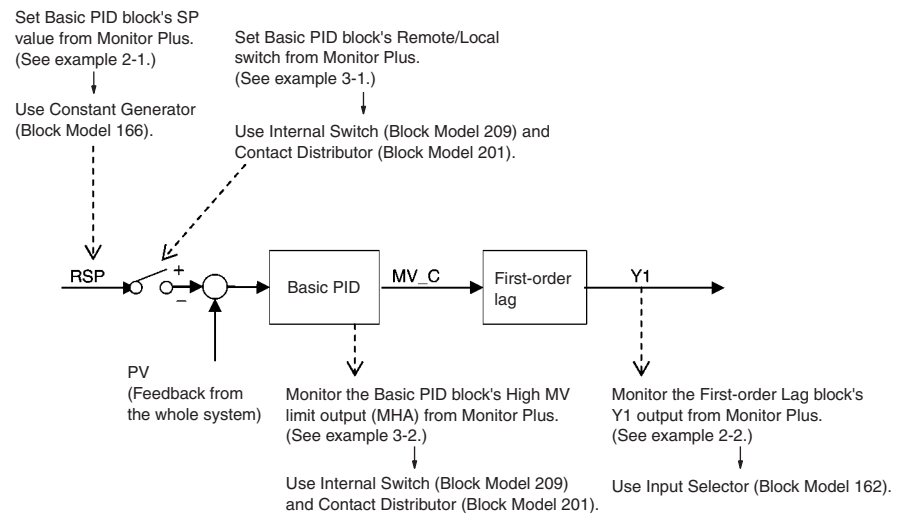
1. The link memory values can be read directly in Monitor Plus when the R/W setting is set to Wr (LCB→) and reading from the ITEM is disabled. When reading the link memory values directly this way, set the Link Mode to an external sync and set the external sync contact to the System Common Block's 020: U0 (always output 0) ITEM.

2. If the above tag values are changed using CX-Process Monitor Plus when the R/W setting is set to "Rd (→LCB)" and writing to the ITEM is enabled, the link memory values in the user link table will be changed and as a result the function block ITEM will be changed.

When making the setting, make sure that ladder program and function block operations will not be adversely affected.

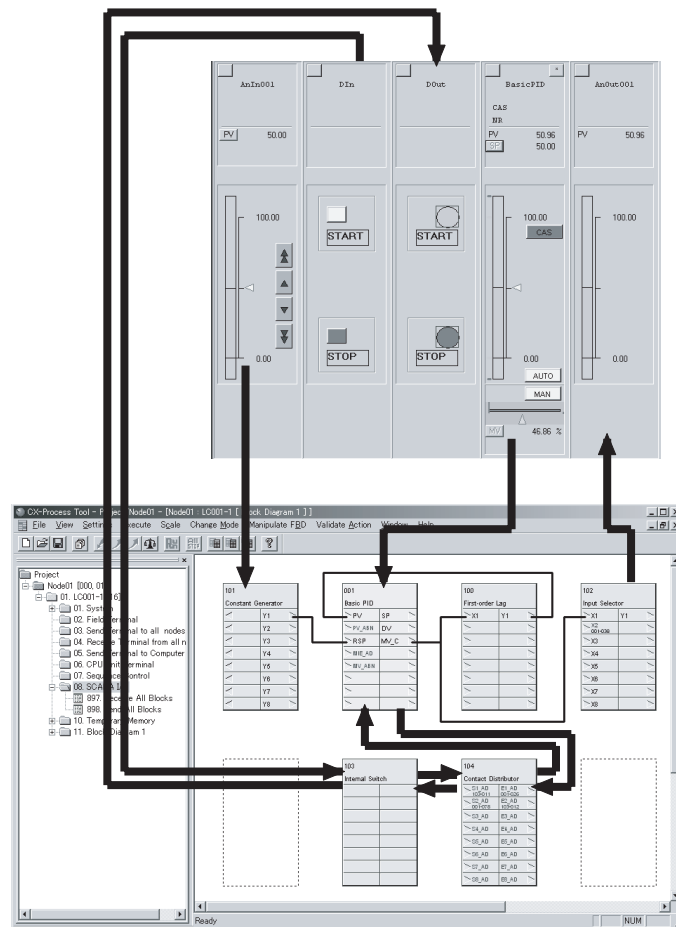
## 3-2 Example Function Blocks for Data Exchange

This section shows example function blocks that exchange data with Monitor Plus. To explain the operation of the function blocks, the examples show how to monitor the following kind of program from Monitor Plus.



A “main function block” and “monitor function block” are required to create a block diagram for this example.

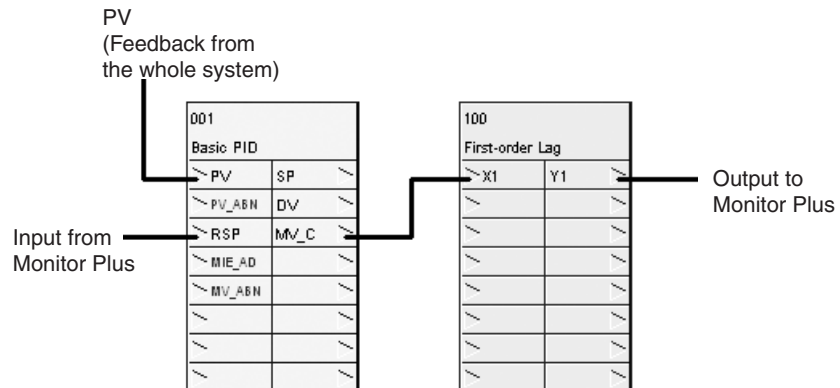
The following project provides the operations required in this example.



### Step 1: Creating the Main Function Block

First create the main function block, which is the heart of the control system. This example requires a Basic PID block (Block Model 011) and a First-order Lag block (Block Model 141).

The following diagram shows the main function block.



**Note** Set ITEM 024 (Set point setting mode) of the Basic PID block to 1 (Remote/Local). The Remote/Local setting mode must be enabled in order for the Remote/Local setting to be made with a contact input.

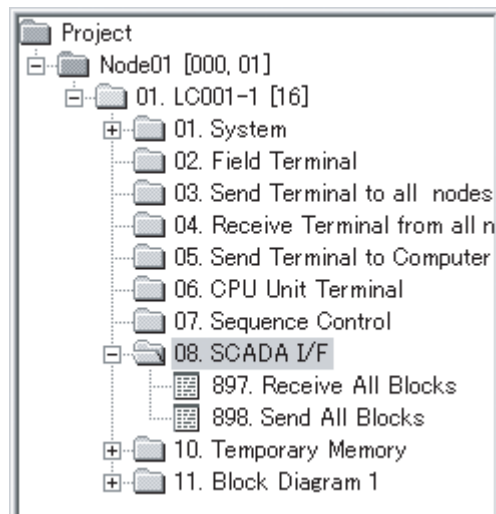
## Step 2: Registering Function Blocks for Data Exchange

### 1. Exchanging Function Block Data

Make the following settings to monitor the MV\_C output from the Basic PID block, which is the heart of the control system. Send All Blocks (Block Model 461) and Receive All Blocks (Block Model 462) must be registered in order to monitor the MV\_C output from the Basic PID block.

#### 1-1 Registering “Send All Blocks” and “Receive All Blocks”

Register Send All Blocks (Block Model 461) and Receive All Blocks (Block Model 462) in the project, as shown in the following diagram.



#### 1-2 Settings for Send All Blocks and Receive All Blocks

The following ITEMS must be set in the Send All Blocks (Block Model 461) and Receive All Blocks (Block Model 462) function blocks. These settings specify the CPU Unit's allocated data area as well as the number of function blocks that will be sent and received.

- CPU Unit data area
- Leading address of the specified data area
- Number of Control blocks
- Number of Operation blocks
- Number of External Controller blocks

| ITEM | Type | ITEM tag                 | Data             | Data Name                        |
|------|------|--------------------------|------------------|----------------------------------|
|      |      | < Initial setting data > |                  |                                  |
| 001  | S    | COMMENT                  | ALL Block Rx Box | Comment                          |
| 002  | S    | MODEL                    | 461              | Model:Receive All Blocks         |
| 004  | S    | CNT_TM                   | 1.0 sec          | Operation cycle                  |
| 006  | S    | INT_M                    | 1                | Memory initialization at startup |
| 008  | S    | MS                       | 3                | CPU Unit I/O memory area type    |
| 009  | S    | M_AD                     | 00000            | Beginning address                |
| 012  | S    | CNT_NO                   | 32               | Number of Control Blocks         |
| 013  | S    | CAL_NO                   | 5                | Number of Operation Blocks       |
| 014  | S    | SCT_NO                   | 0                | Number of Ext. Control Blocks    |
| 030  | S    | CYCL                     | 0                | Periodic initialization          |
| 031  | S    | CYCL_TM                  | 4                | Initialization interval          |
|      |      | < Operation data >       |                  |                                  |
| 007  | O    | S2                       | 0                | Forced memory initialization SW  |
| 010  | O    | S3                       | 0                | Reception stop switch            |
| 020  | O    | S1                       | 0                | Forced read switch               |

The following settings are made in this example.

| ITEM                                 | Send All Blocks<br>(Block Model 462) | Receive All Blocks<br>(Block Model 461) |
|--------------------------------------|--------------------------------------|-----------------------------------------|
| Data area                            | 3:D (DM area)                        |                                         |
| Leading address                      | 00000                                | 10000                                   |
| Number of Control blocks             | 32 (default setting)                 |                                         |
| Number of Operation blocks           | 5 (Five are used in this example.)   |                                         |
| Number of External Controller blocks | 0                                    |                                         |

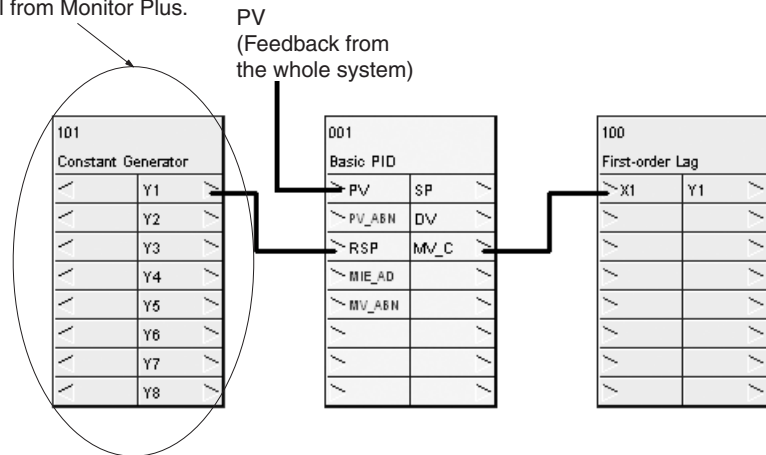
## 2. Exchanging Analog Signal Data

### 2-1 Setting Analog Data from Monitor Plus

Example: Setting the Basic PID block's RSP value from Monitor Plus

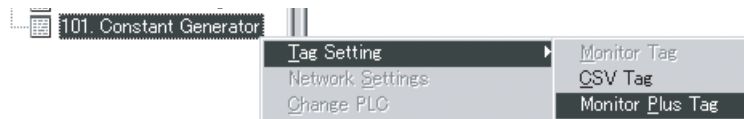
This step registers a function block that inputs an analog signal from Monitor Plus to the Basic PID block. In this case, an analog input is being sent from Monitor Plus, so the Constant Generator (Block Model 166) is registered and connected.

This function block is registered and connected to input an analog signal from Monitor Plus.



### Setting the Tag for Monitor Plus

This step sets the tags for Monitor Plus needed to set an analog signal in the Constant Generator (Block Model 166) from Monitor Plus. This tag is specified from Monitor Plus to set the analog value.



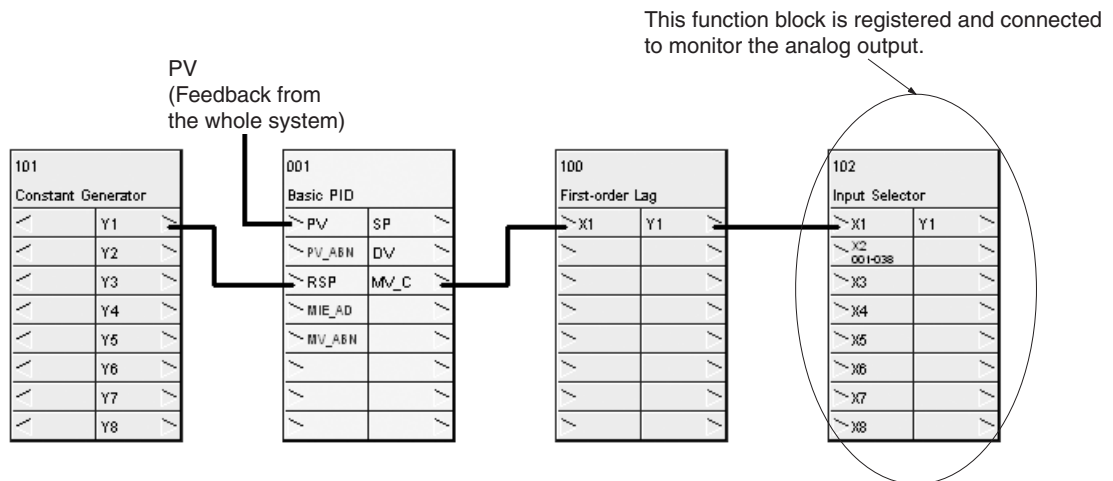


Tag name “AnalogIn1” is set for ITEM Y1.

## 2-2 Creating a Function Block to Monitor Data from Monitor Plus

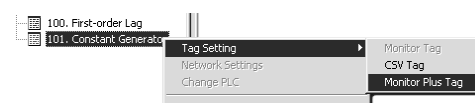
Monitoring the Filtered PID Output from Monitor Plus

This step registers a function block that monitors the analog output from the First-order Lag block (the filtered PID Block output). In this case, an analog input is being monitored from Monitor Plus, so the Input Selector (Block Model 162) is registered and connected.



## Setting the Tags for Monitor Plus

This step sets the tag for Monitor Plus needed to monitor the analog signal in the Input Selector (Block Model 162). This tag is specified from Monitor Plus to monitor the analog value.



In this case, the tag name “AnalogOut1” is set for ITEM X1.

Edit Monitor Plus Tag

LCU/LCB

LC001-1

Group

11. Block Diagram 1

Function Block

102. Input Selector

Tag Name

AnalogOut1

Comment

Scaling Upper Limit

10000

DP

2

Scaling Lower Limit

0

Unit

☐ Alarm

☒ Setting

☒ Display

Register

Delete

| No  | ITEM | Tag name   | Comment |
|-----|------|------------|---------|
| 001 | X1   | AnalogOut1 |         |
| 002 | X2   |            |         |
| 003 | X3   |            |         |
| 004 | X4   |            |         |
| 005 | X5   |            |         |
| 006 | X6   |            |         |
| 007 | X7   |            |         |
| 008 | X8   |            |         |

OK

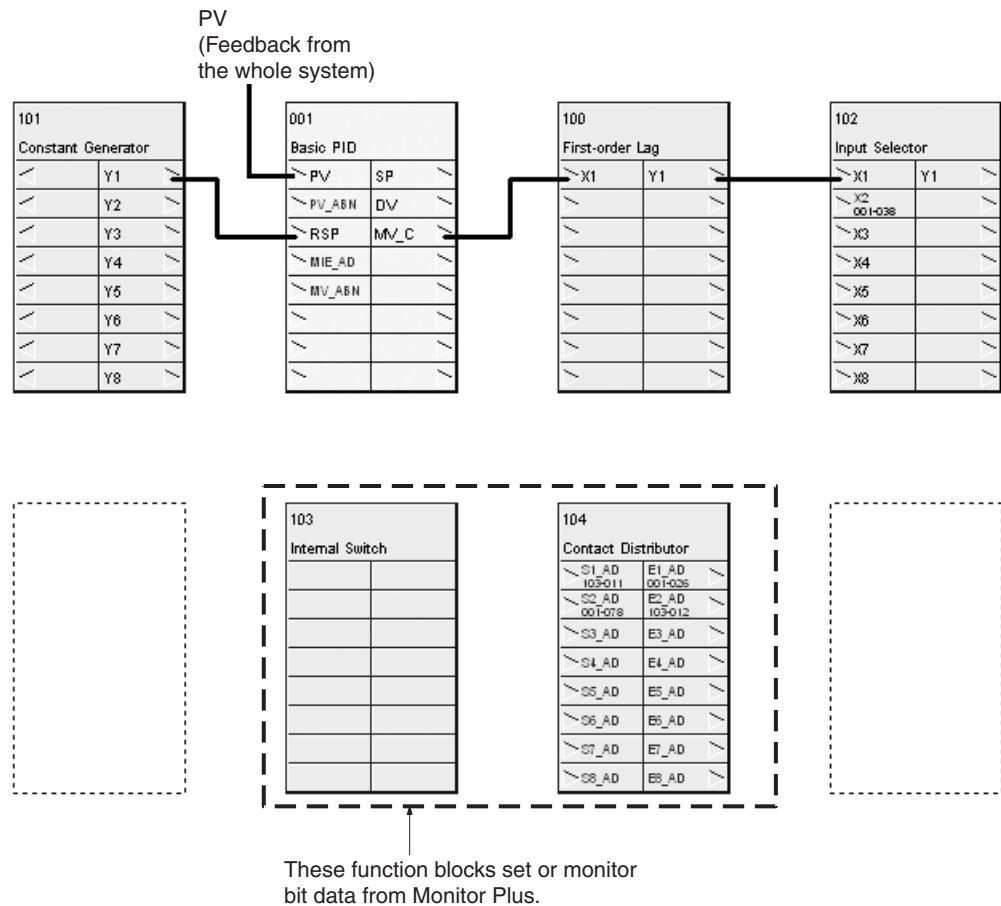
Cancel

Creating Function Blocks to Set/Monitor Bit Data

This step registers and connects a function block that sets or monitors another function block’s bit data from Monitor Plus. The Contact Distributor (Block Model 201) and Internal Switch (Block Model 209) blocks must be used because bit data is being set or monitored.

Bit data is set or monitored through the CPU Unit’s I/O memory and the Loop Control Unit or Board’s internal memory. The direction of connections must be correct to transfer the data properly.

**Note** It is not necessary to go through the Contact Distributor when using bits in a sequence table or step ladder.

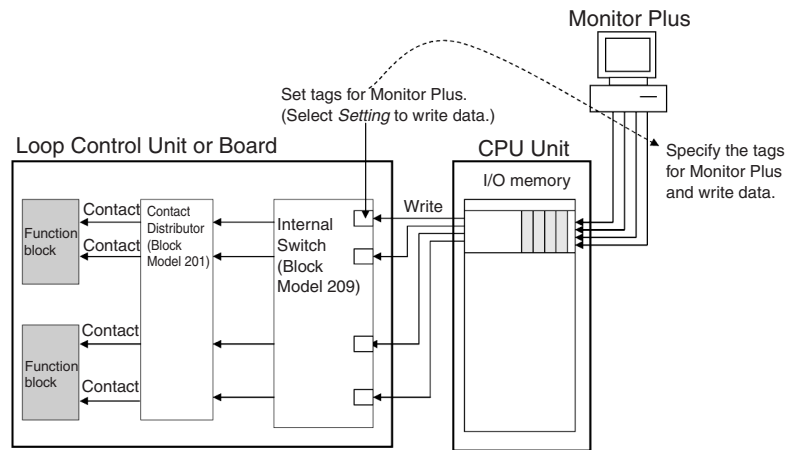


### 3-1 Setting a Bit (Contact)

Example: Setting the Basic PID block's R/L Switch from Monitor Plus

The following steps are required to set a bit's status.

- 1,2,3...**
1. Write the data to the CPU Unit's data area from Monitor Plus, read this data with the Internal Switch (Block Model 209), and write it to the Loop Control Unit or Board's internal memory.
  2. Use the Contact Distributor (Block Model 201) to input the data (written to internal memory in step 1) to the function block's bit. In this case, the bit data is input to the Basic PID block's Remote/Local Switch ITEM.
  3. Set the tag for Monitor Plus (used to set the bit from Monitor Plus) in the Internal Switch's bit. In this case, S1's tag name is set to RLSW.

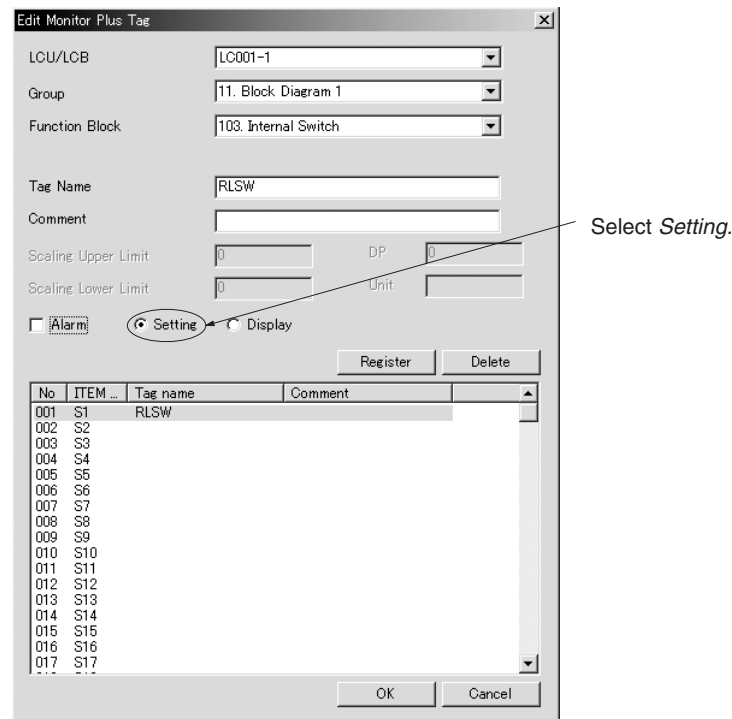


### Actual Setting Procedure

The following settings are used to set a bit's status from Monitor Plus.

1,2,3...

1. Set the tag for Monitor Plus in the Internal Switch (Block Model 209) block's S1 ITEM. Set the tag type to *Set*.



2. Set the Contact Distributor block's S1\_AD ITEM (S1 source designation) to the Internal Switch block's S1 ITEM. In this case, S1\_AD is set to 103011.
3. Set the Contact Distributor block's E1\_AD ITEM (E1 destination) to the Basic PID block's R/L\_SW ITEM (Remote/Local switch). In this case, E1\_AD is set to 001026.

| ITEM | Type | ITEM tag                 | Data                        | Data Name                  |
|------|------|--------------------------|-----------------------------|----------------------------|
|      |      | < Initial setting dat... |                             |                            |
| 001  | S    | COMMENT                  | Contact Distributor         | Comment                    |
| 002  | S    | MODEL                    | 201                         | Model:Contact Distributor  |
| 004  | S    | CNT_TM                   | System common operation ... | Operation cycle            |
| 006  | S    | TYPE                     | 0                           | Output type                |
| 007  | S    | S1_AD                    | 103.011                     | S1 source designation      |
| 008  | S    | E1_AD                    | 001.026                     | E1 destination designation |
| 009  | S    | S2_AD                    | 001.078                     | S2 source designation      |
| 010  | S    | E2_AD                    | 103.012                     | E2 destination designation |
| 011  | S    | S3_AD                    | 000.000                     | S3 source designation      |
| 012  | S    | E3_AD                    | 000.000                     | E3 destination designation |
| 013  | S    | S4_AD                    | 000.000                     | S4 source designation      |
| 014  | S    | E4_AD                    | 000.000                     | E4 destination designation |
| 015  | S    | S5_AD                    | 000.000                     | S5 source designation      |
| 016  | S    | E5_AD                    | 000.000                     | E5 destination designation |
| 017  | S    | S6_AD                    | 000.000                     | S6 source designation      |
| 018  | S    | E6_AD                    | 000.000                     | E6 destination designation |
| 019  | S    | S7_AD                    | 000.000                     | S7 source designation      |
| 020  | S    | E7_AD                    | 000.000                     | E7 destination designation |
| 021  | S    | S8_AD                    | 000.000                     | S8 source designation      |
| 022  | S    | E8_AD                    | 000.000                     | E8 destination designation |
|      |      | < Operation data >       |                             |                            |

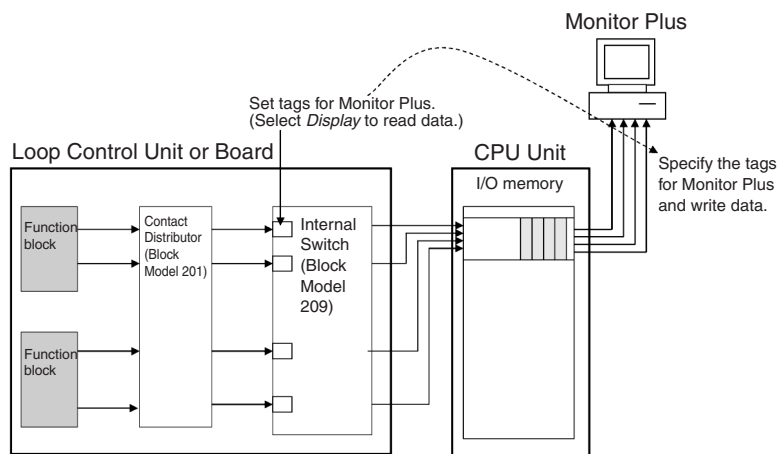
### 3-2 Monitoring a Contact (Bit)

Example: Monitoring the Basic PID block's High MV Limit Output (MHA) from Monitor Plus

The following steps are required to monitor a bit's status.

**1,2,3...**

1. Use the Contact Distributor (Block Model 201) to temporarily store the function block's bit status in the Loop Control Unit or Board's memory.
2. Use the Internal Switch (Block Model 209) to read the temporarily stored data from memory and write it to the CPU Unit's data area.
3. Set the tag for Monitor Plus (used to monitor the bit from Monitor Plus) in the Internal Switch's bit. In this case, S2's tag name is set to MHA.



### Actual Setting Procedure

The following settings are used to monitor a bit's status from Monitor Plus.

- 1,2,3...**
1. Set the tag for Monitor Plus in the Internal Switch (Block Model 209) block's S2 ITEM. Set the tag type to *Display*. Set the tag name to MHA.

LCU/LCB: LC001-1

Group: 11. Block Diagram 1

Function Block: 103. Internal Switch

Tag Name: MHA

Comment:

Scaling Upper Limit: 0 DP: 0

Scaling Lower Limit: 0 Unit:

☐ Alarm ☐ Setting ☒ Display

Register Delete

| No  | ITEM | Tag name | Comment |
|-----|------|----------|---------|
| 001 | S1   | RLSW     |         |
| 002 | S2   | MHA      |         |
| 003 | S3   |          |         |
| 004 | S4   |          |         |
| 005 | S5   |          |         |
| 006 | S6   |          |         |
| 007 | S7   |          |         |
| 008 | S8   |          |         |
| 009 | S9   |          |         |
| 010 | S10  |          |         |
| 011 | S11  |          |         |
| 012 | S12  |          |         |
| 013 | S13  |          |         |
| 014 | S14  |          |         |
| 015 | S15  |          |         |
| 016 | S16  |          |         |
| 017 | S17  |          |         |

OK Cancel

2. Set the Contact Distributor block's S2\_AD ITEM (S2 source designation) to the Basic PID block's MHA ITEM (High MV Limit Output). In this case, S2\_AD is set to 001078.
3. Set the Contact Distributor block's E2\_AD ITEM (E2 destination) to the Internal Switch (Block Model 209) block's S2 ITEM. In this case, E2\_AD is set to 103012.

Node01 : LC001-1 11.104 Contact Distributor

| ITEM                     | Type | ITEM tag | Data                        | Data Name                  |
|--------------------------|------|----------|-----------------------------|----------------------------|
| < Initial setting dat... |      |          |                             |                            |
| 001                      | S    | COMMENT  | Contact Distributor         | Comment                    |
| 002                      | S    | MODEL    | 201                         | Model:Contact Distributor  |
| 004                      | S    | CNT_TM   | System common operation ... | Operation cycle            |
| 006                      | S    | TYPE     | 0                           | Output type                |
| 007                      | S    | S1_AD    | 103.011                     | S1 source designation      |
| 008                      | S    | E1_AD    | 001.026                     | E1 destination designation |
| 009                      | S    | S2_AD    | 001.078                     | S2 source designation      |
| 010                      | S    | E2_AD    | 103.012                     | E2 destination designation |
| 011                      | S    | S3_AD    | 000.000                     | S3 source designation      |
| 012                      | S    | E3_AD    | 000.000                     | E3 destination designation |
| 013                      | S    | S4_AD    | 000.000                     | S4 source designation      |
| 014                      | S    | E4_AD    | 000.000                     | E4 destination designation |
| 015                      | S    | S5_AD    | 000.000                     | S5 source designation      |
| 016                      | S    | E5_AD    | 000.000                     | E5 destination designation |
| 017                      | S    | S6_AD    | 000.000                     | S6 source designation      |
| 018                      | S    | E6_AD    | 000.000                     | E6 destination designation |
| 019                      | S    | S7_AD    | 000.000                     | S7 source designation      |
| 020                      | S    | E7_AD    | 000.000                     | E7 destination designation |
| 021                      | S    | S8_AD    | 000.000                     | S8 source designation      |
| 022                      | S    | E8_AD    | 000.000                     | E8 destination designation |
| < Operation data >       |      |          |                             |                            |

## 3-3 Loop Control Unit Precautions

### 3-3-1 System Information Area Settings

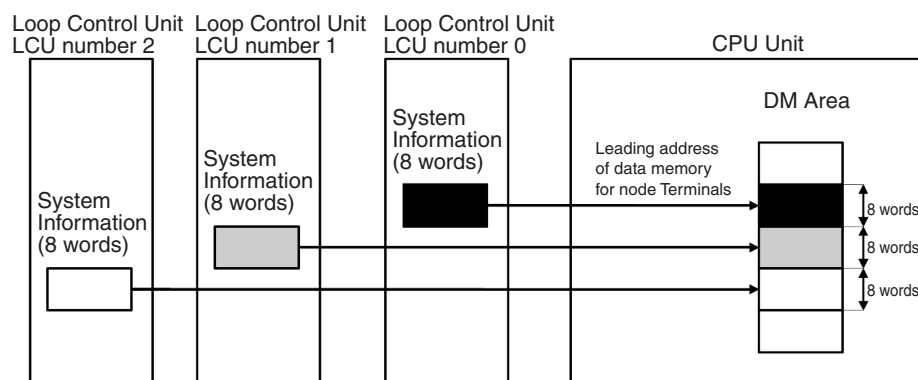
When monitoring a Loop Control Unit with Monitor Plus, the “system information area” is used to display and set the system information. To use the system information area, the following data must be set in the System Common block (Block Model 000) in the Loop Control Unit.

#### Default Settings to the System Common block (Block Model 000)

| ITEM | Function                                                                                                                                               | Setting range | Default |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|
| 043  | Leading address (S) of the data memory for node Terminals                                                                                              | 0 to 32767    | 16020   |
| 042  | LCU number<br>A unique LCU number identifies each Loop Control Unit when there are multiple Loop Control Units (3 Units max.) mounted in the CPU Rack. | 0 to 2        | 0       |

#### System Information

System information is information such as the Loop Control Unit's unit address and operating information. When the Loop Control Unit starts, this information is written to the 24 words (8 words per Loop Control Unit) starting with the leading address the data memory for node Terminals.



- Note**
1. The default leading address of the data memory for node Terminals is D16020 and the default LCU number is 0. Accordingly, the default location for the system information is the eight words from D16020 to D16027 when the Loop Control Unit is started. If the Loop Control Unit is being used with its default settings, do not use words D16020 to D16027 for any other applications.
  2. When two or three Loop Control Units are mounted in the same CPU Rack, set a unique LCU number (ITEM042) in each Loop Control Unit to distinguish the Units. In addition, set the same leading address of the data memory for node Terminals (ITEM043) in each Loop Control Units.

### 3-3-2 Applicable Versions

The Send All Blocks (Block Model 461) and Receive All Blocks (Block Model 462) are not supported by Loop Control Units prior to version 2.0. CX-Process Monitor Plus thus cannot be used with Loop Control Units prior to version 2.0.

## SECTION 4

# Monitor Screen Functions and Operations

This section describes the monitor screens used with the CX-Process Monitor Plus.

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## 4-1 Outline

This section explains the functions and operations for each screen primarily for those people who will operate CX-Process Monitor Plus. The explanations assume that CX-Process Tool settings and screen configuration for the CX-Process Monitor Plus have already been completed.

Refer to *SECTION 5 Configuration Screens* for how to configure CX-Process Monitor Plus screens. Also, refer to the *CX-Process Tool Operation Manual* (W372) for CX-Process Tool settings.

CX-Process Monitor Plus screen configuration is already completed, monitor the Loop Control Unit/Board mainly by performing the following operations.

- 1,2,3...**
1. Start CX-Process Monitor Plus (refer to *4-4 Starting and Stopping the CX-Process Monitor Plus*).
  2. In the CX-Process Monitor Plus Main Window, click the **Run** Button to display the Overview Screen (refer to *4-5 Overview Screen*).
  3. From the Overview Screen, move to each of the following screens.
    - Control Screen (see *4-7 Control Screens*)
    - Tuning Screen (see *4-8 Tuning Screens*)
    - Trend Screen (see *4-9 Trend Screens*)
    - Batch Trend Screen (see *4-10 Batch Trend Screens*)
    - Segment Program 2 Screen (see *4-11 Segment Program 2 Screens*)
    - Graphic Screen (see *4-12 Graphic Screens*)
    - Annunciator Screen (see *4-13 Annunciator Screens*)
    - Operation Guide Screen (see *4-14 Operation Guide Screens*)
    - Alarm Log Screen (see *4-15 Alarm Log Screens*)
    - Operation Log Screen (see *4-16 Operation Log Screens*)
    - System Monitor Screen (see *4-17 System Monitor Screens*)
    - System Monitor Log Screen (see *4-18 System Monitor Log Screens*)

## 4-2 Using the CX-Process Monitor Plus

### Preparations on the CX-Process Tool

- 1,2,3...**
1. Set the network address, node address, and unit address.
  2. Register the function blocks for data exchange with the CX-Process Monitor Plus.
  3. Set CSV tags and tags for the CX-Process Monitor Plus.
  4. Generate the tag file for Monitor Plus.
  5. Download the function block data to the Loop Control Unit/Board.

### Operations on the CX-Process Monitor Plus

6. Start the CX-Process Monitor Plus.
7. In the Main Window, click the **Run** Button to compile the monitor tag file. (See note.)
8. In the Overview Screen, select **Control Screen**, **Trend Screen**, etc. as required.

**Note** Steps 7. will not be required and a specified screen will be displayed if auto-starting is enabled. Autostarting can be enabled by clicking the **System Info.** Button when configuring the screen and then setting the Auto-start–Auto-start setting to *Enable*.

4-3 CX-Process Tool Procedures

The following six steps must be performed on the CX-Process Tool to pass tag data to the CX-Process Monitor Plus.

- 1,2,3...
1.

2.

3.

4.

5.

6.
- Set the network address, node address, and unit address.

Register and connect the function blocks that exchange data with the CX-Process Monitor Plus.

Set the CSV tags and the tags for Monitor Plus.

Generate the tag file for Monitor Plus.

Download the function block data to the Loop Control Unit/Board.

Compile the monitor tag files.

Set Network Address, Node Address, and Unit Address.

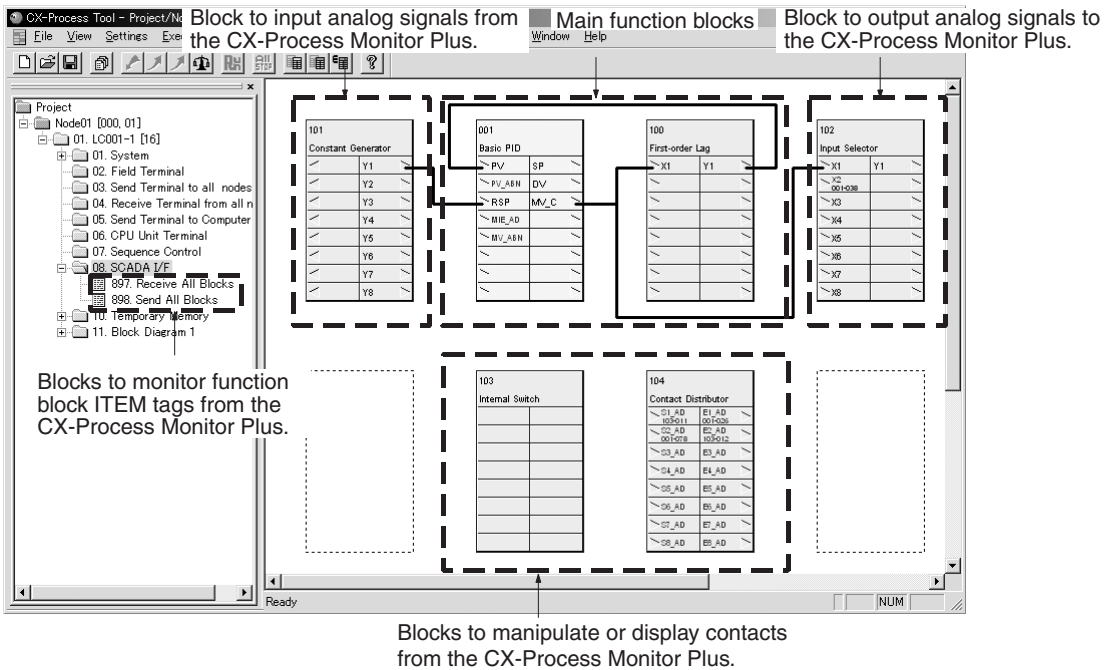
The CX-Process Monitor Plus uses the network address, node address, and unit address set using the CX-Process Tool (**Settings/Network Settings** or **Settings/Change PLC**) for communications with the PLC. The communications settings for the CX-Process Monitor Plus and thus made from the CX-Process Tool.

Note

The CX-Process Monitor and CX-Process Monitor Plus use FinsGateway as the communications driver for connections with the PLC. When using the CX-Process Monitor or CX-Process Monitor Plus, always set FinsGateway as the communications driver for the CX-Process Tool. If the CX-Server is set, the CX-Process Monitor or CX-Process Monitor Plus will not be able to go online with the PLC.

Register and Connect Function Blocks To Exchange Data with CX-Process Monitor Plus.

| Item                            | Loop Control Unit                                                                      | Loop Control Board                                       |
|---------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------|
| Function block data to exchange | Send All Blocks block (Block Model 462) and Receive All Blocks block (Block Model 461) | HMI settings in the System Common block (Block Mode 000) |
| Contact signals to exchange     | Contact Distributor (Block Model 201) or Internal Switch (Block Model 209)             |                                                          |
| Analog signals to exchange      | Input Selector block (Block Model 162) and Constant Generator block (Block Model 166)  |                                                          |



**Set CSV Tags and Tags for Monitor Plus.**

Always set the CSV tags and tags for the CX-Process Monitor Plus. The CX-Process Monitor Plus recognizes CSV tags and tags for the CX-Process Monitor Plus using tag names.

Example for Internal Switch Block (Block Model 209)

| No  | ITEM | Tag name | Comment |
|-----|------|----------|---------|
| 001 | S1   |          |         |
| 002 | S2   |          |         |
| 003 | S3   |          |         |
| 004 | S4   |          |         |
| 005 | S5   |          |         |
| 006 | S6   |          |         |
| 007 | S7   |          |         |
| 008 | S8   |          |         |
| 009 | S9   |          |         |
| 010 | S10  |          |         |
| 011 | S11  |          |         |
| 012 | S12  |          |         |
| 013 | S13  |          |         |
| 014 | S14  |          |         |
| 015 | S15  |          |         |
| 016 | S16  |          |         |
| 017 | S17  |          |         |

| Item         | No. of character | Prohibited characters |
|--------------|------------------|-----------------------|
| Tag names    | 16 max.          | None                  |
| Tag comments | 16 max.          | None                  |

**Note** Set the range upper limit (RH) and range lower limit (RL) for scaling on the CX-Process Monitor Plus to the range given in the following table.

|                  |                                                                                       |
|------------------|---------------------------------------------------------------------------------------|
| Number of digits | 5 max. including sign and decimal point                                               |
| Numeric range    | -5000 to 99999<br>Example with one digit below the decimal point:<br>-550.0 to 9999.9 |

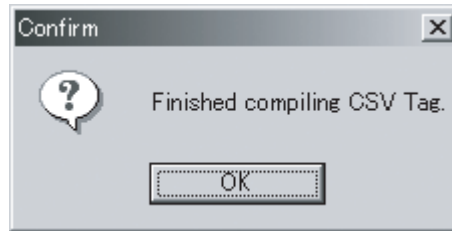
**Generate Tag File for Monitor Plus.**

Generate the tag file for Monitor Plus using the following procedure.

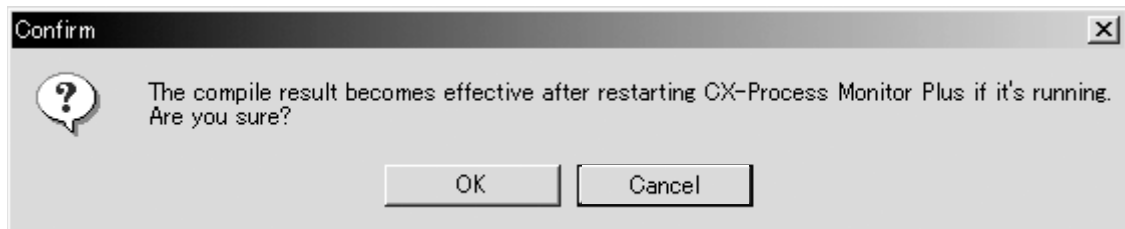
1,2,3...

1. Select **Execute – Output Tag File – Monitor Plus Tag**. The following window will be displayed. To execute an error check, select the option to perform an error check.

- Click the **OK** Button. Compilation of CSV tags and tags for Monitor Plus will begin. The following message will be displayed if compilation ends normally.



**Note** If the tag file for Monitor Plus is output while the CX-Process Monitor Plus is running, the following dialog box will be displayed.



Tag information will not be updated if a tag file for Monitor Plus is output during CX-Process Monitor Plus operation. To update the tag file, restart the CX-Process Monitor Plus.

#### Download Function Block Data to Loop Control Unit/Board.

Download the function blocks.

#### Compile Monitor Tag Files.

The monitor tag file is automatically generated when the CX-Process Monitor Plus is started.

For details on starting the CX-Process Monitor Plus, refer to *5-2-1 Starting and Stopping the CX-Process Monitor Plus*.

Monitor tag files that are generated will be created under the following directory and file name.

Directory: Omron\CX-Process Monitor Plus\db (The underlined portion is the installation directory.)

File names: mtagmst and mtagsubmst

**⚠ WARNING** After changing the CX-Process Monitor Plus tag settings or network configuration, set the CX-Process Monitor Plus screen configuration correctly according to the new settings. Incorrect settings may result in unexpected operation.

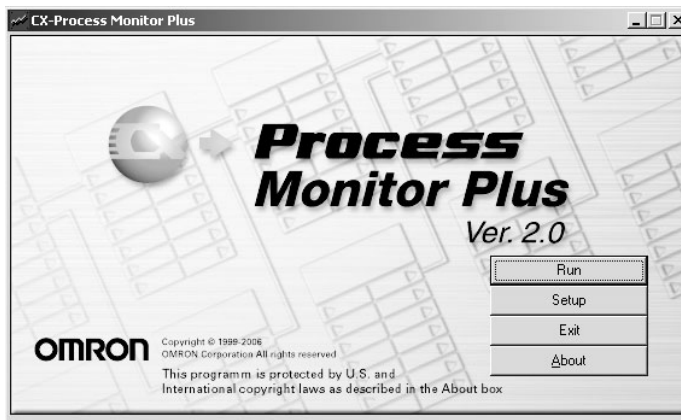
## 4-4 Starting and Stopping the CX-Process Monitor Plus

### 4-4-1 Starting the CX-Process Monitor Plus

This section explains how to start and stop the CX-Process Monitor Plus.

- 1,2,3... 1. Select **Start – Programs – Omron – CX-Process Monitor Plus – CX-Process Monitor Plus**.

The CX-Process Monitor Plus's Main Window will be displayed.



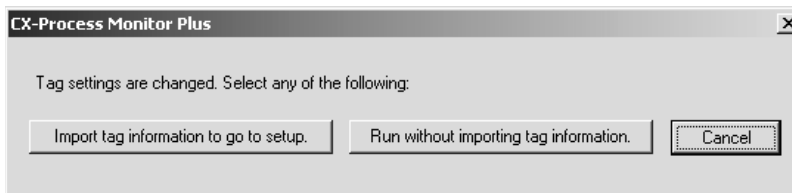
**Note** When you have finished using CX-Process Monitor Plus, click the **Exit** Button in the Main Window. The Main Window and CX-Process Monitor Plus will both close.

2. Click the **Run** Button.

The monitoring process will be started, and the Overview Screen will be displayed. (Refer to 4-5 Overview Screen.)

When the configuration has been completed, monitoring can be started from the Overview Screen. Refer to *SECTION 5 Configuration Screens* for configuration.

- Note**
1. If auto-starting has been specified (i.e., if the *Auto-start enable* option is selected in the Auto-start settings), the screen that has been set will be displayed directly. (Refer 5-7 Checking Configurations.)
  2. When new tag or network information settings are made, the following dialog box will be displayed.



**Import Tag Information to Go to Setup Button:**

Regenerates the monitor tag file from the CX-Process Monitor Plus tag file. When this button is clicked, a dialog box will be displayed to input the password. For details on passwords, refer to 5-2-2 Setting Passwords.

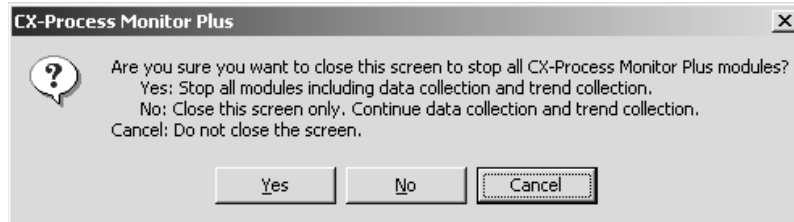
**Run without Importing Tag Information Button:**

Starts monitoring according to the tag information from the previous monitoring.

## 4-4-2 Stopping the CX-Process Monitor Plus

To stop the CX-Process Monitor Plus, click the **Close** Button at the top right of the Overview Screen. If a monitoring process, such as data or trend collection, is in progress, a dialog box will be displayed to confirm that the process is to be stopped.

Select **Yes** to end the monitor process. Select **No** to continue running the monitor process.



**Note**     **Stopping a Monitoring Process That Was Continued:**

Use the following procedure to stop a process that was continued by clicking the **No** Button in the above dialog box.

1. Start the CX-Process Monitor Plus.
2. Click the **Exit** Button in the CX-Process Monitor Plus Main Window. The dialog box will again be displayed to confirm that the process is to be stopped. Click the **Yes** Button.  
The CX-Process Monitor Plus will be closed and the monitoring process will be stopped.

## 4-5 Overview Screen

The Overview Screen displays all the menu screens and displays alarms.

Click this button to move to the Control Screen.

The status of data collection for a Batch Trend Screen is displayed.

Batch Trend Data Logging (Background: Red): Collecting data.  
Batch Completed (Background: Blue): Not collecting data.

Each button represents one loop. Click the button to display the Tuning Screen for the loop.



The button icons for the registered Control Screen, Trend Screen, Batch Trend Screen, Graphic Screen, Segment Program 2 Screen, and Annunciator Screen will be displayed.

| Icon | Screen type        | Icon | Screen type              |
|------|--------------------|------|--------------------------|
|      | Control Screen     |      | Segment Program 2 Screen |
|      | Trend Screen       |      | Graphic Screen           |
|      | Batch Trend Screen |      | Annunciator Screen       |

Each screen displays eight rows and four columns to a maximum of 32 screens. The alarm status for each loop is shown on the Control Screen button.

Select the icon to move to the registered screen.

If a user-set alarm occurs, the icon for the Annunciator Screen flashes.

When returning to the Overview Screen from any screen, first select **Overview** from among the screen selection buttons, and then select the Overview Screen name.

More than one Overview Screen can be displayed by clicking the **System Info.** Button when configuring the screen and then setting the Multi-screen–Multi-screen setting to *Enable*. Refer to 5-6 *System Information Settings* for details.

**Note** Auto-starting can be enabled or disabled by clicking the right mouse button at the top of an Overview Screen. Click the **Yes** Button on the dialog box that appears and then set **Auto-start** to as required.

## 4-6 Screen Configurations

This section explains the configuration of the CX-Process Monitor Plus Screen as a whole. The following example shows the Overview Screen.

**Screen Selection Buttons:** Right-click here to confirm the CRT-ID, group number, and position of the screen specified for automatic startup. Refer to the table below for each button's function.

Click here and then set a tag name to select any Tuning Screen.

When a new message appears in the Operation Guide Screen, a red mark is displayed, and a buzzer will sound at the same time.

System Monitor Message Display Area: Displays the most recent System Monitor message, and a buzzer will sound at the same time. The message is stored in the System Monitor Log. Click the Button to delete the message. The buzzer will also stop at the same time.

Use these buttons to start any external applications that have been set.

**Alarm Message Display Area:** Displays the most recent alarm message, and a buzzer will sound at the same time. The message is stored on the Alarm Log screen. Click the Button to delete the message. The buzzer will also stop at the same time.

This area displays all the Monitor Screens. The example shows the Overview Screen. Use the Screen Selection Buttons to change the display.

Prints a hardcopy of the screen.

Displays the date and time

Return to previous screen

**Note** The bottom line will appear as follows for some screens.

Prints error log data on Operation Guide Screen, Alarm Log Screens, Operation Log Screens, and System Monitor Log Screens.



## Screen Selection Buttons

| Button name                        | Function                                                                                                                                                              |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Overview                           | Displays the Overview Screen. If multiple Overview Screens are registered, a pull-down menu will be displayed from which you can select the Overview Screen you want. |
| Alarm                              | Displays the Alarm Log Screen.                                                                                                                                        |
| Operation Log                      | Displays the Operation Log Screen.                                                                                                                                    |
| Operation Guide                    | Displays the Operation Guide Screen.                                                                                                                                  |
| System Monitor                     | Displays the System Monitor Screen to show system status.                                                                                                             |
| System Monitor Log                 | Displays the System Monitor Log Screen, which registers system messages.                                                                                              |
| About                              | Displays information on the CX-Process Monitor Plus version.                                                                                                          |
| External application start buttons | Start external applications set in the System Info.                                                                                                                   |

## 4-7 Control Screens

### 4-7-1 Outline

Use Control Screens to monitor and set the Control Block and part of the Operation Block, to monitor analog signals, and to monitor and set contact signals. For the Control Block in particular, use the Control screen to perform such operations as monitoring Set Point (SP), Process Variable (PV), Manipulated Variable (MV) run status, and Set Point (SP) changes, etc.

Click the **Control Screen** Button in the Overview screen to display the following information on the Control Screen.

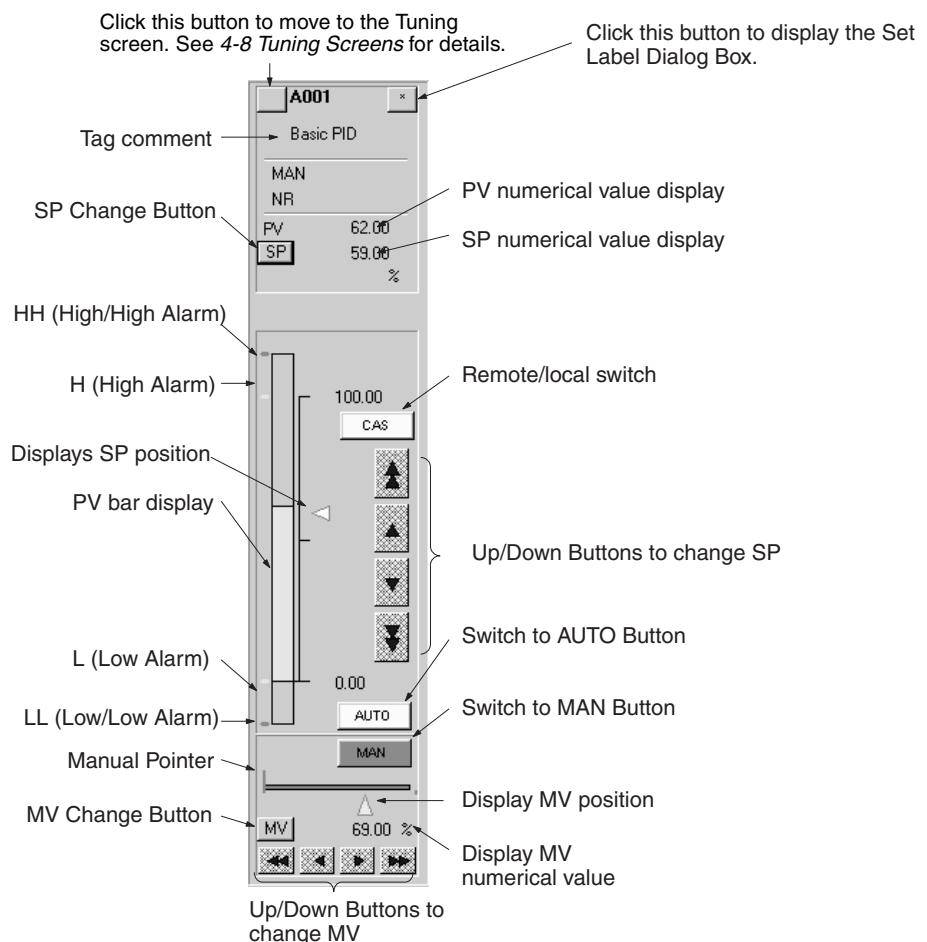
- You can display up to a maximum of eight loops per screen of PID, Indicators, and other Control Blocks as on-site Instrument images. The maximum is 400 screens x eight loops.
- You can perform SP changes, auto/manual switching, and manual operations, etc. (Items indicated by a Button can be changed. Items without a Button are displayed only.)
- You can also move to the Tuning Screen.

| Block name (mode)     | Send source function block, or ITEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Target function block | Control Blocks: Basic PID (011), Advanced PID (012), Blended PID (Block Model 013), Batch Flowrate Capture (Block Model 014), Indication and Setting (031), Indication and Operation (032), Ratio Setting (033), Indicator (034), 2-position ON/OFF (001), 3-position ON/OFF (002)<br>Operation Blocks: High/Low Alarm (111), Segment Program 2 (157), ON/OFF Valve Manipulator (221), Motor Manipulator (222), Reversible Motor Manipulator (223), Motor Opening Manipulator (224), Timer (205), Counter (208)<br>The following for all function blocks:<br>Analog input signals (Input Selector (Block Model 162))<br>Analog output signals (Constant Generator (Block Model 166))<br>Contact input signals or contact output signals for all function blocks, or contact value parameters (Contact Distributor (Block Model 201) + Internal Switch (Block Model 209)) |
| Display               | SP, PV, MV, A/M status, R/L status (See note 1), bar color change analog signal when an alarm occurs, contact signal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Setting               | SP, MV (only in manual mode), A/M switching (See note 3), R/L switching (See notes 1 and 2.)<br>Contact signal (See note 4.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

- Note**
1. When the SP setting (local only, or remote/local both possible) for ITEM024 for Basic PID, Advanced PID, Indication and Setting, Ratio Setting, 2-position ON/OFF, and 3-position ON/OFF is 1 (remote/local both possible), CAS is displayed. If the setting is 0 (local only), nothing is displayed.
  2. When the SP setting (local only, or remote/local both possible) for ITEM024 for Basic PID, Advanced PID, Indication and Setting, Ratio Setting, 2-position ON/OFF, and 3-position ON/OFF is 1 (remote/local both possible), CAS is displayed, and settings can be made.
  3. When set to remote, only auto is possible; manual is disabled (this limit only applies to CX-Process Monitor Plus).
  4. Analog signals are not possible.

## 4-7-2 Basic Displays and Operations

### Basic PID (011)



#### PV Bar Display

Displays the PV range from upper to lower limit as a bar.

Green: Status normal

Red: PV Alarm (either HH, H, L, LL)

Yellow: Deviation Alarm

Blue: Alarm OFF

Light blue: Function block calculations stopped

**Changing SP**

Change SP using the SP Change Up/Down Buttons.

First press the **SP** Button, select the value column, and then enter the change using the ten-key dialog (using the mouse), or the keyboard. (The ten-key pad is displayed when the input box is selected. To enable inputting from the ten-key, click the **System Info.** Button in the Setup Dialog Box, and then change the setting to enable the ten-key.

**Changing MV**

Change the MP using the MP Change Up/Down Buttons.

First press the **MP** Button, and then enter the change using the ten-key dialog box (using the mouse), or the keyboard.

**Remote/Local (R/L) Switching**

When the SP setting (local only, or remote/local both possible) for ITEM024 for Basic PID, Advanced PID, Indication and Setting, Ratio Setting, 2-position ON/OFF, and 3-position ON/OFF is 1 (remote/local both possible), CAS is displayed.

When the **CAS** Button is red, the setting is on remote SP. When the **CAS** Button is blue, the setting is on local SP. Click the **CAS** Button to switch the setting.

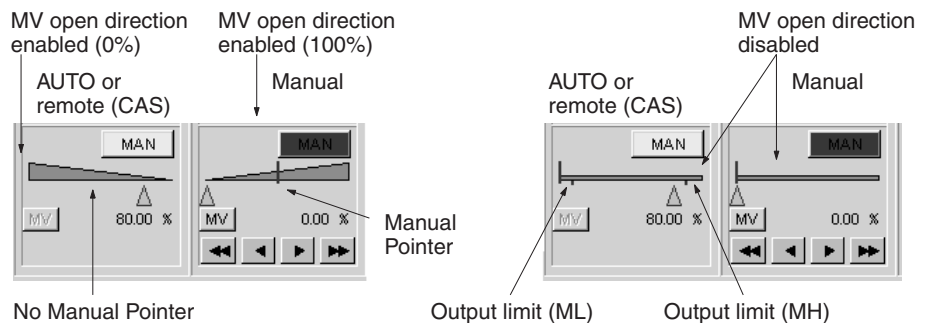
**Note** When the CX-Process Monitor Plus is set to Remote SP, A/M automatically switches to AUTO. You cannot set Manual.

**A/M Switching**

When AUTO is lit red, the setting is AUTO. You can change the SP value. When MAN is lit blue, the setting is manual. You can change MV and SP values. Select AUTO or MAN to switch.

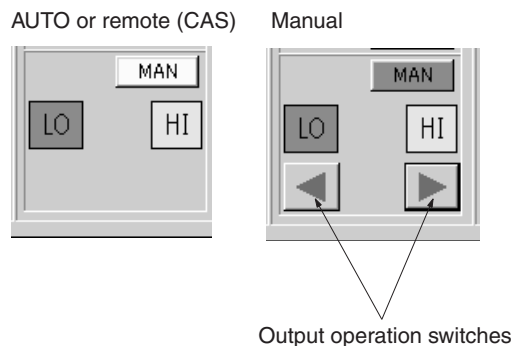
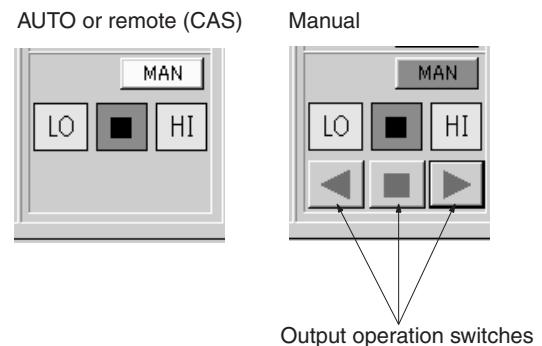
**MV Adjustment Area Details:**

**Basic PID (011), Advanced PID (012), Batch Flowrate Capture (014), Indication and Operation (032), Ratio Setting (033)**



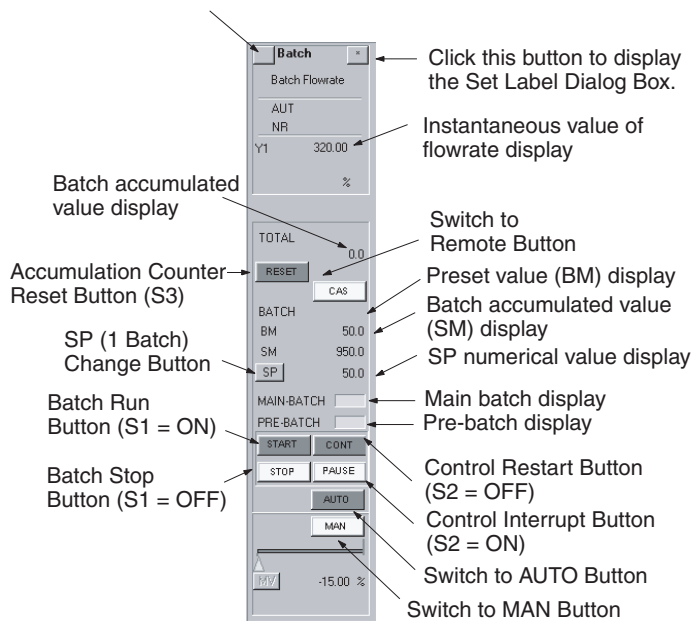
Make Manual Pointer and MV open direction settings when registering the Control Screen. Refer to *5-5-2 Overview of Screen Registration* for details.

Make output limit (ML, MH) settings using the Tuning screen. Refer to *4-8 Tuning Screens* for details.

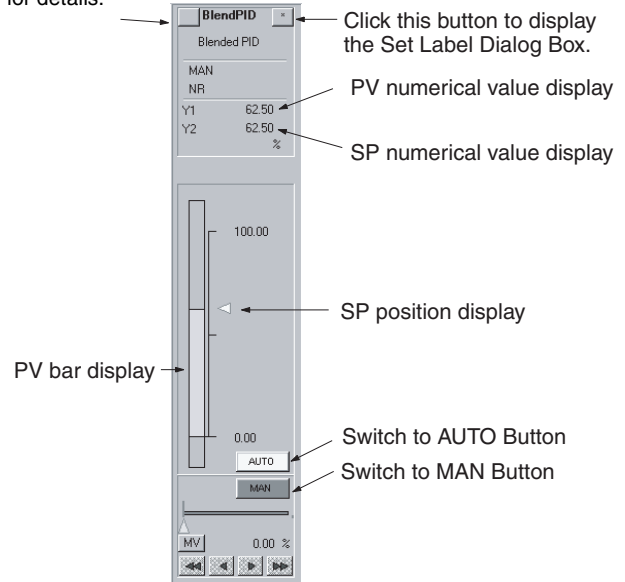
**2-position ON/OFF (001)****3-position ON/OFF (002)**

**Batch Flowrate Capture (014)**

Click this button to move to the Tuning screen.  
See 4-8 Tuning Screens for details.

**Blended PID (013)**

Click this button to move to the Tuning screen.  
See 4-8 Tuning Screens for details.

**PV Bar Display**

Displays the PV range from upper to lower limit as a bar.

Green: Status normal

Red: Deviation Alarm (DHH, DH, DL, or DLL)

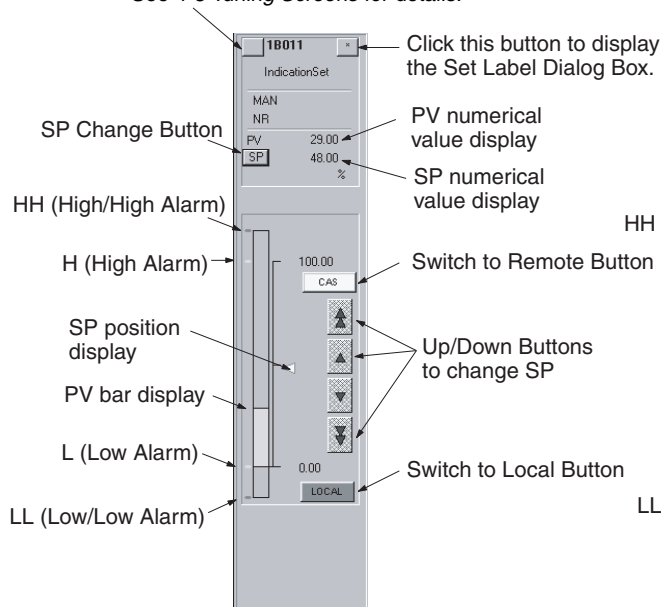
Yellow: MV Limit High/Low

Blue: Alarm OFF

Light blue: Function block calculations stopped

**Indication and Setting (031)**

Click this button to move to the Tuning screen.  
See 4-8 Tuning Screens for details.

**PV Bar Display**

Displays the PV range from upper to lower limit as a bar.

Green: Status normal

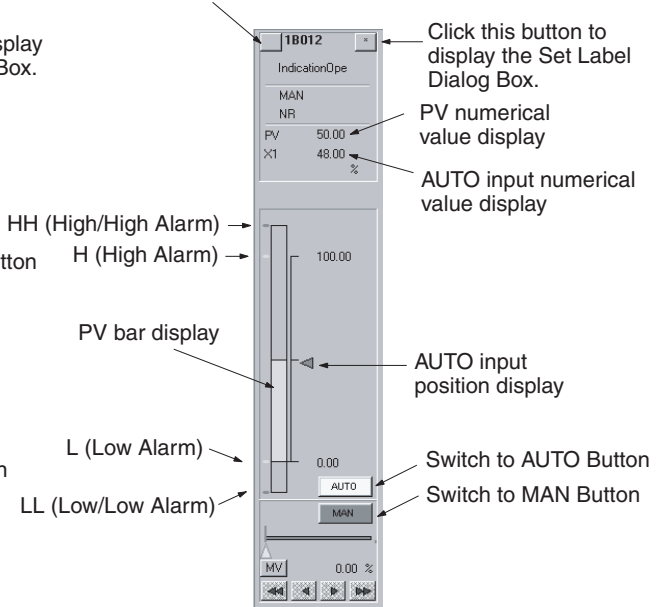
Red: PV Alarm (either HH, H, L, LL)

Blue: Alarm OFF

Light blue: Function block calculations stopped

**Indication and Operation (032)**

Click this button to move to the Tuning screen.  
See 4-8 Tuning Screens for details.

**PV Bar Display**

Displays the PV range from upper to lower limit as a bar.

Green: Status normal

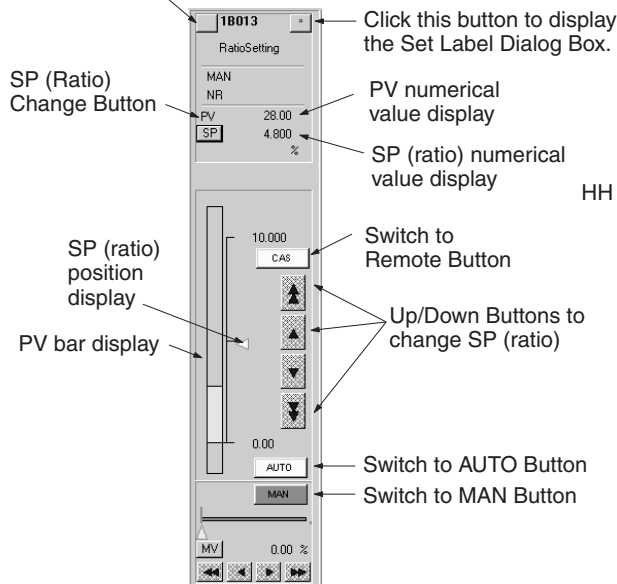
Red: PV Alarm (either HH, H, L, LL)

Blue: Alarm OFF

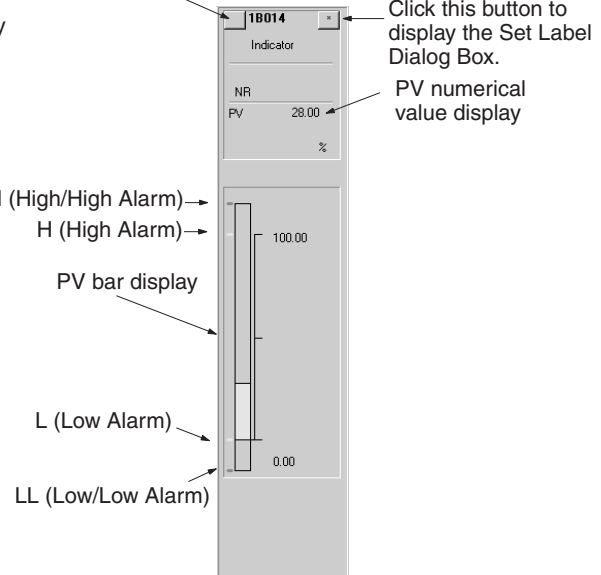
Light blue: Function block calculations stopped

**Ratio Setting (033)**

Click this button to move to the Tuning screen.  
See 4-8 Tuning Screens for details.

**Indicator (034)**

Click this button to move to the Tuning screen.  
See 4-8 Tuning Screens for details.

**PV Bar Display**

Displays the PV range from upper to lower limit as a bar.

Green: Status normal

Red: PV Alarm (either HH, H, L, LL)

Blue: Alarm OFF

Light blue: Function block calculations stopped

**PV Bar Display**

Displays the PV range from upper to lower limit as a bar.

Green: Status normal

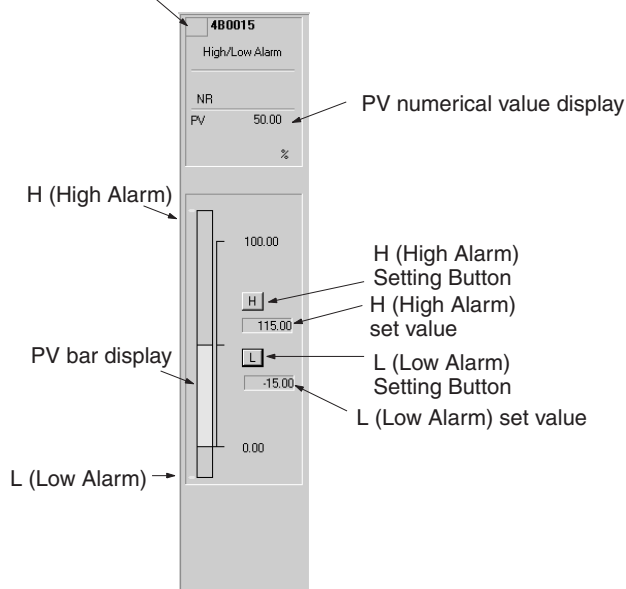
Red: PV Alarm (either HH, H, L, LL)

Blue: Alarm OFF

Light blue: Function block calculations stopped

**High/Low Alarm (111)**

Click this button to move to the Tuning screen.  
See 4-8 Tuning Screens for details.

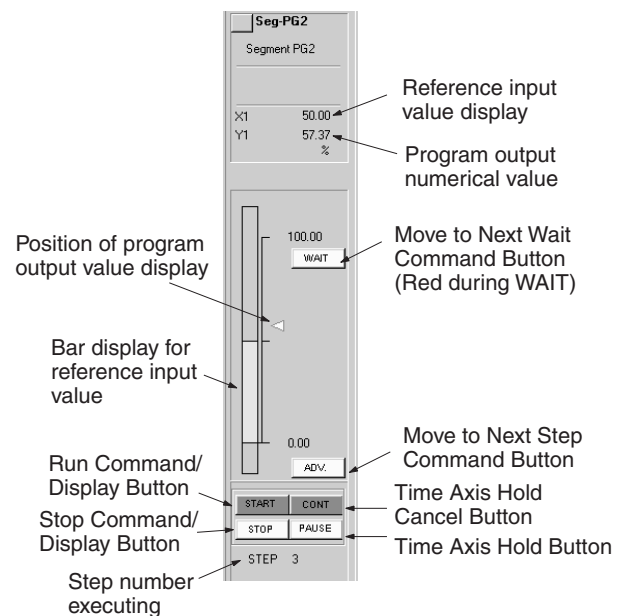
**PV Bar Display**

Displays the PV range from upper to lower limit as a bar.

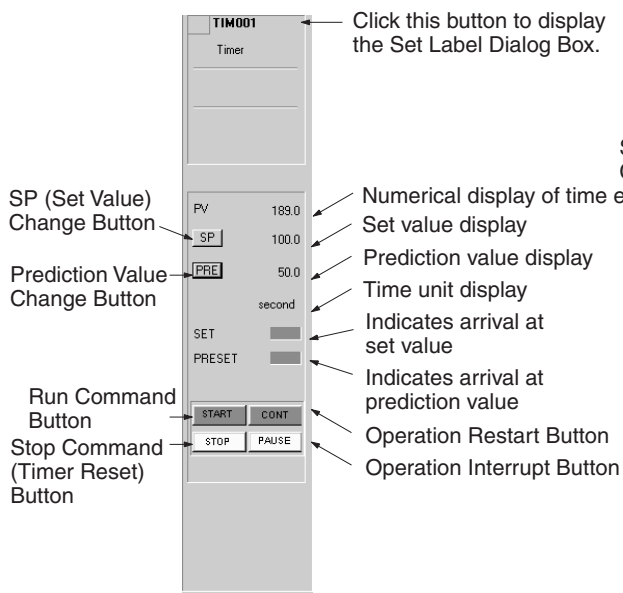
Green: Status normal

Red: Alarm

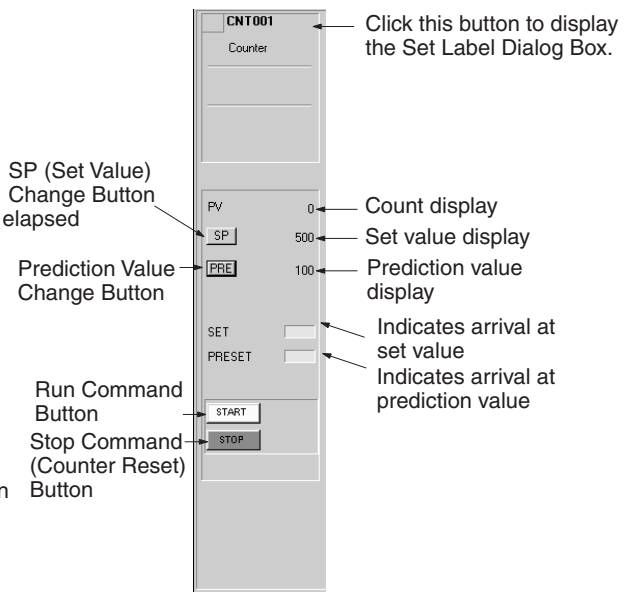
Light blue: Function block calculations stopped

**Segment Program 2 (157)**

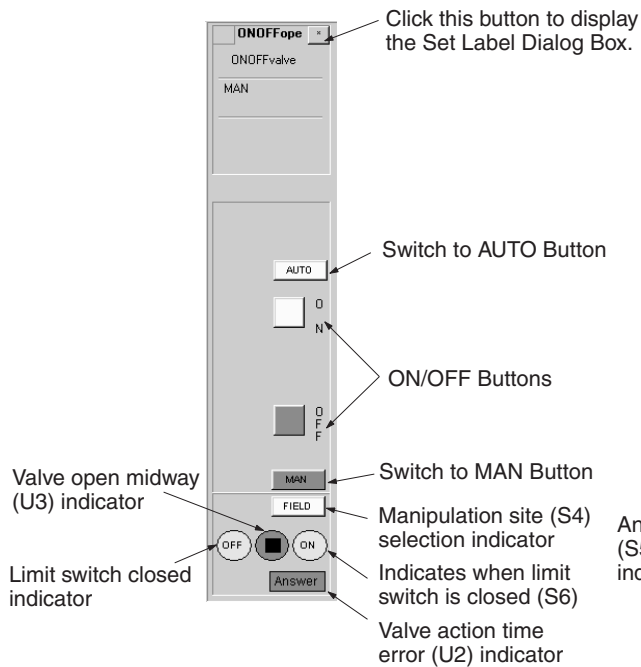
Timer (205)



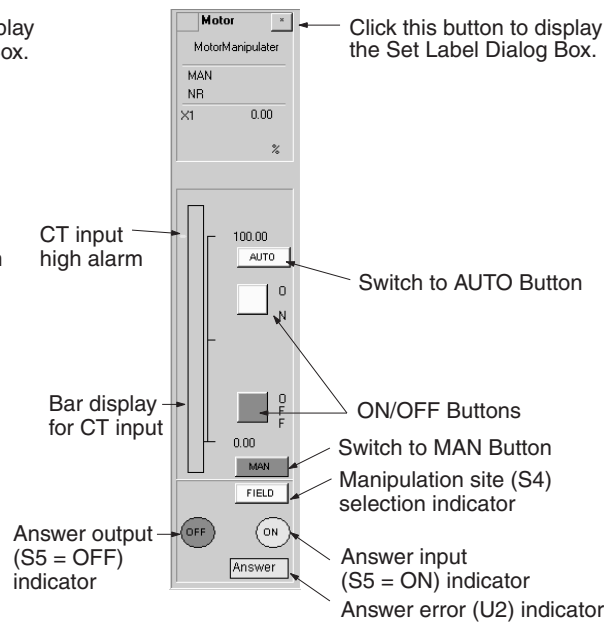
Counter (208)



ON/OFF Valve Manipulator (221)

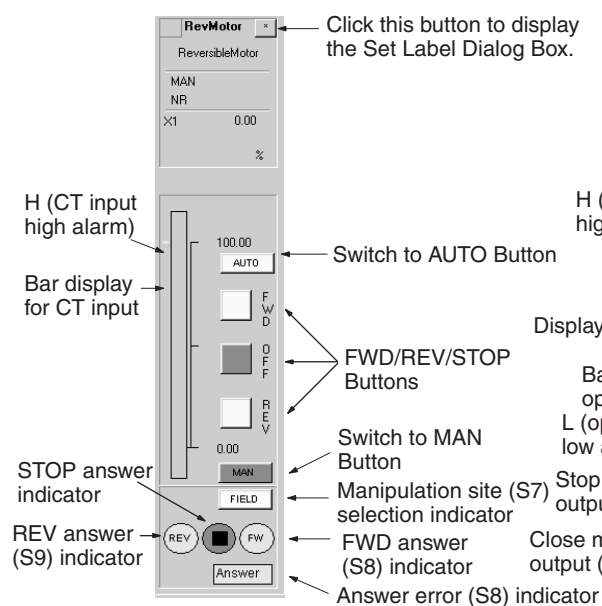


Motor Manipulation (222)

**PV Bar Display**

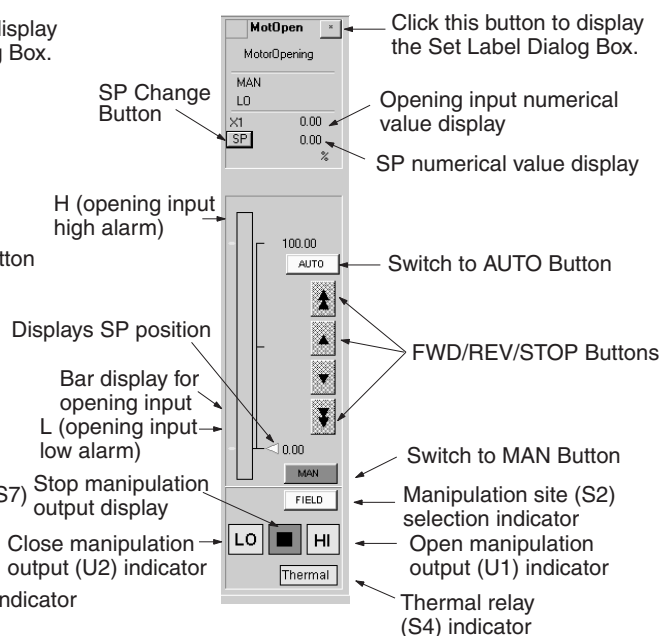
Displays the PV range from upper to lower limit as a bar.  
 Green: Status normal  
 Red: Alarm (H)

## Reversible Motor Manipulator (223)

**PV Bar Display**

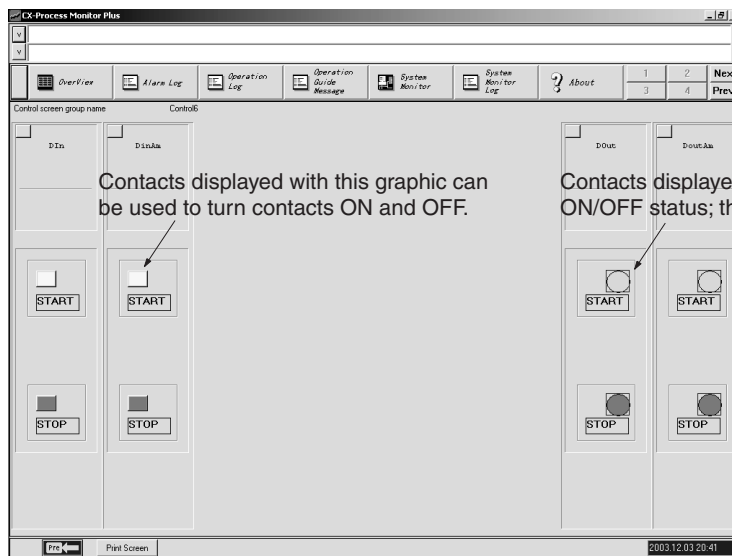
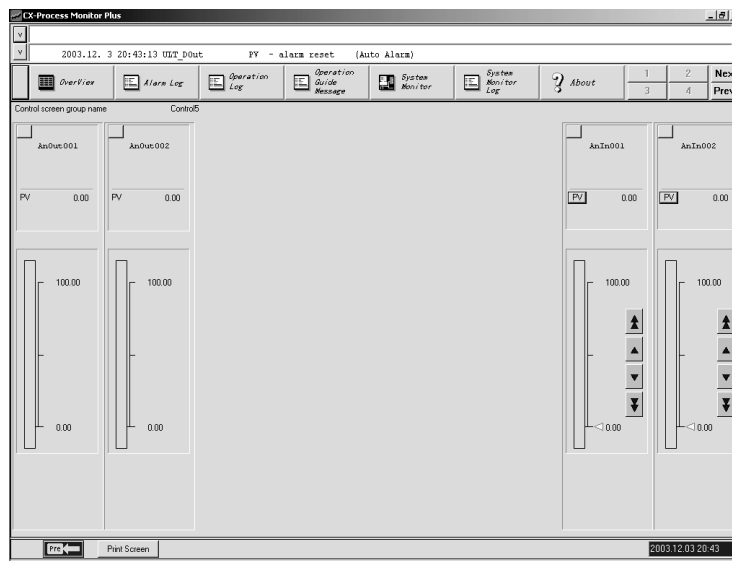
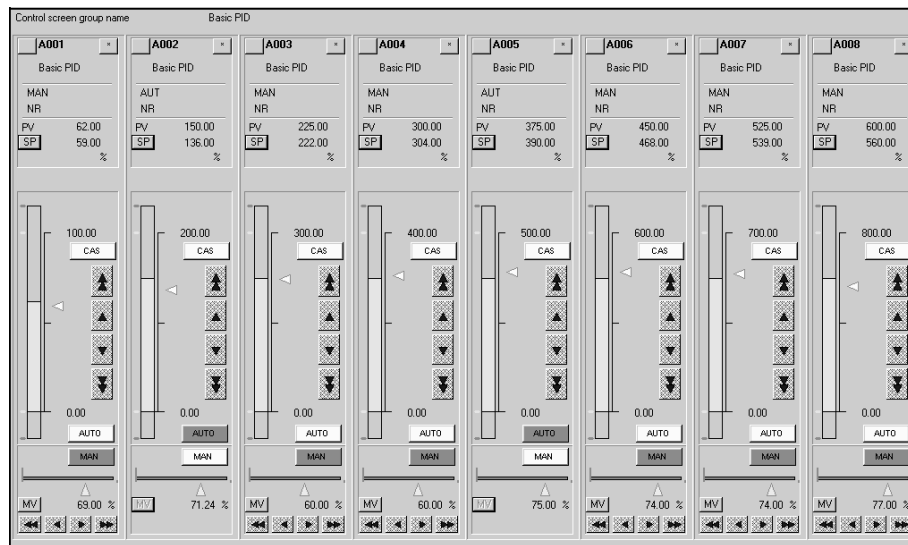
Displays the PV range from upper to lower limit as a bar.  
 Green: Status normal  
 Red: Alarm (H)

## Motor Opening Manipulator (224)

**PV Bar Display**

Displays the PV range from upper to lower limit as a bar.  
 Green: Status normal  
 Red: Alarm (H)

### 4-7-3 Display Examples





## 4-8 Tuning Screens

Use Tuning Screens, for example, to change Control Block P, I, and D constants, in control blocks.

- You can set the parameters for PID Block P, I, D, and alarm set values.
- You can make adjustments while monitoring PV, SP, and MV trends.
- A maximum of 3,200 screens can be displayed.
- If an alarm occurs, the bar graph color changes.

Use one of the following methods to display the Tuning Screen.

- Select a button to move to the Tuning Screen using the Control Screen. Refer to *4-7 Control Screens* for details.
- Click the button displayed by the Control Screen icon in the Overview Screen. Refer to *4-5 Overview Screen* for details.

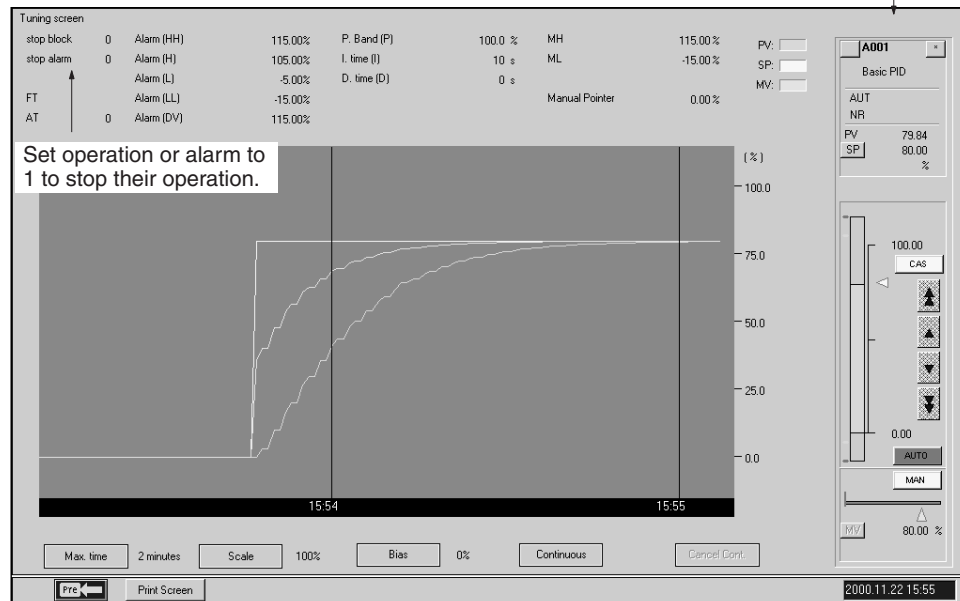
A pop-up menu of tag names or a dialog box to specify the tag name will be displayed if the button on the upper left of an Overview Screen is displayed. (Refer to *4-6 Screen Configurations*.) (Either a pop-up menu or a dialog box can be selected by clicking the **System Info**. Button when configuring the screen and then setting the Auto-start–Tuning screen list setting.

| Block name (model)                            | Signal source Function Block or ITEM                                                                                                                                                                                                                                                               |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Target function block                         | Control Block: Basic PID (011), Advanced PID (012), Batch flowrate capture (014), Indication and Setting (031), Indication and Operation (032), Ratio Setting (033), Indicator (034), blended PID (013), 2-position ON/OFF (001), 3-position ON/OFF (002), Segment Program 2 (157)                 |
| Display<br>Example:<br>Basic or Advanced PID  | SP, PV, and MV trends<br>Setting values for P, I, D, and MV limit High/Low, High/High Alarm, High Alarm, Low Alarm, Low/Low Alarm, and Deviation Alarm.<br>Alarm OFF switch, Stop block operation command, SP, PV, MV, and A/M status, R/L status (See note 1.), bar color change if alarm occurs. |
| Settings<br>Example:<br>Basic or Advanced PID | Setting values for P, I, D, and MV limit High/Low, High/High Alarm, High Alarm, Low Alarm, Low/Low Alarm, and Deviation Alarm.<br>SP, MV (manual mode only), A/M switching (See note 1.), R/L switching (See note 1.).                                                                             |

- Note**
1. Same as for Control Screen
  2. If using the Tuning Screen, use the 1-Block Send Terminal to Computer function block (403). tag names specified using the 4-Block Send Terminal to Computer function block(404) cannot be displayed on the Tuning Screen.

Click the text to display the dialog boxes for changing the settings. You can make changes using the ten-key dialog box (using the mouse), or the keyboard. (The ten-key pad is displayed when you select the Enter box. Refer to 5-6-3 *Ten-key Settings* for ten-key/keyboard switching settings.)

Refer to 4-7 *Control Screens* for how to operate.



Select these buttons to display the dialog boxes for changing the settings.

Click the **Time Range** Button to set the maximum amplitude for the time axis displayed on the screen.

The scale can be set to either percentages or engineering units. The setting can be made by clicking the **System Info.** Button when configuring the screen and then setting the Auto-start–Divisions in Tuning screen setting.

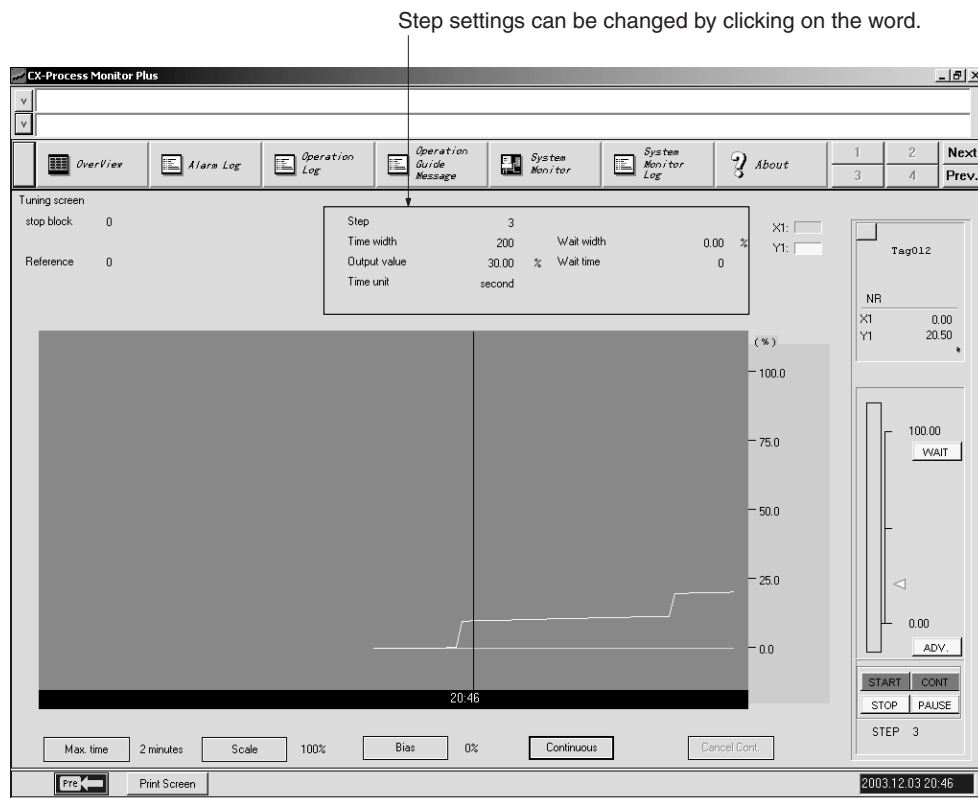
To zoom in on the scale displayed, click the **Scale** Button and change the setting.

To add bias to the display, click the **Bias** Button and change the setting.

Collection of Trend data for the Tuning Screen starts once you have moved to the Tuning Screen, and is displayed only while the Tuning Screen is displayed. To continue to collect trend data even if you then move from the Tuning Screen to another screen, and to display the data continuously if you return to the Tuning Screen, click the **Continuous** Button. In this way, the data from three screens is collected against the background of the Tuning Screen.

To cancel the Continuous function explained above, click the **Cancel** button.

**Note** The display for Segment Program 2 (157) is shown below.



### Auto-tuning (AT)

It is possible to automatically calculate and store the PID constants used for Basic PID (011) or Advanced PID (012). This function is called auto-tuning (AT). For details of the AT function, refer to the section on Basic PID (011) in the Loop Control Unit Function Block Reference Manual. AT can be set in the same way as the other settings, as shown below.

**1,2,3...**

1. If the value for AT displayed in the upper-left region of the Tuning Screen is 0, then AT will not be executed.
2. Click **AT**.

The Change Data Dialog Box shown below will be displayed.

3. To execute AT, input 1 in the New Data Field.
4. Click the **OK** Button. AT will be executed (see note). The value for AT displayed in the upper-left region of the Tuning Screen will change to 1.
5. When the PID constants have been calculated and stored and AT has been completed, the value for AT displayed in the upper-left region of the Tuning Screen will return to 0.

**Note** Execution of AT can be cancelled from the above dialog box by inputting 0 in the New Data Field and clicking the **OK** Button. (The value for AT displayed in the upper-left region of the Tuning Screen will return to 0.)

### Changing P, I, D

The following example shows how to change P (the proportional band).

1,2,3...

1. Click **Proportional Band (P)** displayed in the upper center of the screen.  
The Change Data Dialog Box will be displayed.

Change data

P. Band (P)

Old data 25.0

New data

OK Cancel

2. Select the Change To Field.

The ten-key dialog box will be displayed as shown.

**Note** Refer to *5-6 Labels, Alarm Sounds, and Ten-key Settings* for settings to disable the ten-key pad (i.e., to input directly from the keyboard).

Input data

CL / \* .

7 8 9 +

4 5 6 +/-

1 2 3 =

0 .

OK Cancel

3. After using the mouse (or the keyboard) to enter a numerical value, click the **OK** Button.

The display will return to the Change Data Dialog Box shown in Step 1.

4. Click the **OK** Button.

You can change the settings for I (integral time) and D (differential time) in the same way.

### Changing Other Settings

You can use the procedure explained above to change the settings for MV High/Low Limit, High/High Alarm, High Alarm, Low/Low Alarm, Low Alarm, and Deviation Alarm in the same way.

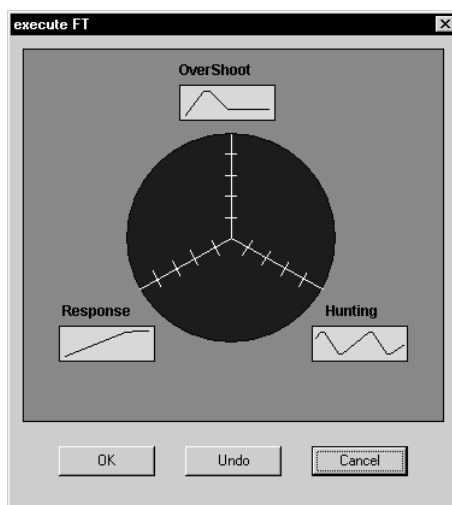
### Executing Fine Tuning

Fine tuning (FT) can be executed for either Basic PID (011) or Advanced PID (012). Fine tuning lets the user use fuzzy inferences to set PID constants as required for more accurate control.

- 1,2,3... 1. Click **Execute FT** at the upper left portion of the Tuning Screen, as shown below.

| Tuning screen |   |
|---------------|---|
| stop block    | 0 |
| stop alarm    | 0 |
| FT            |   |
| AT            | 0 |

The following FT Execution Dialog Box will be displayed.



2. Set the degree of **Response** improvement, **Overshooting** control, and **Hunting** control to any of the five levels and then click the **OK** Button. Either one or two of these can be set for one executed, but all three cannot be set at the same time.

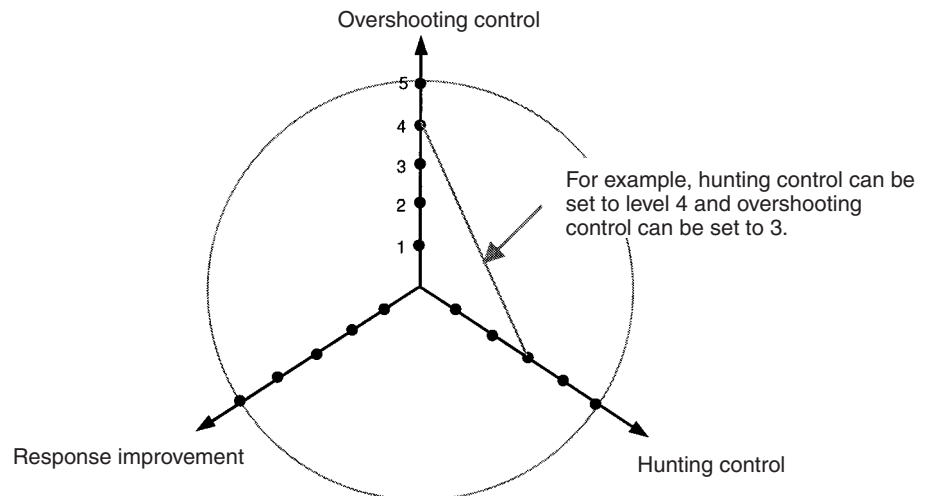
Fine tuning will be executed according to the settings, the resulting PID constants will be stored automatically, and the new values will be displayed at the top of the Tuning Screen.

3. Repeat the above process as many times as required to achieve suitable settings.
4. Click the **Undo** Button to return to the previous PID constant settings. If the Undo Button is pressed a second time, the FT settings will be returned to.

Execute fine tuning when the control performance produced by autotuning is not acceptable, when autotuning produces inconsistency in the PV, or when you cannot allow control to be interrupted.

Fine tuning uses three user settings for hunting control, overshooting, and response improvement along with fuzzy inferences from previous control conditions to improve control by automatically setting PID parameters.

Either one or two of the user settings for hunting control, overshooting, and response improvement can be set to any of five levels. For example, to better control hunting and overshooting, the *Overshoot* and *Hunting* parameters can be set to the desired levels.



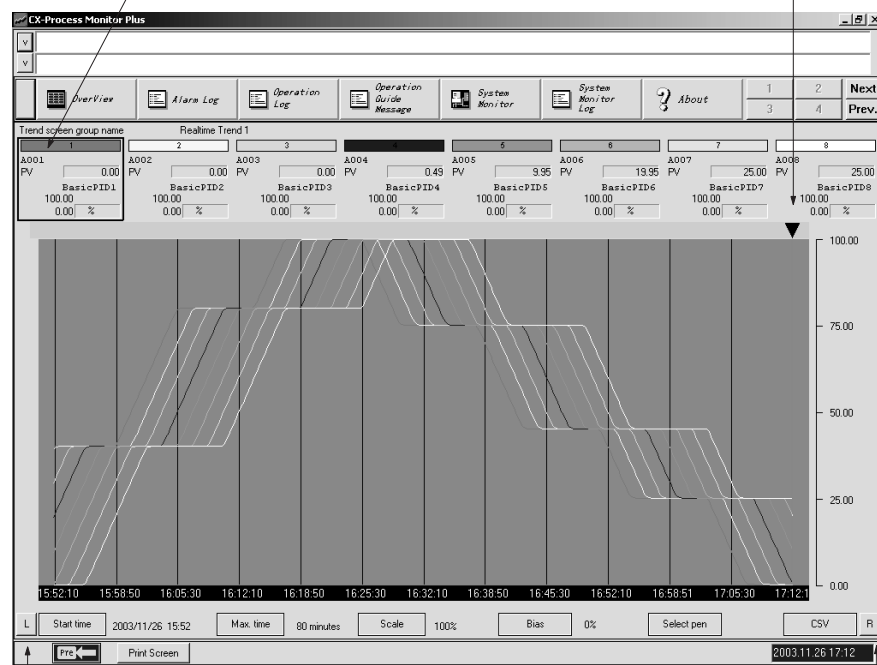
## 4-9 Trend Screens

Trend Screens display changes in Control Block PV, SP, MV, and analog signals across the passage of time as recording meter images. To display the Trend Screen, click the **Trend Screen** Button in the Overview Window.

### 4-9-1 Real Time Trend Screen Display

The scale of the graph is adjusted to the set value of the data that is selected. Click the icon of the desired number to change the data.

Data values at the point in time displayed by this mark (the current value for the default) are displayed in the upper part of the screen. You can drag this mark to move it about the screen. All data is displayed as real numbers.



Time Scroll  
Shifts one screen  
further to the past.

Time Scroll  
Shifts one screen  
further to the future.

Function block PV, SP, MV, and analog signals output from the Send Terminal to Computer function block are collected in fixed cycles, the trend displayed, and simultaneously stored in a file.

Trends are displayed as multi-dot recorder screen images to a maximum of eight dots per screen.

The following two Trend Screens are supported.

| Item                              | Type               | Realtime Trend                                                                                                                                     | Historical Trend                                                                                                                                          |
|-----------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data collection (logger function) | Collection cycle   | 1, 2, 5, 10, or 30 s                                                                                                                               | 1, 5, 10, 30, or 60 min                                                                                                                                   |
|                                   | Tags               | 480 max.                                                                                                                                           | 960 max.                                                                                                                                                  |
|                                   | Maximum save time  | Collection cycle<br>1 s: 10 h<br>2 s: 20 h<br>5 s: 50 h<br>10 s: 100 h<br>30 s: 300 h                                                              | Collection cycle<br>1 min: 30 days<br>5 min: 150 days<br>10 min: 300 days<br>30 min: 900 days<br>60 min: 1,800 days                                       |
| Data display                      | Horizontal axis    | Collection cycle<br>1 s: 2 min to 240 min<br>2 s: 4 min to 240 min<br>5 s: 10 min to 240 min<br>10 s: 20 min to 240 min<br>30 s: 20 min to 240 min | Collection cycle<br>1 min: 2 h to 10 days<br>5 min: 10 h to 50 days<br>10 min: 20 h to 100 days<br>30 min: 60 h to 300 days<br>60 min: 5 days to 600 days |
|                                   | Vertical axis      | One axis for all 8 points. Scale can be magnified by 1×, 2×, 5×, or 10×.                                                                           |                                                                                                                                                           |
|                                   | Display start time | Specify the display start time to display data from that point in time.                                                                            |                                                                                                                                                           |
|                                   | Display colors     | Red, yellow, green, blue, magenta, purple, cyan, and white                                                                                         |                                                                                                                                                           |

The data collection cycle is set on the System Info Screen. For details on the data collection cycle, refer to *5-6-9 CSV File Auto-save Settings*.

**Note** Depending on the number of combined function blocks and the model of Loop Controller that is connected, it may not be possible to collect the data within the collection cycle that is set.

If the data is displayed on a graph under these conditions, the data will be updated with the same values as for the previous collection. To remedy this situation, take measures such as lengthening the collection cycle interval.

You can register a maximum of 60 Realtime Trend Screens, or 120 Historical Trend Screens.

Set either Realtime Trend or Historical Trend when configuring the screen.

Regardless of the trend, trend data collection itself starts at the same time as the monitor process is started (using the **Run** Button in the Main Window).

- Click the **Start Time** Button in the lower left of the screen to set the time from which data will be displayed.
- Click the Maximum Display Time Button to set the maximum width of the time axis displayed on the screen.
- To zoom in on the scale displayed, click the **Scale** Button and change the setting.
- To add bias to the display, click the **Bias** Button and change the setting.
- Use the **Select Pen** Button to select the pen you want to display.

Realtime trends is recorded for the maximum save time (10 to 300 hours), after which the oldest data is discarded.

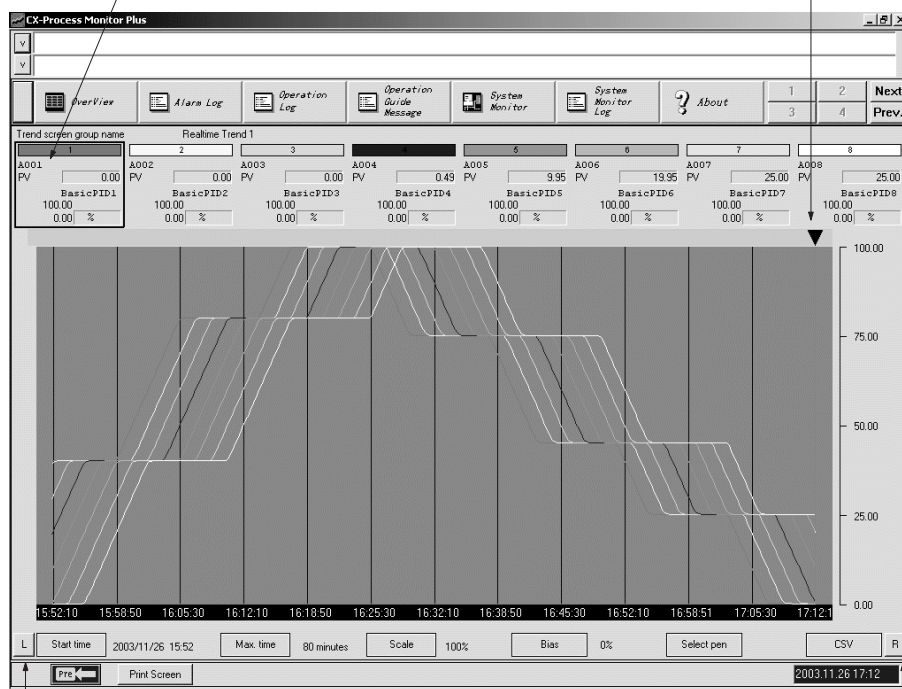
| Element               | Send source function block, or ITEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Target function block | Control Block: PV, SP, MV, Y1, Y2, and HL only for Basic PID (011), Advanced PID (012), Batch flow-rate capture (014), Indication and Setting (031), Indication and Operation (032), Ratio Setting (033), Indicator (034), blended PID (013), 2-position ON/OFF (001), and 3-position ON/OFF (002).<br>The following for all function blocks:<br>Analog input signals (Input Selector (Block Model 162))<br>Analog output signals (Constant Generator (Block Model 166))<br>Contact input signals or contact output signals for all function blocks, or contact value parameters (Contact Distributor (Block Model 201) + Internal Switch (Block Model 209)) |
| Display               | SP, PV, and MV, analog value, and contact (See note.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Setting               | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**Note** MV is displayed as an SP and PV range, not as a percentage.

## 4-9-2 Historical Trend Screen Display

The scale of the graph is adjusted to the set value of the data that is selected. Click the icon of the desired number to change the data.

Data values at the point in time displayed by this mark (the current value for the default) are displayed in the upper part of the screen. You can drag this mark to move it about the screen. All data is displayed as real numbers.



Time Scroll  
Shifts one screen  
further to the past.

Time Scroll  
Shifts one screen  
further to the future.

### CSV File Output

Realtime Trend data and Historical Trend data (data grouped by date, time, or tag name) can be output in CSV (Comma Separated Value) file format using the following procedure.

#### Automatic Saving (Scheduled Saving)

The following settings can be used when configuring screens (i.e., when registering trend screens).

- Automatic save enable



- Save period (1, 2, 3, 4, 6, 8, 10, 12, 18, 20, 24, 48, 72, 96, 120, or 240 h)
- Save file name and folder

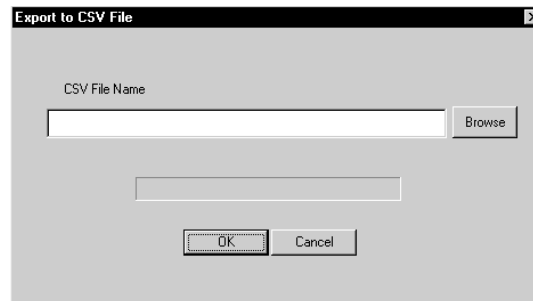
Once automatic saving has been enabled and the monitor process has been started (by clicking the **Run** Button in the Main Window or the **Run** Button in the Setup Dialog Box), the automatic save function will be started. An CSV file will be saved periodically on the hour at the specified save period. Refer to *Registering Trend Screens* under *5-5 Screen Configuration* for details on automatic save settings.

### Manual Saving

Use the following procedure.

1,2,3...

1. Press the **CSV** Button to display the Export to CSV File Dialog Box.



2. Specify a name for the CSV file, and click the **OK** Button. A CSV file will be created. (By clicking the **Browse** Button, the CSV file can be created in a desired folder. The default filename for Realtime Trend data is Trrl.csv and the default filename for Historical Trend data is Trhl.csv.) The contents of CSV files created are as follows:

#### Realtime Trend

```
Real-time Trend(carriage return)
<Screen_name>(carriage return)
<Date_exported>(comma)<Time_exported>(carriage return)
(comma)(comma)<Tag_name_1>(comma)<Tag_name_2>(comma)...(comma)
)<Tag_name_8>(carriage return)
(comma)(comma)<ITEM_tag_1>(comma)<ITEM_tag_2>(comma)...(comma)
<ITEM_tag_8>(carriage return)
<Date_of_trend_data>(comma)<Time_of_trend_data>(comma)<Data_1>(co
mma)<Data_2>(comma)...(comma)<Data_8>(carriage return)
```

**Note** Data for tag names that have not been registered will be 0.

#### Historical Trend

```
Historical Trend(carriage return)
<Screen_name>(carriage return)
<Date_exported>(comma)<Time_exported>(carriage return)
(comma)(comma)<Tag_name_1>(comma)<Tag_name_2>(comma)...(comma)
)<Tag_name_8>(carriage return)
(comma)(comma)<ITEM_tag_1>(comma)<ITEM_tag_2>(comma)...(comma)
<ITEM_tag_8>(carriage return)<Date_of_trend_data>(comma)<Time_of_tre
nd_data>(comma)
<Data_1>(comma)<Data_2>(comma)...(comma)<Data_8>(carriage return)
```

**Note** Data for tag names that have not been registered will be 0.

**Example:** The following screen shows how Realtime Trend data exported to spreadsheet software (e.g., Microsoft Excel) will be displayed.

|    | A               | B        | C    | D    | E    | F    | G    | H    | I    | J    | K |
|----|-----------------|----------|------|------|------|------|------|------|------|------|---|
| 1  | Real-time Trend |          |      |      |      |      |      |      |      |      |   |
| 2  | REAL TIME TR    |          |      |      |      |      |      |      |      |      |   |
| 3  | 11/22/00        | 20:57:24 |      |      |      |      |      |      |      |      |   |
| 4  |                 |          | A001 | A002 | A003 | A004 | A005 | A006 | A007 | A008 |   |
| 5  |                 |          | PV   | PV   | PV   | PV   | PV   | PV   | PV   | PV   |   |
| 6  | 11/22/00        | 9:01:10  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |
| 7  | 11/22/00        | 9:01:20  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |
| 8  | 11/22/00        | 9:01:30  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |
| 9  | 11/22/00        | 9:01:40  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |
| 10 | 11/22/00        | 9:01:50  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |
| 11 | 11/22/00        | 9:02:00  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0 |

Date exported: 11/22/00  
 Tag name: PID1  
 ITEM tag: PV

Screen name: REAL TIME TR  
 Time exported: 20:57:24

Data of trend data: 11/22/00  
 Time of trend data: 9:01:10  
 ITEM tag data: PV

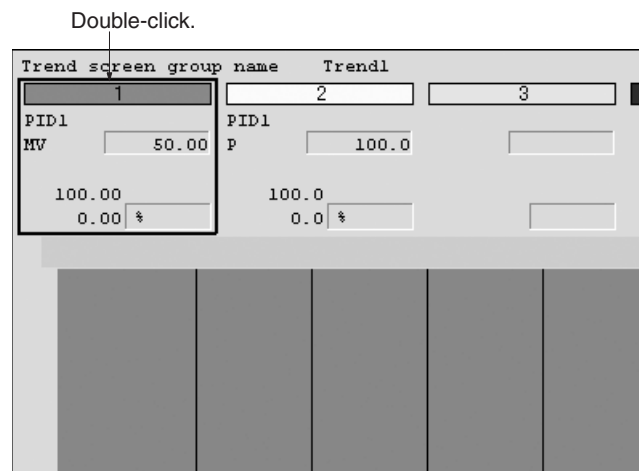
### Changing Pen Settings

Pens can be changed, deleted, or added to Trend Screens without shutting down the CX-Process Monitor Plus.

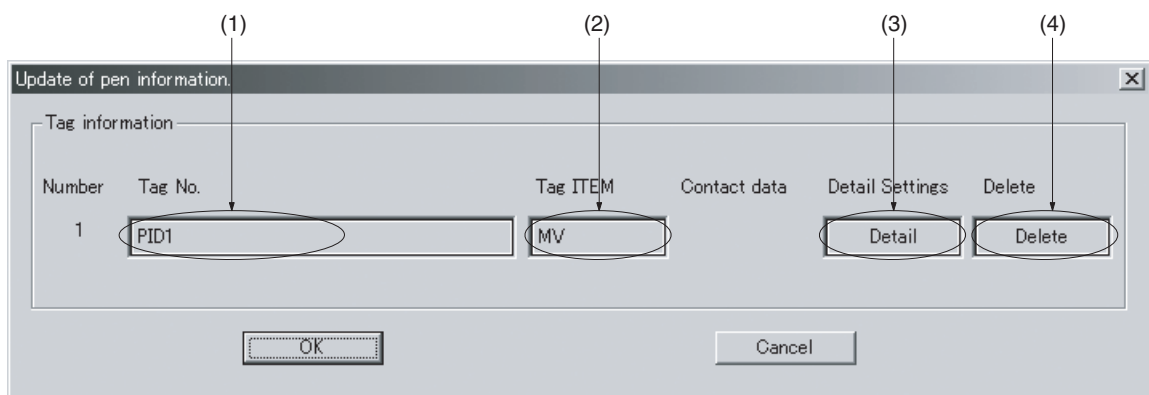
#### Changing/Deleting Pens from the Dialog Box

1,2,3...

- Double-click the pen selection area.



- The following dialog box will be displayed. Click where indicated by numbers 1 to 4 in the following diagram to set the items.



- Tag Name Selection for CSV Tag  
Displays a list of tags registered in CX-Process Monitor Plus.
- ITEM Tag Selection  
Set the type of ITEM to use to narrow the ITEM list displayed for the tag names above.

## (3) Detailed Settings

When the tag name is set above, the upper/lower limits of the specified tag will be displayed by default. The setting can be changed.

## (4) Delete

Deletes the selected pen.

**Note** (a) When the Delete Button is pressed in step 4, above, all tag information will be deleted from the Trend Screen, including the graphic display for the pen.

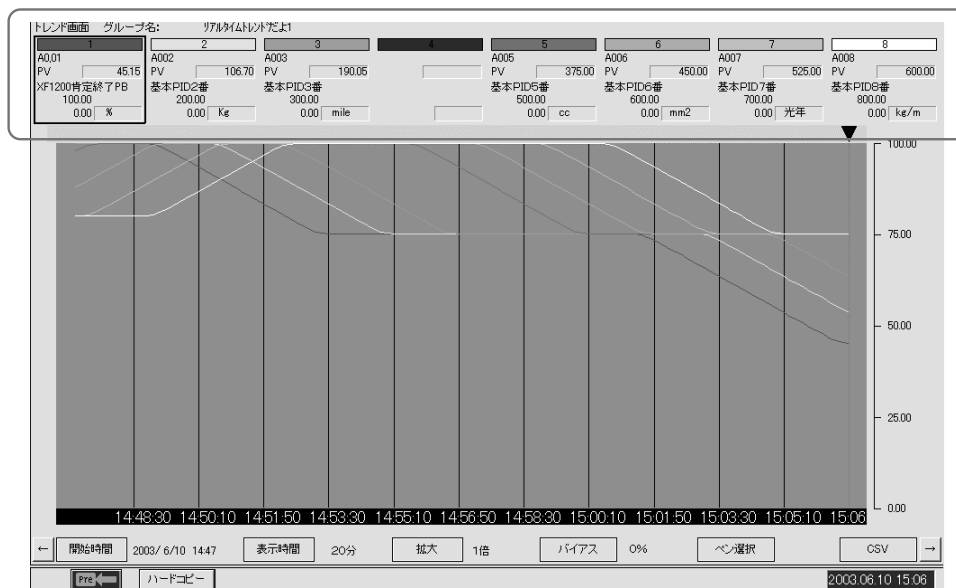
(b) After the four items above are set and the **OK** Button is clicked, some time will be required before the results are displayed on the Trend Screen. This time will be the collection cycle (approximately 10 s for realtime trends and 60 s for historical trends) plus the screen refresh cycle (a few seconds). If another screen is switched to, the changes will be reflected in the screen as soon as it is returned to.

(c) If the scaling settings have been changed using the CX-Process Tool, change the tag upper and lower limit settings to match the changed values using the **Detail** Button in the Update of Pen Information Dialog Box.

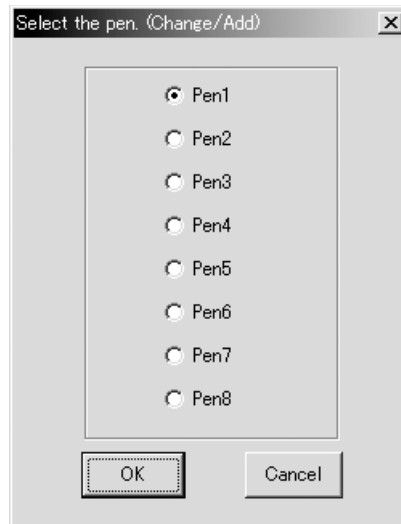
### Adding Pens from the Dialog Box

Use the following procedure to assign a tag to a pen for which one is not yet assigned.

- 1,2,3...** 1. Double-click in the area circled in the screen shown below.



The following dialog box will appear to change the pen.



2. Select a pen to which a tag is not yet assigned and click the **OK** Button.
3. Assign the pen using the same dialog box as used to change and delete pens in the previous procedure.

## 4-10 Batch Trend Screens

Batch Trend Screens collect changes over time in the control block PV, SP, MV, and other analog signals, and display them as recording meter images.

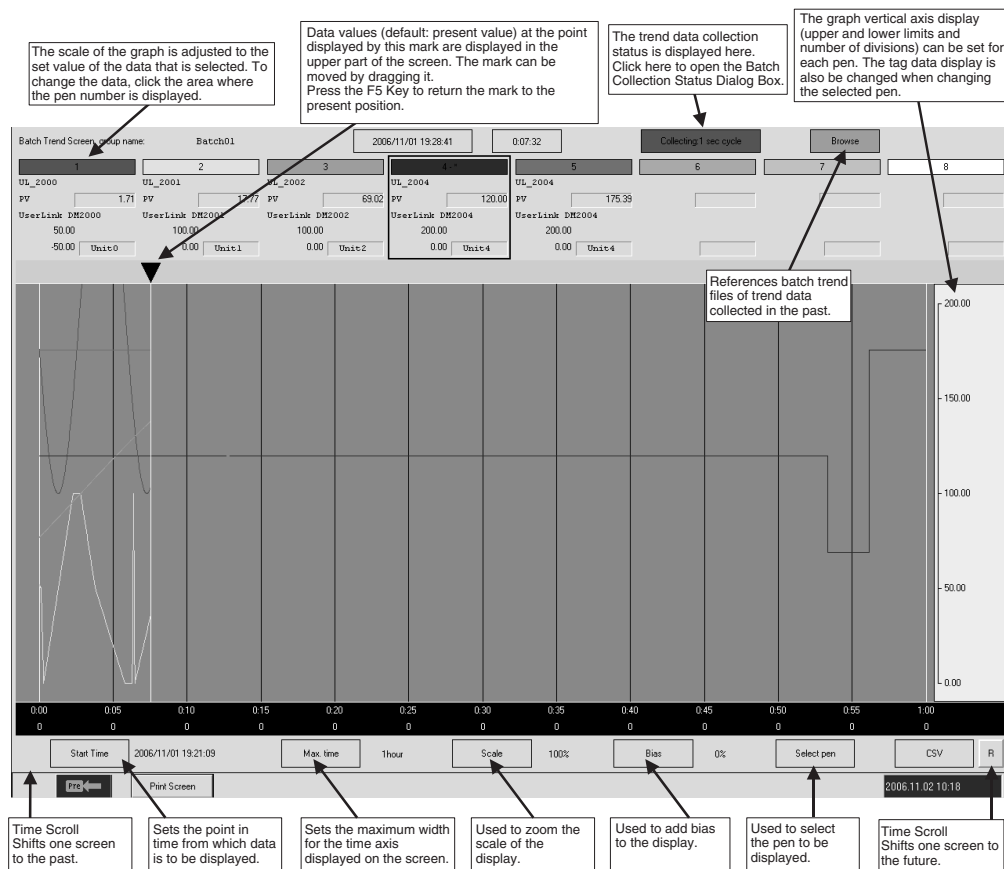
Trend data collection can be started and stopped using tag data status as the trigger.

Collected trend data is automatically saved in a batch trend file.

Past batch data in the batch trend file can be superimposed for display on the Batch Trend Screen during data collection, and can be output to a CSV file.

The Batch Trend Screen is displayed by clicking the Batch Trend Screen icon in the Overview Screen.

### 4-10-1 Batch Trend Screen Display



**Note** The CX-Process Monitor Plus provides the following two types of screens for data collection in trend graph format.

Use them according to the requirements of the application.

- Trend Screens
- Batch Trend Screens

For details on the differences between Trend Screens and Batch Trend Screens, refer to *Appendix B Differences between Trend Screens and Batch Trend Screens*.

- A recording meter screen image with a maximum of eight points is displayed on one screen.
- A maximum of 120 Batch Trend Screens and 960 tags can be registered.

- The trend data collection cycle and maximum save time in a Batch Trend Screen are shown in the following table.

| Item                            | Details                                                                            |
|---------------------------------|------------------------------------------------------------------------------------|
| Collection cycle<br>(See note.) | 1 s, 1 min                                                                         |
| Maximum save time               | 4 hours (when collection cycle is 1 s)<br>10 days (when collection cycle is 1 min) |

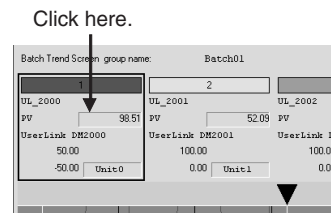
- Note**
- The collection cycle is set using the CRT Builder Dialog Box (Batch Trend Screen) from the Builder Window. For details on collection cycle settings, refer to *5-5-2 Overview of Screen Registration*.
  - Depending on the number of combined function blocks and the model of Loop Controller that is connected, it may not be possible to collect the data within the collection cycle that is set.  
If the data is displayed on a graph under these conditions, the data will be updated with the same values as for the previous collection. To remedy this situation, take measures such as lengthening the collection cycle interval.

### Changing the Vertical Axis Display

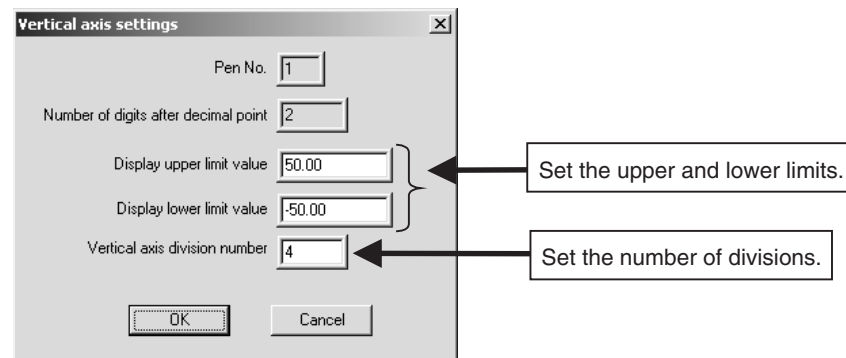
The display for the batch trend graph vertical axis can be changed for each pen.

1,2,3...

- Click the Batch Trend Screen data display area.



- With the pen selected, click the vertical axis of the graph.
- The Vertical Axis Setting Dialog Box will be displayed. Set the vertical axis display.



- Note**
- If the scaling settings have been changed using the CX-Process Tool, change the tag upper and lower limits in the Vertical Axis Setting Dialog Box to match the new scaling values.

## 4-10-2 Collecting and Saving Trend Data

### Triggers for Starting and Ending Trend Data Collection

There are two ways of starting and ending trend data collection, as described below.

#### Trigger Tags

Trigger tags can be used to start and end trend data collection according to the status of the specified tags.

Set the tags as follows, depending on the type of tag data (contact ITEM or analog ITEM):

Contact ITEM: Data collection starts and ends according to the ON and OFF status.

Analog ITEM: Data collection starts when the tag value is equal to or greater than the batch start value that has been set, and it ends when the tag value is less than the batch stop value.

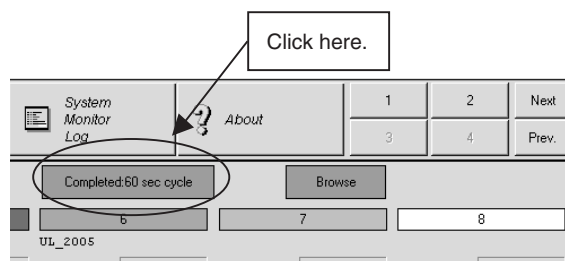
#### Batch Trend Screen Operations

Trend data collection can be started and stopped at any time from the Batch Trend Screen.

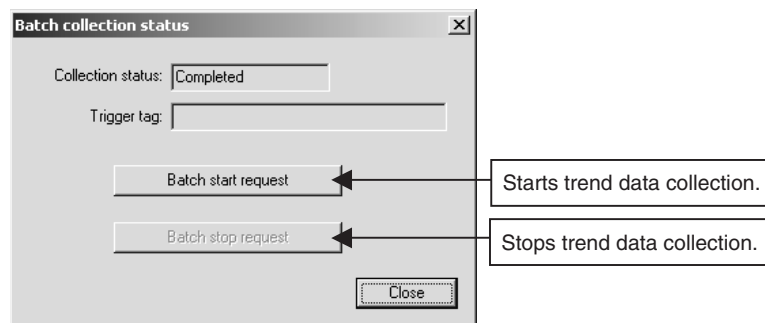
Use the following procedure to start trend data collection.

1,2,3...

1. Click the collection status display area in the Batch Trend Screen.



2. The Batch Collection Status Dialog Box will be displayed. Click the **Batch start request** Button. (If a trigger tag is set, a batch stop request can be executed. Even if it is ended, however, data collection will immediately start when the data collection conditions are satisfied. Use this operation in cases such as switching to another batch when the collection conditions are already satisfied.)



## Batch Trend Files

When trend data collection (batch) is started, batch trend files (binary format) are automatically created for each Batch Trend Screen.

### File Names

Batch trend files are saved under the following file name for each date.

File name: Starting date - Starting time - Batch Trend Screen name.BTR

### Example:

20061201—161510—Batch1.BTR

|                             |                           |                         |
|-----------------------------|---------------------------|-------------------------|
|                             |                           |                         |
| Starting date<br>(YYYYMMDD) | Starting time<br>(HHMMSS) | Batch Trend Screen name |

### Batch Trend Screen Maximum Save Time

When the maximum save time (4 hours or 10 days) elapses for a Batch Trend Screen, the batch trend file is no longer updated.

If the collection trigger condition is satisfied, a new batch trend file is created and trend data collecting is restarted.

### Batch Trend File Save Time

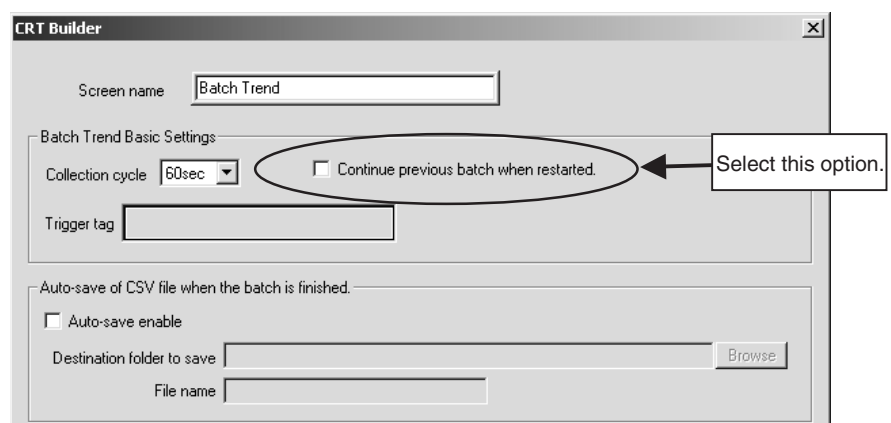
A batch trend file is added each time trend data collection is started. A setting can be made on the System Info Screen so that batch trend files created outside of the regular cycle are automatically deleted. For details on System Info Screen settings, refer to *5-6-9 CSV File Auto-save Settings*.

### CX-Process Monitor Plus Starting and Stopping Operations

When the CX-Process Monitor Plus is ended (by ending all CX-Process Monitor Plus modules or by turning OFF the computer), data trace collection is stopped even if the data collection trigger condition is satisfied.

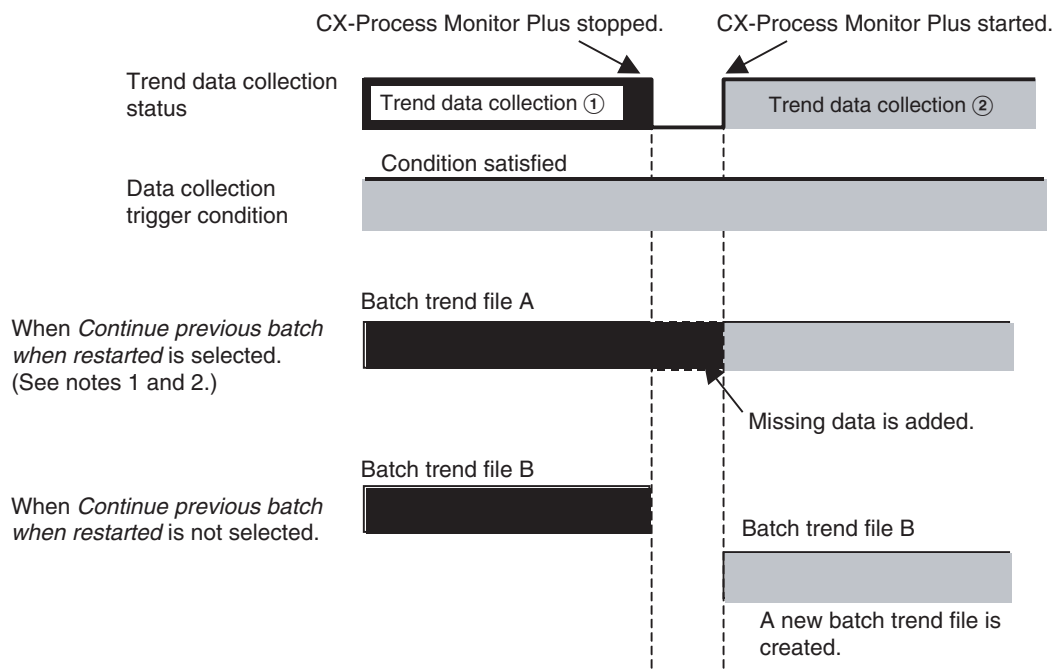
When the CX-Process Monitor Plus is restarted, the data collection starts again but the data is collected in a new batch file.

An option can be selected in the CRT Builder Dialog Box (Batch Trend Screen) from the Builder Window to enable trend data to continue to be collected in the same batch trend file as when the CX-Process Monitor Plus was stopped.



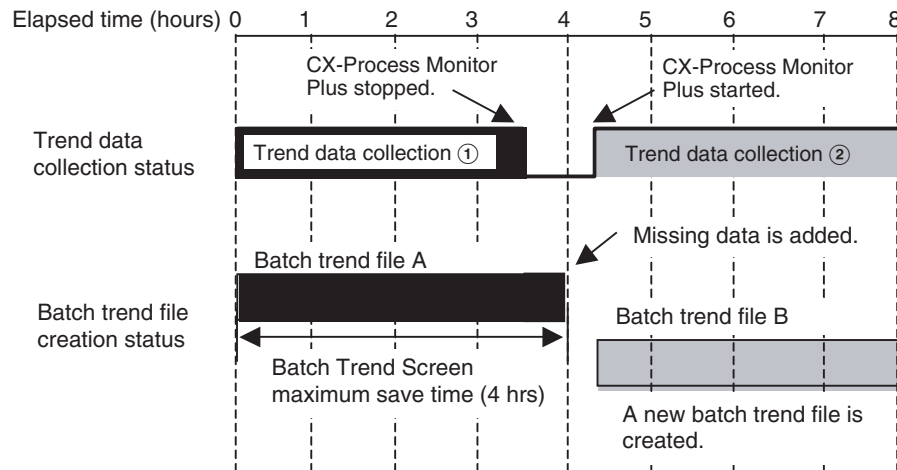


### Difference in Batch Trend File Creation Method by Selecting *Continue Previous batch when restarted* Option



- Note** 1. Even if this option is selected, saving will not be continued if the restart time exceeds the Batch Trend Screen maximum save time.

#### Example: 1-s Collection Cycle



- If the trend data collection trigger condition becomes satisfied while the CX-Process Monitor Plus is stopped, the CX-Process Monitor Plus will not recognize it.  
If the trend data trigger condition is satisfied when the CX-Process Monitor Plus is restarted and if the *Continue previous batch when restarted* option is selected, the data will be saved in the same batch trend file as when the previous CX-Process Monitor Plus was stopped.
- For details on Builder Window CRT Dialog Box (Batch Trend Screen) settings, refer to 5-5-2 *Overview of Screen Registration*.

### Referencing Past Trend Data

Trend data collected in the past is saved as batch trend files. These files can be displayed on Batch Trend Screens.

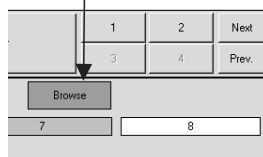
### Procedure for Referencing Past Trend Data

Trend data collected in the past can be checked on a Batch Trend Screen.

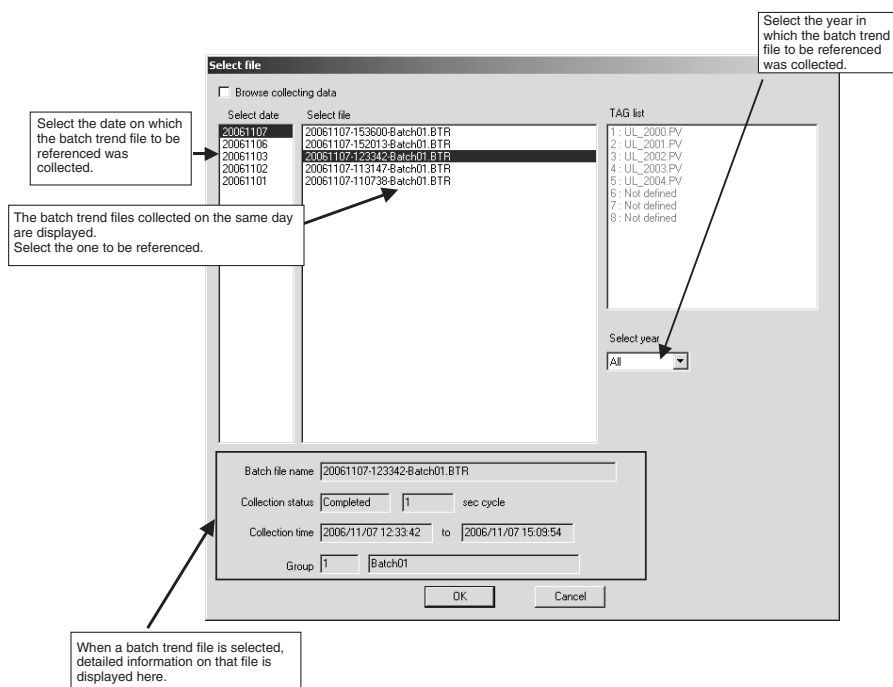
1,2,3...

1. Click the **Browse** Button at the top of the Batch Trend Screen to display the Select File Dialog Box.

Click here.

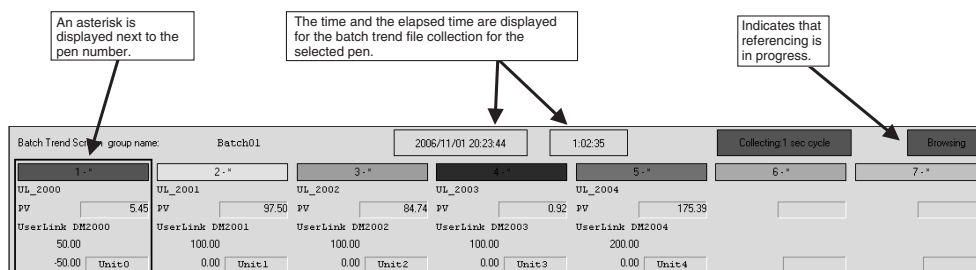


2. In the Select file Dialog Box, select the batch trend file that is to be referenced.



3. The status of the selected batch trend file will be displayed on the Batch Trend Screen.

The display on the Batch Trend Screen while the batch trend file is being referenced will be as shown below.



4. To end the batch trend file reference status, click the **Browse** Button to display the Browse File Dialog Box and select the *Browse collecting data* option.

The batch trend file reference status will be ended when moving to another screen.

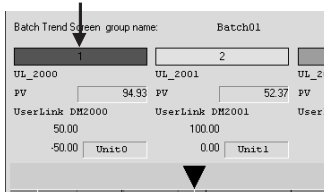
## Overlaying Past and Currently Collected Trend Data

Past and present trend data collection can be compared in pen units.

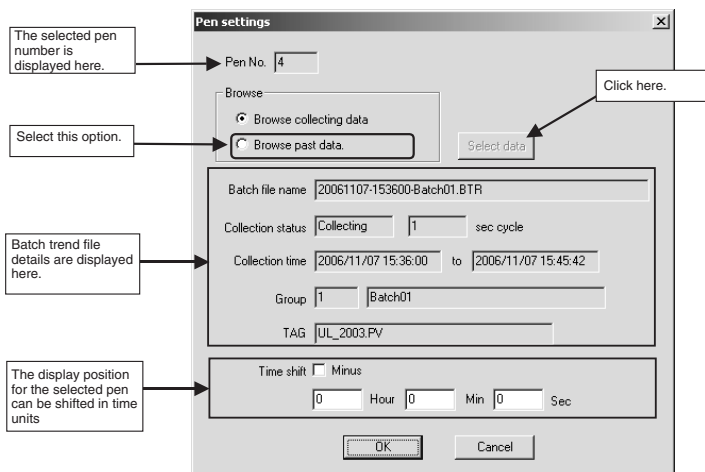
1,2,3...

1. Click the pen number for the past trend data to be displayed.

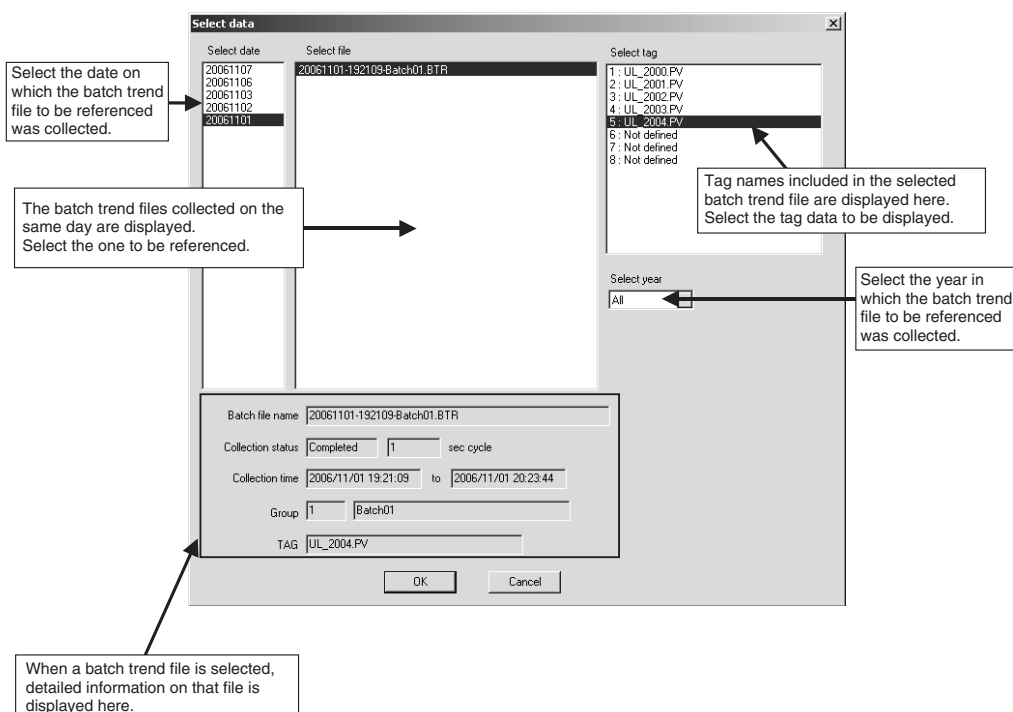
Click here.



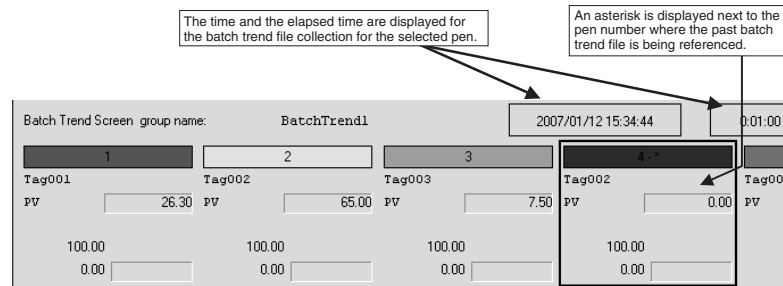
2. The Pen Settings Dialog Box will be displayed. Select *Browse past data* and click the **Select Data** Button.



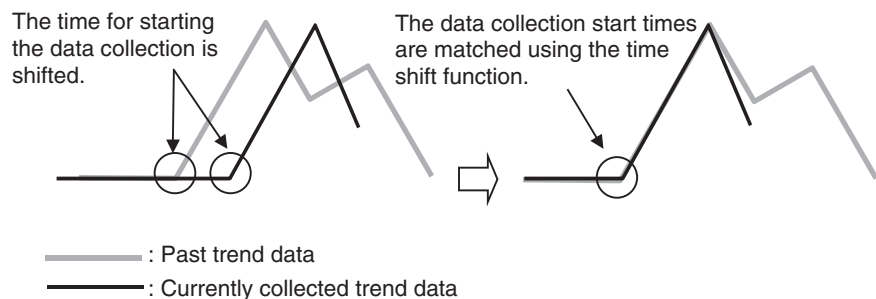
3. The Select data Dialog Box will be displayed. Select the tag data to be displayed.



4. The status of the past batch trend files for the selected pen will be displayed. While a batch trend file is being referenced, the Batch Trend Screen will appear as shown below.



**Note** Use the time shift setting in the Pen Settings Dialog Box to shift the graph for past and currently collected trend data as shown below.



5. To end the batch trend file reference status, click the **Browse** Button to display the Pen Settings Dialog Box and select the *Browse collecting data* option. The batch trend file reference status will be ended when moving to another screen.

## CSV File Output

Data collected using the Batch Trend Screen (data grouped by date, time, or tag number) can be output in CSV (Comma Separated Values) file format either automatically or manually.

## Automatic Saving

The following settings are used when configuring screens (i.e., when registering trend screens).

- Automatic save enable
- Save filter name and save destination folder

The CSV file is automatically saved according to these settings when trend data collection stops (when the trigger tag condition is not satisfied, or when a batch stop is requested manually).

**Manual Saving (Saving by Using Buttons)**

Use the following procedure.

1,2,3...

1. Press the **CSV** Button in the Batch Trend Screen to display the CSV export Dialog Box.

2. Select the batch trend file to export.
3. Specify a name for the CSV file and click the **OK** Button. The CSV file will be created.  
(The file can be created in a specified folder by clicking the **Browse** Button. The default file name is the name of the batch trend file with a CSV file name extension.)

**CSV File Specifications**

Batch trend (comma) Version (carriage return)

Screen name text string (carriage return)

Output time (comma) Output date data (comma) Output time data (carriage return)

Start time (comma) Batch start date data (comma) Batch start time data (carriage return)

Finish time (comma) Batch finish date data (comma) Batch finish time data (carriage return)

(comma) (comma) (comma) Tag name 1 (comma) Tag name 2 (comma) ... (comma) Tag name 8 (carriage return)

Date (comma) Time (comma) Elapsed time (comma) ITEM tag 1 (comma) ITEM tag 2 (comma) ... (comma) ITEM tag 8 (carriage return)

Data date (comma) Data time (comma) Data 1 (comma) Data 2 (comma) ... (comma) Data 8 (carriage return)

**Note** Data will not be displayed for unregistered tag numbers.

**Example:** When an Output CSV File Is Read Using Spreadsheet Software

|    | A           | B            | C            | D       | E       | F       | G       | H       | I       | J       | K       |
|----|-------------|--------------|--------------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1  | Batch Trend | Version 1.00 |              |         |         |         |         |         |         |         |         |
| 2  | Batch02     |              |              |         |         |         |         |         |         |         |         |
| 3  | Output time | 2006/11/7    | 17:12:48     |         |         |         |         |         |         |         |         |
| 4  | Start time  | 2006/11/7    | 17:03:09     |         |         |         |         |         |         |         |         |
| 5  | Finish time | 2006/11/7    | 17:12:48     |         |         |         |         |         |         |         |         |
| 6  |             |              |              | UL_2000 | UL_2001 | UL_2002 | UL_2003 | UL_2004 | UL_2005 | UL_2006 | UL_2007 |
| 7  | Date        | Time         | Elapsed time | PV      | PV      | PV      | PV      | PV      | PV      | PV      | PV      |
| 8  | 2006/11/7   | 17:03:09     | 0:00:00      | 91.45   | 42.37   | 76.5    | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 9  | 2006/11/7   | 17:03:10     | 0:00:01      | 91.45   | 42.37   | 76.5    | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 10 | 2006/11/7   | 17:03:11     | 0:00:02      | 91.93   | 42.23   | 76.55   | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 11 | 2006/11/7   | 17:03:12     | 0:00:03      | 92.4    | 42.08   | 76.6    | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 12 | 2006/11/7   | 17:03:13     | 0:00:04      | 92.85   | 41.95   | 76.66   | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 13 | 2006/11/7   | 17:03:14     | 0:00:05      | 93.3    | 41.81   | 76.71   | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 14 | 2006/11/7   | 17:03:15     | 0:00:06      | 93.73   | 41.67   | 76.76   | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 15 | 2006/11/7   | 17:03:16     | 0:00:07      | 94.14   | 41.53   | 76.81   | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 16 | 2006/11/7   | 17:03:17     | 0:00:08      | 94.55   | 41.39   | 76.86   | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 17 | 2006/11/7   | 17:03:18     | 0:00:09      | 94.93   | 41.25   | 76.92   | 0.36    | 175.39  | 20      | 34.39   | 17.05   |
| 18 | 2006/11/7   | 17:03:19     | 0:00:10      | 95.31   | 41.12   | 76.97   | 0.36    | 175.39  | 20      | 34.39   | 17.05   |

Annotations in the image:

- Arrows point from the following labels to the corresponding columns in the table:
  - Screen name: points to column A (Batch Trend)
  - Export time: points to column B (Output time)
  - Batch start and finish times: points to column C (Start time)
  - Tag name: points to column D (UL\_2000)
  - ITEM tag: points to column E (PV)
- Brackets at the bottom indicate:
  - Trend data realtime: spans columns A through C.
  - Time elapsed from batch start time: points to column C (Elapsed time).
  - ITEM tag data: spans columns D through K.

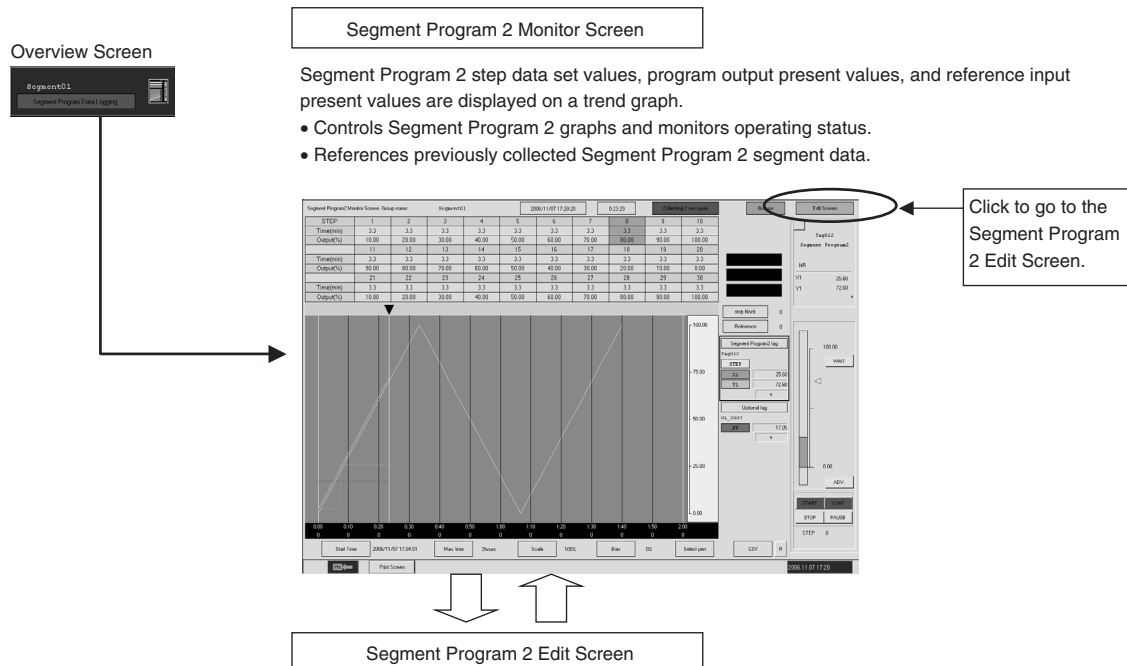
## 4-11 Segment Program 2 Screens

Operations such as monitoring operating conditions and setting step data for a Segment Program 2 (Block Model 157) function block can be executed using Segment Program 2 Screens. The monitored segment data can be automatically saved in a Segment Program 2 trend file.

Segment Program 2 trend files can be used to display previously collected segment data on Segment Program 2 Screens and to output the previous data to CSV files. The Segment Program 2 Screens are displayed by clicking the Segment Program 2 icon on the Overview Screen.

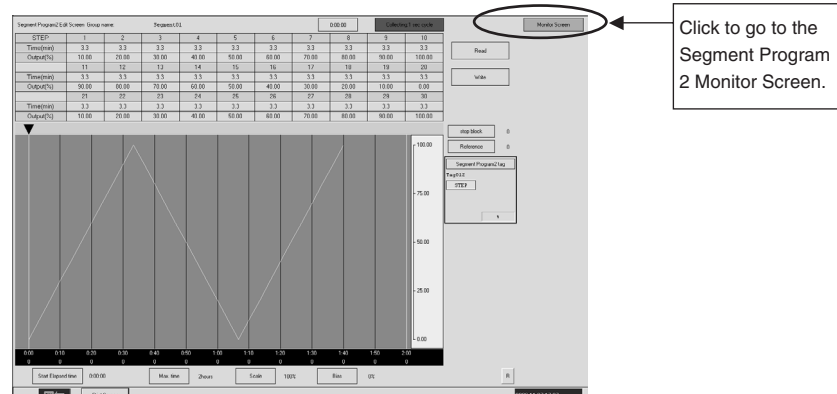
### 4-11-1 Overview

The Segment Program 2 Screens consists of the Segment Program 2 Monitor Screen and the Segment Program 2 Edit Screen, as shown below.



Edit Segment Program 2 steps.

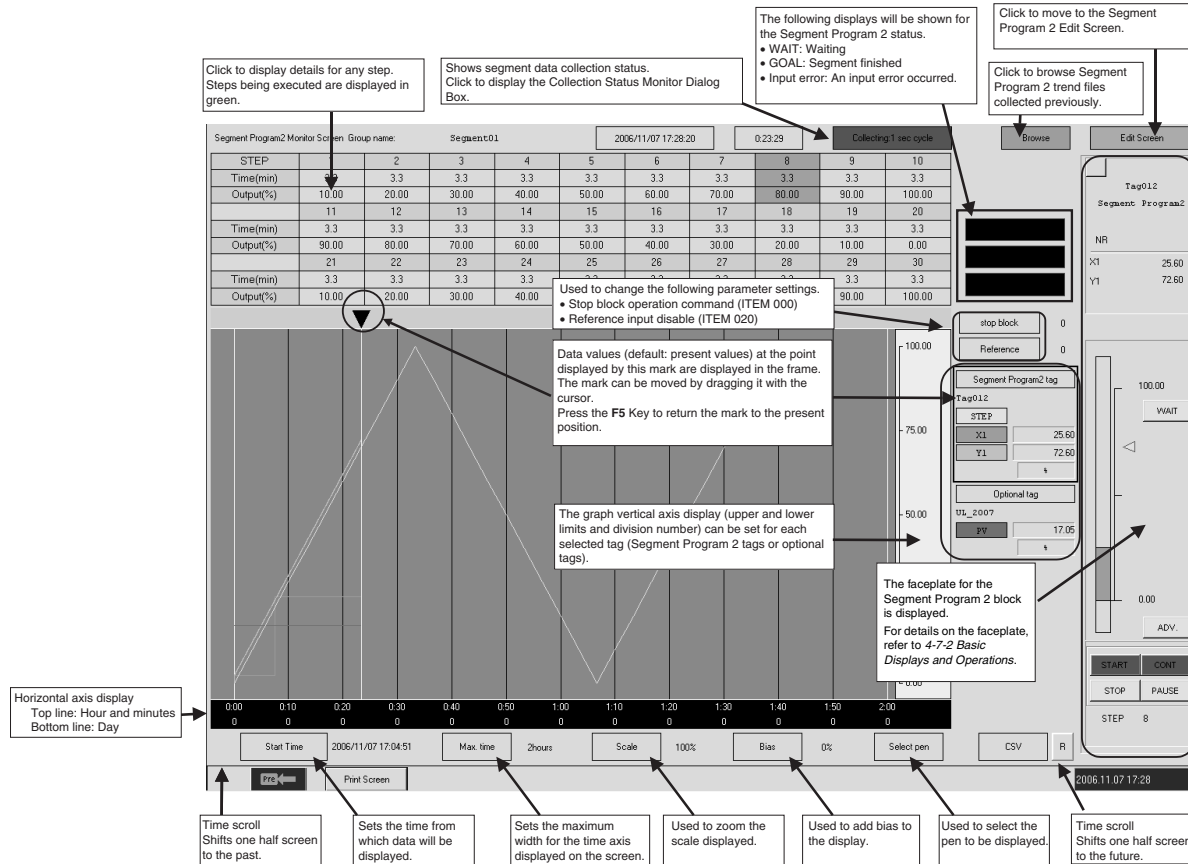
- Read, set, and write the relevant Segment Program 2 steps.



- A maximum of 16 pairs of Segment Program 2 Edit Screens can be registered.
- The above screen names will be used in the descriptions from here onwards.

## 4-11-2 Segment Program 2 Monitor Screen Examples and Operations

Segment Program 2 present values are displayed in a trend graph.



### Data That Can Be Monitored on the Segment Program 2 Monitor Screen

The following data can be displayed simultaneously on the Segment Program 2 Monitor Screen.

| Data                          | Color of line on graph | Details                                                                                               |
|-------------------------------|------------------------|-------------------------------------------------------------------------------------------------------|
| Step data                     | Yellow                 | Step data in the Loop Controller is displayed on the screen in advance, overlapping other tag values. |
| Program output Y1 (ITEM 008)  | Light blue             | ---                                                                                                   |
| Reference input X1 (ITEM 007) | Green                  | ---                                                                                                   |
| Optional tag                  | Purple                 | Specify any tag                                                                                       |

#### Note Step Data Display

When the Segment Program 2 Monitor Screen is displayed first, the step data is not displayed. (Step data is displayed by starting segment data collection.) To check in advance the step data executed on the Segment Program 2 Monitor Screen, move to the Segment Program 2 Edit Screen.

With the move to the Segment Program 2 Edit Screen, new Segment Program 2 step data is received from the Loop Controller and the display is updated on the Segment Program 2 Monitor Screen.

**Segment Program 2 Collection Cycles and Maximum Save Times**

The following table shows the Segment Program 2 Monitor Screen data collection cycles and maximum save times.

| Item                            | Details                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------|
| Collection cycle<br>(See note.) | 1 s, 10 s, 1 min                                                                                         |
| Maximum save time               | 3 days (Collection cycle: 1 s)<br>30 days (Collection cycle: 10 s)<br>180 days (Collection cycle: 1 min) |

- Note**
1. The collection cycle is set using the CRT Builder Dialog Box (Segment Program 2 Screen) from the Builder Window. For details on collection cycle settings, refer to *5-5-2 Overview of Screen Registration*.
  2. Depending on the number of combined function blocks and the model of Loop Controller that is connected, it may not be possible to collect the data within the collection cycle that is set. If the data is displayed on a graph under these conditions, the data will be updated with the same values as for the previous collection. To remedy this situation, take measures such as lengthening the collection cycle interval.

**Segment Data Collection Starting and Stopping**

When the monitored Segment Program 2 Block S1 (ITEM 013) turns ON, data collection starts. When it turns OFF, data collection stops.

When segment data collection is started, Segment Program 2 trend files are automatically created in binary format for each Segment Program 2 Screen.

- Note**
- Start the CX-Process Monitor Plus before starting to run Segment Program 2. If it is started after the CX-Process Monitor Plus, the step data may not match the monitored program output display.

**Segment Program 2 Status Display**

Segment Program 2 status is displayed at the upper right of the Segment Program 2 Monitor Screen.

There are three types of status display, as shown below.



- - Displayed when U10 Waiting (ITEM 019) in the Segment Program 2 block turns ON.
- - Displayed when U2 Arrival at Final Segment (ITEM 016) in the Segment Program 2 block turns ON.
- - Displayed when U1 X1 Input Error (ITEM 015) in the Segment Program 2 block turns ON.



## Checking Step Data

1,2,3...

1. Click the step data section in the table.

Segment Program2 Monitor Screen Group name:

| STEP      | 1     | 2     |
|-----------|-------|-------|
| Time(min) | 3.3   | 3.3   |
| Output(%) | 10.00 | 20.00 |
|           | 11    | 12    |
| Time(min) | 3.3   | 3.3   |
| Output(%) | 90.00 | 80.00 |
|           | 21    | 22    |
| Time(min) | 3.3   | 3.3   |
| Output(%) | 10.00 | 20.00 |

Click here.

2. The Display Steps Dialog Box will be displayed.  
Set values cannot be changed from this dialog box. To change set values, use the Segment Program 2 Edit Screen.

Display Steps

Step 1

Step time 200.0 sec

Program output 10.00 %

Wait time 50.0 sec

Wait width 10.00 %

Prev. Step Next Step Close

Displays the previous step data.

Displays the next step data.

## Changing the Vertical Axis Display

The Segment Program 2 Monitor Screen vertical axis display can be changed for each Segment Program 2 tag or optional tag.

1,2,3...

1. Click the data display area of the Segment Program 2 Monitor Screen.

Segment Program2 tag

Tag012

STEP

X1 25.60

Y1 81.25

Optional tag

UT\_2007

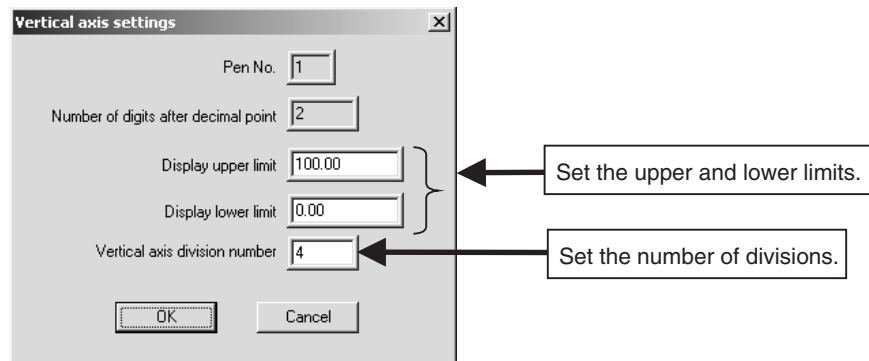
PV 17.05

Click to change the vertical axis display for a Segment Program 2 tag.

Click to change the vertical axis display for an optional tag.

2. With the data display area selected, double-click the vertical axis of the graph.

- The Vertical axis settings Dialog Box will be displayed. Set the vertical axis display.



**Note** When changing the scaling settings in the CRT Builder's Segment Program 2 settings screen, change the upper and lower limit settings in the Vertical axis settings Dialog Box to match the new scaling values.

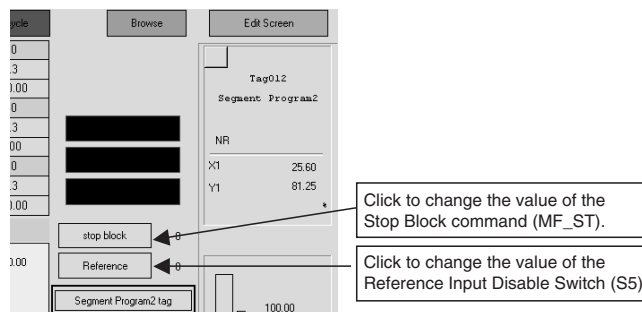
### Changing Parameters

Change the following parameters for the Segment Program 2 Function Block.

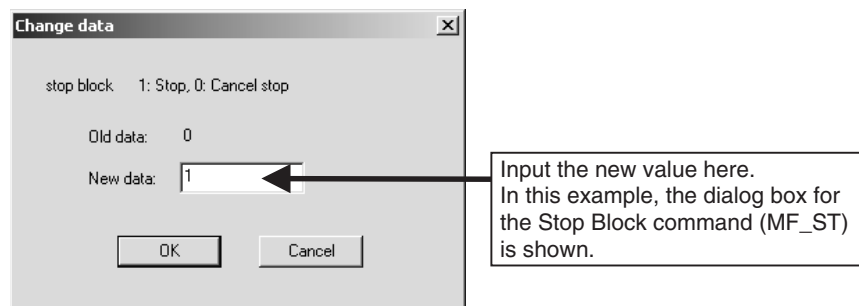
- Stop block operation command (ITEM 000)
- Reference input disable (ITEM 020)

**1,2,3...**

- Click the **Stop Block** and **Reference** Buttons in the Segment Program 2 Monitor Screen.



- The Change data Dialog Box will be displayed. Input the new value.



- Click the **OK** Button. The new value will be reflected in the parameters for the Segment Program 2 Function Block.

## **Segment Program 2 Trend Files**

When Segment Program 2 data collection starts (i.e., when S1, ITEM 013, turns ON), Segment Program 2 trend files are automatically created in binary format for each Segment Program 2 Monitor Screen.

### **File Names**

Segment Program 2 trend files are saved under the following file name for each date.

File name: Starting date - Starting time - Segment Program 2 Screen name.157

### **Example:**

20061201 - 161510 - Segment.157

|                             |                           |                               |
|-----------------------------|---------------------------|-------------------------------|
|                             |                           |                               |
| Starting date<br>(YYYYMMDD) | Starting time<br>(HHMMSS) | Segment Program 2 Screen name |

### **Segment Program 2 Monitor Screen Maximum Save Time**

When the maximum save time (3, 30, or 180 days) has elapsed for a Segment Program 2 Monitor Screen, the Segment Program 2 trend file is no longer updated.

If S1 (ITEM 013) for the Segment Program 2 Block is ON, a new Segment Program 2 trend file is created and segment data collection is restarted.

### **Segment Program 2 Trend File Save Cycles**

A Segment Program 2 trend file is added each time segment data collection is started.

A setting can be made on the System Info Screen so that Segment Program 2 trend files created outside of the regular cycle are automatically deleted.

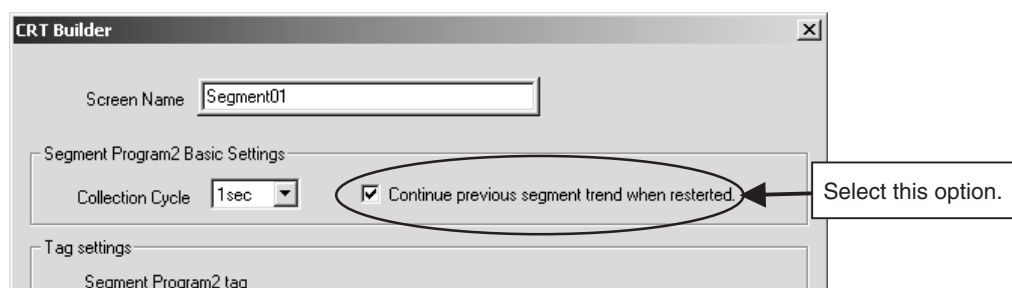
For details on the System Info Screen, refer to *5-6-9 CSV File Auto-save Settings*.

### **Starting and Stopping CX-Process Monitor Plus Operation**

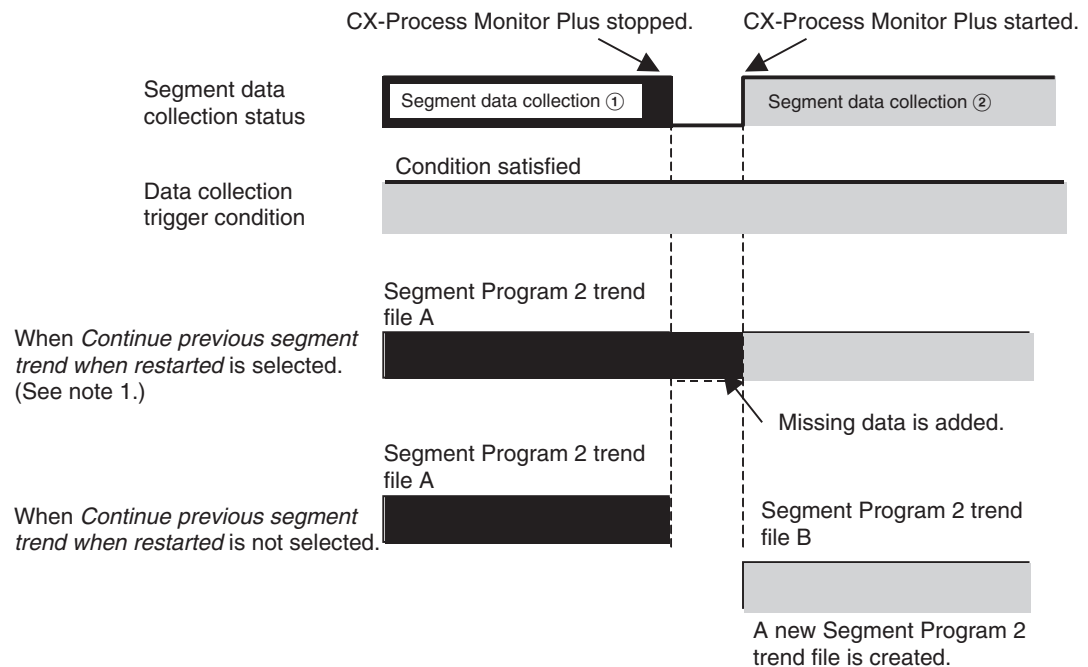
When the CX-Process Monitor Plus is stopped (either by stopping all CX-Process Monitor Plus modules or by turning OFF the computer), the segment data collection is stopped even if S1 (ITEM 013) of the Segment Program 2 Block is ON.

When the CX-Process Monitor Plus is restarted, the data collection starts again, but the data is collected in a new Segment Program 2 trend file.

An option in the CRT Builder Dialog Box option (Segment Program 2 Screen) from the Builder Window can be selected to enable segment data to continue to be collected in the Segment Program 2 trend file from when the CX-Process Monitor Plus was stopped.

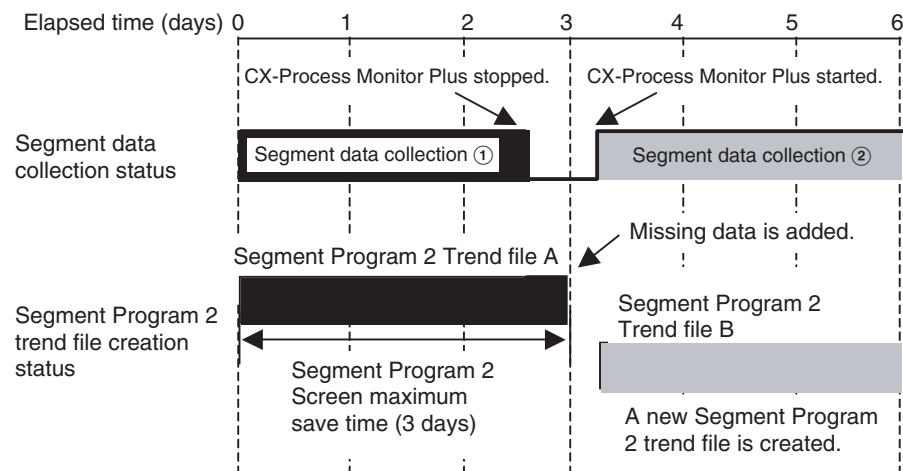


### Difference in Segment Program 2 File Creation Method by Selecting *Continue previous segment trend when restarted* Option



- Note** 1. Even if this option is selected, saving will not be continued if the restart time exceeds the Segment Program 2 Screen maximum save time.

#### Example: 1-s Collection Cycle



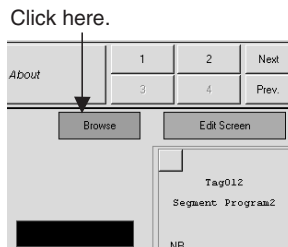
- If S1 in the Segment Program 2 Block changes from ON to OFF while the CX-Process Monitor Plus is stopped, the CX-Process Monitor Plus will not recognize it.  
If S1 of the Segment Program 2 Block is ON when the CX-Process Monitor Plus is restarted, and if the *Continue previous segment trend when restarted* option is selected, the data will be saved in the same Segment Program 2 trend file as when the previous CX-Process Monitor Plus was stopped.
- For details on Builder Window CRT Dialog Box (Segment Program 2 Screen) settings, refer to 5-5-2 *Overview of Screen Registration*.

### Referencing Past Segment Data

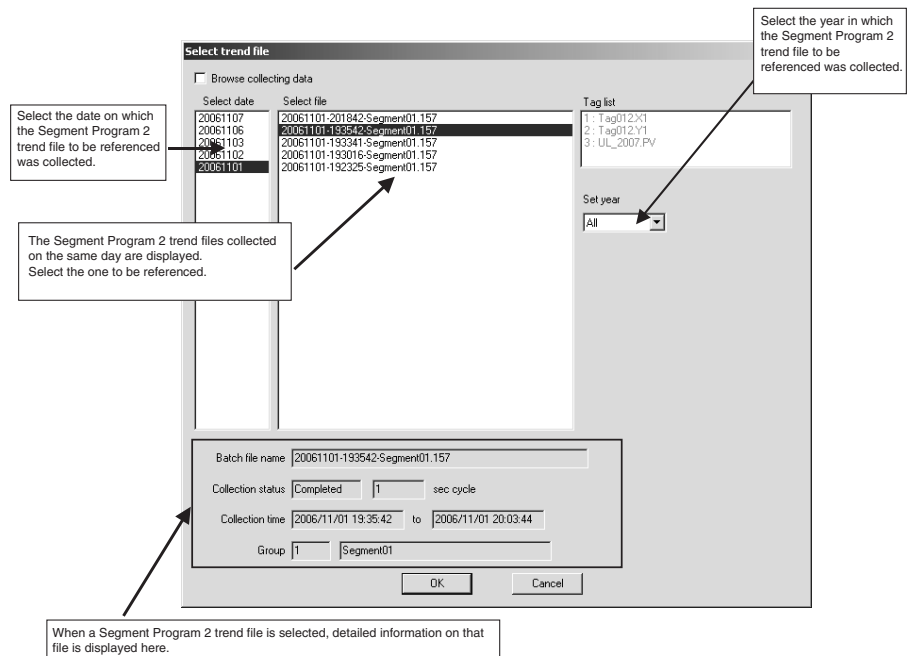
Segment data collected in the past is saved as Segment Program 2 trend files.

These files can be displayed on Segment Program 2 Monitor Screens.

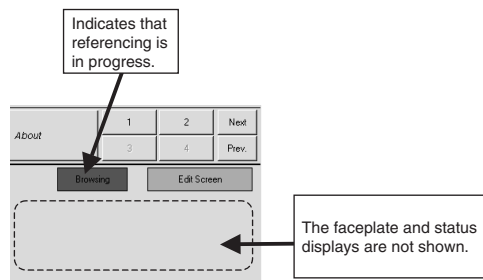
- 1,2,3...**
1. Click the **Browse** Button at the top of the Segment Program 2 Monitor Screen to display the Select trend file Dialog Box.



2. In the Select trend file Dialog Box, select the Segment Program 2 trend file that is to be referenced.



3. The status of the selected Segment Program 2 trend file will be displayed on the Segment Program 2 Monitor Screen.  
The display on the Segment Program 2 Monitor Screen while the Segment Program 2 trend file is being referenced will be as shown below.



4. To end the Segment Program 2 trend file reference status, click the **Browse** Button to display the Select trend file Dialog Box and select the *Browse collecting data* option.  
The Segment Program 2 trend file reference status will be ended when moving to another screen.

- Note** Changing the Segment Program 2 Screen Name  
If the name of a Segment Program 2 Screen is changed using the Builder Window CRT Builder Dialog Box (Segment Program 2 Screen), Segment Program 2 trend files created by data collection prior to the change can no longer be referenced.

## CSV File Output

Data collected using the Segment Program 2 Monitor Screen (data grouped by date, time, or tag number) can be output in CSV (Comma Separated Values) file format either automatically or manually.

### Automatic Saving

The following settings are used when configuring screens (i.e., when registering Segment Program 2 Screens).

- Automatic save enable
- Save filter name and save destination folder

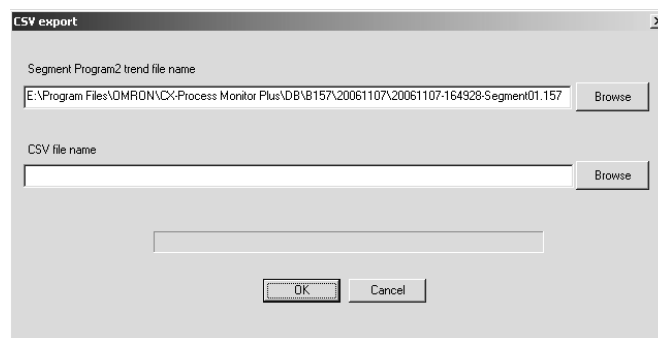
The CSV file is automatically saved according to these settings when segment data collection stops (when S1 turns OFF).

### Manual Saving (Saving by Using Buttons)

Use the following procedure.

1,2,3...

1. Press the **CSV** Button in the Segment Program 2 Monitor Screen to display the CSV export Dialog Box.



2. Select the Segment Program 2 trend file to export.
3. Specify a name for the CSV file and click the **OK** Button. The CSV file will be created.  
(The file can be created in a specified folder by clicking the **Browse** Button. The default file name is "*Segment\_Program\_2\_trend\_file\_name.CSV*".)

### CSV File Specifications

Segment Program 2 trend (comma) Version (carriage return)

Screen name text string (carriage return)

Output time (comma) Output date data (comma) Output time data (carriage return) (carriage return)

Step (comma) Step time (comma) Time unit (comma) Program output value (comma) Output value unit (comma) Wait time (comma) Time unit (comma) Wait width (comma) Wait width unit (carriage return)

0 (comma) Step 0 output value data (carriage return)

1 (comma) Step 1 step time data (comma) Step 1 time unit data (comma) Step 1 program output value data (comma) Step 1 output value unit data (comma) Step 1 wait time data (comma) Step 1 wait time unit data (comma) Step 1 wait width data (comma) Step 1 wait width unit data (carriage return)

:

(Continued to step 30.)

:

(carriage return)

Start time (comma) Data collection start date data (comma) Data collection start time data (carriage return)

Finish time (comma) Data collection finish date data (comma) Data finish time data (carriage return)

(comma) (comma) (comma) Segment Program 2 tag name (comma) Segment Program 2 tag name (comma) Optional tag name (carriage return)

Date (comma) Time (comma) Elapsed time (comma) X1 (comma) Y1 (comma) Optional tag ITEM name (carriage return)

Data date (comma) Data time (comma) Data for time elapsed since batch start (comma) Data 1 (comma) Data 2 (comma) Data 3 (carriage return)

**Note**

Data will not be displayed for unregistered tag numbers.

Also, if the data in a single CSV file exceeds 65,000 lines, another CSV file will be created. The CSV files will be saved with “\_01.CSV,” “\_02.CSV,” etc., added at the end of the filename.

**Example: When an Output CSV File Is Read Using Spreadsheet Software**

|    | A                      | B            | C            | D                                      | E                 | F         | G         | H          | I               |
|----|------------------------|--------------|--------------|----------------------------------------|-------------------|-----------|-----------|------------|-----------------|
| 1  | Segment Program2 Trend | Version 1.00 |              |                                        |                   |           |           |            |                 |
| 2  | Segment01              |              |              | Screen name                            |                   |           |           |            |                 |
| 3  | Output time            | 2006/11/7    | 18:00:05     | Export time                            |                   |           |           |            |                 |
| 4  |                        |              |              |                                        |                   |           |           |            |                 |
| 5  | Step                   | Step time    | time unit    | program output value                   | output value unit | wait time | time unit | wait width | wait width unit |
| 6  | 0                      |              |              | 0 %                                    |                   |           |           |            |                 |
| 7  | 1                      | 200          | sec          | 10 %                                   |                   | 1.5       | sec       | 0 %        |                 |
| 8  | 2                      | 200          | sec          | 20 %                                   |                   | 0         | sec       | 0 %        |                 |
| 9  | 3                      | 200          | sec          | 30 %                                   |                   | 0         | sec       | 0 %        |                 |
| 10 |                        |              |              |                                        |                   |           |           |            |                 |
| 11 |                        |              |              |                                        |                   |           |           |            |                 |
| 12 | 28                     | 200          | sec          | 80 %                                   |                   | 0         | sec       | 0 %        |                 |
| 13 | 29                     | 200          | sec          | 90 %                                   |                   | 0         | sec       | 0 %        |                 |
| 14 | 30                     | 200          | sec          | 100 %                                  |                   | 0         | sec       | 0 %        |                 |
| 15 |                        |              |              |                                        |                   |           |           |            |                 |
| 16 | Start Time             | 2006/11/7    | 17:04:51     | Data collection start and finish times |                   |           |           |            |                 |
| 17 | Finish time            | 2006/11/7    | 17:59:46     |                                        |                   |           |           |            |                 |
| 18 |                        |              |              | Tag01 2                                | Tag01 2           | UL_2007   |           |            | Tag name        |
| 19 | Date                   | Time         | Elapsed time | X1                                     | Y1                | PV        |           |            | ITEM tag        |
| 20 | 2006/11/7              | 17:04:51     | 0:00:00      | 2.28                                   | 0                 | 17.05     |           |            |                 |
| 21 | 2006/11/7              | 17:04:52     | 0:00:01      | 2.28                                   | 0                 | 17.05     |           |            |                 |
| 22 | 2006/11/7              | 17:04:53     | 0:00:02      | 2.28                                   | 2.28              | 17.05     |           |            |                 |
| 23 | 2006/11/7              | 17:04:54     | 0:00:03      | 2.28                                   | 2.33              | 17.05     |           |            |                 |
| 24 | 2006/11/7              | 17:04:55     | 0:00:04      | 2.28                                   | 2.38              | 17.05     |           |            |                 |
| 25 | 2006/11/7              | 17:04:56     | 0:00:05      | 2.28                                   | 2.43              | 17.05     |           |            |                 |
| 26 | 2006/11/7              | 17:04:57     | 0:00:06      | 2.28                                   | 2.53              | 17.05     |           |            |                 |
| 27 | 2006/11/7              | 17:04:58     | 0:00:07      | 2.28                                   | 2.53              | 17.05     |           |            |                 |
| 28 | 2006/11/7              | 17:04:59     | 0:00:08      | 2.28                                   | 2.58              | 17.05     |           |            |                 |
| 29 | 2006/11/7              | 17:05:00     | 0:00:09      | 2.28                                   | 2.63              | 17.05     |           |            |                 |
| 30 | 2006/11/7              | 17:05:01     | 0:00:10      | 2.28                                   | 2.68              | 17.05     |           |            |                 |
| 31 | 2006/11/7              | 17:05:02     | 0:00:11      | 2.28                                   | 2.73              | 17.05     |           |            |                 |
| 32 | 2006/11/7              | 17:05:03     | 0:00:12      | 2.28                                   | 2.78              | 17.05     |           |            |                 |

Segment Program 2 step information

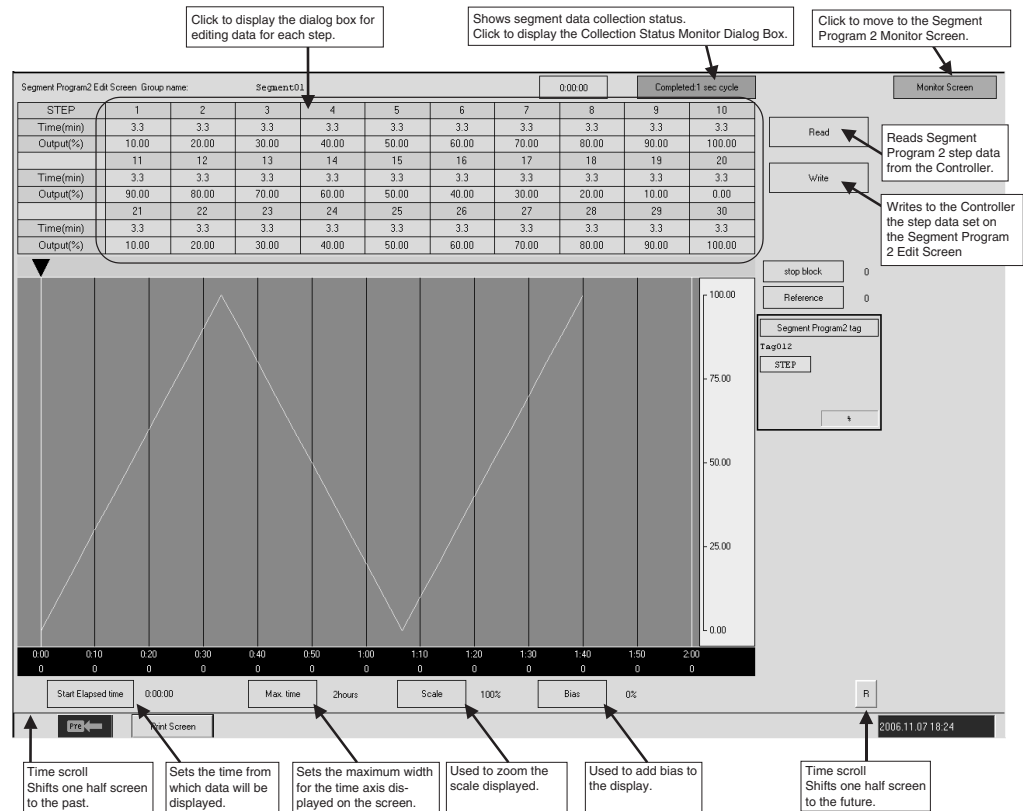
Trend data realtime

ITEM tag data (X1, Y1, and optional tag data for Segment Program 2)

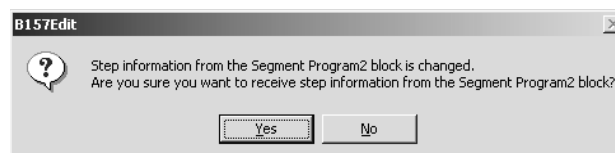
Time elapsed from batch start time

### 4-11-3 Segment Program 2 Edit Screen Display Examples and Operations

Segment data for the relevant Segment Program 2 Block can be set while observing actual segment status in realtime, and the settings can be transferred to the Loop Controller.

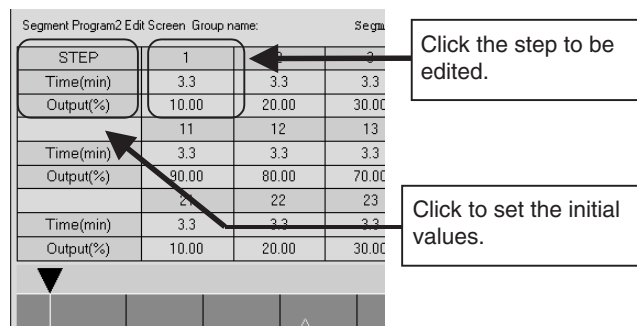


**Note** The following dialog box will be displayed if step data registered in the Loop Controller is updated when the Segment Program 2 Edit Screen is displayed. Click the **Yes** Button to update the step data.



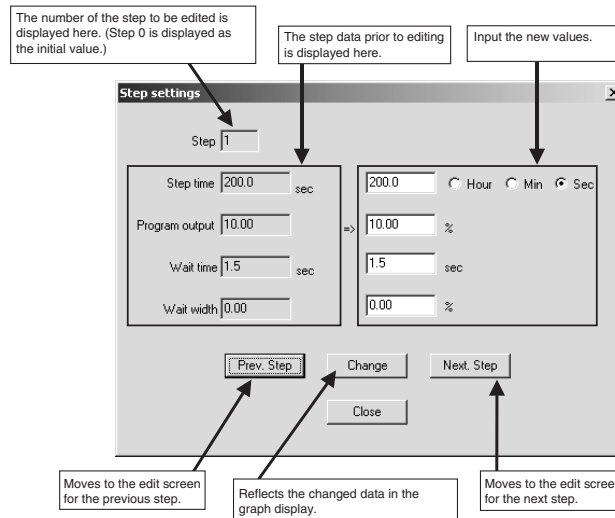
#### Editing Step Data

- 1,2,3...** 1. Click the step area at the top of the Segment Program 2 Edit Screen.





- The Step Settings Dialog Box will be displayed.  
Input the values to be set for each step and click the **Change** Button.  
The graph display will be updated at that point, but the new settings will not be sent to the Loop Controller.



- After the changes have been completed, click the **Close** Button to close the Step Settings Dialog Box.

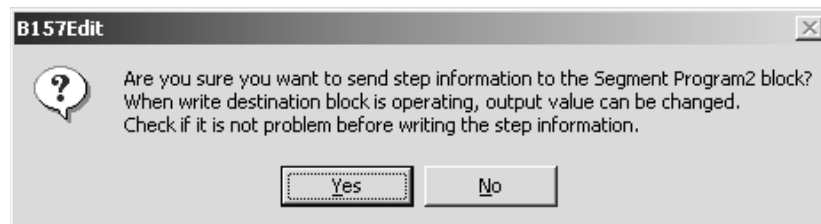
### Transferring Edited Step Data to the Loop Controller

Use the following procedure to transfer the step data edited on the Segment Program 2 Edit Screen to the Loop Controller.

**! WARNING** Transferring segment data while the Segment Program 2 function block or function blocks that are affected by Segment Program 2 outputs are running may affect the outputs from these function blocks. Transferring data without first confirming the results may cause unexpected operation of the controlled equipment.

**1,2,3...**

- Click the **Write** Button on the Segment Program 2 Edit Screen.
- The following dialog box will be displayed.  
Confirm the effects of writing the step data, and then click the **Yes** Button to start the transfer.



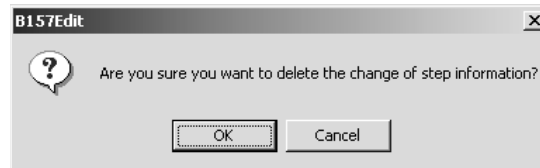
### Reading Step Data from the Loop Controller

Use the following procedure to read the step data currently registered to the Loop Controller.

**1,2,3...**

- Click the **Read** Button on the Segment Program 2 Edit Screen.

- If step data has been edited on this screen, the following dialog box will be displayed. Click the **OK** Button to delete the step data edited on this screen and to use the step data read from the Loop Controller.

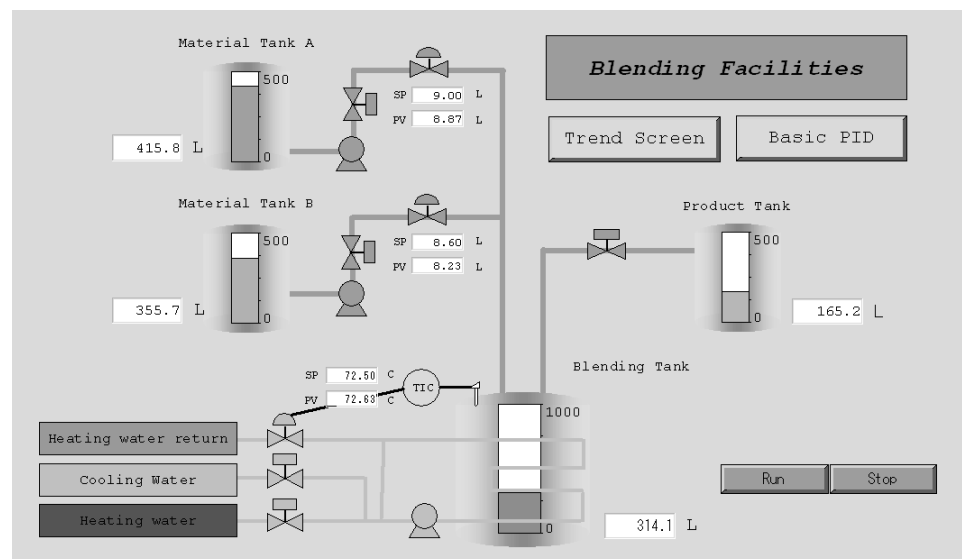


- The step data will be read from the Loop Controller and will be reflected on the Segment Controller 2 Edit Screen.

## 4-12 Graphic Screens

Graphic Screens display the status of the system or device in graphic form. To display the Graphic Screen, click the **Graphic Screen** Icon in the Overview Screen.

### Graphic Screen



Paste to the screen graphic elements representing plant instrumentation, which have been provided, and use them to display the device status, to a maximum of 200 screens.

Library figures and images: Text, lines, rectangles, round rectangles (rectangles with rounded corners), ellipses, polygons, and images

Library Functional Objects

Fixed graphic display elements:

Text boxes, instruments, thermometers, transmitters, and orifices

Changeable graphic display elements:

Analog inputs: Bar graph displays, numerical value displays, and tanks

Analog settings: Numerical settings (See note.)

Contact inputs (display): Pumps, valves, and pipes

Contact settings (operation): Switches (See note.)

Screen display objects:

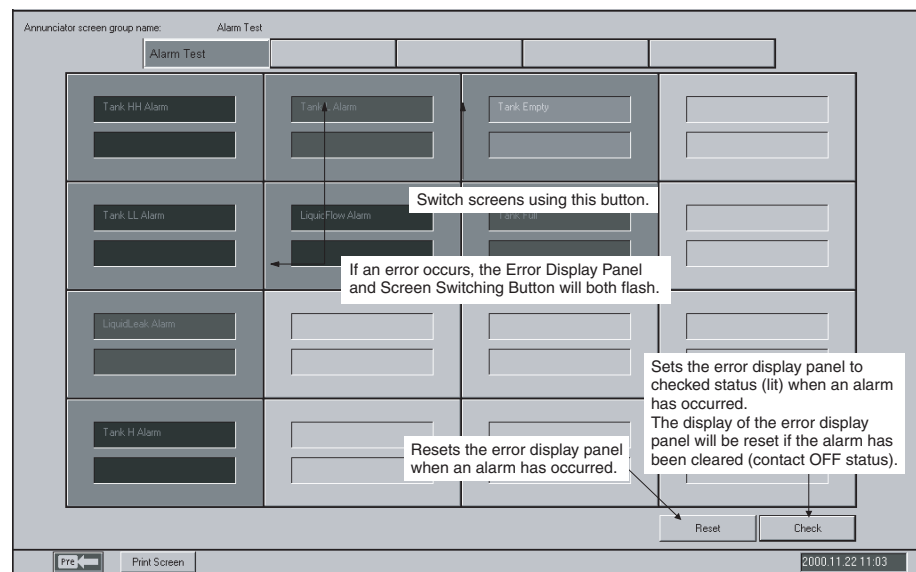
Screen jump objects, FP switch (faceplate pop-up) objects

**Note** If making analog values or contact settings, use tags for Constant Generator (Block Model 166) and Internal Switch (Block Model 209).

| Element        | Function block or ITEM set as send source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function block | <p>Control Blocks: Basic PID (011), Advanced PID (012), Blended PID (Block Model 013), Batch Flow-rate Capture (Block Model 014), Indication and Setting (031), Indication and Operation (032), Ratio Setting (033), Indicator (034), 2-position ON/OFF (001), 3-position ON/OFF (002)</p> <p>Operation Blocks: High/Low Alarm (111), Segment Program 2 (157), ON/OFF Value Manipulator (221), Motor Manipulator (222), Reversible Motor Manipulator (223), Motor Opening Manipulator (224), Timer (205), Counter (208)</p> <p>The following for all function blocks:<br/>           Analog input signals (Input Selector (Block Model 162))<br/>           Analog output signals (Constant Generator (Block Model 166))</p> <p>Contact input signals or contact output signals for all function blocks, or contact value parameters (Contact Distributor (Block Model 201) + Internal Switch (Block Model 209))</p> |
| Display        | <p>Analog values: Bar graphs, numerical values, tank level</p> <p>Contacts: Indicators, pumps, valves, pipes</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Setting        | <p>Analog values: Numerical values (using Constant Generator (Block Model 166))</p> <p>Contacts: Switches (using Contact Distributor (Block Model 201) + Internal Switch (Block Model 209))</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 4-13 Annunciator Screens

Annunciator Screens display comprehensively the contacts status (mainly the alarm status). To display the Annunciator Screen, click the **Annunciator Screen** icon on the Overview Screen.



There are no particular limits to contacts that can be specified. Basically, however, register contacts that display the alarm status of the Control Block's HH (High/High Alarm), H (High Alarm), L (Low Alarm), and LL (Low/Low Alarm), etc.

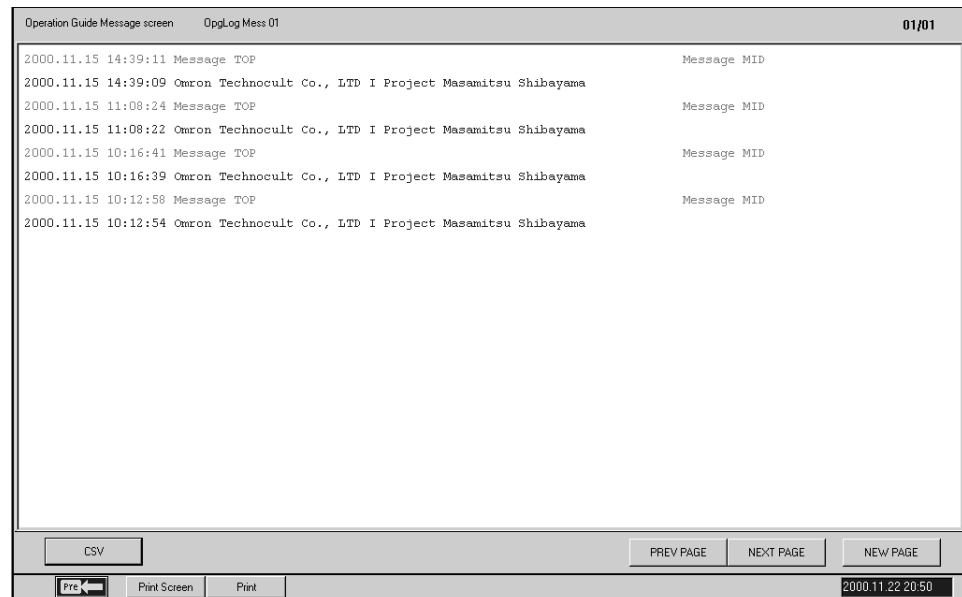
If an alarm/error occurs, the icon color will change and a beep will sound. At the same time, two rows of eight wide-size characters making a user-registered message can be displayed.

You can display a total of 16 separate elements per screen as 4 rows x 4 columns, to a maximum of five screens.

| Element               | Send source Function Block, or ITEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Target function block | Control Blocks: PV, SP, and MV only for Basic PID (011), Advanced PID (012), Blended PID (Block Model 013), Batch Flowrate Capture (Block Model 014), Indication and Setting (031), Indication and Operation (032), Ratio Setting (033), Indicator (034), 2-position ON/OFF (001), and 3-position ON/OFF (002).<br><br>Operation Blocks: High/Low Alarm (111), Segment Program 2(157), ON/OFF Valve Manipulator (221), Motor Manipulator (222), Reversible Motor Manipulator (223), Motor Opening Manipulator (224), Timer (205), Counter (208)<br><br>Contact input signals or contact output signals for all function blocks, or contact value parameters (Contact Distributor (Block Model 201) + Internal Switch (Block Model 209)) |
| Display               | Color, sound, and messages displayed when contact is ON.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Setting               | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 4-14 Operation Guide Screens

Operation Guide Screens display messages registered when the contact signal was turned ON. To display the Operation Guide Message Screen, click the **Operation Guide Button**.



When the specified contact (internal switch, etc.) is turned ON, the pre-prepared wide-size character message (54 wide characters) will be displayed together with the time the contact was turned ON. (When the contact is turned ON, a red mark will be displayed next to the Operation Guide icon on the Overview Screen.)

Possible No. of registrations: 1,000 messages max.

Message colors: 16 colors, displayed with sound.

You can display a message with a maximum of 1,000 elements on one screen.

| Element               | Send source Function Block, or ITEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Target function block | Control Blocks: PV, SP, and MV only for Basic PID (011), Advanced PID (012), Blended PID (Block Model 013), Batch Flowrate Capture (Block Model 014), Indication and Setting (031), Indication and Operation (032), Ratio Setting (033), Indicator (034), 2-position ON/OFF (001), and 3-position ON/OFF (002).<br>Operation Blocks: High/Low Alarm (111), Segment Program 2 (157), ON/OFF Value Manipulator (221), Motor Manipulator (222), Reversible Motor Manipulator (223), Motor Opening Manipulator (224), Timer (205), Counter (208)<br>Contact input signals or contact output signals for all function blocks, or contact value parameters (Contact Distributor (Block Model 201) + Internal Switch (Block Model 209)) |
| Display               | Color, sound, and messages displayed when contact is ON.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Setting               | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**CSV File Output**

Operation Guide message data (date, time, contents of Operation Guide) can be output in CSV (Comma Separated Value) file format using the following procedure.

- 1,2,3...**
1. Press the **CSV** Button to display the Export to CSV File Dialog Box.
  2. Specify a name for the CSV file, and click the **OK** Button. A CSV file will be created. (By clicking the **Browse** Button, the CSV file can be created in a desired folder. The default filename is Opglog.csv.) The contents of CSV files created are as follows:  
Operation Guide Message Log (carriage return)  
<Screen\_name>(carriage return)  
<Date\_exported>(comma)<Time\_exported>(carriage return)  
<Date\_of\_Operation\_Guide>(comma)<Time\_of\_Operation\_Guide>(comma)<Registered\_Message>(carriage return)

## 4-15 Alarm Log Screens

Alarm Log Screens display alarm logs. To display the Alarm Log Screen, click the **Alarm** Button.

The targets monitored for alarms are as follows: Control Block's HH (High/High Alarm), H (High Alarm), L (Low Alarm), LL (Low/Low Alarm), and DA (Deviation Alarm) contacts, and other contact signals (including parameters).

| Alarm Log screen group name |         | AlmLog Mess 01   |         | 01/04                           |
|-----------------------------|---------|------------------|---------|---------------------------------|
| 2000.11.22 14:36:20         | b031    | Blend-PID        | 0.00 %  | Deviation Low limit alarm reset |
| → 2000.11.22 14:36:20       | b030    | 3-positionON/OFF | 0.00 %  | FV Low limit alarm occurred     |
| ● 2000.11.21 19:09:12       | dummy-2 | dummy-2          | 15.00 % | FV Low/Low limit alarm reset    |
| ● 2000.11.21 19:09:12       | dummyt  | dummyt           | 15.00 % | FV Low/Low limit alarm reset    |
| ● 2000.11.21 19:09:12       | A006    | Basic PID        | 90.00 % | FV Low/Low limit alarm reset    |
| ● 2000.11.21 19:09:12       | A001    | Basic PID        | 15.00 % | FV Low/Low limit alarm reset    |
| ● 2000.11.21 19:08:58       | A006    | Basic PID        | 90.00 % | FV Low/Low limit alarm occurred |
| ● 2000.11.21 19:08:58       | A001    | Basic PID        | 15.00 % | FV Low/Low limit alarm occurred |
| ● 2000.11.21 19:08:56       | dummy-2 | dummy-2          | 15.00 % | FV Low/Low limit alarm occurred |
| ● 2000.11.21 19:08:56       | dummyt  | dummyt           | 15.00 % | FV Low/Low limit alarm occurred |
| ● 2000.11.21 19:07:38       | A006    | Basic PID        | 90.00 % | FV Low/Low limit alarm reset    |
| ● 2000.11.21 19:07:38       | A001    | Basic PID        | 15.00 % | FV Low/Low limit alarm reset    |
| ● 2000.11.21 19:07:36       | dummy-2 | dummy-2          | 15.00 % | FV Low/Low limit alarm reset    |
| ● 2000.11.21 19:07:36       | dummyt  | dummyt           | 15.00 % | FV Low/Low limit alarm reset    |
| ● 2000.11.21 18:38:03       | A006    | Basic PID        | 90.00 % | FV Low/Low limit alarm occurred |
| ● 2000.11.21 18:38:03       | A001    | Basic PID        | 15.00 % | FV Low/Low limit alarm occurred |
| ● 2000.11.21 18:38:02       | dummy-2 | dummy-2          | 15.00 % | FV Low/Low limit alarm occurred |
| ● 2000.11.21 18:38:02       | dummyt  | dummyt           | 15.00 % | FV Low/Low limit alarm occurred |
| ● 2000.11.21 18:37:53       | A006    | Basic PID        | 90.00 % | FV Low limit alarm reset        |
| ● 2000.11.21 18:37:53       | A001    | Basic PID        | 15.00 % | FV Low limit alarm reset        |

Display all

Display only LIGHT (Light alarm),  
H (High alarm), or L (Low alarm)

Display only current errors

Display only HEAVY (Heavy alarm), HH (High/High alarm), or LL (Low/Low alarm)

Save and display comprehensively alarm records (time error occurred, Tag name, current value when PV or MV occurred, alarm type, etc.) occurring from the Controller and Alarm Blocks.

You can display a maximum of 1,000 alarm messages on one screen.

| Element        | Function block or ITEM set as send source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function block | Control Blocks: High/High alarm, High alarm, Low alarm, Low/Low alarm, and Deviation alarm for Basic PID (011), Advanced PID (012), Blended PID (Block Model 013), Batch Flowrate Capture (Block Model 014), Indication and Setting (031), Indication and Operation (032), Ratio Setting (033), Indicator (034), 2-position ON/OFF (001), and 3-position ON/OFF (002), Segment Program 2 (157), ON/OFF Value Manipulator (221), Motor Manipulator (222), Reversible Motor Manipulator (223), Motor Opening Manipulator (224). |
|                | Contact input signals or contact output signals for all function blocks, or contact value parameters (Contact Distributor (Block Model 201) + Internal Switch (Block Model 209))                                                                                                                                                                                                                                                                                                                                              |
| Display        | Alarm history (date and time of occurrence, and value when alarm occurred)<br>Time of occurrence: Red; Time of recovery: Black                                                                                                                                                                                                                                                                                                                                                                                                |
| Setting        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

### CSV File Output

Alarm log data (date, time, tag names, current value when alarm occurred, type of alarm) can be output in CSV (Comma Separated Value) file format using the following procedure.

1,2,3...

1. Press the **CSV** Button to display the Export to CSV File Dialog Box.

- Specify a name for the CSV file, and click the **OK** Button. A CSV file will be created. (By clicking the **Browse** Button, the CSV file can be created in a desired folder. The default filename is Almlog.csv.) The contents of CSV files created are as follows:

Alarm Log (carriage return)

<Date\_exported>(comma)<Time\_exported>(carriage return)

<Alarm\_date>(comma)<Alarm\_time>(comma)<Tag\_name>(comma)

<Comment>(comma)<Data\_when\_a\_PV\_or\_MV\_error\_occurs>(comma)

<Unit>(comma)<Alarm\_type>(carriage return)

**Example:** The following screen shows how alarm log data exported to spreadsheet software (e.g., Microsoft Excel) will be displayed.

|   | A         | B        | C      | D                 | E  | F      | G                           |
|---|-----------|----------|--------|-------------------|----|--------|-----------------------------|
| 1 | Alarm Log |          |        |                   |    |        |                             |
| 2 | 2006/11/7 | 18:36:38 |        |                   |    |        |                             |
| 3 | 2006/11/7 | 18:35:46 | Tag018 | Open Control      | 0% |        | PV Low limit alarm occurred |
| 4 | 2006/11/7 | 18:35:46 | Tag010 | Indicator         | 0  | UNIT10 | PV Low limit alarm occurred |
| 5 | 2006/11/7 | 18:35:46 | Tag008 | Manual Loader     | 0  | UNIT08 | PV Low limit alarm occurred |
| 6 | 2006/11/7 | 18:35:46 | Tag007 | Manual Setter     | 0  | UNIT07 | PV Low limit alarm occurred |
| 7 | 2006/11/7 | 18:35:46 | Tag004 | Advanced PID      | 0  | UNIT04 | PV Low limit alarm occurred |
| 8 | 2006/11/7 | 18:35:46 | Tag003 | Basic PID         | 0  | UNIT03 | PV Low limit alarm occurred |
| 9 | 2006/11/7 | 18:35:46 | Tag002 | Three State OnOff | 0  | UNIT02 | PV Low limit alarm occurred |

Date of alarm      Time of alarm      Tag name      Comment      Data when a PV or MV error occurs      Unit      Alarm type

## 4-16 Operation Log Screens

Operation Log Screens display operation logs. To display the Operation Log Screen, click the **Operation Log** Button.

| Operation Log screen group name |           |        |       | Control Mess 01 |   |  | 01/08 |  |
|---------------------------------|-----------|--------|-------|-----------------|---|--|-------|--|
| 2000.11.22 20:47:56 A001        | Basic PID | LP_SP  | 88.70 | 29.00           | % |  |       |  |
| 2000.11.22 20:46:39 A001        | Basic PID | LP_SP  | 29.70 | 72.00           | % |  |       |  |
| 2000.11.22 20:45:03 A001        | Basic PID | LP_SP  | 72.70 | 87.00           | % |  |       |  |
| 2000.11.22 20:45:03 A001        | Basic PID | LP_SP  | 73.70 | 87.00           | % |  |       |  |
| 2000.11.22 20:45:02 A001        | Basic PID | LP_SP  | 74.70 | 87.00           | % |  |       |  |
| 2000.11.22 20:45:02 A001        | Basic PID | LP_SP  | 75.70 | 87.00           | % |  |       |  |
| 2000.11.22 20:45:02 A001        | Basic PID | LP_SP  | 76.70 | 87.00           | % |  |       |  |
| 2000.11.22 20:45:02 A001        | Basic PID | LP_SP  | 77.70 | 87.00           | % |  |       |  |
| 2000.11.22 20:44:55 A001        | Basic PID | LP_SP  | 87.70 | 81.00           | % |  |       |  |
| 2000.11.22 20:44:52 A001        | Basic PID | LP_SP  | 81.70 | 45.00           | % |  |       |  |
| 2000.11.22 20:44:47 A001        | Basic PID | LP_SP  | 45.70 | 29.00           | % |  |       |  |
| 2000.11.22 20:43:46 A001        | Basic PID | LP_SP  | 29.70 | 66.00           | % |  |       |  |
| 2000.11.22 20:43:40 A001        | Basic PID | A/M_SW | 1     | 1               | % |  |       |  |
| 2000.11.22 20:43:40 A001        | Basic PID | R/L_SW | 0     | 1               | % |  |       |  |
| 2000.11.22 16:30:15 A001        | Basic PID | A/M_SW | 1     | 1               | % |  |       |  |
| 2000.11.22 16:30:15 A001        | Basic PID | R/L_SW | 0     | 0               | % |  |       |  |
| 2000.11.22 15:53:45 A001        | Basic PID | LP_SP  | 80.00 | 0.00            | % |  |       |  |
| 2000.11.22 15:27:12 A001        | Basic PID | LP_SP  | 0.00  | 80.00           | % |  |       |  |
| 2000.11.22 15:27:11 A001        | Basic PID | LP_SP  | 1.00  | 80.00           | % |  |       |  |
| 2000.11.22 15:27:10 A001        | Basic PID | LP_SP  | -7.00 | 80.00           | % |  |       |  |

CSV      PREV PAGE      NEXT PAGE      NEW PAGE

Print Screen      Print

2000.11.22 20:52

Save and display comprehensively records (time and date operation occurred, Tag name, ITEM data before change, ITEM data after change, etc.) of ITEM data changed within the Loop Control Unit, using the Control Screen or the Tuning Screen.

Operations using Graphic Screen data elements and switch elements are saved as operation logs and displayed together.

You can display a maximum of 1,000 operation messages on one screen.

**CSV File Output**

Operation log data (date, time, contents of operation) can be output in CSV (Comma Separated Value) file format using the following procedure.

**1,2,3...**

1. Press the **CSV** Button to display the Export to CSV File Dialog Box.
2. Specify a name for the CSV file, and click the **OK** Button. A CSV file will be created. (By clicking the **Browse** Button, the CSV file can be created in a desired folder. The default filename is Ctllog.csv.) The contents of CSV files created are as follows:

Operation Log (carriage return)

<Screen\_name>(carriage return)

<Date\_exported>(comma)<Time\_exported>(carriage return)

<Operation\_date>(comma)<Operation\_time>(comma)

<Tag\_name>(comma)<Comment>(comma)<ITEM\_name>(comma)

<ITEM\_data\_after\_changes>(comma)

<ITEM\_data\_before\_changes>(comma)<Unit>(carriage return)

**Example:** The following screen shows how operation log data exported to spreadsheet software (e.g., Microsoft Excel) will be displayed.

|   | A               | B        | C          | D                | E  | F    | G    | H |
|---|-----------------|----------|------------|------------------|----|------|------|---|
| 1 | Operation Log   |          |            |                  |    |      |      |   |
| 2 | Control Mess 01 |          |            |                  |    |      |      |   |
| 3 | 2006/11/7       | 18:42:02 |            |                  |    |      |      |   |
| 4 | 2006/11/7       | 18:23:10 | Tag012     | Segment Program2 | B1 | 12   | 10 % |   |
| 5 | 2006/11/7       | 17:59:45 | Tag012     | Segment Program2 | S1 | 0    | 1    |   |
| 6 | 2006/11/7       | 17:41:41 | Tag024     | Segment Program2 | S1 | 1    | 0    |   |
| 7 | 2006/11/7       | 17:12:47 | UL_3001_01 | UserL DM3001_01  | PV | 0    | 1    |   |
| 8 | 2006/11/7       | 17:12:20 | UL_2008    | UserLink DM2008  | PV | 25.6 | 2.28 |   |
| 9 | 2006/11/7       | 17:04:50 | Tag012     | Segment Program2 | S1 | 1    | 0    |   |

Date exported → (points to row 2)  
 Date of operation (points to column A)  
 Time of operation (points to column B)  
 Tag names (points to column C)  
 Comments (points to column D)  
 ITEM names (points to column E)  
 ITEM data after changes (points to column F)  
 ITEM data before changes (points to column G)  
 Unit (points to column H)

## 4-17 System Monitor Screens

### 4-17-1 System Monitor Screen Outline

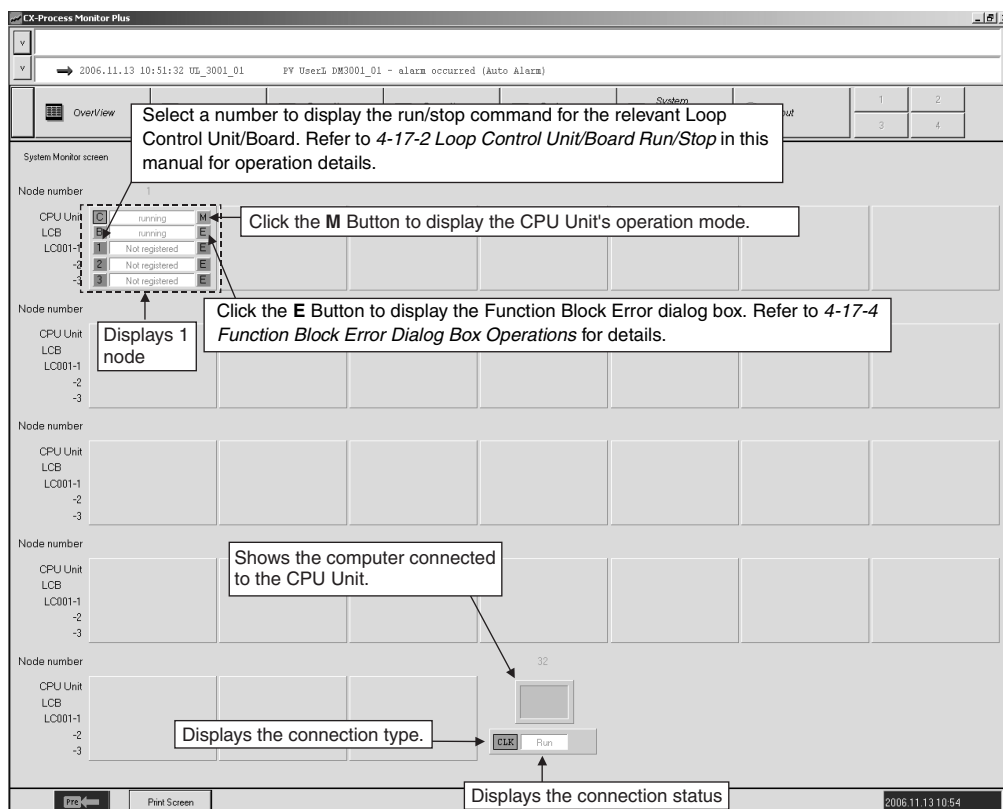
System Monitor Screen display the system status, and runs/stops the Loop Control Unit/Board. To display the System Monitor Screen, click the **System Monitor** Button.

You can display and operate the following items.

| Display/operation | Item                                                                                      |
|-------------------|-------------------------------------------------------------------------------------------|
| Display           | All system allocations                                                                    |
|                   | All CPU Unit modes                                                                        |
|                   | All Loop Control Unit/Board statuses (run/stop)                                           |
|                   | Block errors (Execution errors, RAM checksum errors, battery errors)                      |
|                   | Type of connection to computer (CLK, Ethernet, serial), and connection status (OK, error) |
| Operation         | Loop Control Unit/Board run/stop                                                          |

**Note** The system status display on the System Monitor Screen depends on the settings made in the System Monitor Setting Window (using the **System Monitor Builder** Button in the Setup Dialog Box).





## 4-17-2 Loop Control Unit/Board Run/Stop

**⚠ WARNING** Before starting a Loop Control Unit, check the following points.

- Make sure that I/O Units used in combination are correctly mounted. Also, make sure that the Unit number on the front of analog I/O Units agree with the Unit number set using the field terminals. If the Unit numbers do not agree, I/O (i.e., read and write) will be performed incorrectly, with data for another Special I/O Unit (with the Unit number set using the field terminal).
- Make sure that the initial settings for System Common Block within the Loop Control Unit are correct. In particular, check that data memory (DM) for node terminals within the CPU Unit used by the Loop Control Unit is not allocated to other applications in the PLC as well. If the same DM has been allocated twice, there is a risk that the PLC system will malfunction, resulting in injury.
- When writing data to the I/O memory in the CPU Unit with function blocks (e.g., using Send All Blocks, Expanded DO/AO Terminal to CPU Unit, or DO/AO Terminal to CPU Unit), be sure that the words written to in the I/O memory are not being used for any other purpose. If I/O memory words are allocated to more than one purpose, the PLC system may act unexpectedly and cause injury.

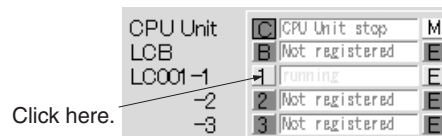
**⚠ WARNING** Check the following items before starting to run the Loop Control Board:

- Do not allow the bank of the EM Area with the number specified for allocation to the HMI (human-machine interface) data to overlap with any other area used by the CPU Unit or other Units. The block allocated for the HMI is specified in ITEM 050 (EM Area Bank Allocated for HMI Memory = 0 to 12) of the System Common block. If areas overlap, the system may operate in an unexpected fashion, which may result in injury.
- Do not allow the area to which user link table data is written to overlap with any other area used by the CPU Unit or other Units. If areas overlap, the system may operate in an unexpected fashion, which may result in injury.
- Analog Input/Output Units used in combination with the Loop Control Board must be mounted correctly, and the unit number set on the front panel of the Analog Input/Output Unit must match the unit number set on the Field Terminal block. If the unit numbers do not match, input/output (read/write) is performed on the data of another Special I/O Unit (whose unit number is set on the Field Terminal block).
- The defaults of the System Common block on the Loop Control Board must be set correctly.

**⚠ WARNING** Always stop the operation of the Loop Control Board before converting any of the EM Area to file memory. If any part of the EM Area that is being used by the Loop Control Board for the HMI is converted to file memory during Board operation, the system may operate in an unexpected fashion, which may result in injury.

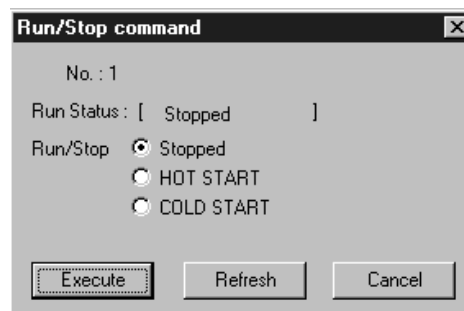
**Note** First sufficiently check system operation using the CX-Process Tool (check the load rate, etc.: Execution, Operation, Monitor Run Status), and sufficiently check operation (Monitor Run Status, Start) for the Function Block data that has been created, and then change to actual operation. In particular, first check that the load rate is 60% or less, and then change to actual operation.

- 1,2,3...**
1. Click the number button for the Loop Control Unit you want to use, as shown.



The Run/Stop Command Dialog Box will be displayed as shown (for a Loop Control Unit).

- Loop Control Unit is stopped.



- Loop Control Unit is running.



2. Select **Stop**, **HOT START**, or **COLD START**, and then click the **Execute** Button.

Click the **Refresh** Button to check and redisplay the run status of the Loop Control Unit.

### 4-17-3 Backing Up Data during Operation

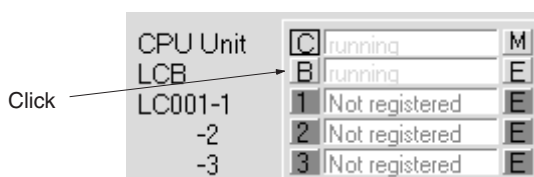
With the LCB01/05 (Version 1.50 and later), LCB05D, or LCB03, data can be backed up during operation from the Run Command Dialog Box.

Function block data in the RAM in the Loop Control Board is backed up to the flash memory in the Loop Control Board without interrupting operation.

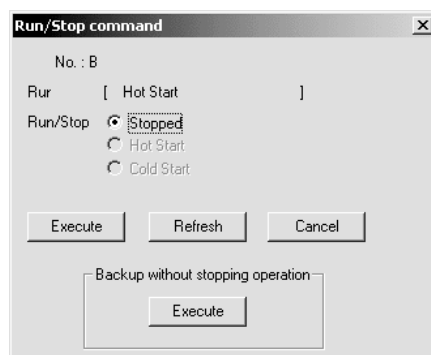
An entry will be added to the system monitor log to indicate a backup operation was performed during operation.

#### Procedure

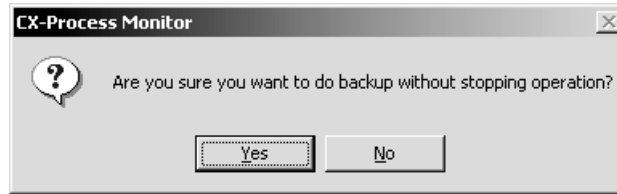
- 1,2,3... 1. Click the button (here B) for the Loop Control Board for which data is to be backed up.



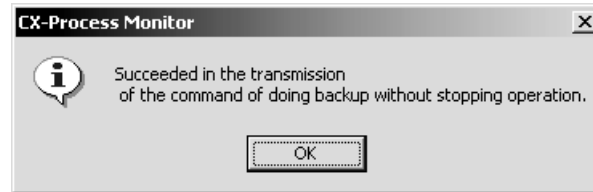
2. Display the Run/Stop Command Dialog Box.



- Click the **Send** Button for the backup during operation command. A confirmation dialog box will be displayed to confirm the backup during operation. Click the **OK** Button.

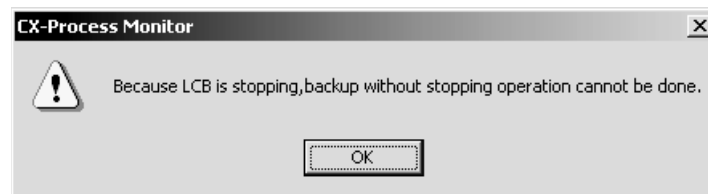


- A dialog box will appear when the command has been completed. Click the **OK** Button.

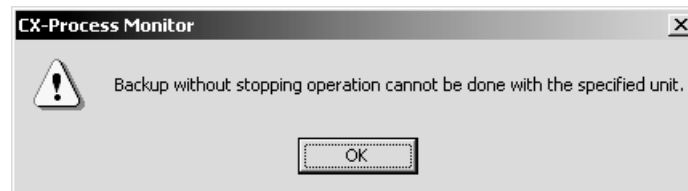


### Precautions for Backing Up Data during Operation

The command to back up data during operation cannot be used if the Loop Control Board is not running. The following dialog box will be displayed if an attempt is made to do so.



The command to back up data during operation cannot be used for Loop Control Boards with a version lower than 1.50. The following dialog box will be displayed if an attempt is made to do so.



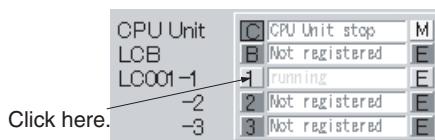
The command to back up data during operation cannot be used for Loop Control Units and the command button will thus not be displayed in the Run/Stop Command Dialog Box.

**Note** Observe the following precautions when backing up data during operation.

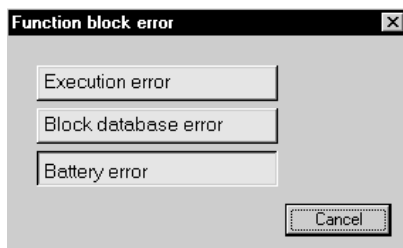
- The cycle time of the CPU Unit may be extended by approximately 10 ms.
- Up to approximately 10 minutes could be required to complete the backup.
- If the command to stop operation is selected while backing up data during operation, operation will stop but the data backup process will continue.
- If the command to back up data during operation is selected while backing up data during operation, the second command will be ignored. Wait for the backup to be completed before selecting the command again.

## 4-17-4 Function Block Error Dialog Box Operations

- 1,2,3... 1. Click the **E** Button.



The Function Block Error Dialog Box will be displayed.

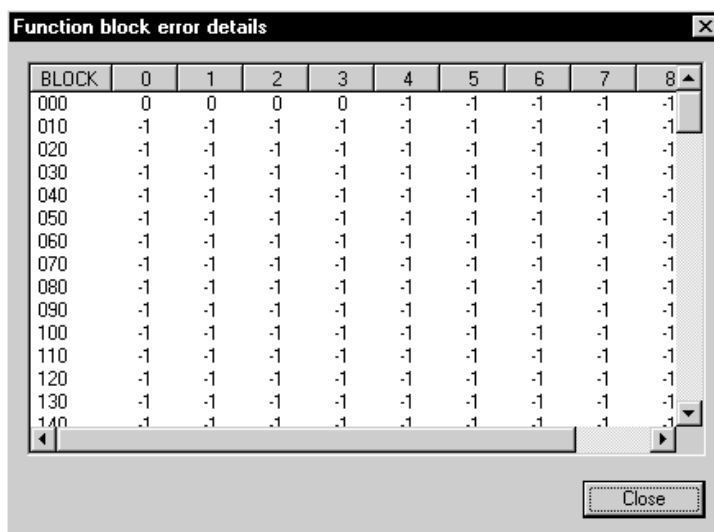


**Note** A Block database error indicates an error has occurred in the function block database.

The Function Block Error Dialog Box is displayed in green during normal operation, and red if there is an error.

2. Click the **Execution Error** or the **Block Database Error** button (Battery Error is displayed only and cannot be selected).

The Details of Function Block Error Dialog Box will be displayed.



### Block Database Error

0 = Normal (no errors), -1 = Block number not in use, 90 = Relevant Function Block has a database error.

### Execution Error

0 = Normal (no errors), -1 = Block number not in use, other numbers (1 to 89) = Error code.

The following table gives the function error codes.

| Code | Description                                                | Explanation                                                                                                                                                                                                                 | Operation at Error                                                                                                                                                                                                                                                            | Remedy                                                                                                                                                                                                                                                                                                                      |
|------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0    | Normal                                                     |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                             |
| 1    | Connection terminal/output terminal connection not defined | Either the function block is not registered to the block address of the source designation or the destination, or the ITEM number does not exist.                                                                           | Running of the function block in question is stopped, and the functions in question do not operate normally.                                                                                                                                                                  | Check the block address and ITEM number of the source designation or destination designation.                                                                                                                                                                                                                               |
| 2    | Default error                                              | When run/stop command S1 turned ON in the ramp program or segment program, the reference input was outside the rise ramp range.                                                                                             | The program is not started.                                                                                                                                                                                                                                                   | Check the connection of the reference input and program settings.                                                                                                                                                                                                                                                           |
| 3    | Variable value error                                       | A constant between A1 and A8 or an intermediate buffer between B1 and B4 that is used in the conditional statement for Arithmetic Operation (Block Model 126) is not defined.                                               | Execution of the Arithmetic Operation block will be stopped.                                                                                                                                                                                                                  | Set definitions for all constants A1 to A8 and an intermediate buffers B1 to B4 that are used.                                                                                                                                                                                                                              |
| 10   | Operation process: Division by "0"                         | An attempt was made to execute division by a "0" denominator in the operation process.                                                                                                                                      | In the case of Multiplication, DI/AI Terminal from CPU Unit, DI/AI Terminal from Expanded CPU Unit or Field Terminal blocks, the maximum value is output. In the case of the Segment Linearizer or Temperature and Pressure Correction blocks, the previous data is retained. | In the case of DI/AI Terminal from CPU Unit, DI/AI Terminal from Expanded CPU Unit or Field Terminal blocks, check the scaling value, and in the case of the Segment Linearizer block, check the setting value of the input coordinate side. In the case of temperature and pressure correction, check the gain bias value. |
|      |                                                            | An attempt was made to execute division by a "0" denominator in Arithmetic Operation block (Block Model 126).                                                                                                               | Execution of the Arithmetic Operation block will be stopped.                                                                                                                                                                                                                  | Check the contents of the conditional statement and calculation expressions for division by 0.                                                                                                                                                                                                                              |
| 11   | Operation process: Operation out of restricted value       | The output value of the operation result exceeded the data length of two bytes.<br><b>Note</b> An error does not occur even if the output range (e.g., 320.00) is exceeded if the data length of two bytes is not exceeded. | Output becomes the maximum value or minimum value of the output range. (For example, when the output range is 320.00, the output becomes +320.00 or 320.00.)                                                                                                                  | If there is a problem, review the settings of related ITEMS.                                                                                                                                                                                                                                                                |
|      |                                                            | The arguments or results for a Arithmetic Operation block exceed the defined limits.                                                                                                                                        | Execution of the Arithmetic Operation block will be stopped.                                                                                                                                                                                                                  | Check the contents of the conditional statement and calculation expressions and correct the mistake.                                                                                                                                                                                                                        |
| 12   | Argument beyond definition                                 | An argument used in Arithmetic Operation (Block Model 126) is beyond the definition.                                                                                                                                        | Execution of the Arithmetic Operation block will be stopped.                                                                                                                                                                                                                  | Check the range of the arguments and correct the conditional statement or calculation expressions.                                                                                                                                                                                                                          |
| 15   | AT error                                                   | A limit cycle cannot be generated for Basic PID (Block Model 011) or Advanced PID (Block Model 012) or suitable PID constants cannot be calculated.                                                                         | Execution of the relevant block will be stopped.                                                                                                                                                                                                                              | Check the following AT parameters: ITEM 036 to ITEM 040. Also, set ITEM 051 to 2 s or less.                                                                                                                                                                                                                                 |

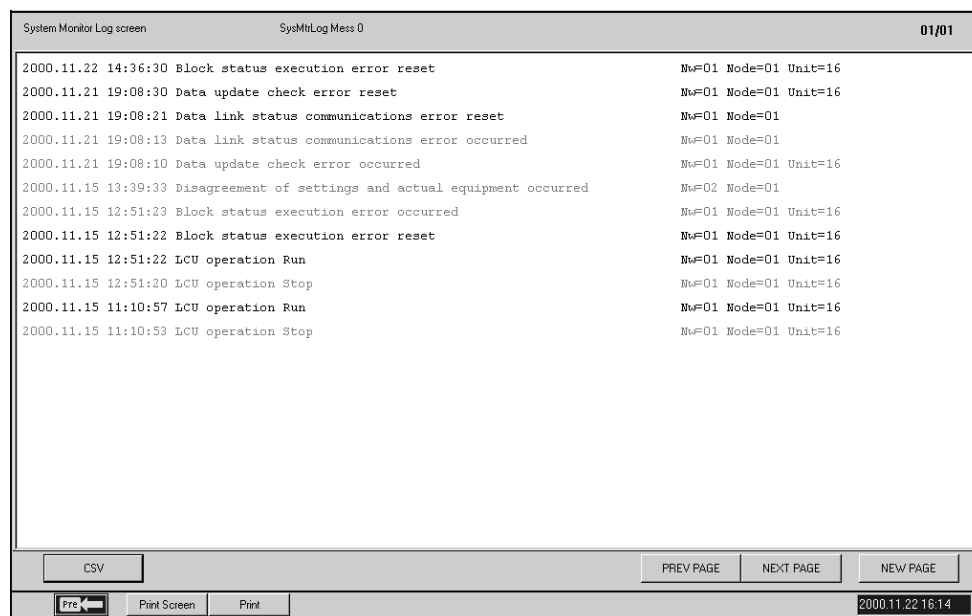
| Code | Description                            | Explanation                                                                                                                                                                                                  | Operation at Error                                                                      | Remedy                                                                                                                                                                                                                                                                                                                                     |
|------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19   | Inappropriate operation                | Two or more S1 to S3 select switches are set to 1 (ON) at the same time in the 3-output Selector block (Block Model 163) or 3-input Selector block (Block Model 164).                                        | The output value that was active before the error occurred is held.                     | Re-program the Step Ladder Program block so that S1 to S3 select switches are set to 1 (ON) independent of each other.                                                                                                                                                                                                                     |
| 20   | Download terminal data exchange error  | Data exchange with the CPU Unit is not being executed correctly on the CPU Unit Terminal, Expanded CPU Unit Terminal, Node Terminals and Field Terminal blocks.                                              | The data of the function block in question is not updated.                              | If a malfunction has occurred on the CPU Unit, follow the remedy for that error. If the CPU Unit is normal, turn ON the power supply again.                                                                                                                                                                                                |
| 21   | I/O memory address out-of-range        | An address out of the I/O memory address range has been specified on the CPU Unit Terminal, Expanded CPU Unit Terminal, Node Terminals and Field Terminal blocks.                                            | Operation of the function block in question is stopped.                                 | On the CPU Unit Terminal and Expanded CPU Unit Terminal blocks, check the leading address, and on field terminals check the setting of the CIO (channel I/O) Area number setting. In the case of Node Terminals, check the setting of the "leading address of the memory for the node terminals" specified by System Common block ITEM043. |
| 29   | Reception error for external device    | A communications frame error was generated by the data received from an ES100X Controller for an ES100X Controller Terminal (Block Model 045). (An FCS check error or frame error occurred 3 times in a row. | Communications will be stopped with the specified ES100X and tried with another ES100X. | Check the communications path and the communications settings (7 data bits, even parity, and 2 stop bits).                                                                                                                                                                                                                                 |
| 30   | Response timeout                       | A response was not returned after sending data to the Controller for a ES100X Controller Terminal (Block Model 045). (Response was not returned for 5 s 3 times.)                                            | Communications will be stopped with the specified ES100X and tried with another ES100X. | Check the communications path, the communications settings (7 data bits, even parity, and 2 stop bits), and other required settings in the ES100X (parameter setting mode, unit number, etc.).                                                                                                                                             |
| 31   | Controller unit number duplicated      | The unit number set in ITEM 006 for a ES100X Controller Terminal (Block Model 045) is the same as another ES100X Controller Terminal. (A response timeout will occur if the unit number does not exist.)     | Communications will be stopped with the ES100X Controllers                              | Change the unit number settings (ITEM 006) so that each is used only once.                                                                                                                                                                                                                                                                 |
| 70   | Illegal combination of function blocks | The function block on the primary loop side is not basic PID or advanced PID when bumpless processing between primary/secondary loops was specified in basic PID or advanced PID.                            | Running of the function block in question is stopped.                                   | Check the function block model number on the primary loop side.                                                                                                                                                                                                                                                                            |

| Code | Description                                               | Explanation                                                                                                                                                                                                                                                                                        | Operation at Error                                                               | Remedy                                                                          |
|------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 71   | Inappropriate parameter                                   | a) When restricted conditions are applied across two ITEMS:<br>(example: when the unit pulse output is equal to or greater than the operation cycle when there is unit pulse output in run time accumulation)<br>b) An attempt has been made to write out-of-range data at the ITEM Setting block. | a) The function block in question is not executed.<br>b) Data cannot be written. | Check the settings of the ITEMS.                                                |
| 80   | Step Ladder Program command error                         | There is an irrelevant command in the Step Ladder Program, or the method of use of commands is wrong, for example, there is an AND command even though there is no input command.                                                                                                                  | The command in question and onwards are not executed.                            | Check the program within the Step Ladder Program block.                         |
| 81   | Step Ladder Program source designation not defined        | Either the function block is not registered to the block address currently specified by each command in the Step Ladder Program, or the ITEM number does not exist.                                                                                                                                | The command in question and onwards are not executed.                            | Check the block address and ITEM number.                                        |
| 89   | Overuse of Step Ladder Program differentiated instruction | The number of differentiated instructions to be simultaneously executed has exceeded 256.                                                                                                                                                                                                          | Differentiated instructions exceeding 256 instructions are not executed.         | Reduce the number of differentiated instructions to be executed simultaneously. |



## 4-18 System Monitor Log Screens

System Monitor Log Screens record and display run/stop logs and the execution error logs as soon as they occur. To display the System Monitor Log Screen, click the **System Monitor Log** Button.



Display is red for an occurrence, and black following recovery.

### CSV File Output

System monitor log data (date, time, contents of runs/stops and execution errors) can be output in CSV (Comma Separated Value) file format using the following procedure.

**1,2,3...**

1. Press the **CSV** Button to display the Export to CSV File Dialog Box.
2. Specify a name for the CSV file, and click the **OK** Button. A CSV file will be created. (By clicking the **Browse** Button, the CSV file can be created in a desired folder. The default filename is Sysmlog.csv.) The contents of CSV files created are as follows:

System Monitor Log (carriage return)

<Export\_date>(comma)<Export\_time>(carriage\_return)<Date>(comma)

<Time>(comma)

<Operation\_start/stop\_or\_contents\_of\_execution\_error>(carriage return)

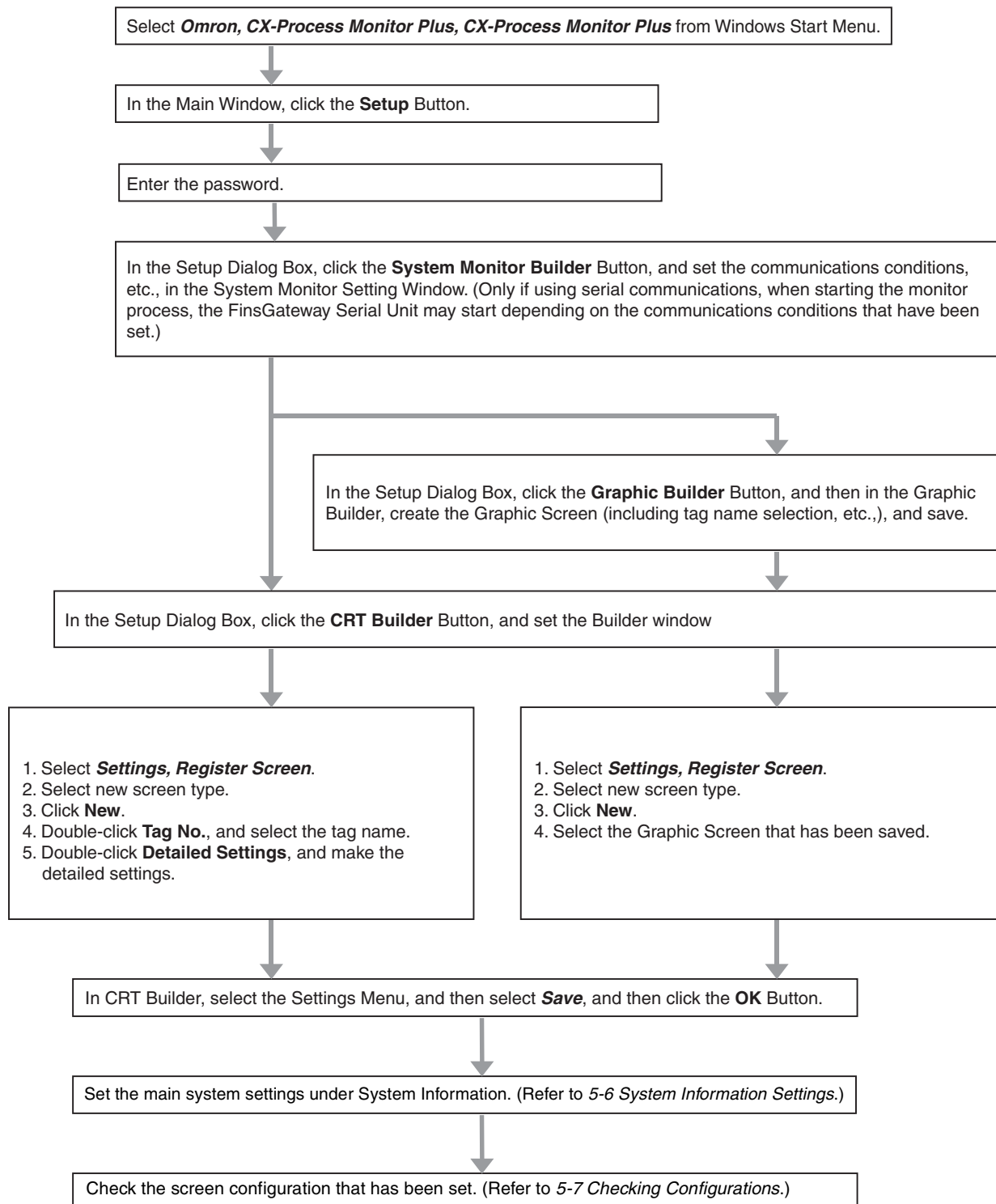
# SECTION 5

## Configuration Screens

This section describes operating procedures to create screens and monitor using the CX-Process Monitor Plus.

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## 5-1 Basic Configuration Procedure



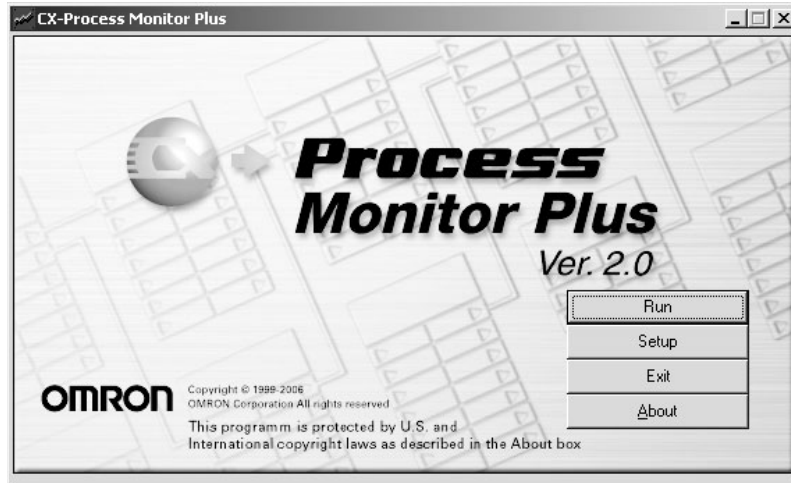
## 5-2 Basic Configuration Operations

### 5-2-1 Starting and Stopping the CX-Process Monitor Plus

#### Starting

- 1,2,3... 1. Select **Programs, Omron, CX-Process Monitor Plus, and CX-Process Monitor Plus** from the Windows Start Menu.

The CX-Process Monitor Plus Main Window will be displayed.

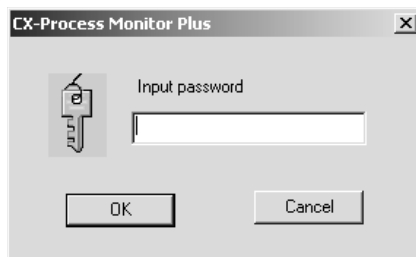


2. Click the **Setup** Button.
3. If the tag or network information has been changed, the following dialog box will be displayed. Click the **Yes** Button to create a monitor tag file from the CX-Process Monitor Plus tag file.



**⚠ WARNING** If the CX-Process Monitor Plus tag settings or network configuration have been changed, set the CX-Process Monitor Plus screen configuration correctly according to the new settings. Failure to correctly update the settings may result in unexpected operation by the machinery.

4. A dialog box will be displayed to input the password.



**Note** If no password has been set for the initial startup, the dialog box for registering a password will be displayed when the **Setup** Button is clicked. It is not possible to configure screens or make settings unless a password has been registered and the correct password has been entered. Personnel who will be making settings must register a password.  
For details on registering passwords, refer to *5-2-2 Setting Passwords*.

5. Enter the password and click the **OK** Button. The Setup Dialog Box will be displayed.

### Stopping

In the Main Window, click the **Exit** Button.

The Main Window will close, and CX-Process Monitor Plus will stop running.

## 5-2-2 Setting Passwords

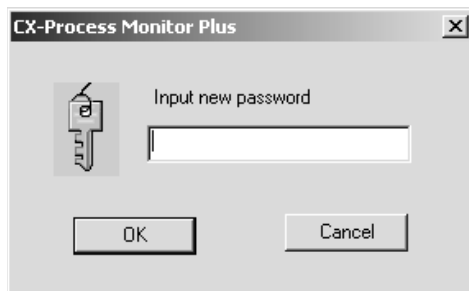
Set the password to configure the CX-Process Monitor Plus Screen and to protect the settings you have made.

**Note** Unless a password has been set and the correct password has been entered, it will not be possible to make any settings.

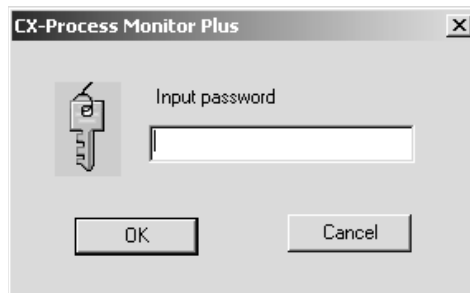
- 1,2,3...**
1. If no password has been set and if new tag information is imported, the following dialog box will be displayed when the **Setup** Button is clicked in the Main Window.



2. Click the **OK** Button.  
The following dialog box will be displayed.



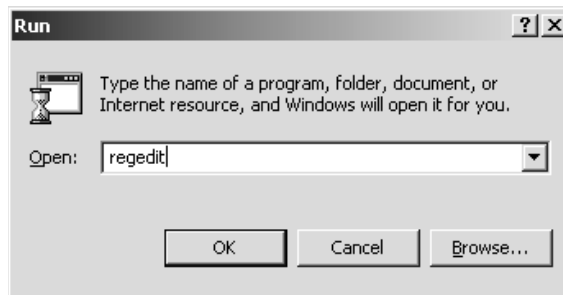
3. Enter the password, and click the **OK** Button.  
The following dialog box will be displayed.



4. Enter the password once again, and click the **OK** Button.

**Note** If you have forgotten the password or want to change the password, perform the following operation using the Registry Editor, and after deleting the Password key, set the password once again using the above procedure.

- 1,2,3...**
1. Click the **Start** Button, click the **Run** Button, enter *regedit*, and then click the **OK** Button.



The Registry Editor will start.

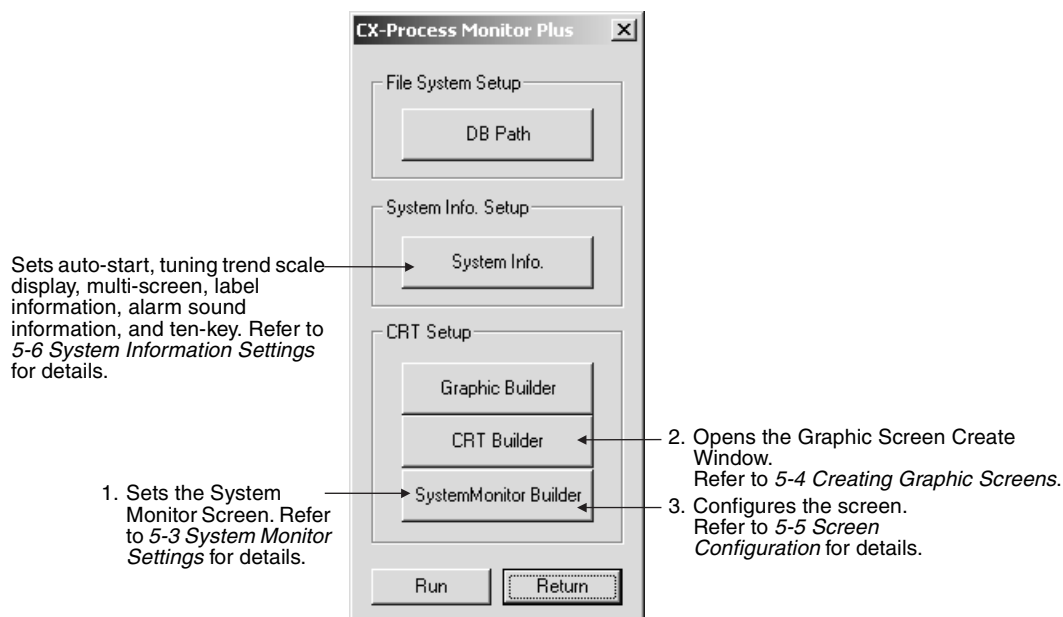
2. On the local computer, select HKEY\_LOCAL\_MACHINE\SOFTWARE\OMRON\CX-Process Monitor Plus\2.00, and then delete the password.

### 5-2-3 Setup Dialog Box

This section explains the functions of the Setup Dialog Box.

- 1,2,3...**
1. In the Main Window, click the **Setup** Button.  
A dialog box will be displayed to input the password. If no password has been set, the Setup Dialog Box will not be displayed. For details on setting a password, refer to 5-2-2 *Setting Passwords*.
  2. Enter the password, and click the **OK** Button.  
The Setup Dialog Box will be displayed.
  3. Click any button, and then select a function.

## Setup Dialog Box



Refer to the following sections for details on the functions of each button.

## 5-3 System Monitor Settings

Using the System Monitor Setting Window, register the PLC and Loop Control Unit/Board to be monitored using the System Monitor Screen. Also register the local computer to perform the monitoring.

The setting items are as follows:

|                  |                                                                                                                                                                                             |                                                 |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| PLC setting      | PLC node number (address)                                                                                                                                                                   | Use the System Monitor Screen for this setting. |
|                  | Unit address of the Loop Control Unit/ Board (The unit address of the Loop Control Board is always 225.)                                                                                    |                                                 |
| Computer setting | Computer node number (default is 32)                                                                                                                                                        |                                                 |
|                  | Communications type (CLK, Serial, Ethernet) (Use the System Monitor Screen to set CLK or Ethernet communications.)<br>For serial connections, you must also set the COM port and baud rate. |                                                 |

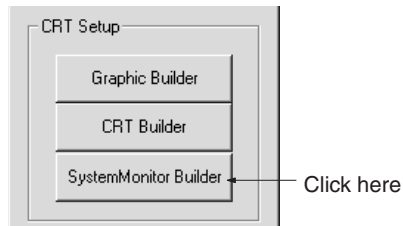
When the monitor process is started with serial (Host Link) communications by clicking the **Run** Button in the Main Window or the Setup Dialog Box, FinsGateway communications will start according to the settings of the following communications conditions.

- Communications type: Serial (Host Link)
- COM port used and baud rate

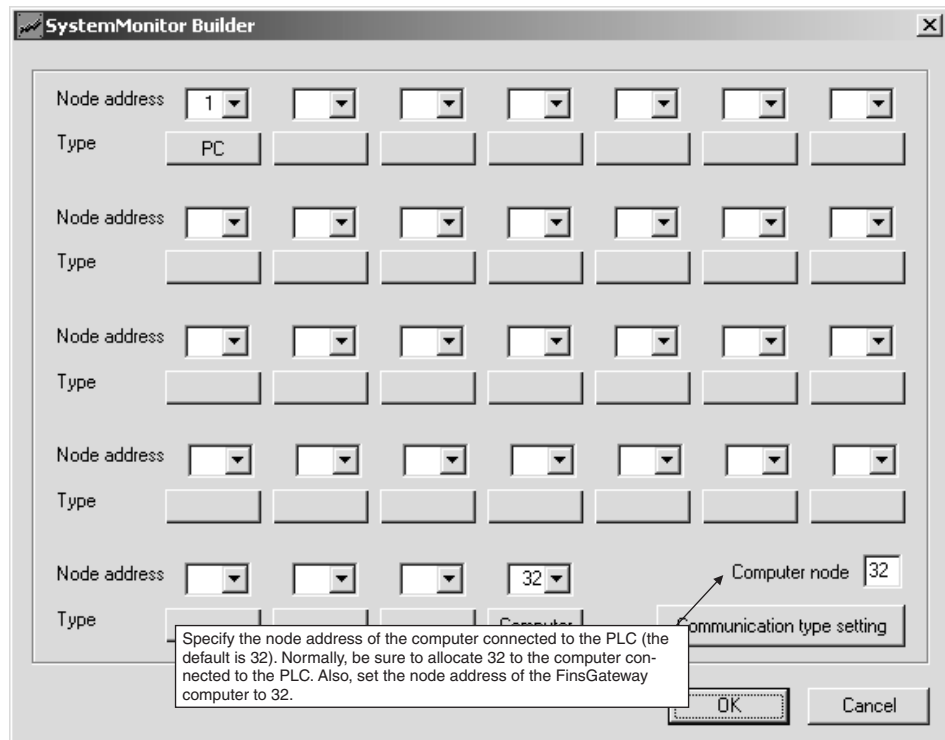
**Note** The PLC settings (node address, Unit address, etc.) set here can be used only from the System Monitor Screen. Actual communications processing depends on the network address, node address, and Unit address set using the CX-Process Tool. Controller Link and Ethernet settings within the computer settings made here can also be used only from the System Monitor Screen. Perform actual communications processing by manually starting FinsGateway.

**Note** Set the PLC settings (node address, Unit address, etc.) made here to agree with the network address, node address, and Unit address settings made using CX-Process Tool. If the settings do not agree, monitoring using the System Monitor Screen will not be performed correctly.

- 1,2,3...** 1. In the Setup Dialog Box, click the **System Monitor Builder** Button.



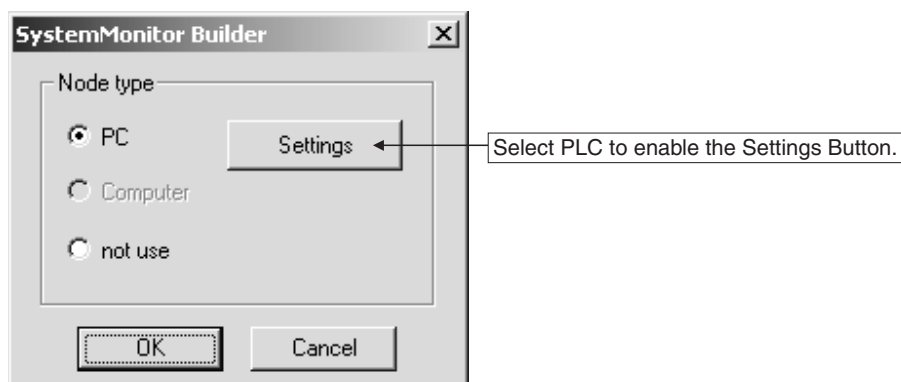
The System Monitor Setting Window will be displayed.



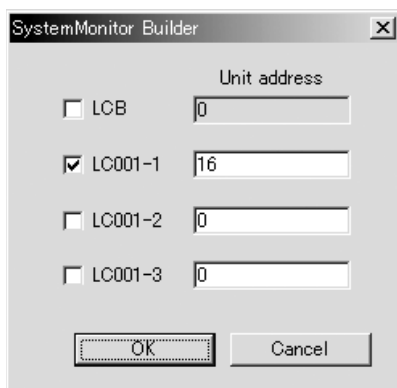
2. Select the node number allocated to the PLC or computer, as described below, and then click the button displayed under the node number.
- PLC: Select the number from the list box.
  - Computer: Input the number in the list box. Normally register node 32. (The node number of the computer connected to the PLC is the same as the number input for the computer node in the bottom right of the System Monitor Settings Window.)



3. Select the device (PLC or computer), and then make the appropriate settings.



4. When *PC* has been selected as the node type, click the **Settings** Button. The following dialog box will be displayed. Make the setting as shown.



**Note** When using more than one Loop Control Unit in the same PLC, set the unit addresses and function numbers in ascending order.

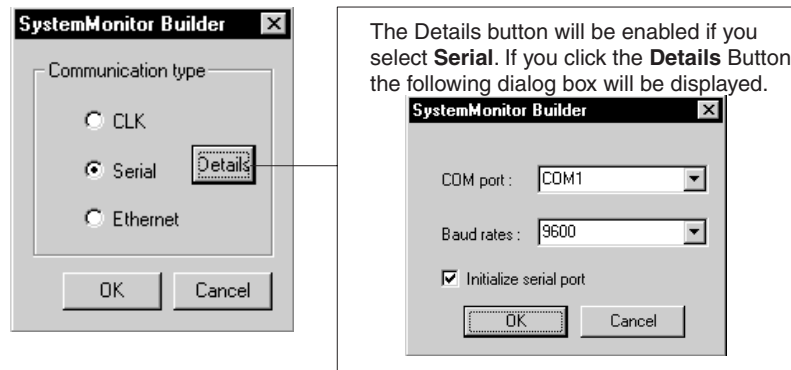
You can connect one Loop Control Board and up to three Loop Control Units to one PLC. Select the check box for the Loop Control Unit/Board mounted to the PLC, and enter the unit address.

The unit address of the Loop Control Board is always 225.

Click the **OK** Button to return to the Set Node Dialog Box.

**Note** The unit address for each node set here can be used only from the System Monitor Screen. Which Loop Control Unit/Board's data and which PLC CX-Process Monitor Plus will be accessed depends on the network address, node address, and unit address set using the CX-Process Tool. (This is linked to the tag information.) The unit address of the Loop Control Board is always 225.

5. Click the **Communication type setting** Button. The following dialog box will appear.



In Network Type, select **CLK**, **Serial**, or **Ethernet**.

If you select **Serial**, set the computer COM port, and the baud rate. If necessary, also set **Initialize serial port**. Refer to the following Note.

Click the **OK** Button to return to the Set Node Dialog Box.

**Note** If the communications type is set to Serial (Host Link), then when the monitor process is started (by clicking the **Run** Button in the Main Window or in the Setup Dialog Box), FinsGateway Serial Unit driver will start according to the communications conditions set here.

If you select another communications type (Controller Link or Ethernet), the communications type set here can be used only from the System Monitor Screen. You must start the FinsGateway manually.

6. When you have finished making all the PLC and computer settings, click the **OK** Button in the System Monitor Settings Window. This completes the System Monitor settings.

## 5-4 Creating Graphic Screens

### 5-4-1 Outline

The Graphic Screen displays schematically the device status.

Create the Graphic Screen using the Graphic Builder.

- Paste to the screen graphic elements representing plant instrumentation, which have been provided, and use them to display the device status, to a maximum of 200 screens.
- Library figures and images:
  - Text, lines, rectangles, round rectangles (rectangles with rounded corners), ellipses, polygons, and images
- Fixed graphic display elements:
  - Text boxes, instruments, thermometers, transmitters, and orifices
- Changeable graphic display elements:
  - Analog inputs: Bar graph displays, numerical value displays, and tanks
  - Analog settings: Numerical settings (See note.)
  - Contact inputs (display): Pumps, valves, and pipes
  - Contact settings (operation): Switches (See note.)

**Note** If making analog values or contact settings, use tags for Constant Generator (Block Model 166) and Internal Switch (Block Model 209).

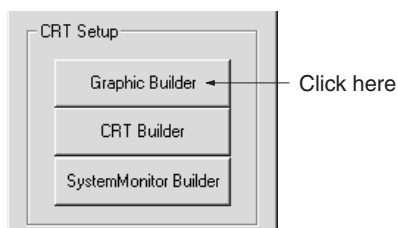
- Screen display objects:  
Screen jump objects, FP switch (faceplate pop-up) objects

| Element        | Function block or ITEM set as send source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function block | <p>Control Blocks: Basic PID (Block Model 011), Advanced PID (Block Model 012), Blended PID (Block Model 013), Batch Flowrate Capture (Block Model 014), Indication and Setting (Block Model 031), Indication and Operation (Block Model 032), Ratio Setting (Block Model 033), Indicator (Block Model 034), 2-position ON/OFF (Block Model 001), and 3-position ON/OFF (Block Model 002)</p> <p>Operation Blocks: High/Low Alarm (Block Model 111), Segment Program 2 (Block Model 157), ON/OFF Valve Manipulator (Block Model 221), Motor Manipulator (Block Model 222), Reversible Motor Manipulator (Block Model 223), Motor Opening Manipulator (Block Model 224), Timer (Block Model 205), and Counter (Block Model 208)</p> <p>The following for all function blocks:<br/>Analog input signals (using Input Selector (Block Model 162))<br/>Analog output signals (using Constant Generator (Block Model 166))<br/>Or Analog value parameters (using Constant Generator (Block Model 166))</p> <p>Contact input signals or contact output signals for all function blocks, or contact value parameters (Contact Distributor (Block Model 201) + Internal Switch (Block Model 209))</p> |
| Display        | <p>Analog values: Bar graphs, numerical values, tank level</p> <p>Contacts: Indicators, pumps, valves, and pipes</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Setting        | <p>Analog values: Numerical values (using Constant Generator (Block Model 166))</p> <p>Contacts: Switches (using Contact Distributor (Block Model 201) + Internal Switch (Block Model 209))</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

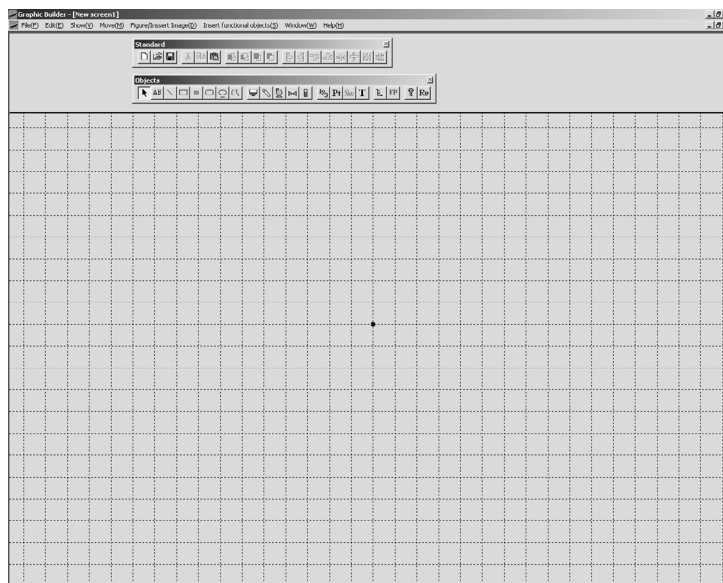
## 5-4-2 Procedure for Creating Graphic Screens

### Starting the Graphic Builder

- 1,2,3...** 1. In the Setup Dialog Box, click the **Graphic Builder** Button.



The Graphic Builder will be displayed.



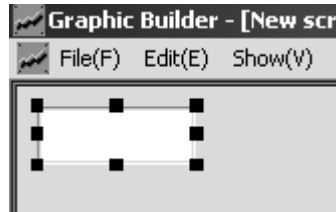
**Creating Graphic Screens**

Graphic objects are placed on Graphic Screens. The object placed on a Graphic Screen in this example is a data box.

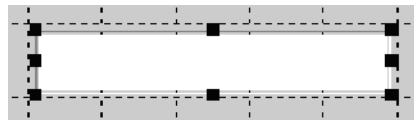
**1,2,3...**

1. Select **Insert Functional Object - Data** (or click the  icon on the Object Toolbar).

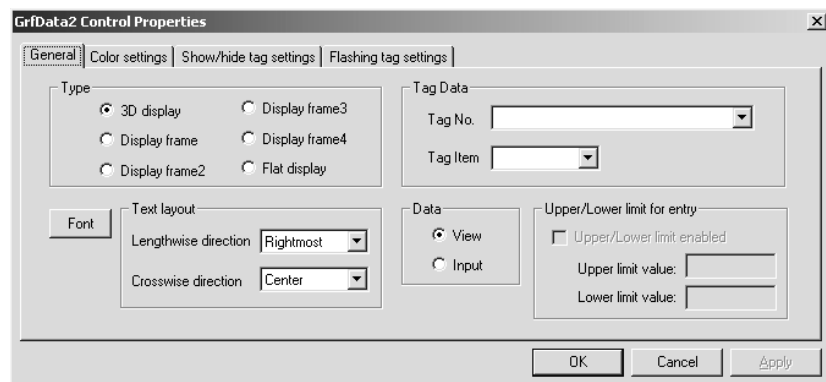
The data box will be displayed on the top left of the screen as shown below.



2. Double-click the data box to select it, and drag it to the display position.
3. Drag any of the eight points on the data box frame to enlarge or reduce its size.



4. Right-click the data box and select **Properties - GrfData2 Control Object** from the pop-up menu.
5. The GrfData2 Control Properties Dialog Box will be displayed. Make the settings for the data box and click the **OK** Button.  
For details on setting graphic objects, refer to 5-4-6 Setting Graphic Objects.



6. Place other graphic objects using the same procedure as above.

**Saving Graphic Screens**

Graphic Screens that have been created are saved one by one.

**1,2,3...**

1. Select **Save** or **Save As** from the File Menu, or click the  icon.
2. The following dialog box will be displayed. Input the file name and click the **Save** Button.  
One Graphic Screen will be saved (with a GRF file name extension).



### Exiting the Graphic Screen Creation Window

In the File menu, click **Exit**.

The Graphic Builder will close.

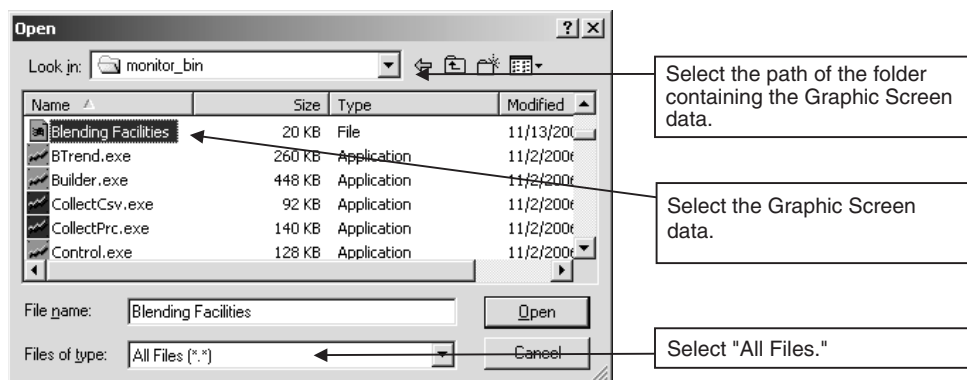
#### Note

1. When using the Graphic Screen, first create and save the graphics using Graphic Builder (using the **CRT Builder** Button in the Setup Dialog Box), and then register the saved graphics in the Overview Screen in the format you have selected. Consequently, before registering the graphics in the Overview screen, you must create and save the graphics using the Graphic Builder.
2. If you have not saved the edited data when you click **Exit**, a window recommending that you save the data will be displayed. Save all necessary data. After performing this operation, the Graphic Builder will close.
3. You must configure the screen to display the Graphics Screen you have created using CX-Process Monitor Plus. Refer to 5-5 *Screen Configuration* for how to make the settings.

### Graphic Screens Created Using CX-Process Monitor Plus Version 1 or Earlier

Graphic Screens created using CX-Process Monitor Plus version 1 or earlier can be used with version 2 by following this procedure:

1. In the Graphic Screen Creation Window, select **File - Open**.
2. The Open Dialog Box will be displayed. Select the Graphic Screen that was created using CX-Process Monitor Plus version 1, and click the **Open** Button.



3. Using the procedure described in *Saving Graphic Screens* above, save the monitor Graphic Screen read to the Graphic Screen Creation Window.

Graphic objects created using CX-Process Monitor Plus version 1 cannot be used with the expanded functions of version 2.

To use all of the functions for graphic objects, create new graphic objects using CX-Process Monitor Plus version 2.

### 5-4-3 Graphic Builder Menus and Tool Bars

#### Menu Command

This shows the commands available in the Graphics Builder.

| Menu | Command                 | Shortcut key | Function                                                                                                                                                                                                                     |
|------|-------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| File | New                     | Ctrl + N     | Create new Graphic Screen.                                                                                                                                                                                                   |
|      | Open                    | Ctrl + O     | Close created Graphic Screen.                                                                                                                                                                                                |
|      | Save                    | Ctrl + S     | Overwrite project being edited.                                                                                                                                                                                              |
|      | Save As                 | ---          | Save project being edited with a new name.                                                                                                                                                                                   |
|      | Save Group File         | ---          | Save grouped graphic object data.                                                                                                                                                                                            |
|      | Load Group File         | ---          | Read grouped graphic object data.                                                                                                                                                                                            |
|      | Delete File Information | ---          | Specify name of a registered Graphic Screen, and delete that file information.                                                                                                                                               |
|      | Modify File Information | ---          | Specify name of a registered Graphic Screen, and change the file information for it.                                                                                                                                         |
|      | Recent Files (1...2...) | ---          | Display the most recent files.                                                                                                                                                                                               |
|      | Exit                    | ---          | Close Graphic Builder.                                                                                                                                                                                                       |
| Edit | Undo                    | Ctrl + Z     | Undo the previous operation.                                                                                                                                                                                                 |
|      | Cut                     | Ctrl + X     | Cut the specified range.                                                                                                                                                                                                     |
|      | Copy                    | Ctrl + C     | Copy the specified range.                                                                                                                                                                                                    |
|      | Paste                   | Ctrl + V     | Paste the contents of the clipboard.                                                                                                                                                                                         |
|      | Delete                  | Del          | Delete the specified range.                                                                                                                                                                                                  |
|      | Select All              | Ctrl + A     | Select all items.                                                                                                                                                                                                            |
|      | Paste Special...        | ---          | This menu item is not used.                                                                                                                                                                                                  |
|      | Group Objects           | Ctrl + G     | Group two or more selected figures objects.                                                                                                                                                                                  |
|      | Ungroup Objects         | Ctrl + F     | Clear grouping of objects.                                                                                                                                                                                                   |
|      | Properties              | Alt + Enter  | Display properties of selected figures or image objects.                                                                                                                                                                     |
|      | Create/Paste Objects    | ---          | Display the Insert Objects dialog box.<br>Select and create objects from the menu of objects supported by CX-Process Monitor Plus and objects that can be inserted into the Graphic Screen.<br>Specify and paste file names. |
|      | Links                   | ---          | This menu item is not used.                                                                                                                                                                                                  |
|      | Object                  | ---          | Open the selected figure, image or functional object properties.                                                                                                                                                             |
| View | Standard Toolbar        | ---          | Select whether to display or hide the Standard Toolbar                                                                                                                                                                       |
|      | Object Toolbar          | ---          | Select whether to display or hide the Object Toolbar.                                                                                                                                                                        |
|      | Paper Color             | Basic Color  | Set the background color.                                                                                                                                                                                                    |
|      |                         | System Color | Restore the default background color.                                                                                                                                                                                        |
|      | Display Frame           | ---          | Select whether to display or hide object frame.                                                                                                                                                                              |
|      | Grid line               | ---          | Set the grid lines.<br>10 points, 20 points, 40 points, 60 points, or none<br>You can also change the line color.                                                                                                            |
|      | Refresh                 | ---          | Refresh the screen.                                                                                                                                                                                                          |

| Menu                     | Command                  |                         | Shortcut key | Function                                                                                                                                       |
|--------------------------|--------------------------|-------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Move                     | To Front                 |                         | +            | Move the selected object to the front.                                                                                                         |
|                          | To Back                  |                         | –            | Move the selected object to the back.                                                                                                          |
|                          | To Top                   |                         | Ctrl + +     | Move the selected object to the top.                                                                                                           |
|                          | To Bottom                |                         | Ctrl + –     | Move the selected object to the bottom.                                                                                                        |
|                          | Arrange                  | Align Left              | ---          | Align multiple selected objects on the left, right, top, or bottom of the selected object that is farthest to the left, right, top, or bottom. |
|                          |                          | Align Right             | ---          |                                                                                                                                                |
|                          |                          | Align Top               | ---          |                                                                                                                                                |
|                          |                          | Align Bottom            | ---          |                                                                                                                                                |
|                          |                          | Align Recent Left       | ---          | Align multiple objects on the left, right, top, or bottom of the last object that was selected.                                                |
|                          |                          | Align Recent Right      | ---          |                                                                                                                                                |
|                          |                          | Align Recent Top        | ---          |                                                                                                                                                |
|                          |                          | Align Recent Bottom     | ---          |                                                                                                                                                |
|                          |                          | Distribute Horizontally | ---          | Distribute multiple selected objects with even spacing horizontally.                                                                           |
|                          |                          | Distribute Vertically   | ---          | Distribute multiple selected objects with even spacing vertically.                                                                             |
|                          |                          |                         |              |                                                                                                                                                |
|                          | Make Same Size           | Width                   | ---          | Unify the width, height, or both, of multiple selected objects.                                                                                |
|                          |                          | Height                  | ---          |                                                                                                                                                |
|                          |                          | Both                    | ---          |                                                                                                                                                |
|                          | Snap to Grid             |                         | ---          | Align a selected object to the nearest grid cross point                                                                                        |
| Insert Figure/Image      | Text                     |                         | ---          | Insert a text display object.                                                                                                                  |
|                          | Line                     |                         | ---          | Insert a line.                                                                                                                                 |
|                          | Rectangle                |                         | ---          | Insert a rectangle.                                                                                                                            |
|                          | Round rect               |                         | ---          | Insert a rectangle with rounded corners.                                                                                                       |
|                          | Ellipse                  |                         | ---          | Insert an ellipse.                                                                                                                             |
|                          | Polygon                  |                         | ---          | Insert a polygon.                                                                                                                              |
|                          | Image                    |                         | ---          | Insert an image object.                                                                                                                        |
| Insert Functional Object | Tank                     |                         | ---          | Insert a tank.                                                                                                                                 |
|                          | Pipe                     |                         | ---          | Insert a pipe.                                                                                                                                 |
|                          | Pump                     |                         | ---          | Insert a pump.                                                                                                                                 |
|                          | Valve                    |                         | ---          | Insert a valve.                                                                                                                                |
|                          | Meter bar                |                         | ---          | Insert a meter bar.                                                                                                                            |
|                          | Parts                    |                         | ---          | Insert parts (instrument, thermometer, transmitter, or orifice).                                                                               |
|                          | Switch                   |                         | ---          | Insert a switch.                                                                                                                               |
|                          | Data                     |                         | ---          | Insert a data box.                                                                                                                             |
|                          | Text Box                 |                         | ---          | Insert a text box.                                                                                                                             |
|                          | Jump                     |                         | ---          | Insert an object to call another screen.                                                                                                       |
|                          | FP Switch                |                         | ---          | Insert a FP Switch object to display a faceplate.                                                                                              |
| Window                   | Cascade                  |                         | ---          | Cascade Graphic Screen Edit Windows.                                                                                                           |
|                          | Tile Vertically          |                         | ---          | Tile Graphic Screen Edit Windows vertically.                                                                                                   |
|                          | Tile Horizontally        |                         | ---          | Tile Graphic Screen Edit Windows horizontally.                                                                                                 |
|                          | Align Icons              |                         | ---          | Align minimized Edit Windows.                                                                                                                  |
|                          | Select Window (1...2...) |                         | ---          | Select an edited Graphic Screen and display it in front.                                                                                       |
| Help                     | Version                  |                         | ---          | Display the Graphics Builder version information.                                                                                              |

Toolbars

To display or hide the toolbar, first select *View* and then either *Standard Toolbar* or *Object Toolbar*.

The Builder Window has two types of toolbars, as shown below.

Standard Toolbar



| Icon | Function  |
|------|-----------|
|      | New       |
|      | Open      |
|      | Save      |
|      | Cut       |
|      | Copy      |
|      | Paste     |
|      | To Top    |
|      | To Bottom |
|      | To Front  |
|      | To Back   |

| Icon | Function                                   |
|------|--------------------------------------------|
|      | Align multiple objects on left             |
|      | Align multiple objects on right            |
|      | Align multiple objects at top              |
|      | Align multiple objects at bottom           |
|      | Evenly space multiple objects horizontally |
|      | Evenly space multiple objects vertically   |
|      | Group objects                              |
|      | Ungroup objects                            |



## Object Toolbar



| Icon | Function                                     |
|------|----------------------------------------------|
|      | Select a figure, image, or functional object |
|      | Insert a text display                        |
|      | Insert a line                                |
|      | Insert a rectangle                           |
|      | Insert an image                              |
|      | Insert a rectangle with rounded corners      |
|      | Insert an ellipse                            |
|      | Insert a polygon                             |

| Icon | Function                                                        |
|------|-----------------------------------------------------------------|
|      | Insert a numerical data box                                     |
|      | Insert parts (instrument, thermometer, transmitter, or orifice) |
|      | Insert a switch                                                 |
|      | Insert a text box                                               |
|      | Insert a Screen jump object                                     |
|      | Insert an FP switch to display a faceplate pop-up               |
|      | Display the Version Dialog Box                                  |
|      | Refresh the screen                                              |

| Icon | Function           |
|------|--------------------|
|      | Insert a tank      |
|      | Insert a pipe      |
|      | Insert a pump      |
|      | Insert an ellipse  |
|      | Insert a meter bar |

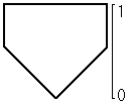
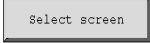
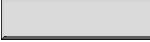
## 5-4-4 Basic Operations

The following table displays the basic Graphic Builder operations (operations other than those displayed on the menu and toolbars).

| Objective                                        | Operation                                                                                                                               |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Select object                                    | Double-click                                                                                                                            |
| Select multiple objects                          | Drag to surround the multiple objects                                                                                                   |
| Cancel selection                                 | Click an area outside of the selected object                                                                                            |
| Move object                                      | Select the object, and then drag it                                                                                                     |
|                                                  | Select the object and then press the Left, Right, Up, or Down Arrow Key on the keyboard.                                                |
| Enlarge/reduce object                            | Select the object, and then drag one of the 8 points displaying the outline of the object                                               |
| Set object properties (shape, color, font, etc.) | Right-click the object, select <b>Properties</b> or <b>Grf*** Control Object</b> , and then click the tab for the item you want to set. |

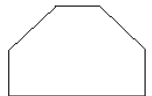
## 5-4-5 Graphic Objects

### Functional Objects

| Elements           | Object name        | Shape (typical)                                                                     | Function                                                                                              | Specifications                  |                            |                                                                                                                                                                                                                                                         |
|--------------------|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                    |                                                                                     |                                                                                                       | Show/<br>hide tag<br>allocation | Flashing<br>tag allocation | Other                                                                                                                                                                                                                                                   |
| Changeable objects | Tank               |    | Displays analog value.                                                                                | Yes                             | Yes                        | Number of divisions (display required), font, upper limit, lower limit, type (tanks 1 to 3), tag data, color (foreground and background colors)                                                                                                         |
|                    | Pipe               |    | Displays contact.                                                                                     | Yes                             | Yes                        | Display frame (top line, bottom line, right line, left line), colors (ON /OFF colors), tag data                                                                                                                                                         |
|                    | Pump               |    | Displays contact.                                                                                     | Yes                             | Yes                        | Direction (up, down, right, left), color (ON/OFF colors), tag data                                                                                                                                                                                      |
|                    | Valve              |    | Displays contact.                                                                                     | Yes                             | Yes                        | Type (horizontal, vertical and up square/right square/left square/up semicircle/right semicircle/left semicircle), tag data, colors (ON/OFF colors)                                                                                                     |
|                    | Meter bar          |    | Displays analog value.                                                                                | Yes                             | Yes                        | Number of divisions (display enable/disable), upper limit, lower limit, direction (vertical, horizontal), font, tag data, color (foreground and background colors)                                                                                      |
|                    | Numerical Data Box |  | Displays analog value (displays numerical value), and analog value setting (numerical value setting). | Yes                             | Yes                        | Type (3D display, display frame 0 to 4, flat display), font, tag data, display data, input data, color (character and background colors), text layout (horizontal or vertical), data display input setting (display, input), range check for data input |
|                    | Switch             |  | Displays contact (indicator), and contact setting (switch).                                           | Yes                             | Yes                        | Character specification (ON/OFF), font, type (DI/DO), tag data, operation confirmation (Y/N), color (ON/OFF colors, character color)                                                                                                                    |
|                    | Screen jump        |  | Change display to specified screen                                                                    | No                              | No                         | Display type (buttons, rectangles), text specification, screen selection type (every time, screen selection, or according to specification), color (button color, frame color, interior color, text color)                                              |
|                    | Faceplate switch   |  | Faceplate pop-up display                                                                              | No                              | No                         | Display type (buttons/rectangles), text specification, tag specification, color (button color, frame color, interior color, text color)                                                                                                                 |

| Elements      | Object name |                   | Shape (typical)                                                                   | Function | Specifications           |                         |                                                                                                    |
|---------------|-------------|-------------------|-----------------------------------------------------------------------------------|----------|--------------------------|-------------------------|----------------------------------------------------------------------------------------------------|
|               |             |                   |                                                                                   |          | Show/hide tag allocation | Flashing tag allocation | Other                                                                                              |
| Fixed objects | Text box    |                   |  | ---      | Yes                      | Yes                     | Text, type (3D display, display frame 0 to 4, flat), font, color (character and background colors) |
|               | Parts       | Transmitter       |  |          | Yes                      | Yes                     | Direction (up, down, right, left), color (border line color and background colors)                 |
|               |             | Orifice           |  |          | Yes                      | Yes                     |                                                                                                    |
|               |             | Instrument        |  |          | Yes                      | Yes                     |                                                                                                    |
|               |             | Temperature meter |  |          | Yes                      | Yes                     |                                                                                                    |

## Figures and Images

| Elements | Object name                                 |  | Shape (typical)                                                                     | Function                                 | Specifications           |                         |                                                                                                                                                                      |
|----------|---------------------------------------------|--|-------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                             |  |                                                                                     |                                          | Show/hide tag allocation | Flashing tag allocation | Other                                                                                                                                                                |
| Figures  | Text                                        |  |  | ---                                      | Yes                      | Yes                     | Text string, font, color settings (direct, tag settings), display position, border lines (line width, line style, color settings), background color (color settings) |
|          | Line                                        |  |  | ---                                      | Yes                      | Yes                     | Color settings (direct, tag settings), border lines (line width, line style, color settings)                                                                         |
|          | Rectangle                                   |  |  | ---                                      | Yes                      | Yes                     | Color settings (direct, tag settings), border lines (line width, line style, color settings), background color (color settings)                                      |
|          | Rectangle with rounded corners (Round rect) |  |  | ---                                      | Yes                      | Yes                     | Color settings (direct, tag settings), border lines (line width, line style, corner color settings), background color (enable/disable, color settings)               |
|          | Ellipse                                     |  |  | ---                                      | Yes                      | Yes                     | Color settings (direct, tag settings), border lines (line width, line style, color settings), background color (enable/disable, color settings)                      |
|          | Polygon                                     |  |  | ---                                      | Yes                      | Yes                     | Color settings (direct, tag settings), border lines (line width, line style, color settings), background color (enable/disable, color settings)                      |
| Images   | Image                                       |  |  | Display image files in BMP or JPG format | Yes                      | Yes                     | Color settings (direct, tag settings), border lines (line width, line style, color settings), image specification (direct, tag settings)                             |

## 5-4-6 Setting Graphic Objects

This section describes how to set properties (shapes, colors, and tags) for graphics objects.

Graphic object properties are set by displaying the dialog box described below.

### Functional Objects

Double-click a functional object to select it, and then right-click and select **Grf\*\*\*\*\* Control Object**.

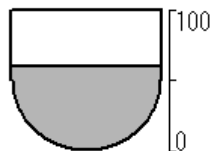
### Figures and Images

Double-click a figure or image object to select it, and then right-click and select **Properties**.

### Setting Functional Objects

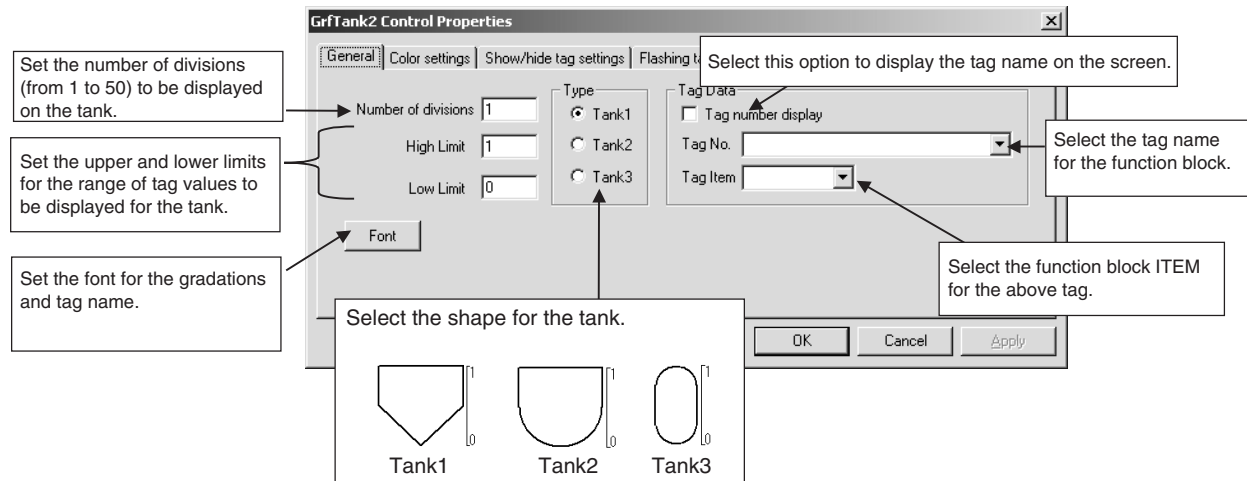
Tank (  )

The tank is filled at the ratio of the upper and lower limits according to the specified tag value.

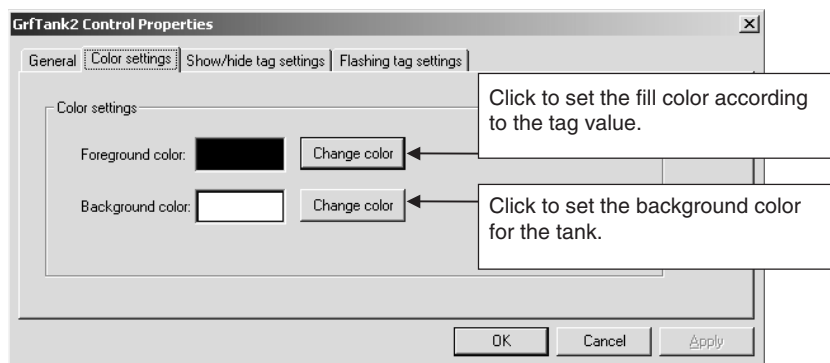


### Setting Method

#### General Tag



### Color Settings Tab



For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

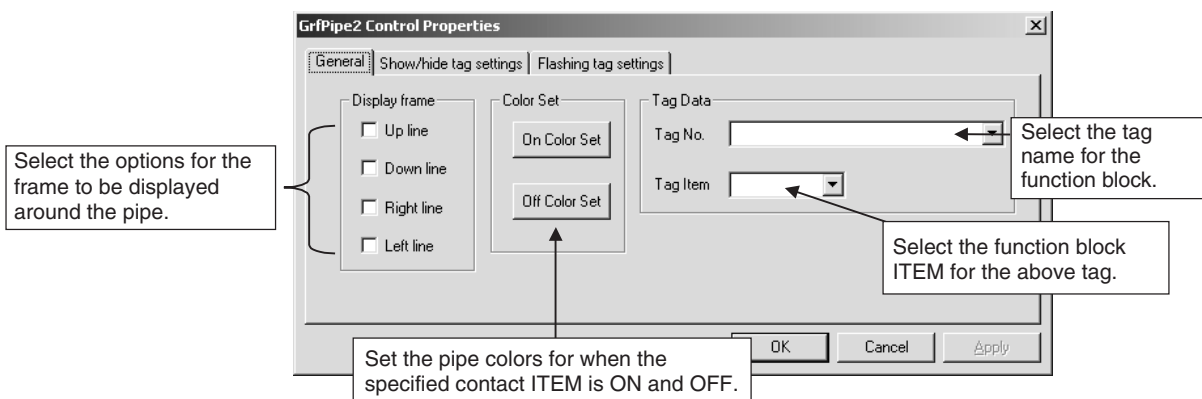
### Pipe ( )

The color is changed according to the ON/OFF status of the specified tag.



### Setting Method

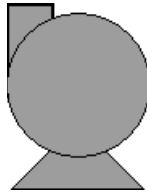
#### General Tab



For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

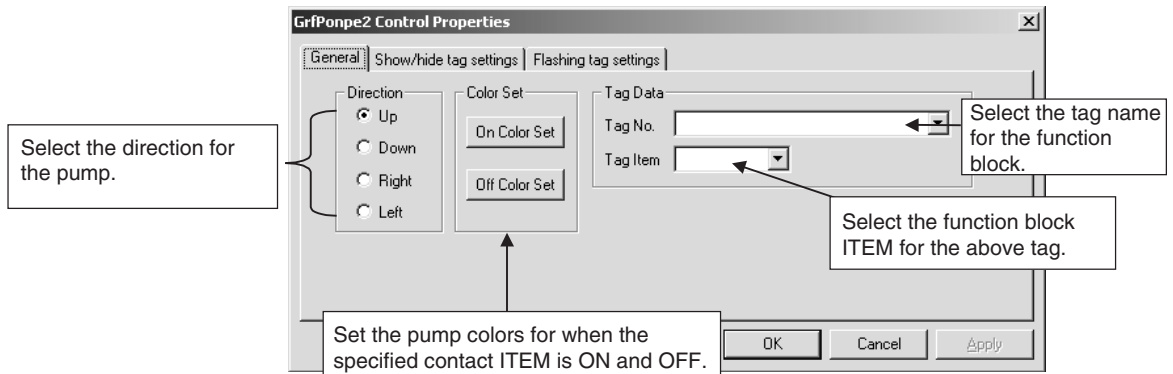
Pump ()

The color is changed according to the ON/OFF status of the specified tag.



### Setting Method

#### General Tab



For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

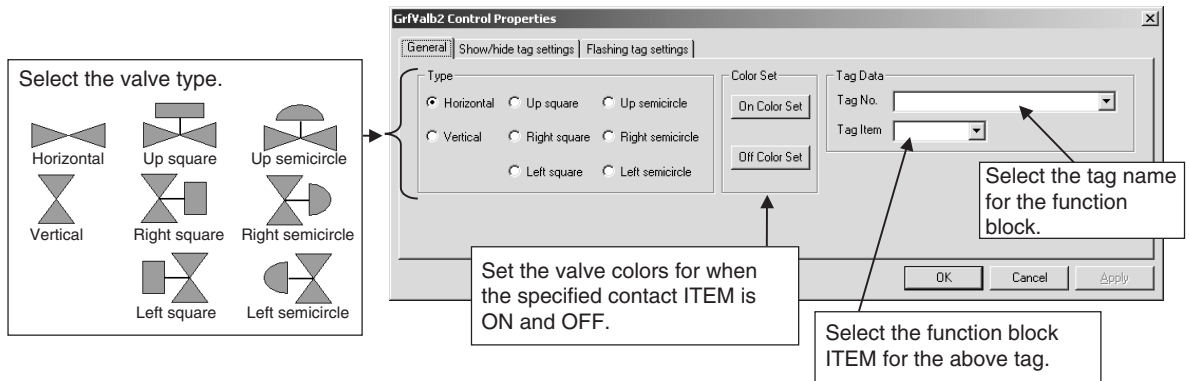
Valve ()

The color is changed according to the ON/OFF status of the specified tag.



### Setting Method

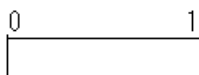
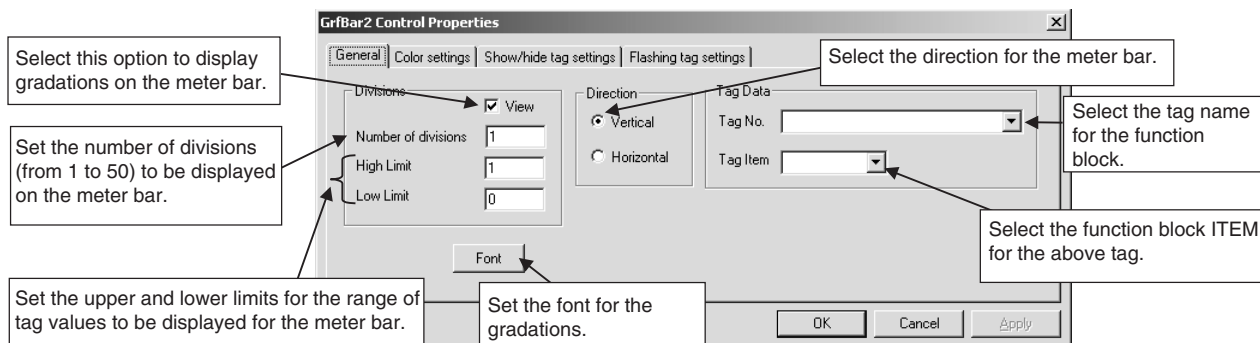
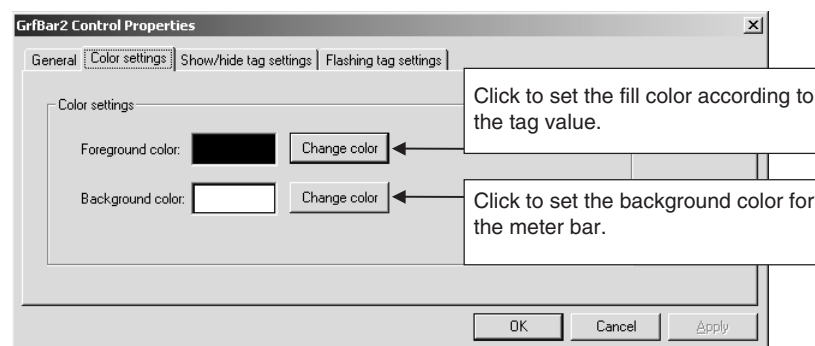
#### General Tab



For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

**Meter Bar** ()

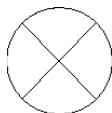
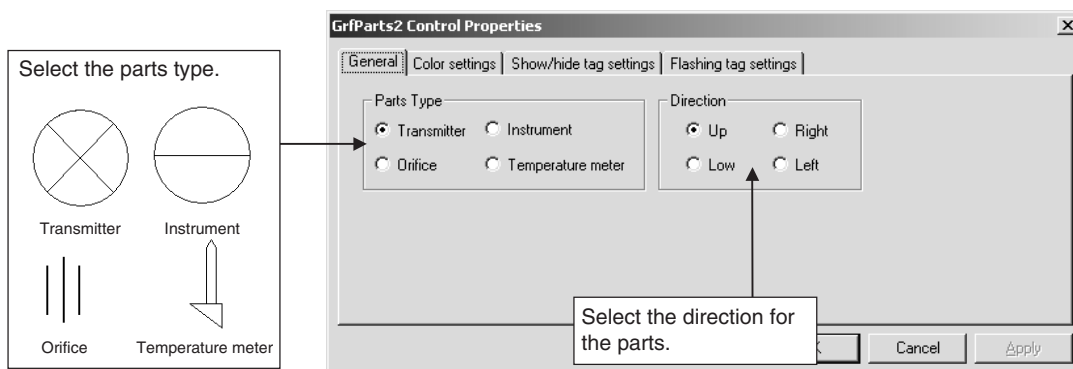
The meter bar is filled at the upper and lower limit ratio according to the value of the specified tag.

**Setting Method****General Tab****Color Settings Tab**

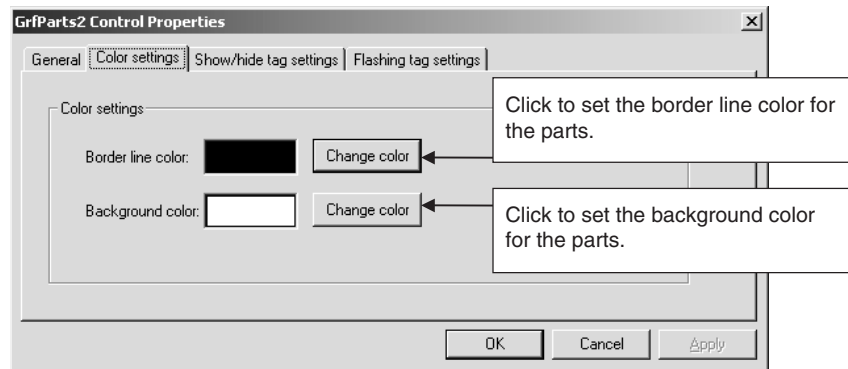
For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

**Parts** ()

These are image objects used for screens such as Control Screens.

**Setting Method****General Tab**

### Color Settings Tag



For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.



**Switch** ()

The switch operates as shown below, depending on the type of switch.



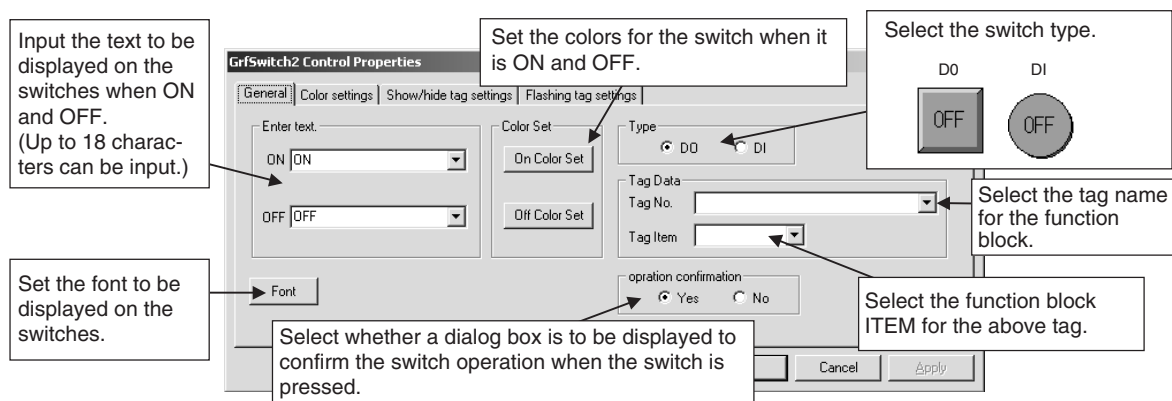
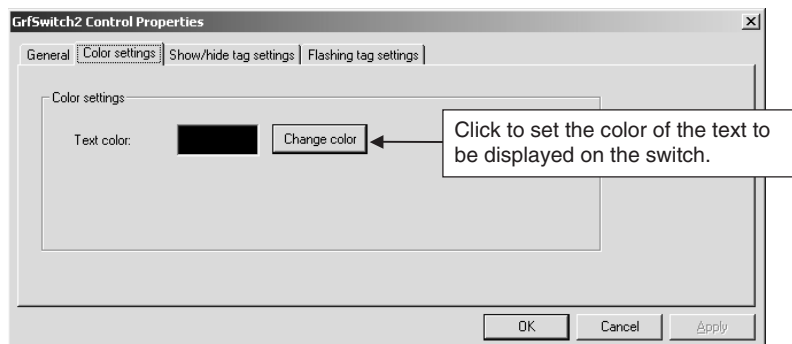
(Type: DO)

Clicking this switch turns the Loop Controller tag ON or OFF.



(Type: DI)

Displays the ON/OFF status of the Loop Controller tag.

**Setting Method****General Tab****Color Settings Tab**

For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

Data (<sup>1</sup><sub>23</sub>)

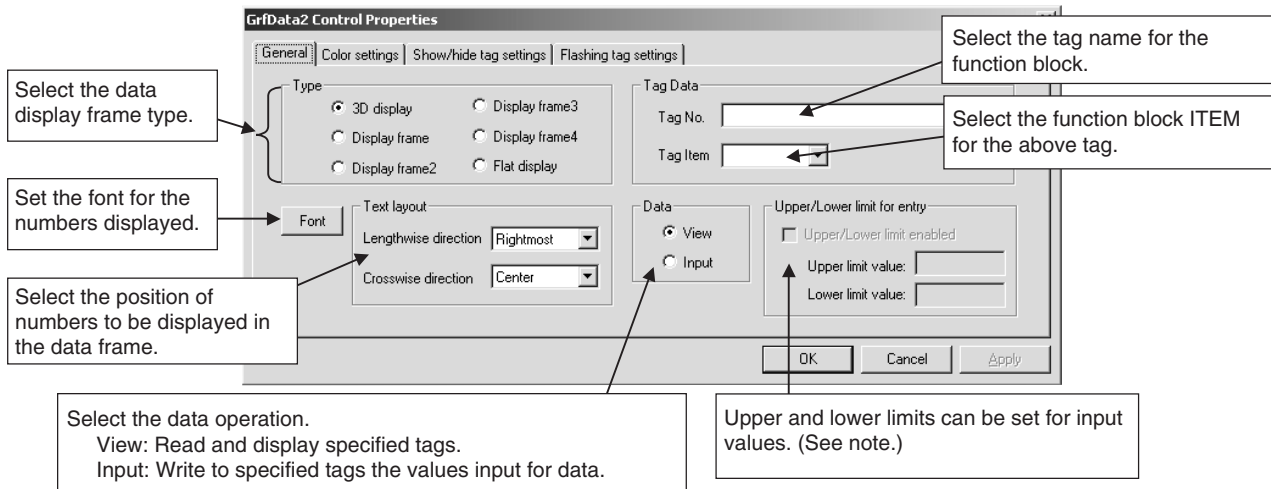
Executes the following operations for specified tag (analog ITEM) values.

- Data view: Reads and displays specified tag values.
- Data input: Writes to specified tags the values input for data.

300.0

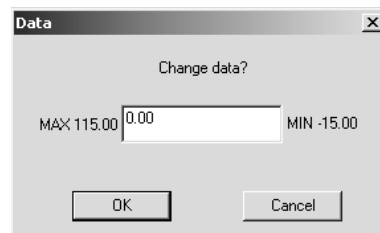
### Setting Method

#### General Tab

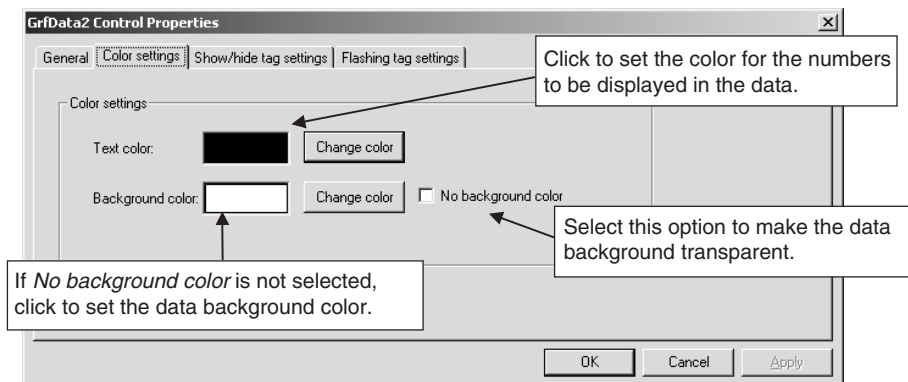


#### Note Upper and Lower Limits for Inputs

1. Upper and lower limits can be set once the following items have been set.  
 Select *Input* for the *Data* operation.  
 Select *Tag (Analog ITEM)* for *Tag Data*.
2. The upper and lower limits are automatically displayed according to the tag ITEM type selected for *Tag Data*.  
 The upper and lower limits can be changed when inputting numbers directly.
3. Operation when Using Upper and Lower Limits  
 When changing a number, the upper and lower limits are displayed as shown below. If a number exceeding the upper or lower limit is input, a message is displayed and the input is not allowed.



### Color Settings Tab



For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

### Text Box (T)

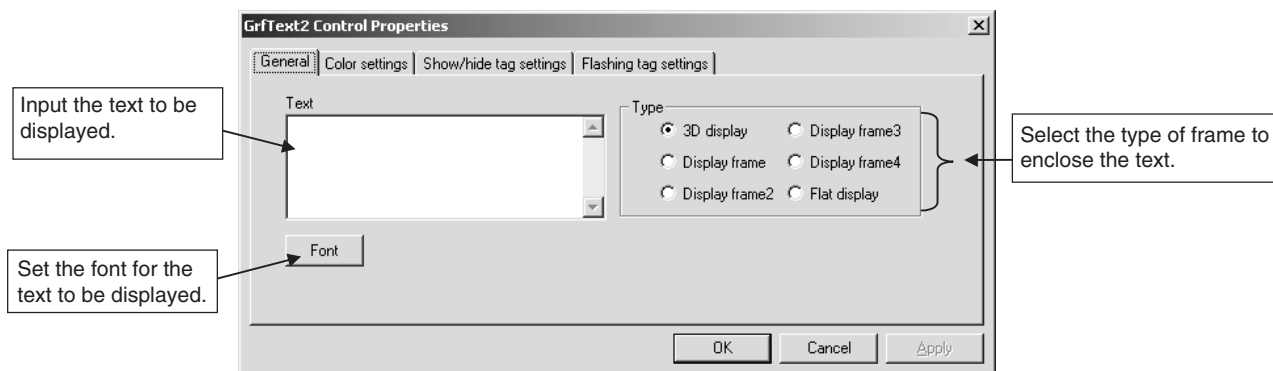
Used to display text input by the user.

Multiple lines can be displayed.

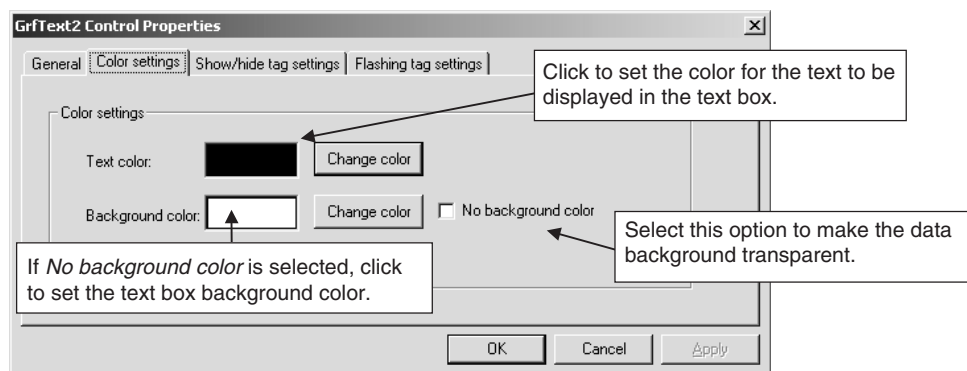
Brewing Tank  
Group A

### Setting Method

#### General Tab



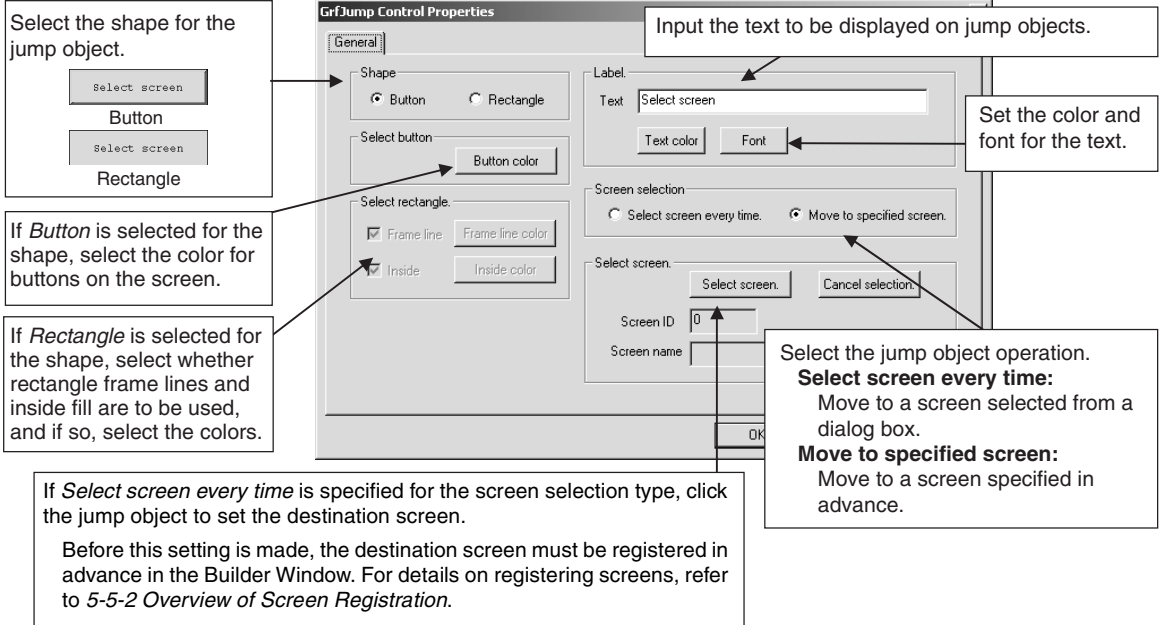
### Color Settings Tab



For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

**Screen Jump** (  )

Used to change the display to a specified screen.

**Setting Method****General Tab**


Select the shape for the jump object.

Button

Rectangle

If *Button* is selected for the shape, select the color for buttons on the screen.

If *Rectangle* is selected for the shape, select whether rectangle frame lines and inside fill are to be used, and if so, select the colors.

If *Select screen every time* is specified for the screen selection type, click the jump object to set the destination screen.

Before this setting is made, the destination screen must be registered in advance in the Builder Window. For details on registering screens, refer to 5-5-2 Overview of Screen Registration.

Input the text to be displayed on jump objects.

Set the color and font for the text.

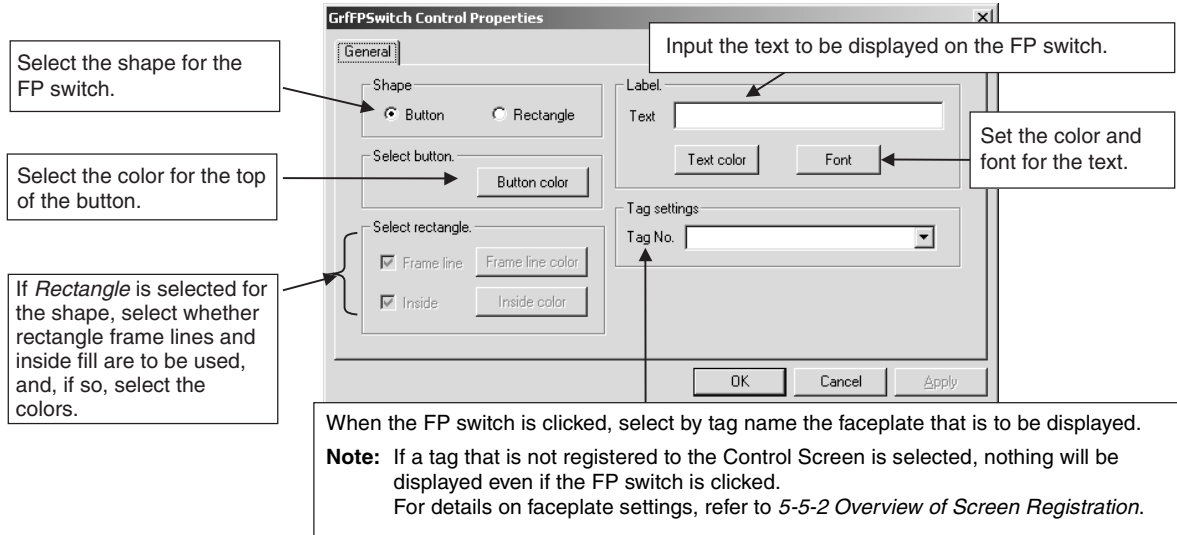
Select the jump object operation.

**Select screen every time:**  
Move to a screen selected from a dialog box.

**Move to specified screen:**  
Move to a screen specified in advance.

**FP Switch** (  )

Used to display specified faceplates as pop-ups on Graphic Screens.

**Setting Method****General Tab**


Select the shape for the FP switch.

Button

Rectangle

Select the color for the top of the button.

If *Rectangle* is selected for the shape, select whether rectangle frame lines and inside fill are to be used, and, if so, select the colors.

Input the text to be displayed on the FP switch.

Set the color and font for the text.

When the FP switch is clicked, select by tag name the faceplate that is to be displayed.

**Note:** If a tag that is not registered to the Control Screen is selected, nothing will be displayed even if the FP switch is clicked.  
For details on faceplate settings, refer to 5-5-2 Overview of Screen Registration.

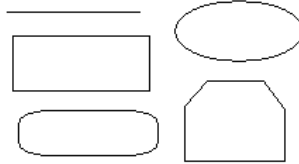
- Note**
1. A maximum of ten faceplates can be simultaneously displayed on Graphic Screens by using FP switches.
  2. All faceplates displayed on a screen will be lost by moving to another screen while the faceplates are being displayed.

## Setting Figures and Images

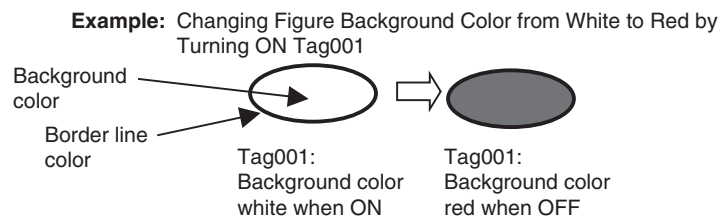
### Setting Figures



This section describes how to set lines, rectangles, rectangles with rounded corners, ellipses, and polygons.



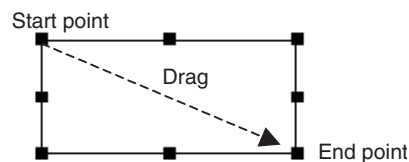
- Note** The figure background color and border line color can be changed using tag values.



### Drawing Method

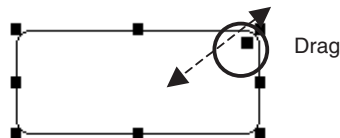
#### Lines, Rectangles, Rectangles with Rounded Corners, and Ellipses

- 1,2,3...**
1. In Object Tool Bar click the icon of the figure to be drawn, or select **Insert Figure/Image** and then **Line**, **Rectangle**, **Round rect** or **Ellipse**.
  2. Click the start point and drag to the end point.



**Note** **Adjusting Rectangles with Rounded Corners**

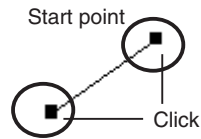
The angle of a corner in a rectangle with rounded corners can be adjusted by clicking on the point displayed in the upper right-hand corner (■).



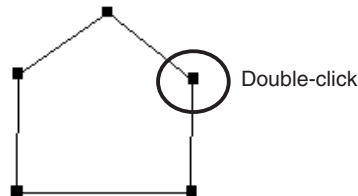
### Polygon

1,2,3...

1. Either click the polygon icon in the Object Tool Bar or select **Insert Figure/Image - Polygon**.
2. Click the end point and then click the next corner.



3. Double-click the end point.



### Setting Method

The settings are described here using a figure (rectangle with rounded corners) as an example.

### Border Line Tab

**Round Rect Property**

Border line | Background color | Show/hide tag settings | Flashing tag settings

Border line: ☒ Yes ☐ None Line width: 1 Line type: Solid Line Corner: 16

Color settings:

☐ Direct color settings:  Color settings

☒ Tag settings:

Tags: Tag001 PV Color/threshold value settings

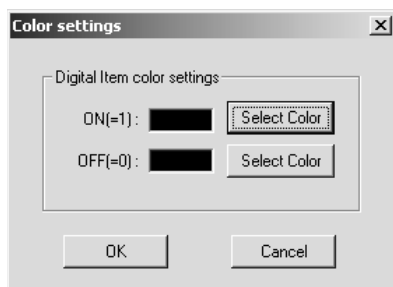
Callouts:

- Select whether border lines are to be used for the figure.
- Select how the border line color is to be displayed.
  - Direct color settings:** The border line color is fixed. The color is directly specified in the *Color settings*.
  - Tag settings:** The border line color is changed according to the tag value.
- Select the tag name for controlling the border line color.
- Select the tag ITEM.
- Set the line width for when the line type is *solid line*.
- Set the type of line to be used for the border lines.
- Set the rounding of the corners.
- Set the condition for the border line color to be displayed. The screen displayed will depend on the tag type (contact ITEM or analog ITEM). (See note.)

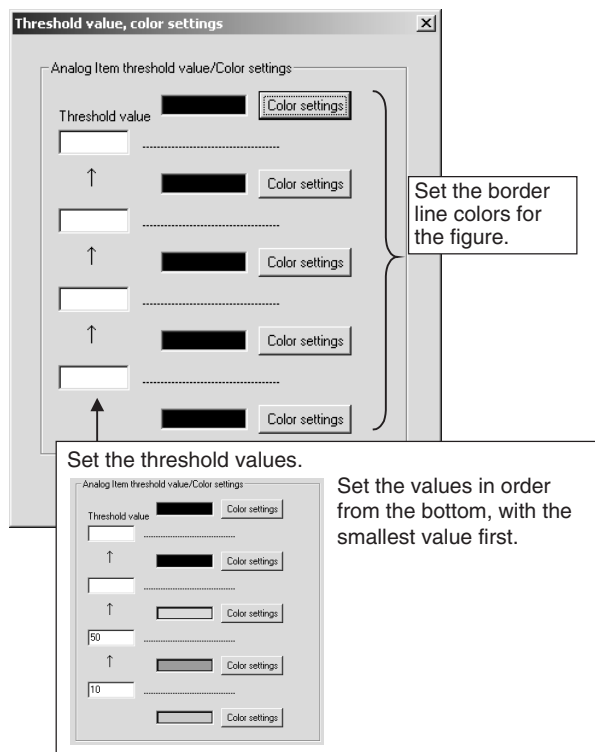
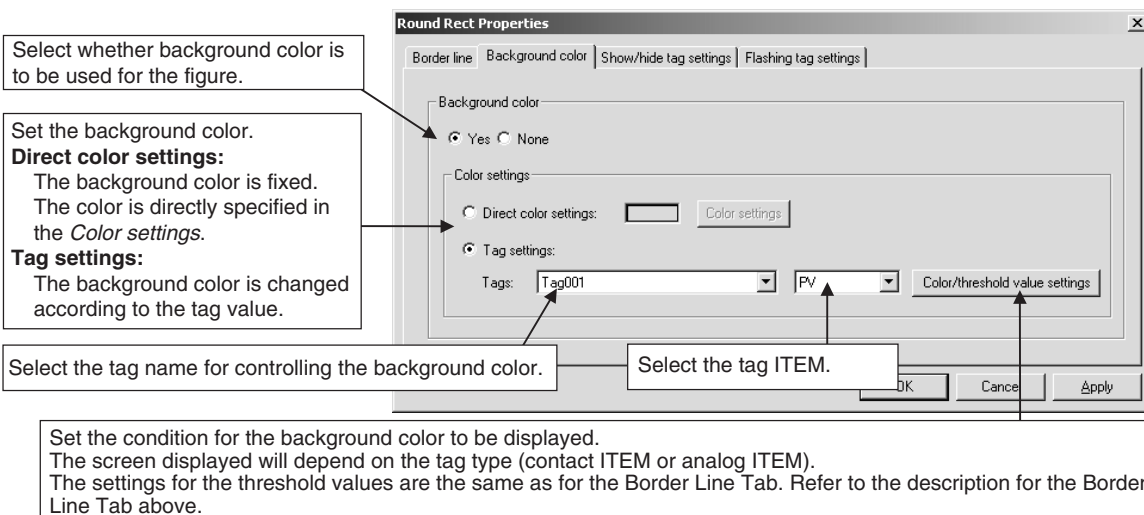
Buttons: OK Cancel Apply

**Note: Setting Threshold Values****Contact ITEM (Digital Item):**

Set the border line colors for when the tag value is ON and OFF.

**Analog ITEM:**

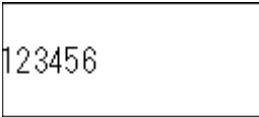
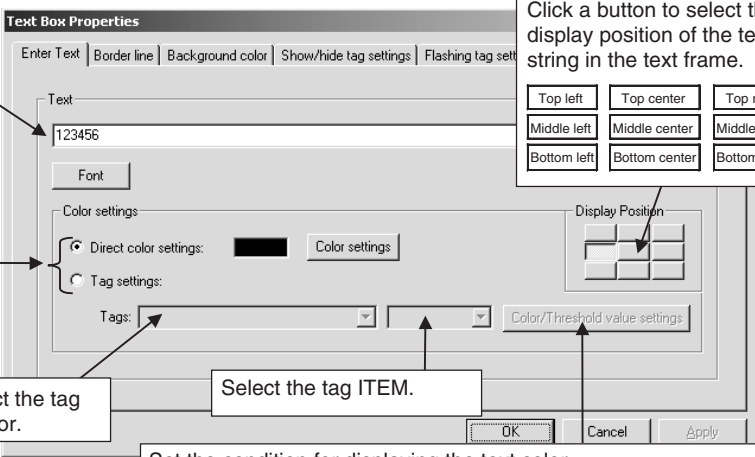
Set the threshold values for changing border line colors.

**Background Color Tab**

For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

Text (  )

Used to display text string that have been input.


**Setting Method****Enter Text Tab**


Input the text string to be displayed (up to 256 characters).

Select the method for displaying the text string.  
**Direct color settings:**  
 The text color is fixed.  
 The color is directly specified in the *Color settings*.  
**Tag settings:**  
 The text color is changed according to the tag value.

If *Tag settings* is selected, select the tag name for controlling the text color.

Select the tag ITEM.

Set the condition for displaying the text color.  
 The screen displayed will depend on the tag type (contact ITEM or analog ITEM).  
 The settings for the threshold values are the same as for the Border Line Tab. Refer to the description for the Border Line Tab above.

Click a button to select the display position of the text string in the text frame.

|             |               |              |
|-------------|---------------|--------------|
| Top left    | Top center    | Top right    |
| Middle left | Middle center | Middle right |
| Bottom left | Bottom center | Bottom right |

**Border Line Tab**

Refer to the description above of the setting method for the Borderline Tab.

**Background Color Tab**

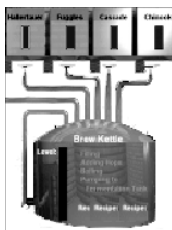
Refer to the description above of the setting method for the Background Color Tab.

For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.



## Images ( )

Image files in BMP (bit map) or JPG format can be displayed as graphic images.



### Setting Method

#### Border Line Tab

Select whether a border line is to be placed around the image.

Select the method for displaying the text string.

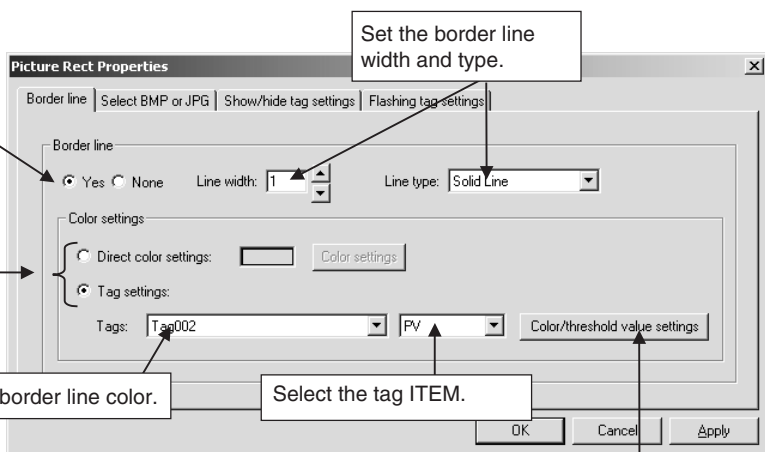
##### Direct color settings:

The border line color is fixed.  
The color is directly specified in the *Color settings*.

##### Tag settings:

The border line color is changed according to the tag value.

Select the tag name for controlling the border line color.



Set the condition for the border line color to be displayed.

The screen displayed will depend on the tag type (contact ITEM or analog ITEM).

The settings for the threshold values are the same as for the Border Line Tab. Refer to the description for the Border Line Tab above.

#### Select BMP or JPG Tab

Select the method for displaying the text string.

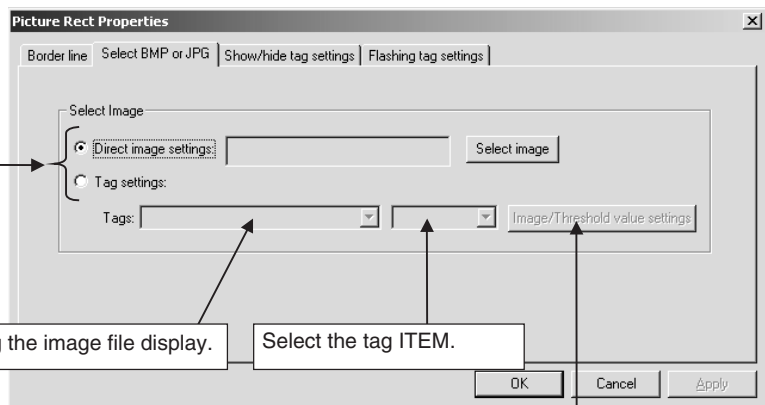
##### Direct image settings

Displays one image file only.  
The image file is directly specified in the *Image selection*.

##### Tag settings:

The image file displayed is changed according to the tag value.

Select the tag name for controlling the image file display.

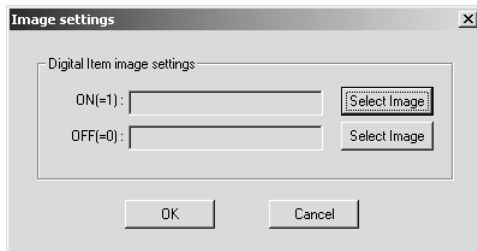


Set the condition for multiple image files to be displayed.

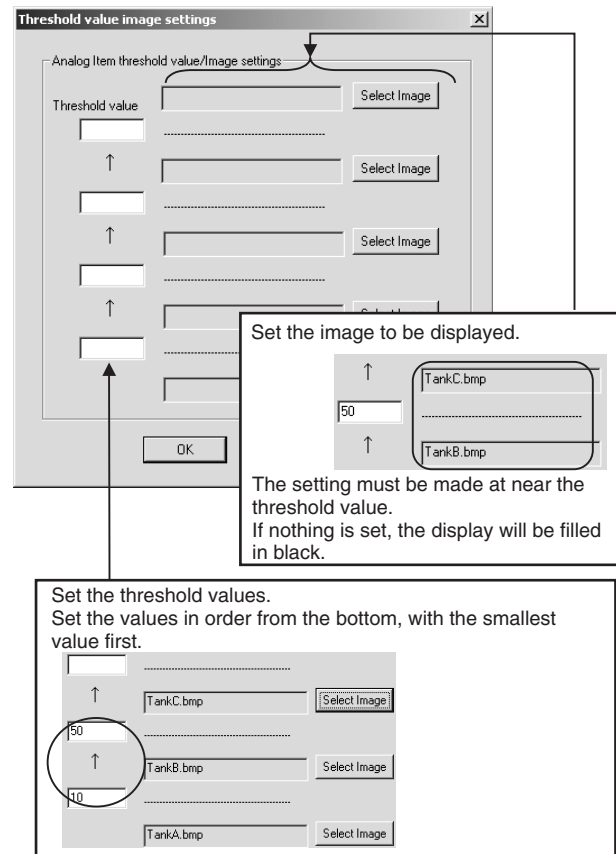
The screen displayed will depend on the tag type (contact ITEM or analog ITEM). (See note.)

**Note: Setting Threshold Values****Contact ITEM:**

Set the image files to be displayed when the tag value is ON and OFF.

**Analog ITEM:**

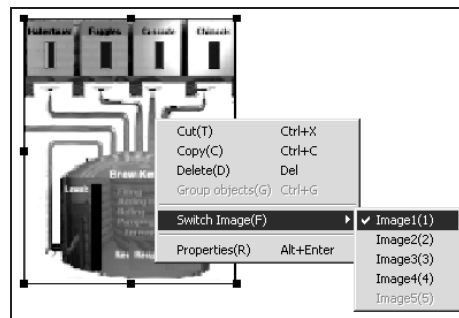
Set the threshold values for changing the image file displayed.



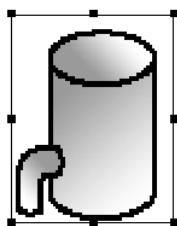
For details on the Show/Hide Tag Settings Tab and the Flashing Tag Settings Tab, refer to *Common Settings for Graphic Objects* in this section.

**Note** When specifying multiple image files to be displayed for an image object, the following procedure can be used to check the contents of the image files.

1. Double-click the image object to select it.
2. Right-click and select **Switch Image** and then **Image1(1)** to **Image4(4)** from the menu.



3. The image file selected from the menu will be displayed for the image object.



The following procedure can also be used to display an image on the Graphic Screen.

1. Copy the image using another drawing program and then select **Edit - Paste** (Ctrl+V) in the Graphic Screen Creation Window to paste the image.
2. Select **Edit - Create/Paste Objects** in the Graphic Screen Creation Window, and then specify and insert the image file.

## Common Settings for Graphic Objects

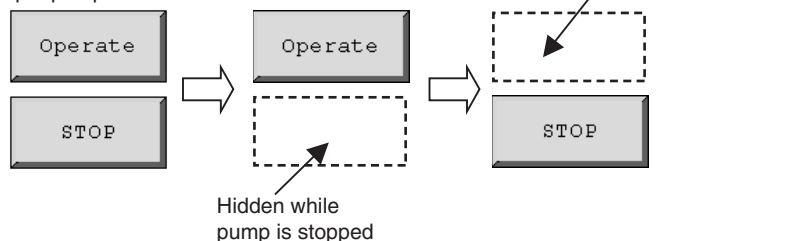
### Showing or Hiding Tag Settings

This section describes the settings made in common for graphic objects.

Graphic object displays are deleted according to tag values.

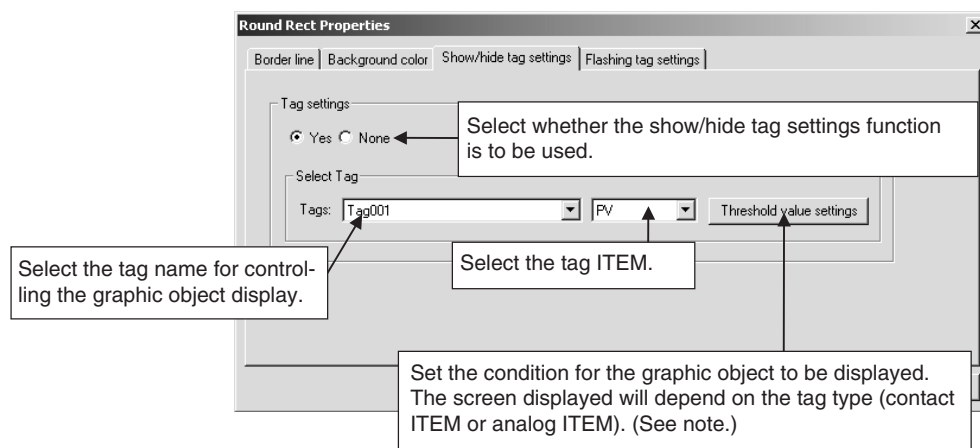
#### Example: Displaying Usable Switches Only

Switches to start and stop a pump



#### Example: Figure (Rectangle with Rounded Corners)

#### Show/Hide Tag Settings Tab

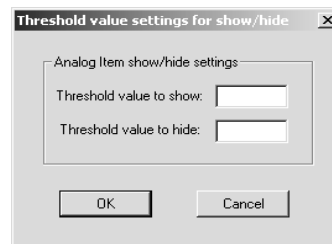


**Note: Setting Threshold Values****Contact ITEM (Digital Item):**

Select whether the graphic object is to be displayed when the tag value is ON or OFF.

**Analog ITEM:**

Set the threshold values for displaying and hiding the graphic object.

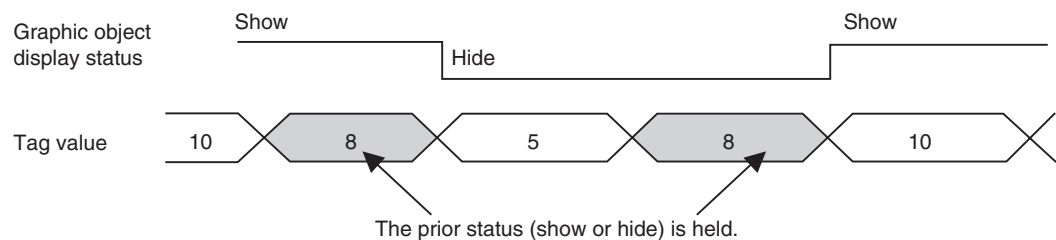
**Note Example 1: Show Threshold Value 6 and Hide Threshold Value 5**

Show when the tag value is 6 or higher, and hide when it is 5 or lower.

**Example 2: Show Threshold Value 10 and Hide Threshold Value 5**

Show when the tag value is 10 or higher, and hide when it is 5 or lower.

The prior status is held as shown below when the tag value is from 9 to 6.

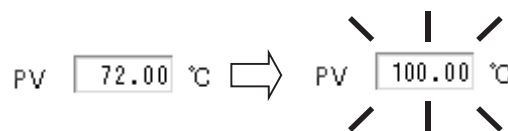
**Example 3: Show Threshold Value 5 and Hide Threshold Value 5**

Show when the threshold value is 5 or higher, and hide when it is less than 5.

**Flashing Tag Settings**

A graphic object is made to flash according to the tag value.

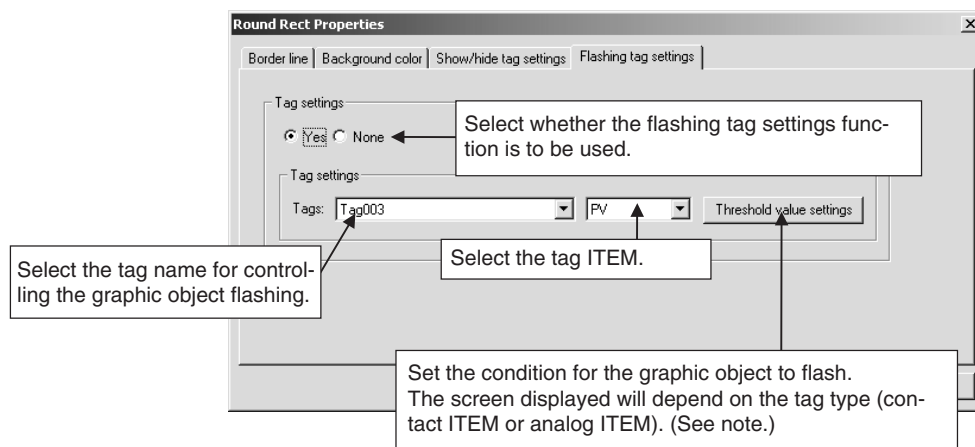
**Example:** A Numeric Object That Flashes When a Particular Temperature (100°C) Is Reached



The numeric object flashes when the temperature reaches 100°C.

**Example:** Figure (Rectangle with Rounded Corners)

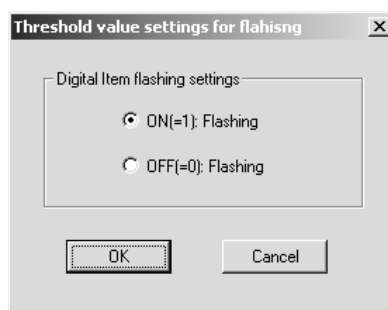
### Flashing Tag Settings Tab



### Note: Setting Threshold Values

#### Contact ITEM (Digital Item):

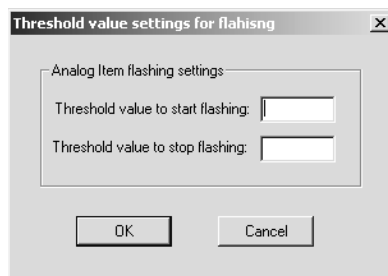
Select whether the graphic object display is to flash when the tag value is ON or OFF.



#### Analog ITEM:

Set the threshold values for starting and stopping the graphic object flashing. The settings for the threshold values are the same as for showing and hiding tag settings.

Refer to the description for the *Showing or Hiding Tag Settings* above.



### 5-4-7 Grouping Graphic Objects

Multiple graphic objects can be grouped so that they will be treated as a single graphic object. (See note.)

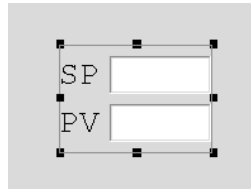
Grouped graphic objects can be saved in individual files.

The grouped objects then can be imported and used in other Graphic Screens by reading the saved files.

**Note** Groups cannot include jump objects and FP switch objects.

#### Grouping Graphic Objects

- 1,2,3...**
1. In the Graphic Builder Window, select the graphic objects that are to be grouped.
  2. Right-click and select **Group Objects** from the pop-up menu. (Alternatively, select **Group Objects** from the Edit Menu.)  
The selected graphic objects will be grouped and the color of the lines in the frame will change to green.



#### Changing the Settings for Individual Graphic Objects in a Group

- 1,2,3...**
1. Select the grouped graphic object.
  2. Within the grouped graphic object, double-click the individual object for which the settings are to be changed.
  3. Right-click and select **Properties** from the pop-up menu.  
The settings for individual graphic objects can then be changed as shown below.

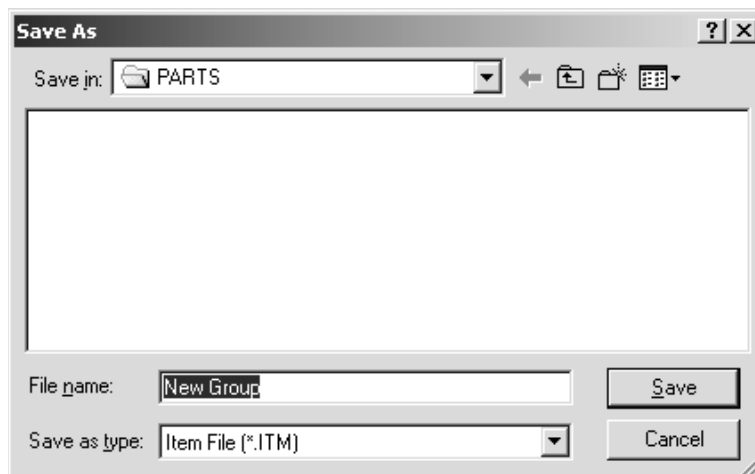


**Note** Individual graphic objects within a group cannot be moved to another display position, deleted, resized, or copied.  
To perform any of these operations, first use the following procedure to ungroup the graphic objects.

1. Double-click the grouped graphic object to select it.
2. Right-click and select **Ungroup Objects** from the pop-up menu.

### Saving Grouped Graphic Objects

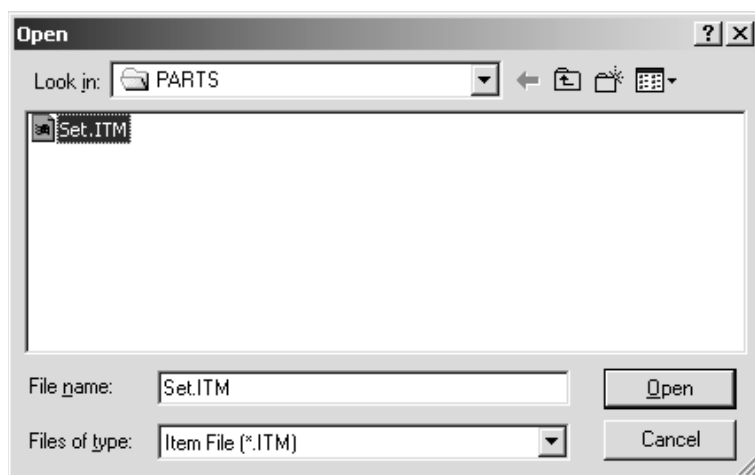
- 1,2,3...
1. With the grouped object selected, select **Save Group File** from the File Menu.
  2. The Save As Dialog Box will be displayed.  
Input the file name and click the **Save** Button.  
The grouped graphic object data will be saved (file name extension: ITM).



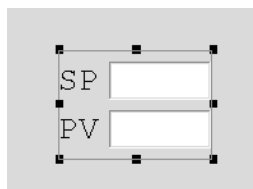
**Note** Settings related to tags set for individual graphic objects will not be saved. Set the tags as required when reading and using grouped graphic objects that have been saved.

### Loading Grouped Graphic Objects

- 1,2,3...
1. Select **Load Group File** from the File Menu.
  2. The Open Dialog Box will be displayed. Select the group file that is to be read, and click the **Open** Button.



3. The grouped graphic object will be loaded to the Graphic Screen.



4. Tag settings are not saved for grouped graphic objects in the files. Right-click and select **Properties** to set the graphic object properties individually.



## 5-5 Screen Configuration

This section explains how to perform operations to configure the CX-Process Monitor Plus Screen.

Use the CRT Builder to configure the following screens.

Overview Screen

- Control Screen
- Trend Screen
- Batch Trend Screen
- Segment Program 2 Screen
- Graphic Screen (You must create this screen beforehand. Refer to *5-3 System Monitor Settings*.)
- Annunciator Screen

Alarm Log Screen

Operation Guide Screen

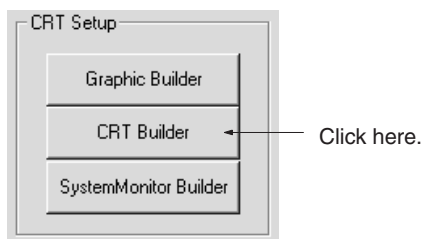
**Note** The Tuning Screen is created automatically when the Control Screen is registered.

When all screens have been configured, save their settings.

### 5-5-1 CRT Builder Functions

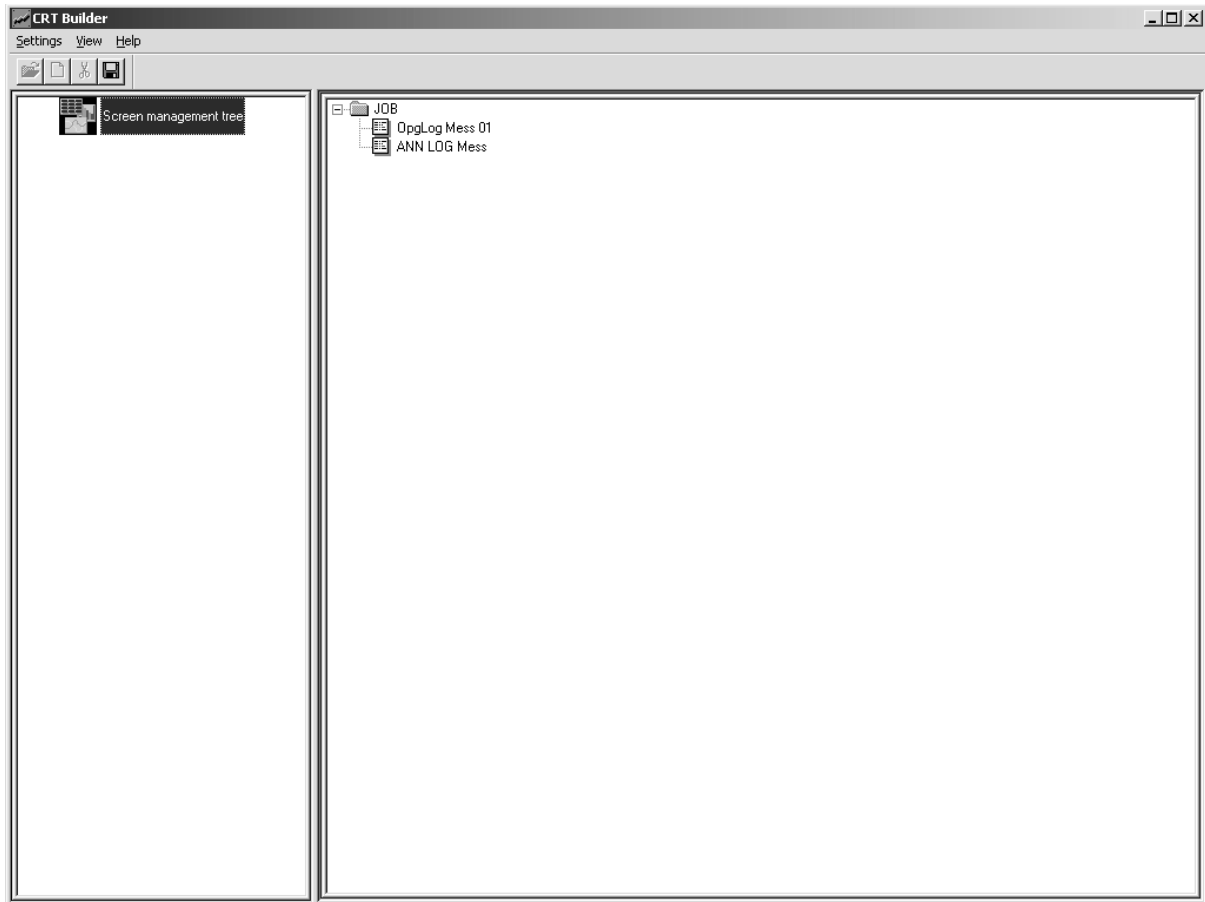
#### Starting the CRT Builder

In the Setup Dialog Box, click the **CRT Builder** Button.



The CRT Builder Window will be displayed.





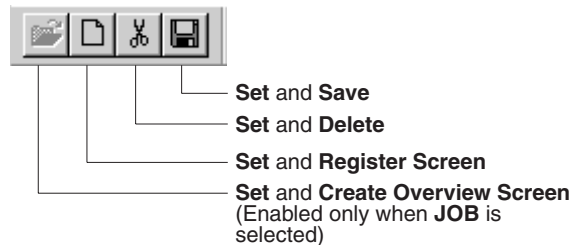
### CRT Builder Menu

The CRT Builder menu contains the following functions.

| Menu     | Commands               | Function                                                                                                             |
|----------|------------------------|----------------------------------------------------------------------------------------------------------------------|
| Settings | Create Overview Screen | Add a new Overview Screen based on the current Overview Screen.                                                      |
|          | Register Screen        | Set and register screen items.<br>Enabled only when you have selected screen items using the Screen Management Tree. |
|          | Delete                 | Deletes registered screen items.                                                                                     |
|          | Save                   | Saves setting in CRT Builder.                                                                                        |
|          | Exit                   | Ends the application.                                                                                                |
| View     | Toolbars               | Select whether to display or hide toolbars.                                                                          |
| Help     | About CRT Builder      | Display the CRT Builder version information.                                                                         |

### CRT Builder Toolbar

The CRT Builder toolbar contains the following functions.



## 5-5-2 Overview of Screen Registration

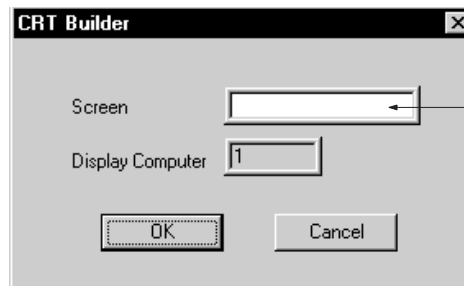
This section explains how to register the Overview Screen and set and register the sub-elements of the Overview Screen given below.

- Control Screen
- Trend Screen
- Batch Trend Screen
- Segment Program 2 Screen
- Graphic Screen (You must create the Graphic Screen beforehand. Refer to 5-4 *Creating Graphic Screens*.)
- Annunciator Screen

**Note** The Tuning Screen is created automatically when the tag name is allocated.

### Registering the Overview Screen

- 1,2,3...**
1. Start CRT Builder, and then in the CRT Builder's Screen Management Tree, select **JOB**, and then select **Setting**, and then select **Create Overview Screen**. The CRT Builder Dialog Box will be displayed.

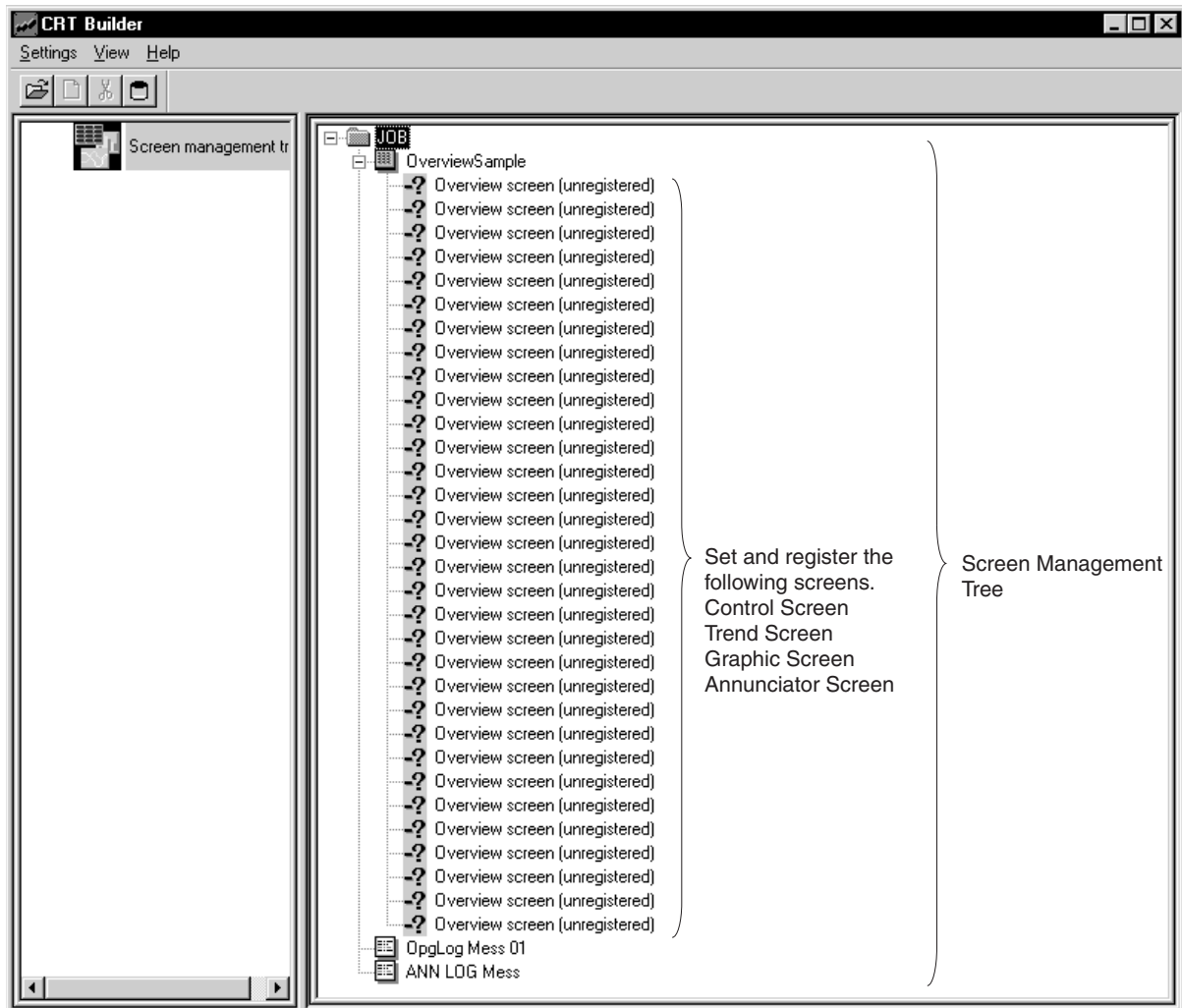


Enter the name of the Overview Screen using 8 full-width characters or 16 half-width characters. Make sure to enter a name for the Overview Screen.

**Note** Make sure to enter a name for the Overview Screen. If you do not enter a name, you will be unable to move to the Overview Screen.

2. Enter a screen name, and then click the **OK** Button.

The Overview Screen will be registered, and the name of the screen you entered will be displayed in the Screen Management Tree.



3. Select the screen item, and then select **Set**, and then select **Register Screen** (or double-click the screen item), to set and register the screens.

Settings differ for each screen item. Refer to later in this manual for how to set each screen.

### Setting the Screen Tag Names

To specify the Function Block data within the Loop Control Unit/Board, specify a tag name when registering each screen.

**Note** To specify the tag name, you must create a Monitor Tag file (select **Execute**, and then select **Compile Monitor Tags**) using CX-Process Tool (on Windows NT). If you do not create a tag file for Monitor Plus, you cannot specify tag names from CX-Process Monitor Plus.

There are two types of tag names:

- 1,2,3... 1. Tag names for function blocks. If specifying tag names for Function Blocks, specify the function block ITEMS using tag ITEM. (See note.)

**Note** Tag ITEM is a fixed name allocated beforehand to specific ITEMS (PV, SP, and MV, etc.) for a specific Function Block (Control Block, and part of the Operation Block). Refer to *Appendix A Reading/Writing Function Block ITEMS* for details.

2. Tag names for analog ITEMS and contact ITEMS.

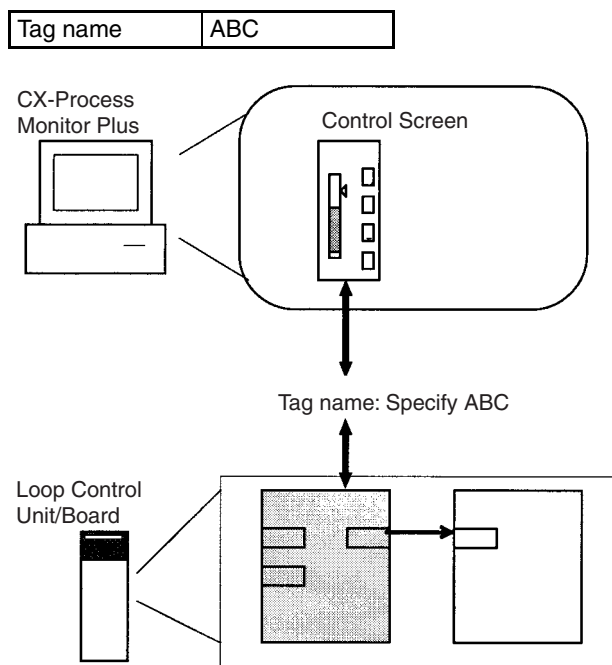
Refer to the following table for the relation between each screen and the tag name/tag ITEM given above.

| Screen                   | 1                             |                                  | 2                                            |
|--------------------------|-------------------------------|----------------------------------|----------------------------------------------|
|                          | tag names for function blocks | Tag ITEMS for the function block | tag names for analog ITEMS and contact ITEMS |
| Control Screen           | Can be specified              | ---                              | Can be specified                             |
| Trend Screen             | Can be specified              | Can be specified                 | Can be specified                             |
| Batch Trend Screen       | Can be specified              | Can be specified                 | Can be specified                             |
| Segment Program 2 Screen | Can be specified              | Can be specified                 | Can be specified (See note.)                 |
| Graphic Screen           | Can be specified              | Can be specified                 | Can be specified                             |
| Annunciator Screen       | Can be specified              | Can be specified                 | Can be specified                             |
| Operation Guide Screen   | Can be specified              | Can be specified                 | Can be specified                             |
| Alarm Log Screen         | Can be specified              | Can be specified                 | Can be specified                             |

**Note** Only optional tags can be set.

**Example 1**

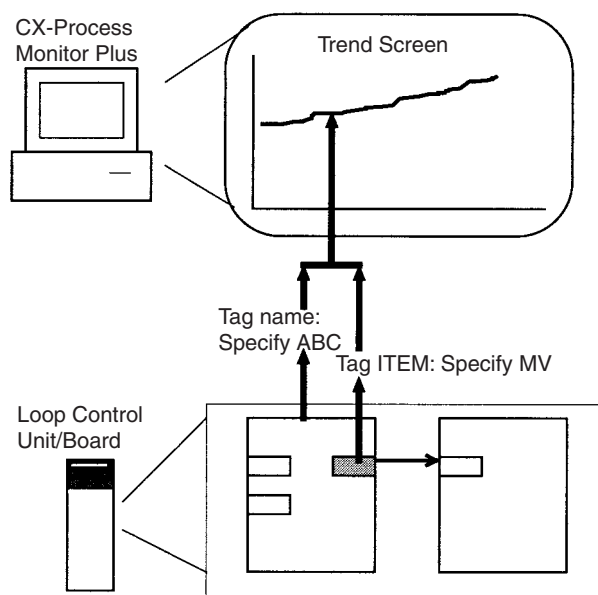
Specifying the Function Block for the Control Screen as Function Block with tag name “ABC.”



**Example 2**

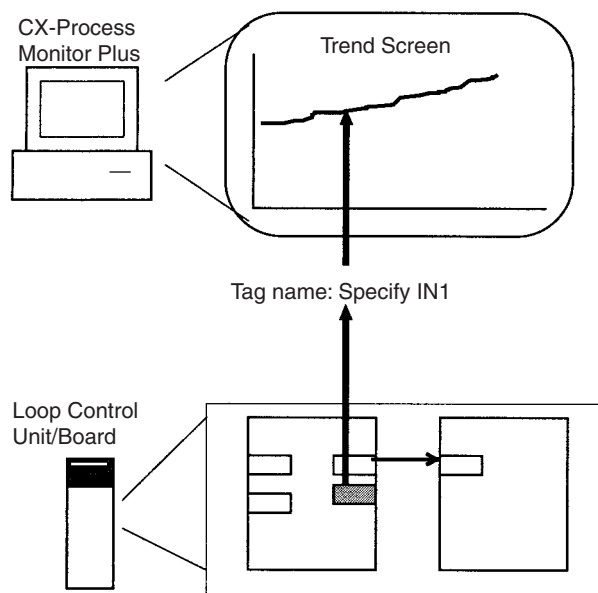
Specifying the analog ITEM for the Trend Screen trends as Function Block Tag ITEM “MV” for tag name “ABC.”

|          |     |
|----------|-----|
| Tag name | ABC |
| Tag ITEM | MV  |

**Example 3**

Specifying the Trend Screen trend as analog ITEM for tag name "IN1."

|          |     |
|----------|-----|
| Tag name | IN1 |
|----------|-----|

**Changing Monitor Tag File Paths**

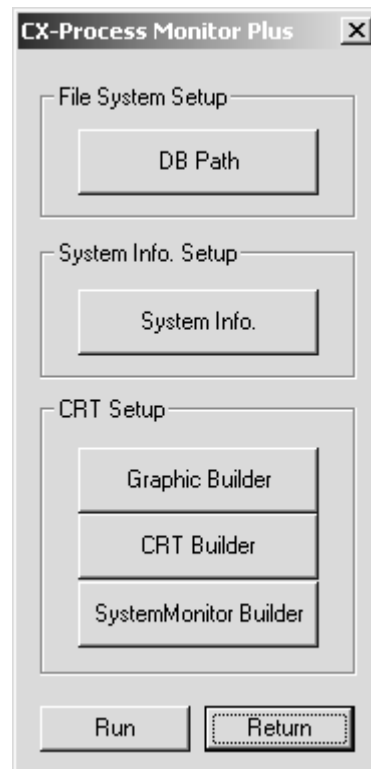
Monitor Tag files are saved to the following directory with a fixed file name when the **Run** Button in the Main Window is clicked.

Directory: Omron/CX-Process Monitor Plus/db (The underlined part is the directory in which the CX-Process Monitor Plus is installed.)

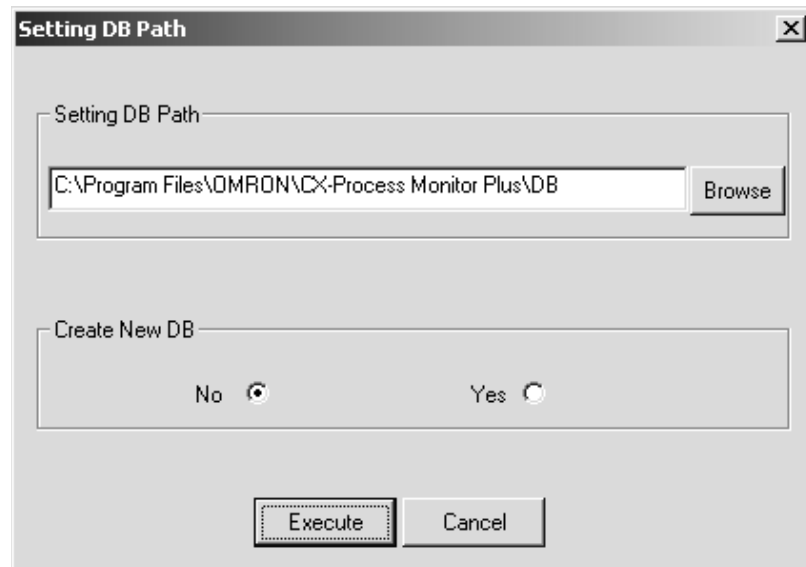
File names: mtagmst and mtagsubmst

It is possible to create several tag file for Monitor Plus and switch between them by changing the application path. In this way, by creating new Monitor Tag files in a directory different from the default one, and changing the application path to this directory, the Monitor Tag files that are used by CX-Process Monitor Plus can be changed. The procedure is as follows:

- 1,2,3...
1. In the Main Window, click the **Setup** Button. A box for entering the password will be displayed.
  2. Enter the password and click the **OK** Button. The following Setup dialog Box will be displayed.



3. Click the **DB Path** Button. The following dialog box will be displayed.



4. The current path setting is displayed in the Setting DB Path field. (The default setting, as in the above example, is Omron/CX-Process Monitor Plus/db.)
5. Click the **Browse** Button and specify the new path in the dialog box that is displayed.

6. Select **Yes** in the Create New DB field and click the **Execute** Button. When the **Run** Button is clicked in the Main Window, initialized Monitor Tag files will be created at the specified path, and the application path will change to the specified one (i.e., the Monitor Tag files used by CX-Process Monitor Plus will change to the newly created ones).

**Note** (a) Several files are created. Therefore, if a folder that is used only for Monitor Tag files is not specified, the Monitor Tag files will be created in the same folder as other files.

- (b) Empty files are created when **Yes** is selected in the Create New DB field. Therefore, Monitor Plus must be restarted by selecting **Execute - Output Tag File - Monitor Plus Tag** from CX-Process Tool.

- (c) Some time is required until the new DB is created.

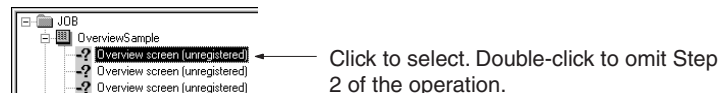
To return the Monitor Tag files that are use to the ones at the original path, select **No** in the Create New DB field and click the **Execute** Button. The application path will change to the original one (i.e., the files that CX-Process Monitor Plus uses will change to the ones corresponding to the original path.) If, however, there are no Monitor Tag files at the specified path, an error will occur when the monitor process is started (i.e., when the **Run** Button is clicked in the Main Window or in the Setup Dialog Box).

**Note** Specifying **No** in the Create New DB field is used to return the application path to the original one after it has been changed by specifying **Yes** in the Create New DB field.

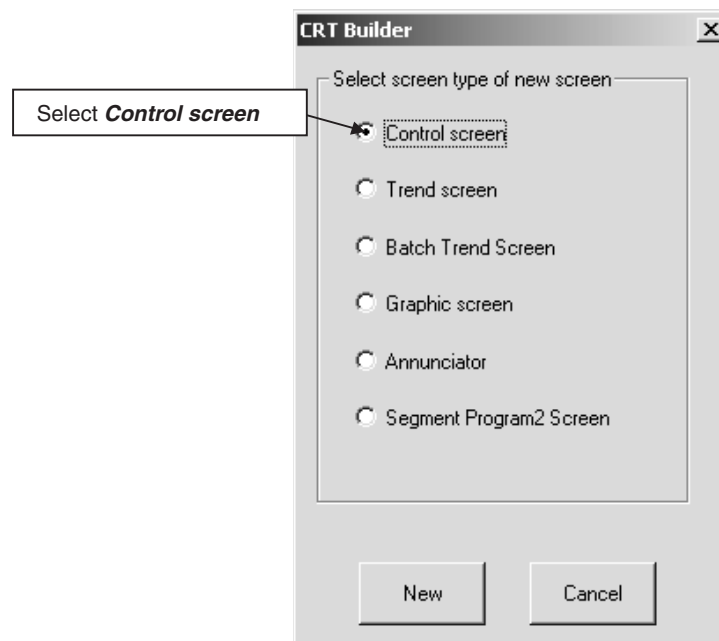
## Registering Control Screens

1,2,3...

1. Select **Screen** in the Overview Screen sub-elements using Screen Management Tree in CRT Builder.



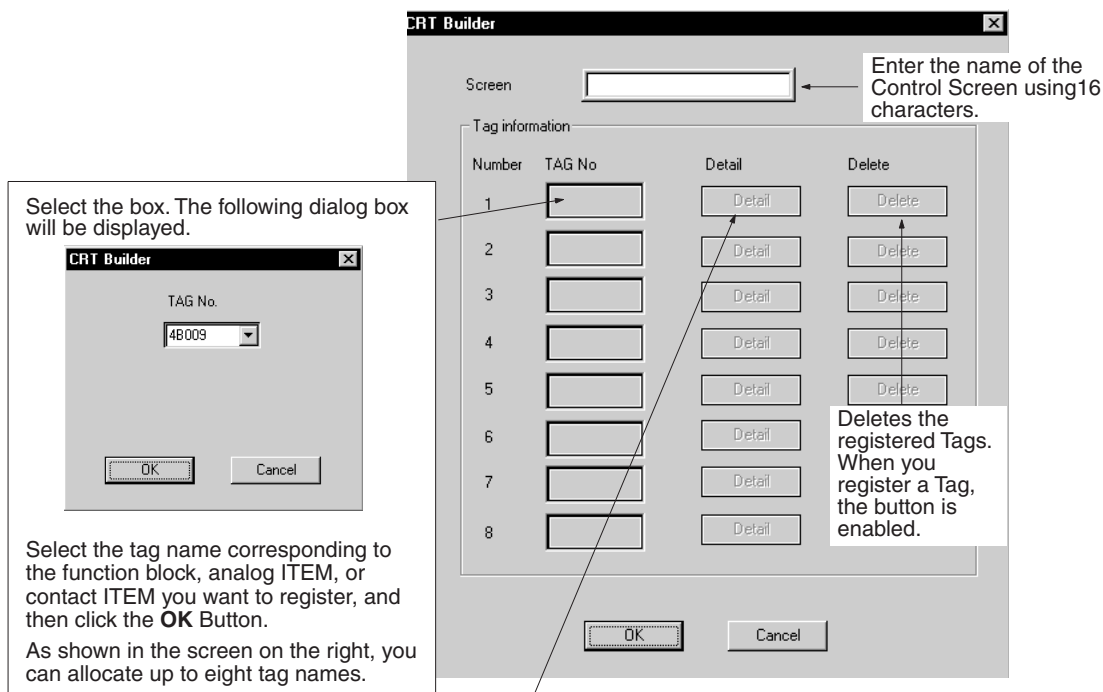
2. From the **Settings** menu, select **Register Screen**, or double-click **Screen**. The following dialog box will be displayed.



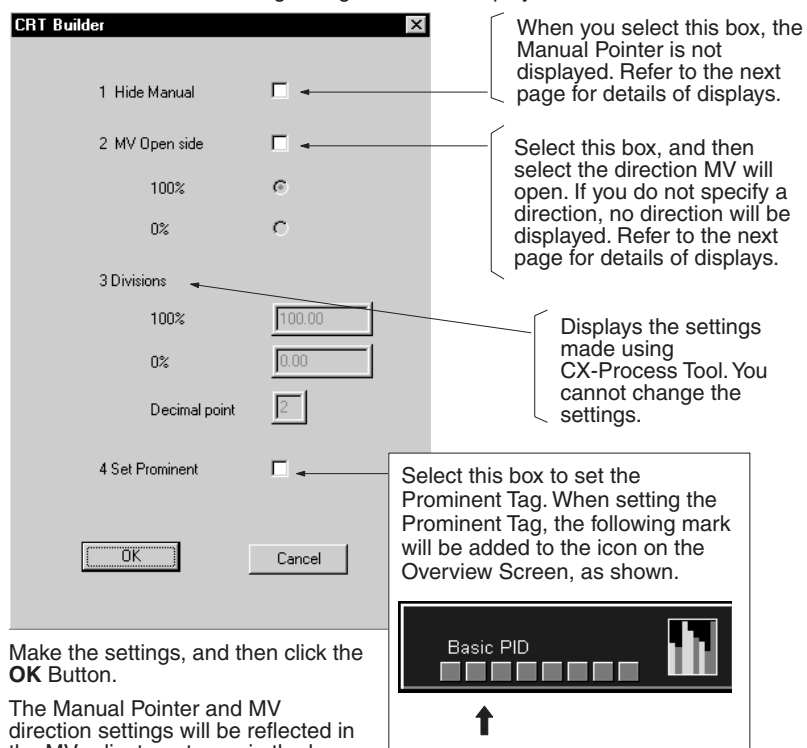
3. Select **Control screen**, and then click the **New** Button.

The following dialog box will be displayed.

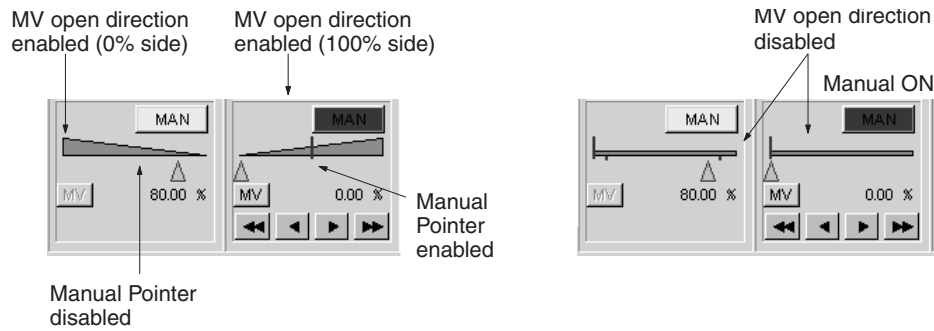
You can register up to eight function blocks in the Control Screen. Specify the function blocks using tag names.



When you select a tag name, the Details Button is enabled. Select the box. The following dialog box will be displayed.

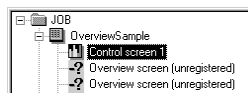




**MV Adjustment Area Display in the Lower Part of the Instrument Diagram**

4. Enter the Screen Name, set the Tag No. and Detailed Settings, then click the **OK** Button.

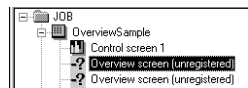
The Control Screen will be registered, and the Screen Name you have entered will be displayed on the Screen Management Tree.

**Registering Trend Screens**

You can register up to 60 Realtime Trend Screens, and up to 120 Historical Trend Screens.

**1,2,3...**

1. Select the Overview Screen's sub-element **Screen** in the CRT Builder's Screen Management Tree.



Click to select. Double-click to omit Step 2 of the operation.

2. In the **Settings** Menu, select **Register Screen**, or double-click **Screen**.  
The dialog box shown in Step 2 of the preceding section, Control Screen Registration, will be displayed.
3. Select the Trend Screen, and then click the **New** Button.

The following dialog box will appear.

You can register a maximum to eight analog ITEMS (PV, SP, MV, or other analog signals), or eight contact ITEMS in the Trend Screen. Specify analog ITEMS or contact ITEMS using either a) or b) below.

- a. Tag name and relevant Tag ITEM (either PV, SP, or MV) corresponding to the function block.
- b. The tag name corresponding to the analog ITEM or contact ITEM.

Please check here to enable automatically saving a CSV file. When automatic saving has been enabled, the save period (time), save destination folder, save file name, and browse button will be enabled.

Select the Trend type.

Enter the name of the Overview Screen using 16 characters.

Click the box. The following dialog box will be displayed.

Deletes the registered tags. When you register a tag, the button is enabled.

Tag information

| Number | Tag No. | Tag ITEM | Contact data | Detail Settings | Delete |
|--------|---------|----------|--------------|-----------------|--------|
| 1      | Tag001  | PV       |              | Detail          | Delete |
| 2      |         |          |              |                 |        |
| 3      |         |          |              |                 |        |
| 4      |         |          |              |                 |        |
| 5      |         |          |              |                 |        |
| 6      |         |          |              |                 |        |
| 7      |         |          |              |                 |        |
| 8      |         |          |              |                 |        |

Select a) the tag name for the Function Block (including the analog ITEMS you want to register), or b) the tag name for the for the analog ITEMS or contact ITEMS you want to register. In this example, the tag name for the Function Block for a) has been specified.

As shown in the screen on the right, you can allocate up to eight tag names.

4. Enter the Screen Name, set the **Trend Type**, and then select **Tag No.** When you register the tag name, the dialog box will change as follows:

Select the box. The following dialog box will be displayed.

Select the Tag ITEM corresponding to the analog ITEM you want to register. In this example, Tag ITEM PV" for the Function Block for tag name 4B009 has been selected.

Select the box. The following dialog box will be displayed.

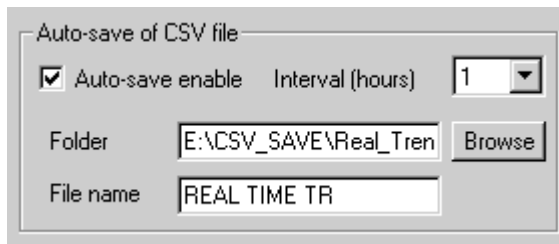
Normally, there is no need to make settings because they are set automatically. Part of the data (PID constants, etc.), however, may not match the display on the chart. Set the settings for the High Limit and Low Limit for this data only.

5. Set **Configure Tag No.**, **Tag ITEM**, and **Detailed Settings**, and then click the **OK** Button.

The Trend Screen will be registered, and the name of the screen you entered will be displayed in the Screen Management Tree.

### Saving to an CSV File

Automatically saving to an CSV file is described below.



Auto-save of CSV file

☒ Auto-save enable    Interval (hours)    1

Folder    E:\CSV\_SAVE\Real\_Tren    Browse

File name    REAL TIME TR

To automatically save a CSV file, check *Autosave enable* on the above screen and then make the following settings.

#### **Interval (hours)**

The time can be set to 1, 2, 3, 4, 6, 10, 12, 18, 20, 24, 48, 72, 86, 120, or 240 hours. The default for Real Time Trends is 12 hours, and the default for Historical Trends is 240 hours.

#### **Folder**

Specify the folder in which to save the file. The *Browse* Button can be use to simplify setting the folder.

#### **Filename**

Specify the name of the file to save. Do not specify the file name extension.

The actual name of the file that is saved will be as follows:

*filename\_data\_time.csv*

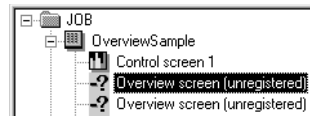
For example, if a file called RealTimeTrend is saved at 16:15:10 on December 1 2006, the file name RealTimeTrend\_20061201\_161510.csv will be created automatically.

## Registering Batch Trend Screens

A maximum of 120 Batch Trend Screens can be registered.

1,2,3...

1. Select *Screen* in the Overview Screen sub-elements using the Screen Management Tree in the Builder Window.



Click to select.

Double-click to omit step 2 of the procedure.

2. Select **Register Screen** from the Settings Menu, or double-click Screen. The dialog box displayed in step 2 of *Registering Control Screens*, above, will be displayed.

3. Select **Batch Trend Screen** and then click the **New** Button.

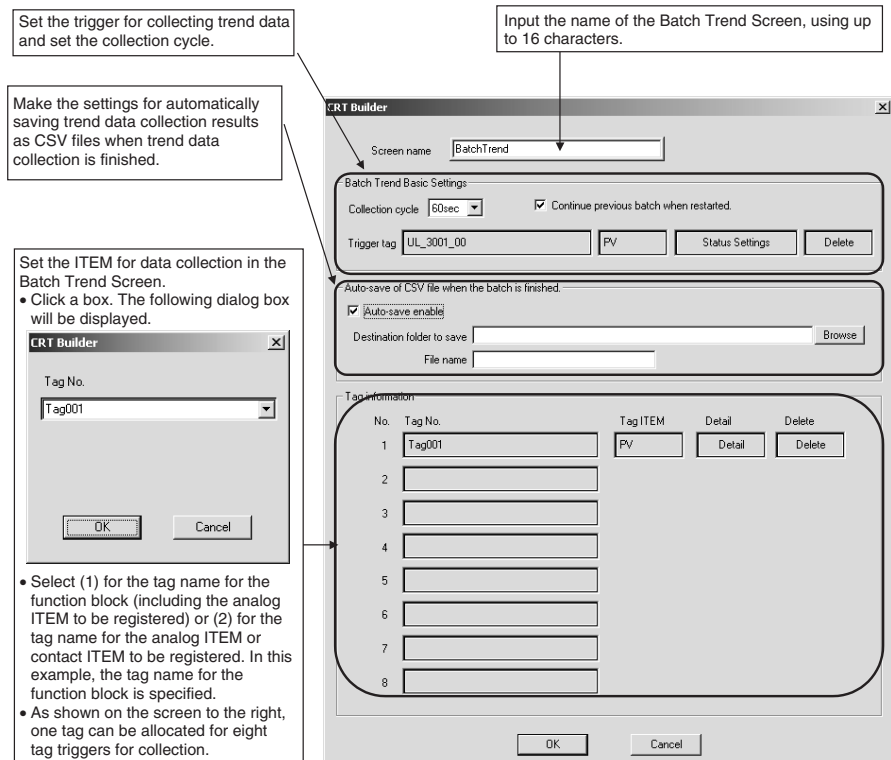
The following dialog box will be displayed.

A maximum of eight analog ITEMS (PV, SP, MV, or other analog signals) or eight contact ITEMS can be registered as data collection ITEMS in a Batch Trend Screen.

Also, one analog ITEM (PV, SP, MV, or other analog signal) or contact ITEM can be registered to serve as the trigger for starting batch collection. Specify analog or contact ITEMS using either method (1) or (2) below.

(1) Tag numbers (tag names) and tag ITEMS (PV, SP, or MV) for the function block

(2) Tag numbers (tag names) for analog or contact ITEMS



4. Input the screen name.
5. Set the batch trend basic settings as shown below.

Select the batch trend collection cycle (1 or 60 s).

Select the operation for when the trigger condition is satisfied for collecting data when the CX-Process Monitor Plus is restarted.  
 • **Selected:**  
Continue collecting data to the same batch trend file when the CX-Process Monitor Plus is restarted.  
 • **Not selected:**  
Begin collecting data to a new batch trend file when the CX-Process Monitor Plus is restarted.

**Batch Trend Basic Settings**

Collection cycle: 60sec

Trigger tag: UL\_3001\_00

☒ Continue previous batch when restarted.

PV
Status Settings
Delete

- Set the tag to serve as a trigger for start collecting trend data.  
**Note:** The trigger tag setting is not required. Trend data collection can also be started using a procedure from the Batch Trend Screen.
- Click the box to display the dialog box shown below.
- Select the tag ITEM for the analog ITEM that is to be registered. In this example, a tag ITEM (PV) with the tag name "UL\_3001\_00" is selected.

**CRT Builder**

Tag No.

UL\_3001\_00

OK
Cancel

- Displayed when a trigger tag ITEM is set.
- Click the box to display one of the following dialog boxes according to the type of ITEM (analog or contact) that is selected.
- Analog ITEM:

**CRT Builder**

Trigger tag: UL\_2000.PV

Analog threshold value settings:

Batch start value: 50.00

Batch stop value: 30.00

OK
Cancel

Set the batch start and stop values.

**If the batch start value is greater than the batch stop value:**  
 Batch collection will start when the trigger ITEM value is equal to or greater than the batch start value.  
 Batch collection will stop when the trigger ITEM value is less than the batch stop value.

**If the batch start value is less than the batch stop value:**  
 Batch collection will start when the trigger ITEM value is less than the batch start value.  
 Batch collection will stop when the trigger ITEM value is equal to or greater than the batch stop value.

- Contact ITEM:

**CRT Builder**

Trigger tag: UL\_3001\_00.PV

Digital status settings:

☒ ON(=1): Start

☐ OFF(=0): Start

OK
Cancel

Set the condition (either when ON or when OFF) for starting the batch collection.

6. Select the tag number for the batch trend collection. Register the tag name and then set *Detail* as described below.

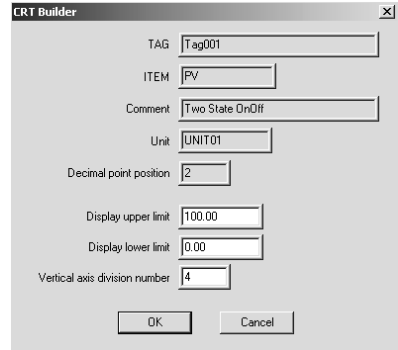
| No. | Tag No. | Tag ITEM | Detail | Delete |
|-----|---------|----------|--------|--------|
| 1   | Tag001  | PV       | Detail | Delete |

• Click the box to display the dialog box shown below.

• Select the tag ITEM for the analog ITEM that is to be registered. In this example, a function block tag ITEM (PV) with the tag name "Tag001" is selected.



• Click the box to display the dialog box shown below.



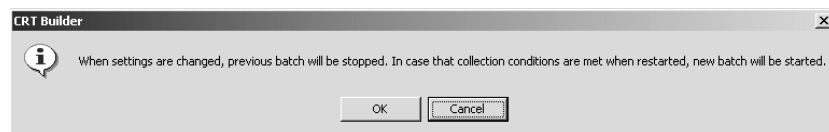
• These settings are normally made automatically. It is possible, however, that certain data (such as a PID constant) may not match the display on the chart. In cases such as that, the upper and lower limit settings must be changed.

7. Select the option to enable auto-saving of CSV files (described below).

8. Click the **OK** Button.

The Batch Trend Screen will be registered and the screen name that was input will be displayed on the Screen Management Tree.

**Note** If a setting is changed while the Continue previous batch when restarted option is selected, the following dialog box will be displayed. To make the change, click the OK Button. To cancel the change, click the Cancel Button.



### Setting Auto-saving of CSV Files

The CSV file auto-save function is described below.

Auto-save of CSV file when the batch is finished.

☒ Auto-save enable

Destination folder to save: E:\CsvAutoSaveData Browse

File name: BatchTrend

### Enabling Auto-saving

When *Auto-save enable* is selected, a CSV file is automatically created when the condition for the batch collection is stopped.

### Destination Folder for Saved Files

Specify the destination folder for saved files at *Destination folder to save*.

The folder can be found by using the **Browse** Button. Within the destination folder, folders will be automatically created for the dates on which the batch collections are started, and the CSV files will be saved in those folders.

For example, if the destination is C:\BatchTrend, and the batch collection was started on December 1, 2006, the folders will be created under C:\BatchTrend\20061201\ (The underlined portion is the date on which the batch collection was started.)

#### File Name

Specify the name of the file to be saved. (Note: Do not specify the file name extension here.)

The actual name of the file that is saved will be as follows:

*start\_date-start\_time-filename.csv*

(The start date and the start time are the time information for when the trend data collection was started for the file that is being saved.)

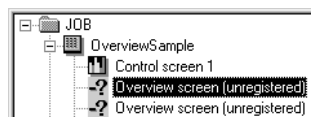
For example, if the name of the file being saved is BatchTrend, and the batch collection was started at 16:15:10 on December 1, 2006, the file name 20061201-161510-BatchTrend.csv will be created automatically.

### Registering Segment Program 2 Screens

There are two types of Segment Program 2 Screens: a Segment Program 2 Monitor Screen and a Segment Program 2 Edit Screen. Up to 16 pairs of Segment Program 2 Screens can be registered.

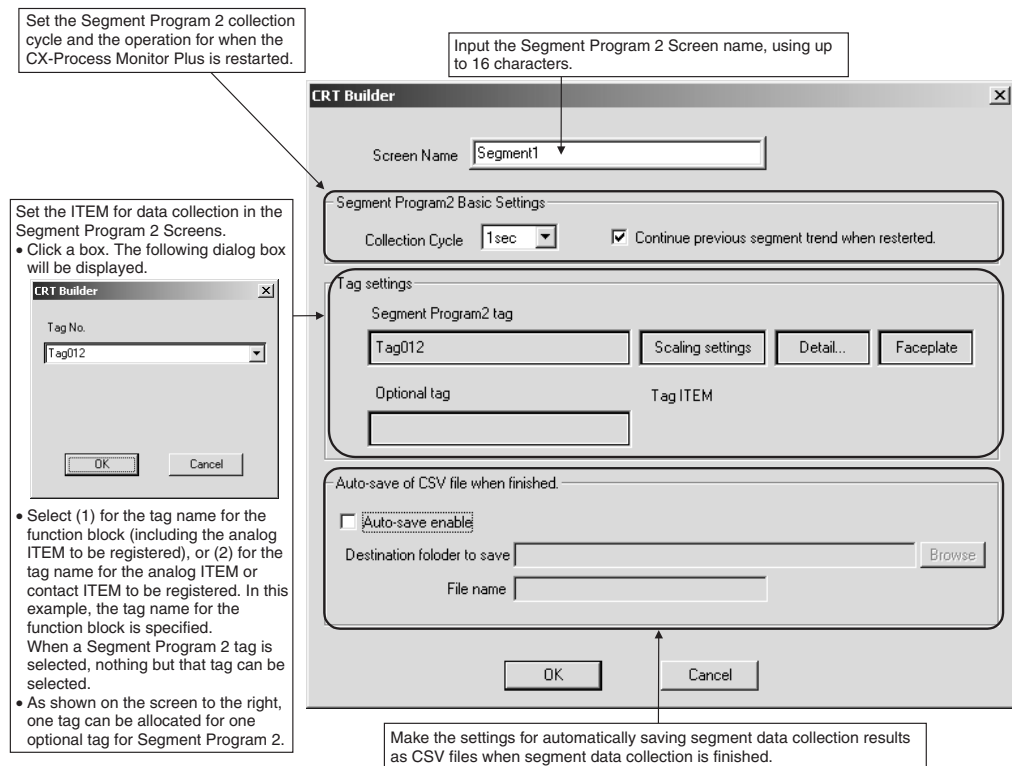
**1,2,3...**

1. Select Screen in the Overview Screen sub-elements using the Screen Management Tree in the Builder Window.

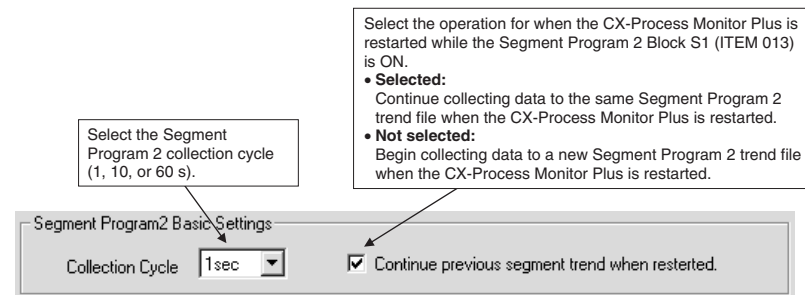


Click to select.  
Double-click to omit step 2 of the procedure.

2. Select **Register Screen** from the Settings Menu, or double-click *Screen*. The dialog box displayed in step 2 of *Registering Control Screens* above will be displayed.
3. Select *Segment Program 2 Screen* and then click the **New** Button. The following dialog box will be displayed.  
Aside from the Segment Program 2 tags, one analog ITEM (PV, SP, MV, or other analog signal) and one contact ITEM can be registered as an optional tag.  
Specify analog or contact ITEMS using either method 1 or 2 below.
  - (1) Tag numbers (tag names) and tag ITEMS (PV, SP, or MV) for the function block.
  - (2) Tag numbers (tag names) for analog or contact ITEMS.



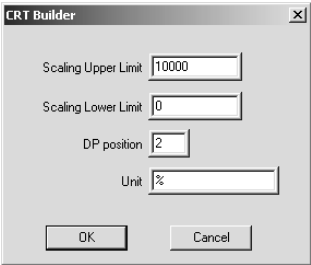
- Set the screen name.
- Set the Segment Program 2 Screen basic settings as shown below.



- Select the Segment 2 Program to be monitored on the Segment 2 Program Monitor Screen, and if required select an optional tag. After selecting the tag, set *Detail* as described below.

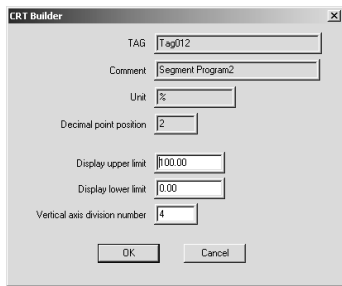


Click the box to display the dialog box shown below.



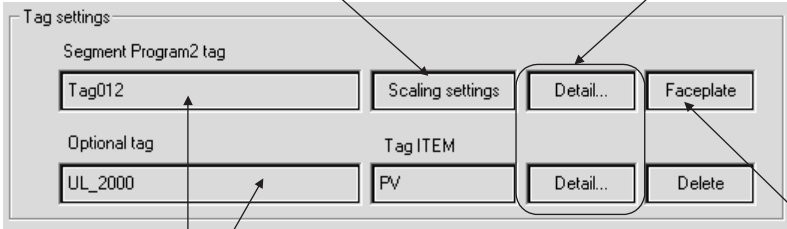
Make the scaling settings for the Segment Program 2 tag. Make changes as required.

Click the box to display the dialog box shown below.



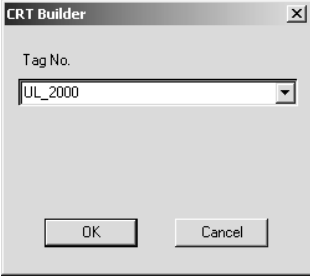
These settings are normally made automatically.  
It is possible, however, that certain data (such as a PID constant) may not match the display on the chart. In cases such as that, the upper and lower limit settings must be changed.

Tag settings

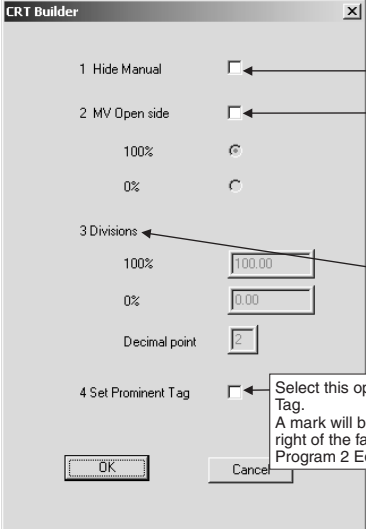


Click a box to display the dialog box shown below.

- Select the Segment 2 Program tag to be monitored on the Segment 2 Program Screen. (There is no need to select a tag ITEM for the Segment 2 Program tag.)
- Select an optional tag if required. Select the tag ITEM for the analog ITEM that is to be registered. In this example, a function block tag ITEM (PV) with the tag name "UL\_2000" is selected.



Click the box to display the dialog box shown below.



When this option is selected, the Manual Pointer is not displayed.

Select this option, and then select the direction the MV will open. If a direction is not specified, no direction will not be displayed.

Displays the settings made using the CX-Process Tool. These settings cannot be changed.

Select this option to set the Prominent Tag. A mark will be added to the upper right of the faceplate on the Segment Program 2 Edit Screen.

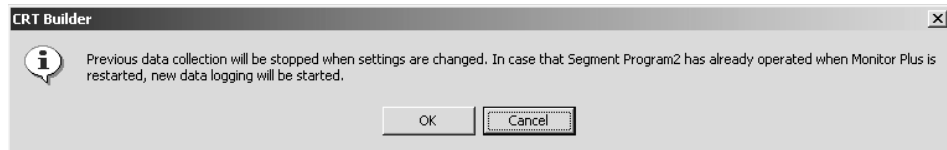
- Make the settings and then click the **OK** Button.
- The Manual Pointer and MV direction settings will be reflected in the MV adjustment area in the lower part of the instrument diagram.

7. Select the option to enable auto-saving of CSV files (described below).

8. Click the **OK** Button.

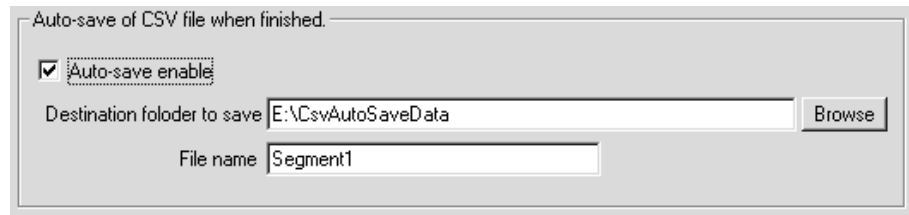
The Segment Program 2 Screen will be registered and the screen name that was input will be displayed on the Screen Management Tree.

**Note** If a setting is changed while the *Continue previous segment trend when restarted* Option is selected, the following dialog box will be displayed. To make the change, click the **OK** Button. To cancel the change, click the **Cancel** Button.



### Setting Auto-saving of CSV Files

The CSV file auto-save function is described below.



#### Enabling Auto-saving

When *Auto-save enable* is selected, a CSV file is automatically created when operation of the relevant Segment Program 2 Block is stopped, i.e., when S1 (ITEM 013) turns OFF.

#### Destination Folder for Saved Files

Specify the destination folder for saved files in the *Destination folder to save* Box.

The folder can be found by using the **Browse** Button. Within the destination folder, folders will be automatically created for the dates on which the batch collections are started, and the CSV files will be saved in those folders.

For example, if the destination is C:\Segment, and the data collection was started on December 1, 2006, the folders will be created under C:\Segment\20061201\ (The underlined portion is the date on which the data collection was started.)

#### File Name

Specify the name of the file to be saved. (Note: Do not specify the file name extension here.)

The actual name of the file that is saved will be as follows:

*start\_date-start\_time- filename.csv*

(The start date and the start time are the time information for when the segment data collection was started for the file that is being saved.)

For example, if the name of the file being saved is Segment, and the data collection was started at 16:15:10 on December 1, 2006, the file name 20061201-161510-Segment.csv will be created automatically.

**Note** If the data in a single CSV file exceeds 65,000 lines, another CSV file will be created. The CSV files will be saved in order with \_01.CSV, \_02.CSV, etc., added at the end of the file name.

### Registering Graphic Screens

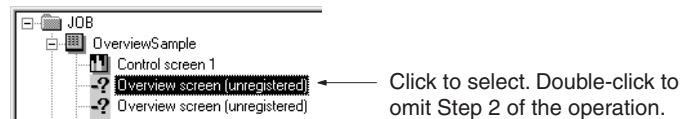
You can register up to 200 Graphic Screens.

**Note** Before registering the Graphic Screen, you must create and save the Graphic Screen using the **Graphic Builder** Button. Refer to 5-4 *Creating Graphic Screens* for how to create a Graphic Screen.

The registration procedure is as follows:

1,2,3...

1. Select **Screen** in the Overview Screen sub-elements using Screen Management Tree in CRT Builder.



2. From the **Settings** menu, select **Register Screen**, or double-click **Screen**. The dialog box shown in Step 2 of the proceeding Control Screen Registration will be displayed.
3. Select **Graphic Screen**, and then click the **New** Button.

The following dialog box will be displayed.

Select the Graphic Screen you created and saved using CRT Builder (i.e., the **Graphic Builder** Button).

**Note** Before registering the Overview Screen, you must create and save the Graphic Screen using CRT Builder.



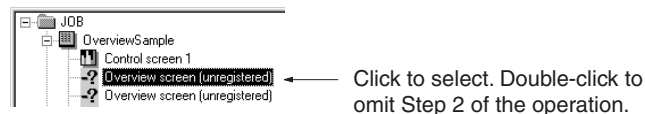
4. Select the screen name, and then click the **OK** Button. The Overview Screen will be registered, and the name of the screen you entered will be displayed in the Screen Management Tree.

### Registering Annunciator Screens

You can register up to five Annunciator Screens. The registration procedure is as follows:

1,2,3...

1. Select the Overview Screen's sub-element **Screen** in the CRT Builder's Screen Management Tree.

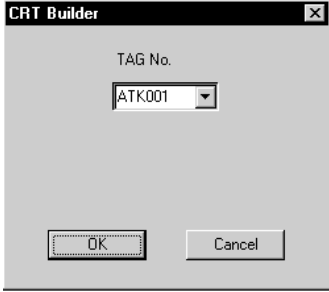


2. In the **Settings** Menu, select **Register Screen**, or double-click **Screen**. The dialog box shown in Step 2 of the preceding section, Control Screen Registration, will be displayed.
3. Select the Trend Screen, and then click the **New** Button. The following dialog box will appear.

You can register up to 16 contact ITEMS in the Annunciator Screen. Specify the contact ITEM using the tag name.

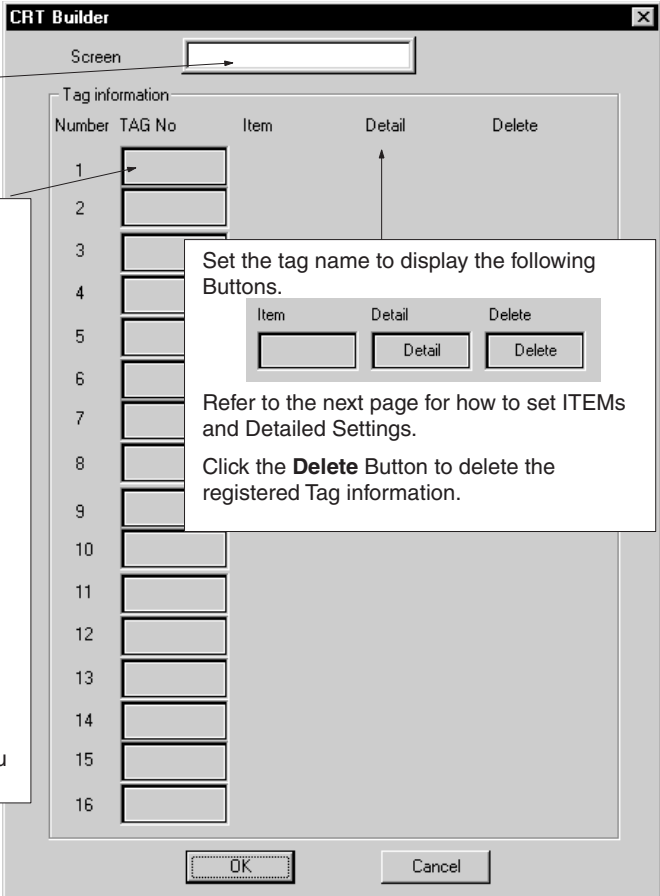
Enter the name of the Control Screen using 16 characters.

Select the box. The following dialog box will be displayed.



Select a) the tag name for the function block (including the contact ITEMS you want to register), or b) the tag name for the for the contact ITEMS you want to register. In this example, the tag name for the function block for a) has been specified.

As shown in the screen on the right, you can allocate up to 16 tag names.



Set the tag name to display the following Buttons.

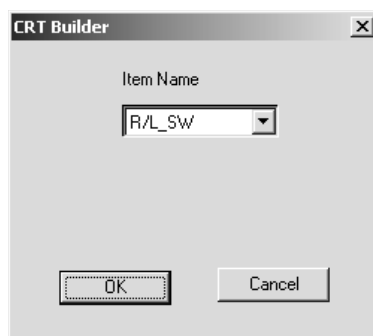
Item Detail Delete

Refer to the next page for how to set ITEMS and Detailed Settings.

Click the **Delete** Button to delete the registered Tag information.

### Setting ITEMS

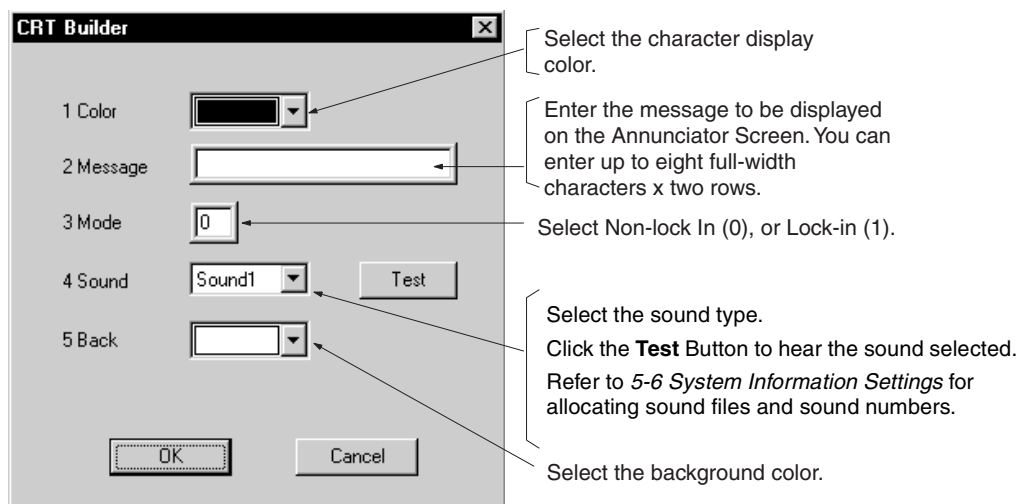
Select the tag name, and then click the **ITEM** Button. The following dialog box will be displayed.



Select the Tag ITEM corresponding to the contact ITEM you want to set. In this example, Tag ITEM "RL\_SW" for the Function Block for tag name ATK001 has been selected. Next, click the **OK** Button.

**Detailed Settings**

Select the tag name, and then click the **Details** Button. The following dialog box will be displayed.



Complete the settings, and then click the **OK** Button.

4. Make the above settings, and then click the **OK** Button.

The Annunciator Screen will be registered, and the name of the screen you entered will be displayed in the Screen Management Tree.

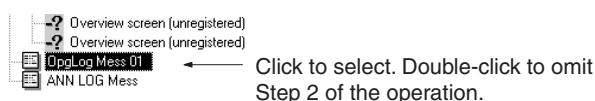
### 5-5-3 Registering Operation Guide Messages

This section explains how to register Operation Guide Messages.

If the conditions registered here occur, the corresponding message will be displayed on the Operation Guide Log Screen, and saved.

1,2,3...

1. Select **OpgLog Mess01** into the CRT Builder's Screen Management Tree.



2. In the **Settings** Menu, select **Register Screen**, or double-click **OpgLog Mess01**.

The following dialog box will appear.

You can register up to 1,000 contact ITEMS in the Operation Guide Messages. Specify the contact ITEM using the tag name.

Enter the name of the Overview Screen using 16 characters.

Switch the page number.  
Click the buttons to move up and down the table of registered tag names. The < and > Buttons will change the tag numbers by 10 at a time and the << and >> Buttons will change the tag numbers by 100 at a time.

Select the box. The following dialog box will be displayed.

Select the tag name to display the Details Button as shown.

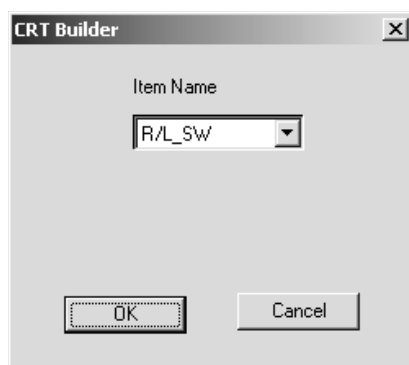
Refer to the next page for how to set ITEM and Detailed Settings. Click the **Delete** Button to delete the registered Tag information.

Select a) the tag name for the function block (including the contact ITEMS you want to register), or b) the tag name for the contact ITEMS you want to register. In this example, the tag name for the function block for a) has been specified.

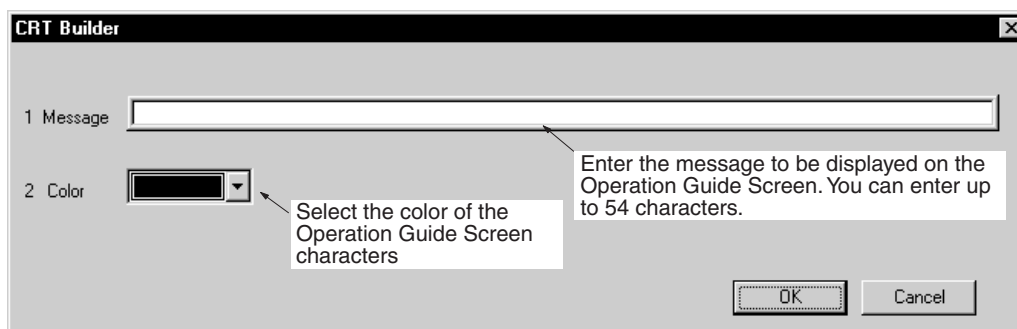
The main CRT Builder window displays a 'Screen name' field with 'OpLogMess 01'. Below it is a 'Tag information' section with navigation buttons (<<, <, Page 1, >, >>) and a table with columns 'Tag No.', 'Item', 'Detail', and 'Delete'. The table lists 10 tag numbers, each with an input field. A dialog box titled 'TAG No.' shows 'ATK001' selected in a dropdown menu. Another dialog box shows 'Item', 'Detail', and 'Delete' buttons, with 'Detail' highlighted. A third dialog box shows 'Item Name' with 'R/L\_SW' selected.

### Setting Items

Select the tag name, and then click the **ITEM** Button. The following dialog box will be displayed.



Select the Tag ITEM corresponding to the contact ITEM you want to set. In this example, Tag ITEM "R/L\_SW" for the Function Block for tag name ATK001 has been selected. Next, click the **OK** Button.

**Detailed Settings**

After completing the settings, click the **OK** Button.

3. After completing the above settings, click the **OK** Button.

The Operation Guide Message Screen will be registered, and the name of the screen you entered will be displayed in the Screen Management Tree.

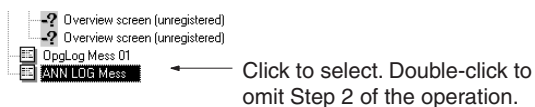
**5-5-4 Registering Alarm Messages**

This section explains how to register alarm messages.

If the conditions registered here occur, the corresponding alarm message will be displayed in the second line of the Monitor Screen, and the alarm message will be saved on the Alarm Log Screen.

**1,2,3...**

1. In the CRT Builder's Screen Management Tree, select **Register Alarm Message**.



2. From the Settings Menu, select **Register Screen**, or double-click **ANN LOG Mess**.

The following dialog box will be displayed.

You can register up to 2,000 contact ITEMS in the alarm messages. Specify the setting ITEMS using the tag names.

Enter the name of the Alarm Message Registration Screen using 16 characters.

Switch the page numbers. Click either button to move up and down the table of registered tag names below by 10 at a time.

Select the box. The following dialog box will be displayed.

The dialog box titled "CRT Builder" contains a label "TAG No." above a dropdown menu showing "ATK001". At the bottom are "OK" and "Cancel" buttons.

Select a) the tag name for the function block (including the contact ITEMS you want to register), or b) the tag name for the for the contact ITEMS you want to register. In this example, the tag name for the function block for a) has been specified.

The main window titled "CRT Builder" has a "Screen name" field with "ANN LOG Mess". Below is a "Tag information" section with a table of 10 rows. The first row is selected. Above the table are navigation buttons: "<<", "<", "Page 1", ">", ">>". To the right of the table are "Item", "Detail", and "Delete" buttons. At the bottom are "OK" and "Cancel" buttons.

Select the tag name to display the Details Button as shown.

The dialog box shows a table with columns "Item", "Detail", and "Delete". The "Detail" button is highlighted.

Refer to the next page for how to set ITEM and Detailed Settings.

Click the **Delete** Button to delete the registered Tag information.

### Setting ITEMS

Select the tag name, and then click the **ITEM** Button. The following dialog box will be displayed.

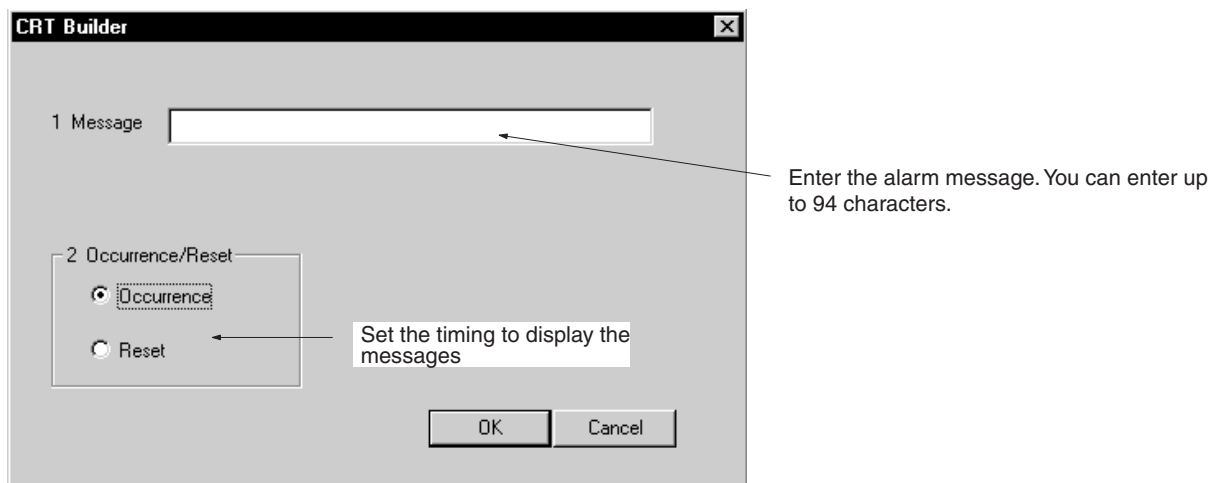
The dialog box titled "CRT Builder" contains a label "Item Name" above a dropdown menu showing "R/L\_SW". At the bottom are "OK" and "Cancel" buttons.

Select the Tag ITEM corresponding to the contact ITEM you want to set. In this example, Tag ITEM "R/L\_SW" for the Function Block for tag name ATK001 has been selected. Next, click the **OK** Button.



**Detailed Settings**

Select the tag name, and then click the **Details** Button. The following dialog box will be displayed.



After making the settings, click the **OK** Button.

Display is red for an occurrence, and black following recovery.

3. Complete the above settings, and then click the **OK** Button.

The alarm message will be registered, and the name of the screen you entered will be displayed in the Screen Management Tree.

**Automatic Allocation Function for Alarm Tags**

Tags specified with the CX-Process Tool can be set as alarm tags. Alarm tags can be displayed in the Alarm History Screens. The following tags can be set as alarm tags.

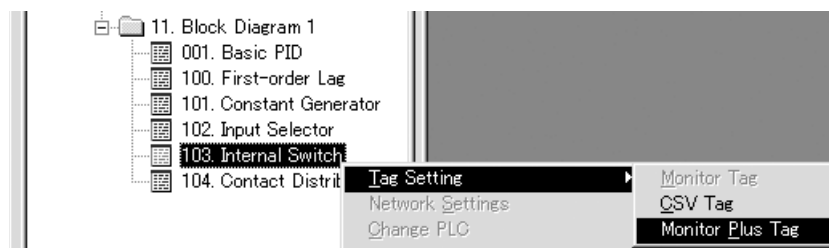
- Tags for Monitor Plus for Internal Switch blocks
- Data in the User Link Table when the analog/digital type is set to a contact

Use to the following procedure to set alarm tags.

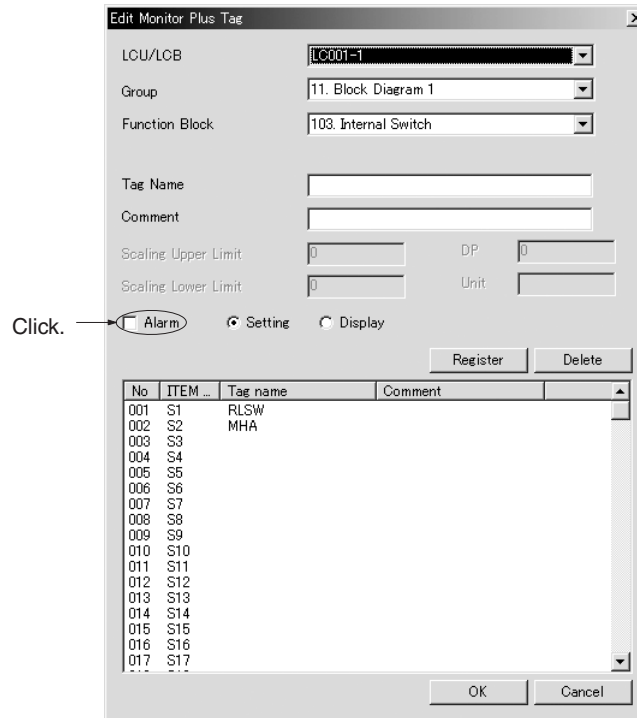
**Internal Switch Blocks**

1,2,3...

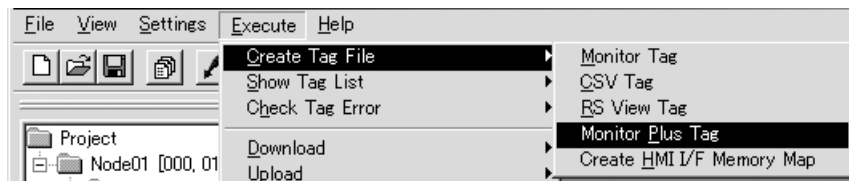
1. Select *Internal Switch* as the function block and select Monitor Plus tags from the tag setting menu.



The following window will be displayed.



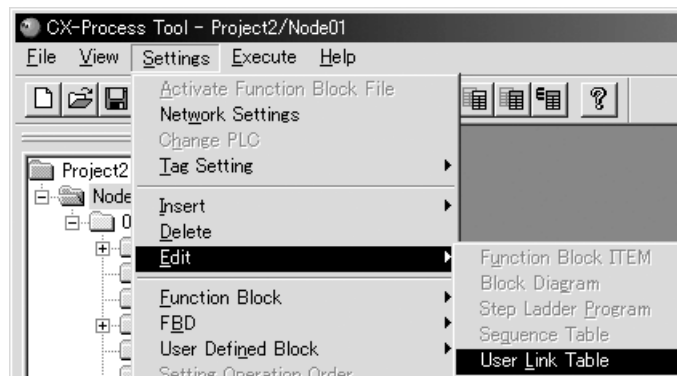
2. Select the *Alarm* Option, click the **Register** Button and then the **End** Button.
3. Compile the tags for Monitor Plus.



4. Start the CX-Process Monitor Plus.

## User Link Table

- 1,2,3... 1. Open the User Link Table for editing.



2. To create a new entry in the user link table, right-click and select **Register**.

3. The following window will be displayed. Set the required items.

Must be set to a contact to enable setting an alarm tag.

Click.

**Note** By using automatic allocations in the alarm monitor, alarm occurred (*Auto Alarm*) will be displayed when the specified flag is ON and alarm reset (*Auto Alarm*) will be displayed when the specified flag is OFF.

CX-Process Monitor Plus

Alarm Log screen group name: Alarm Log Mess 01

01/06

|                       |          |                                  |                               |
|-----------------------|----------|----------------------------------|-------------------------------|
| 2003.12. 3 21:00:52   | ULT_DOut | PV - alarm reset (Auto Alarm)    |                               |
| 2003.12. 3 21:00:48   | ULT_DOut | PV - alarm occurred (Auto Alarm) |                               |
| 2003.12. 3 21:00:35   | DinAm    | - alarm reset (Auto Alarm)       |                               |
| 2003.12. 3 21:00:26   | DinAm    | - alarm occurred (Auto Alarm)    |                               |
| → 2003.12. 3 20:58:57 | Tag008   | 0.00                             | PV Low limit alarm occurred   |
| → 2003.12. 3 20:58:57 | Tag007   | 0.00                             | PV Low limit alarm occurred   |
| → 2003.12. 3 20:58:57 | Tag004   | 0.00                             | PV Low limit alarm occurred   |
| → 2003.12. 3 20:58:57 | Tag003   | 0.00                             | PV Low limit alarm occurred   |
| → 2003.12. 3 20:58:57 | Tag002   | 0.00                             | PV Low limit alarm occurred   |
| → 2003.12. 3 20:58:57 | Tag001   | 0.00                             | PV Low limit alarm occurred   |
| 2003.12. 3 20:57:50   | Tag008   | 60.07                            | PV Low limit alarm reset      |
| 2003.12. 3 20:57:50   | Tag007   | 57.34                            | PV Low limit alarm reset      |
| 2003.12. 3 20:57:50   | Tag004   | 131.07                           | PV Low limit alarm reset      |
| 2003.12. 3 20:57:50   | Tag003   | 87.38                            | PV Low limit alarm reset      |
| 2003.12. 3 20:57:50   | Tag002   | 43.69                            | PV Low limit alarm reset      |
| 2003.12. 3 20:57:50   | Tag001   | 0.00                             | PV Low limit alarm reset      |
| 2003.12. 3 20:43:13   | ULT_DOut | PV - alarm reset (Auto Alarm)    |                               |
| → 2003.12. 3 20:43:12 | Tag016   | 0.00                             | ‡ PV Low limit alarm occurred |
| → 2003.12. 3 20:43:12 | Tag010   | 0.00                             | PV Low limit alarm occurred   |
| 2003.12. 3 20:43:12   | Tag008   | 0.00                             | PV Low limit alarm occurred   |

CSV ALL HEAVY LIGHT CONTINUE PREVIOUS PAGE NEXT PAGE NEW PAGE

Print Screen Print 2003.12.03 21:00

### 5-5-5 Saving Settings

Save the screen configurations that you have set.

**Note** If setting or changing screen configurations, make sure to save the settings or changes.

- 1,2,3...** 1. From the Settings Menu in the CRT Builder, select **Save**.

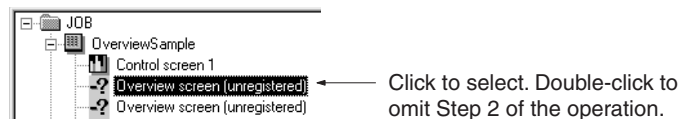


2. Click the **OK** Button.

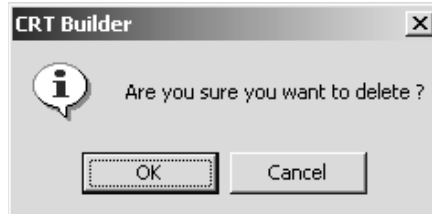
### 5-5-6 Deleting Registered Screens

To delete registered screens, perform the following operation.

- 1,2,3...** 1. In the CRT Builder's Screen Management Tree, click to select the screen you want to delete.



2. From the CRT Builder Settings Menu, select **Delete**.



3. Click the **OK** Button.

### 5-5-7 Starting the Monitor Process

To start the monitor process, perform the following operation.

- 1,2,3...** 1. In the Main Window or in the Setup Dialog Box, click the **Run** Button.  
2. The monitor process will start and the Overview Screen will be displayed.

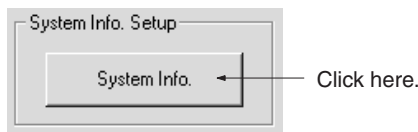
## 5-6 System Information Settings

This section explains label information, alarm sound information, and how to make the ten-key, color, and key-lock settings.

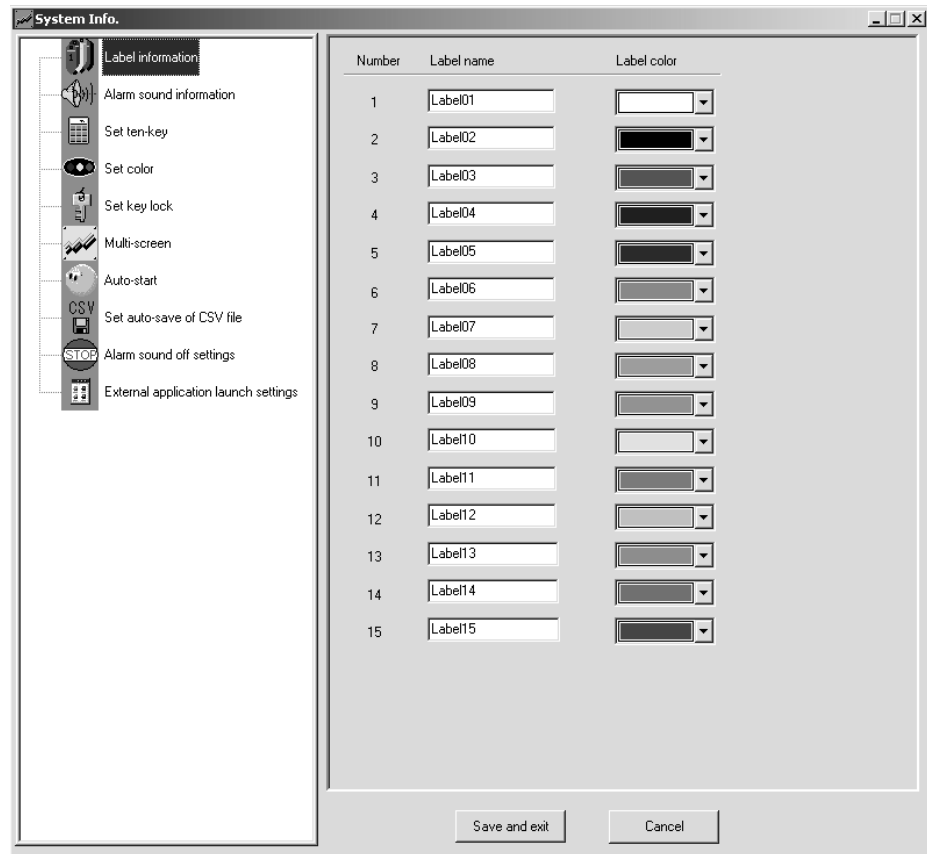
The contents of the settings are as follows:

| Item                                        | Contents                                                                                                                                                                                                                                                     |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Label information                           | Label name                                                                                                                                                                                                                                                   |
|                                             | Label color                                                                                                                                                                                                                                                  |
| Alarm sound information                     | Allocate an alarm sound file to each alarm number (1 to 10).                                                                                                                                                                                                 |
| Ten-key settings                            | Set whether you want to use the Ten-key Dialog Box when entering numerical values. This setting will be enabled for all Monitor Screens.<br><br>If you enable the ten-key, the Ten-key Dialog Box will be displayed when you select the numerical input box. |
| Color settings                              | Specify the color of the buttons used for the Function Block diagrams in the Control Screen and Tuning Screen.                                                                                                                                               |
| Key-lock settings                           | It is possible to prohibit the values of ITEMS being changed from the Control Screen or the Tuning Screen.                                                                                                                                                   |
| Multi-screen settings                       | Specify if multiple screens can be displayed and automatic exiting of the background window for the monitoring process when automatically ending in operator mode. Specify the order in which the pages are to change.                                       |
| Auto-start settings                         | Specify the scale display (engineering units or percentages) for the Tuning and Trend Screens, the Tuning Screen opening method, auto-starting, and the color of alarms on Annunciator Screens.                                                              |
| CSV file auto-save settings, trend settings | Set the method for collecting Trend Screen, Batch Trend Screen, and Segment Program 2 Screen data, and the method for saving the data.                                                                                                                       |
| Alarm buzzer stop setting                   | Set whether to sound the alarm buzzer when recovering from an alarm.<br><br>Set whether to treat MHA and MLA as alarms.<br><br>Register a tag to stop the alarm.                                                                                             |
| Starting external applications              | Allocate applications to start buttons 1 to 4.                                                                                                                                                                                                               |

- 1,2,3...** 1. In the Setup Dialog Box, click the **System Info.** Button.



The following window will be displayed.



2. In the leftmost window, select **Label information**, **Alarm sound information**, **Set ten-key**, **Set color**, or **Set key lock**.
3. Perform the following settings as shown.
4. When you have completed all the settings, click the **Save and Exit** Button.

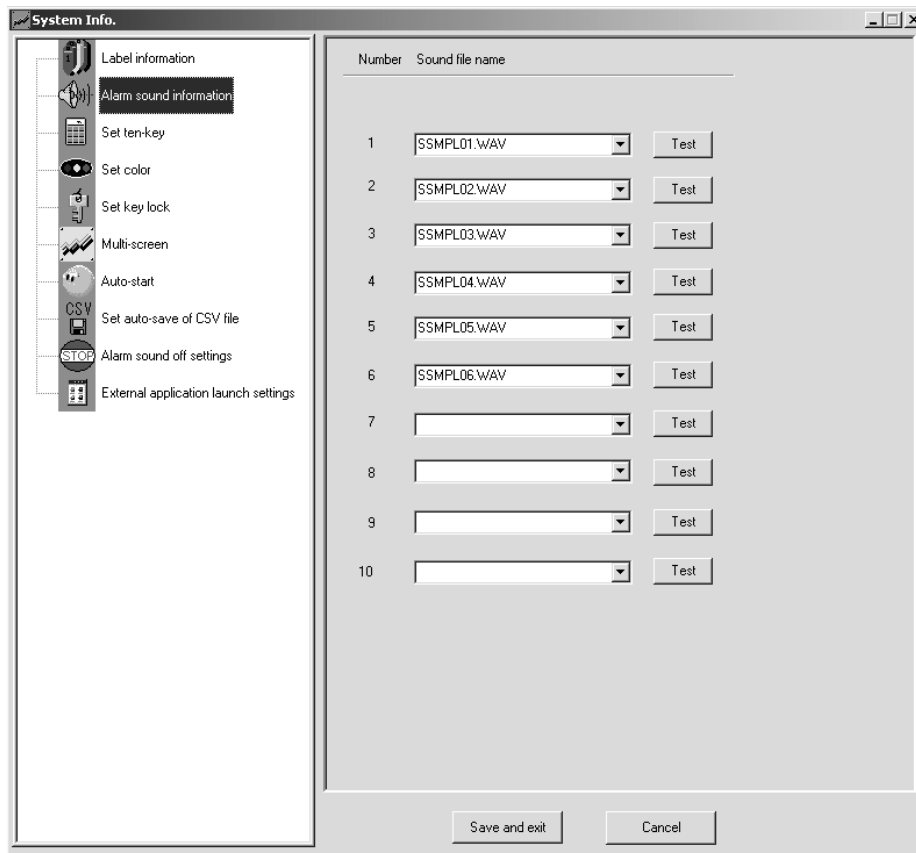
### 5-6-1 Label Information Settings

In the leftmost window, select **Label Information**. The screen shown in Step 1 will be displayed.

Set **Label name** and **Label color**.

## 5-6-2 Alarm Sound Information Settings

In the leftmost window, select **Alarm sound information**. The following screen will be displayed.

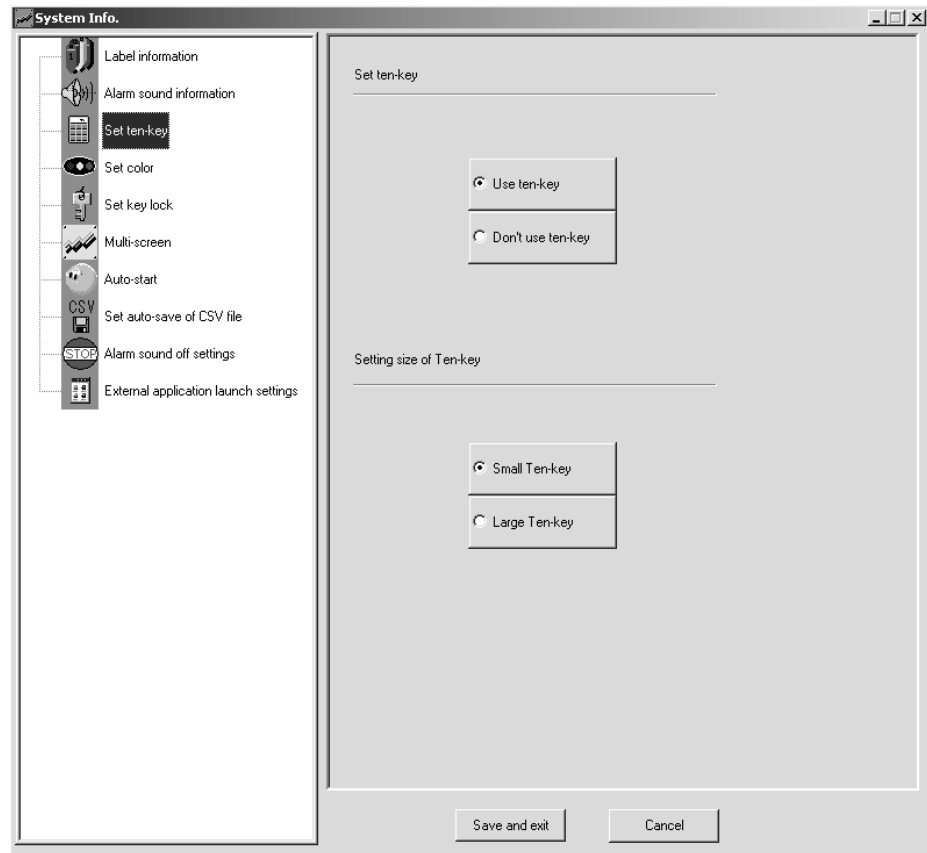


Allocate a sound file to each alarm sound number to register the sound you want to use.

Click the **Test** Button to try sounding the alarm.

### 5-6-3 Ten-key Settings

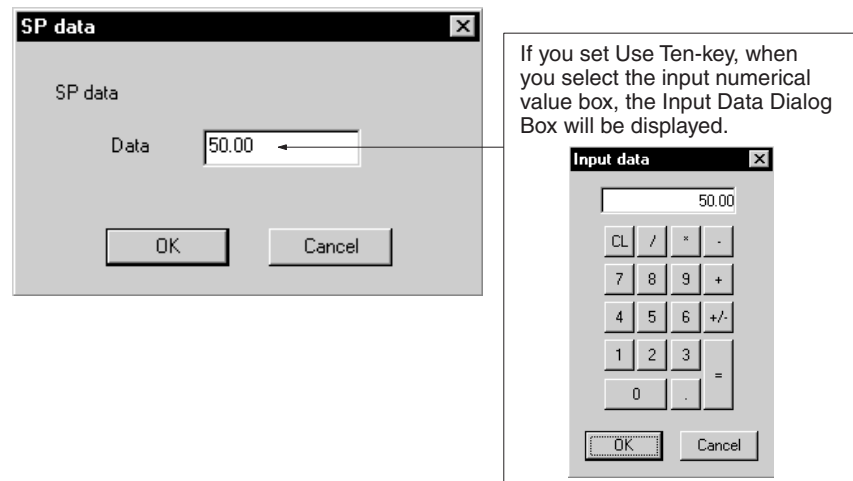
In the leftmost window, select **Set ten-key**. The following screen will be displayed.



Click the **Use ten-key** Button or the **Don't Use ten-key** Button. The setting will be enabled for all Monitor Screens.

If you set **Use ten-key**, when you select the input numerical value box, the Input Data Dialog Box will be displayed.

Example



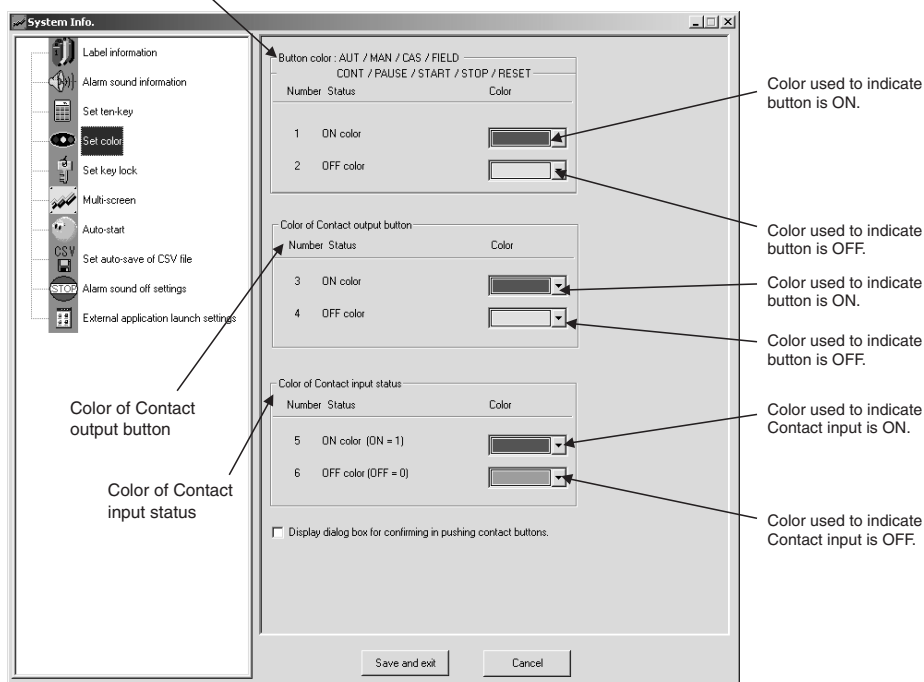
Set the ten-key size to either large or small.



## 5-6-4 Color Settings

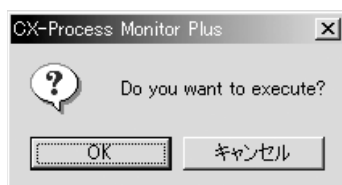
In the leftmost window, select **Set color**. The following screen will be displayed.

Color setting for the buttons used in the AUT/MAN/CAS/FIELD/CONT/PAUSE/START/STOP/RESET Function Block diagrams



Use the above screen to specify the color used for the AUT/MAN/CAS/FIELD/CONT/PAUSE/START/STOP/RESET Function Block diagrams, the Contact output buttons, and the Contact input status.

If the **Display dialog box for confirming in pushing contact buttons** setting is clicked, a confirmation dialog box like the one shown below will be displayed to confirm operation when a contact output button, like AUTO/MAN is clicked.



## 5-6-5 Key-lock Settings

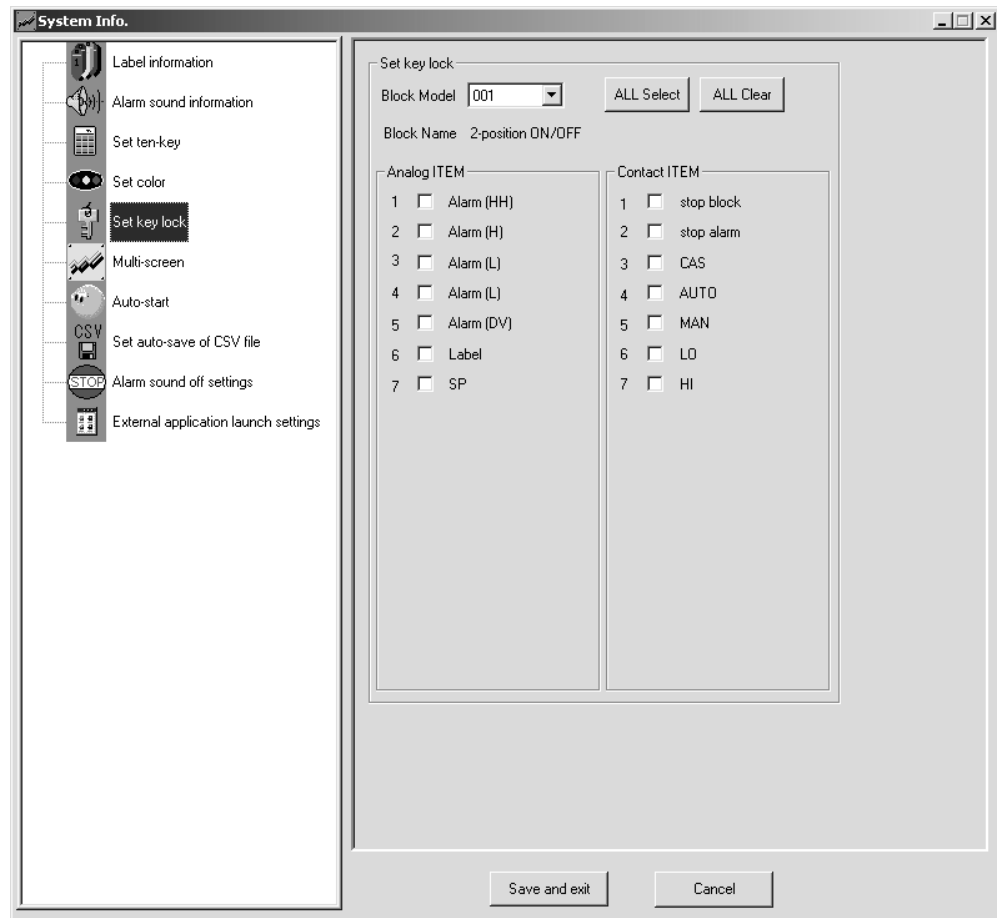
In the leftmost window, select **Set key lock**. The following screen will be displayed.

It is possible to prohibit changing specified ITEM values (e.g., changing SP values or PID constants) of specified Function Blocks (e.g., Basic PID Block) in screens, such as the Control Screen and the Tuning Screen, that can be using for setting operations from the CX-Process Monitor Plus. These settings are called "key locks."

**Note** Key-lock specifications are made in terms of block models (setting in terms of the CX-Process Monitor Plus's tag names is not possible).

## Setting Procedure

- 1,2,3... 1. Select **Block Model**. The Function Blocks will be displayed below it.



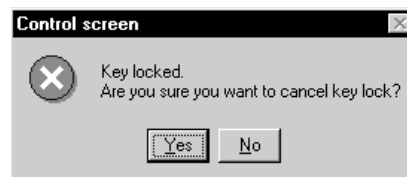
2. To set key locks for all the analog and contact ITEMS of the Function Blocks of the specified Block Model that can usually be changed using CX-Process Monitor Plus, click the **All Select** Button. Similarly, to clear the key locks for all of the ITEMS, click the **All Clear** Button.

To set key locks for specific ITEMS, click in the check box of the required ITEMS in either the analog ITEM or Contact ITEM fields.

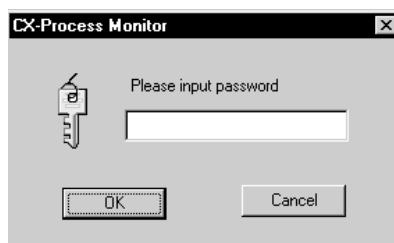
3. Click the **Save and exit** Button to enable the key lock settings.

## Operation with Key Locks Enabled

- 1,2,3... 1. If an attempt to change the value of an ITEM (e.g., SP) for which key lock has been set (e.g., by pressing the **SP** Button), the following dialog box will be displayed.



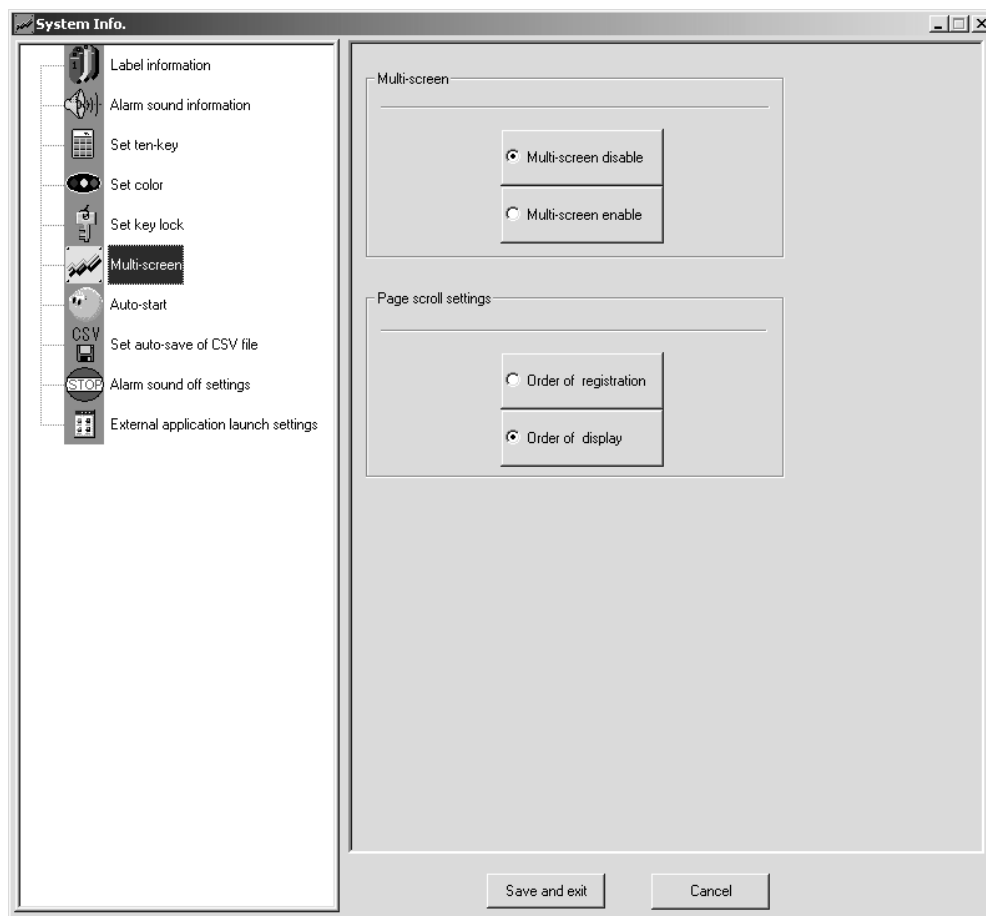
2. If **Yes** is clicked, the following dialog box, requesting entry of a password, will be displayed. (If **No** is clicked, the operation to change the ITEM will be cancelled.)



If the password set is entered (refer to 5-2-2 *Setting Passwords*), the key lock for the ITEM will temporarily be cleared and it will be possible to change the value. The next time, however, that an attempt to change the value of the same ITEM is made, the key lock will be enabled and the above procedure will have to be repeated.

## 5-6-6 Multi-screen Settings

If **Multi-screen** is selected, the following screen will be displayed.



The following settings can be made.

### Multi-screen

Set whether or not more than one Overview Screen can be displayed at the same time.

### Setting the Order of Page Changes

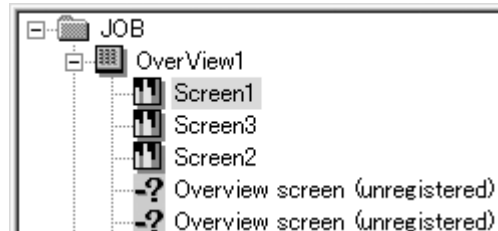
The order in which pages are changed when the **Next** and **Previous** Buttons are clicked can be set to either the order they are registered in the database or the order they are displayed in the Builder Window. Both realtime trends and historical trends are treated in the same group.

**Note** The first page in each group will be displayed when the **Next** Button is pressed at the last page in the group. The last page in each group will be displayed when the **Previous** Button is pressed at the first page in the group.

#### **Order of Database Registration**

Pages will change in the order they are registered using the Builder Window. Both realtime trends and historical trends are treated in the same group.

Example:



If the pages were registered in the order 1, 2, 3, then they will be displayed in that order.

**Note** When pages are changed using the **Previous** and **Next** Buttons while Graphic Screens are being displayed, even Graphic Screens that are not registered in the Builder Window are displayed.

#### **Order of Display**

Pages will change in the order they are displayed in the Builder Window. Both realtime trends and historical trends are treated in the same group.

Example:



The pages will be displayed in the order 1, 3, 2 regardless of the order in which they were registered.

## 5-6-7 Auto-start Settings

If **Auto-start** is selected, the following screen will be displayed.

**System Info.**

Label information  
Alarm sound information  
Set ten-key  
Set color  
Set key lock  
Multi-screen  
**Auto-start**  
CSV Set auto-save of CSV file  
SIOB Alarm sound off settings  
External application launch settings

Divisions in Tuning screen  
☐ EU  
☒ %

Tuning screen list  
☐ Popup menu  
☒ Dialog box

Auto-start  
☐ Auto-start enable  
☒ Auto-start disable

CRT-ID: 1 (Overview)  
 Group: 1  
 No.: 1

Annunciator colors

| Alarm            |                                        | Normal           |                                         |
|------------------|----------------------------------------|------------------|-----------------------------------------|
| Message color    | <input type="text" value="Black"/>     | Message color    | <input type="text" value="Black"/>      |
| Background color | <input type="text" value="Dark Gray"/> | Background color | <input type="text" value="Light Gray"/> |

Save and exit    Cancel

The following settings can be made.

### Divisions in Tuning Screen

Specify whether to use engineering units or percentages for the scale displayed in a Tuning Screen. The default is for percentages.

### Tuning Screen List

Specify whether to input the tag name directly or to select the tag name from a pull-down menu when switching to a Tuning Screen by clicking in the upper left corner of an Overview Screen.

Pull-down Menu

|             |             |            |           |
|-------------|-------------|------------|-----------|
| 1 DI550001  | 33 DO552015 | 65 A003    | 97 aa020  |
| 2 DI550002  | 34 DO552016 | 66 A004    | 98 aa021  |
| 3 DI550003  | 35 CNT_S1   | 67 A005    | 99 aa022  |
| 4 DI550004  | 36 TIM_S1   | 68 A006    | 100 aa023 |
| 5 DI550005  | 37 TIM_S2   | 69 A007    | 101 aa024 |
| 6 DI550006  | 38 B009AUT  | 70 A008    | 102 aa025 |
| 7 DI550007  | 39 B009PID1 | 71 B009    | 103 aa026 |
| 8 DI550008  | 40 B009PID2 | 72 B010    | 104 aa027 |
| 9 DI550009  | 41 A0553001 | 73 B011    | 105 aa028 |
| 10 DI550010 | 42 A0553002 | 74 B012    | 106 B029  |
| 11 DI550011 | 43 CNT_U1   | 75 B013    | 107 B030  |
| 12 DI550012 | 44 CNT_U2   | 76 B014    | 108 B031  |
| 13 DI550013 | 45 TIM_U1   | 77 CNT001  |           |
| 14 DI550014 | 46 TIM_U2   | 78 TIM001  |           |
| 15 DI550015 | 47 DO555001 | 79 ARM001  |           |
| 16 DI550016 | 48 DO555002 | 80 DUMMY01 |           |
| 17 AI551001 | 49 DO555003 | 81 4B009   |           |
| 18 AI553002 | 50 DO555004 | 82 4B010   |           |
| 19 DO552001 | 51 DO555005 | 83 4B011   |           |
| 20 DO552002 | 52 DO555006 | 84 4B012   |           |
| 21 DO552003 | 53 DO555007 | 85 4B013   |           |
| 22 DO552004 | 54 DO555008 | 86 4B014   |           |
| 23 DO552005 | 55 DO555009 | 87 dummy1  |           |
| 24 DO552006 | 56 DO555010 | 88 dummy2  |           |
| 25 DO552007 | 57 DO555011 | 89 TIME136 |           |
| 26 DO552008 | 58 DO555012 | 90 TIME137 |           |
| 27 DO552009 | 59 DO555013 | 91 TIME138 |           |
| 28 DO552010 | 60 DO555014 | 92 TIME139 |           |
| 29 DO552011 | 61 DO555015 | 93 X015    |           |
| 30 DO552012 | 62 DO555016 | 94 X016    |           |
| 31 DO552013 | 63 A001     | 95 X017    |           |
| 32 DO552014 | 64 A002     | 96 X018    |           |

Dialog Box



**Note** If the number of tags registered in the Control Screen exceeds 192, the Dialog Box will be displayed, even if the Pull-down menu is specified.

## 5-6-8 Auto-start

Specify whether to open a specified screen when the CX-Process Monitor Plus is started or to start normally. If the auto-start is enabled, the screen specified in the fields below will be displayed automatically when the CX-Process Monitor Plus is started from the menus. (This eliminates the need to click the **Run Button** on the Main Window.)

### CRT-ID

Set the type of screen. 1: Overview, 2: Control, 3: Trend, 4: Graphic, 5: Annunciator, 10: Tuning, 17: Batch Trend, 18: Segment.

### Group Number

The group number specifies the order of registration by the CRT Builder (0 to 400).

### Position

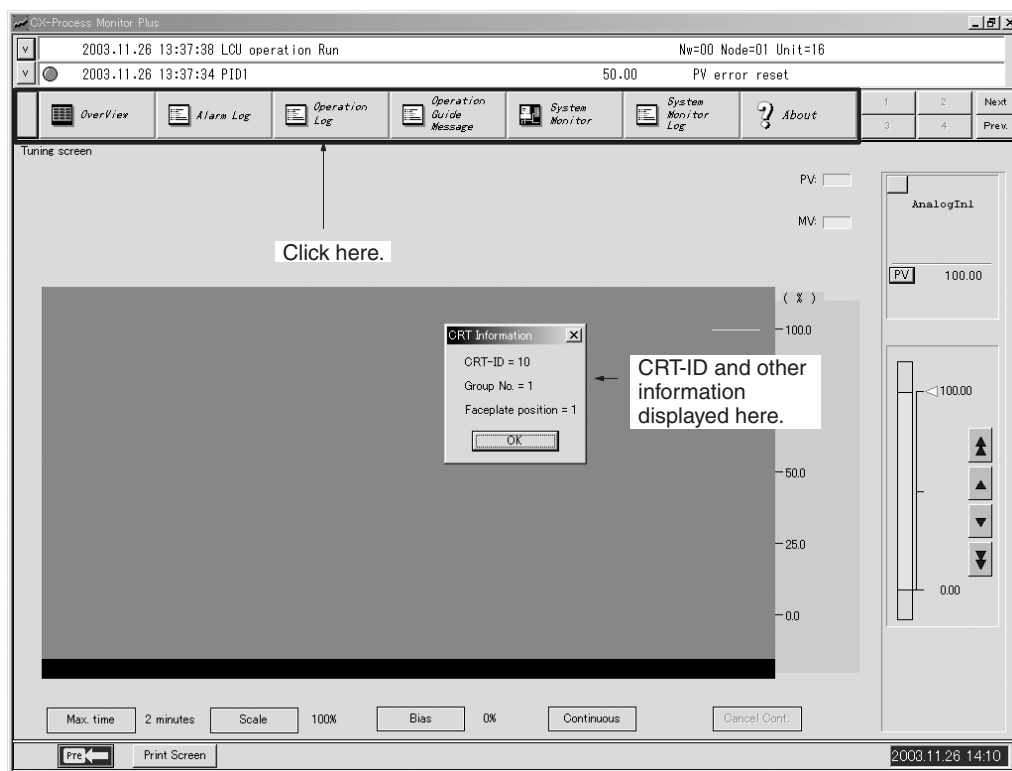
Specify the position on the function block diagram between 1 and 8. This setting is valid only for Tuning Screens.

### Disabling Auto-start

The auto-start setting can be disabled by either of the following two methods.

- Double-click the MonitorCom.exe file from your Explorer to open the System Information settings and disable auto-starting under the *Auto-start* settings.
- Click the right mouse button at the top of an Overview Display and then click the Yes Button on the dialog box that will appear to open the System Information settings. Disable auto-starting under the *Auto-start* settings

**Note** The CRT-ID, group number, and position can be confirmed by clicking at the top of a screen as shown below.



### Disabling Auto-start

The auto-start setting can be disabled by using either of the following two methods.

**1,2,3...**

1. Double-click the MonitorCom.exe file from Explorer to independently open the System Information settings (which include label information, alarm sound information, ten-key, color, and key lock settings) and disable auto-starting under the Auto-start settings.
2. If the auto-start is enabled, right-click at the top of an Overview Screen and then click the **Yes** Button in the dialog box that will appear to open the System Information settings. Disable auto-starting under the Auto-start settings.

## 5-6-9 CSV File Auto-save Settings

If **Set auto-save of CSV file** is selected, the following screen will be displayed.

The screenshot shows the 'System Info.' dialog box. On the left sidebar, the 'CSV' icon is selected, and the option 'Set auto-save of CSV file' is highlighted. The main panel is titled 'Error check capacity for file save.' and contains the following settings:

- Disk space for alarm: 1000 MB
- Disk space for error: 100 MB
- Trend settings - Real time Trend, Historical Trend
  - Real time Trend collection cycle: 10sec
  - Historical Trend collection cycle: 1min
- Batch Trend file retention period
  - ☒ Delete Batch Trend files expiring retention period.
  - Batch Trend file retention period: 366 Day
- Segment Program2 Trend retention period
  - ☒ Delete Segment trend file expiring retention period.
  - Segment Program2 Trend retention period: 366 Day

At the bottom right, there are two buttons: 'Save and exit' and 'Cancel'.

### Error Check Capacity when Saving Files

Set the amount of disk space at which to generate an alarm or error when the drive in which the CSV file is being saved starts becoming full. Setting the values as megabytes. An alarm or error will be generated when the drive set to save the CSV file in for Trend Screens reaches the specified level or lower.

Set the disk space within the following ranges for an alarm or error to be generated.

Disk space for generating an alarm: 10 to 5,000 MB (Default: 1,000 MB)

Disk space for generating an error: 1 to 4,999 MB (Default: 100 MB)

The CX-Process Monitor Plus does not provide functions to delete or overwrite old files.

**Note** Although different drives can be set for the Trend Screens, the error and alarm settings are used for all of them.

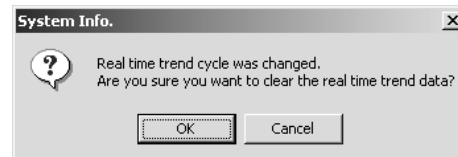
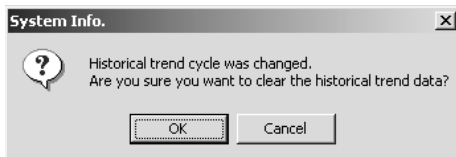


**Trend Settings: Realtime Trend and Historical Trend Collection Cycles**

The trend data collection cycles on the Trend Screen are set separately for realtime trends (1 to 30 s) and historical trends (1 to 60 min).

When a collection cycle setting is changed, one of the following dialog boxes will be displayed.

Click the OK Button to make the change, or click the Cancel Button to cancel the change.

**Batch Trend File Retention Period**

Select the option to have batch trend files created on the Batch Trend Screen deleted after a fixed period has elapsed.

Then set the number of days (from 10 to 36,600) for the batch trend file retention period.

By default this function is enabled and the retention period is set at 366 days.

**Segment Program 2 File Retention Period**

Select the option to have segment trend files created on the Segment Program 2 Screen deleted after a fixed period has elapsed.

Then set the number of days (from 10 to 36,600) for the segment trend file retention period.

By default this function is enabled and the retention period is set at 366 days.

## 5-6-10 Setting for Stopping Alarm Sound

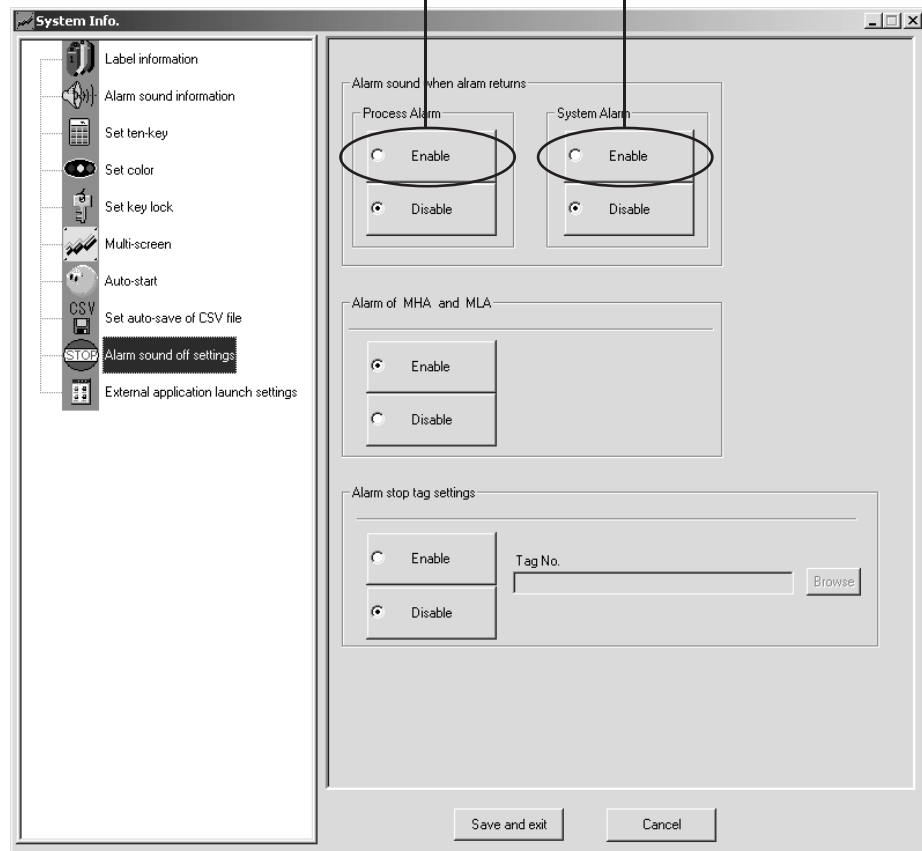
### Alarm Reset Settings

These settings specify whether or not an alarm sound will be produced when alarms are reset. There are separate settings for process alarms and system alarms.

- Process Alarms  
An alarm message is displayed in the Alarm Log Screen.
- System Alarms  
An alarm message is displayed in the System Monitor Screen.

Enable process alarm sounds to produce a sound when an alarm message is displayed in the Alarm Log Screen.

Enable system alarm sounds to produce a sound when an alarm message is displayed in the System Monitor Screen.

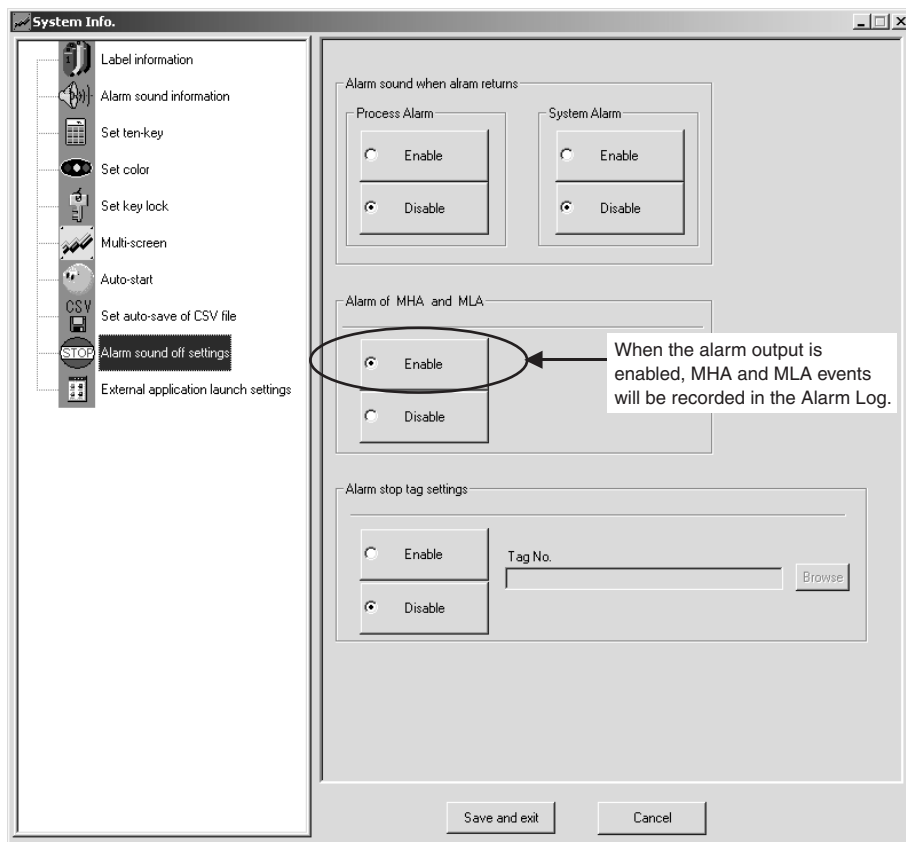


Both alarms are disabled by default.

**Note** When the alarm sound is disabled, no sound will be produced when the alarm is reset, but the alarm event will remain in the alarm log.

**MHA and MLA Alarm Setting**

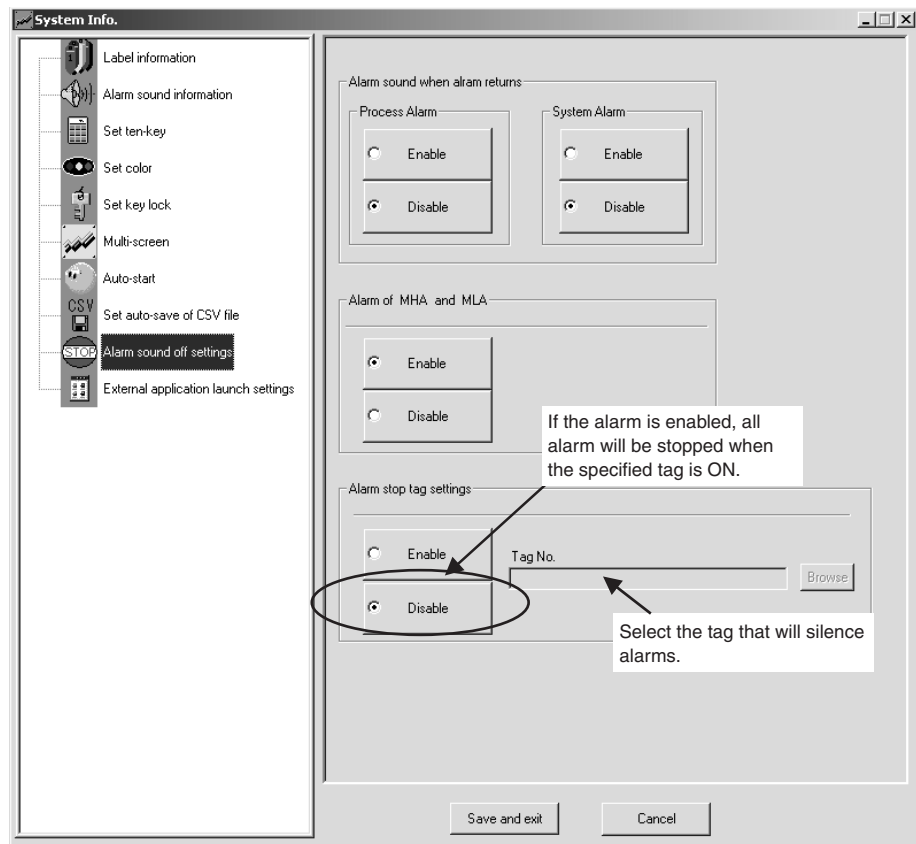
This setting specifies whether or not the MHA and MLA ITEM tags are treated as alarms. If MHA and MLA are treated as alarms, an alarm event will be recorded in the Alarm Log when MHA or MLA goes ON. If the alarm output is disabled, alarm events will not remain in the Alarm Log.



**Alarm Stop Function**

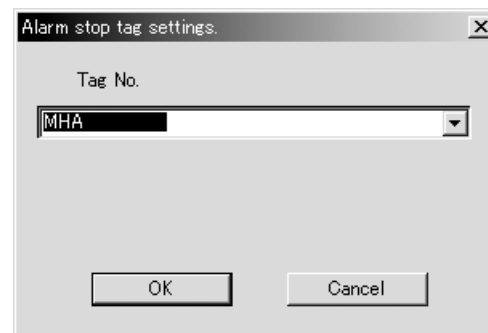
All alarm sounds can be silenced when the specified tag is ON.

When this function is enabled and the specified tag is ON, all alarm sounds (such as process alarms, system alarms, and annunciator alarms) will be stopped.

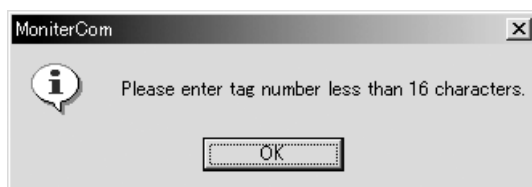
**Setting the Alarm Stop Tag**

Click the **Browse** Button next to the Tag Name field to display the following dialog box. Select the tag name of the tag that will control alarm sounds and click the **OK** Button.

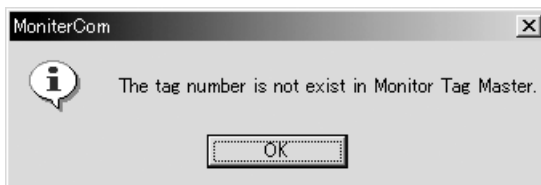
Contact tags in the user link table or internal switch tags can be specified as alarm stop tags.



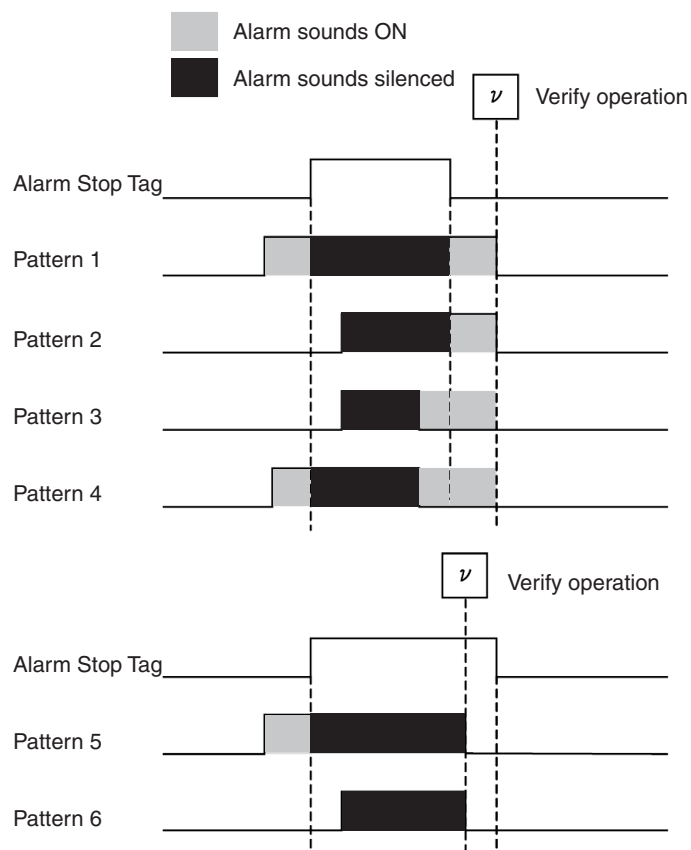
**Note** The following dialog box will be displayed if a tag name longer than 16 characters is input directly into this field. In this case, input an existing tag name that is up to 16 characters long.



The following dialog box will be displayed if a non-existent tag name is input. In this case, click the **Browse** Button and select a tag name.



### Time Chart of Alarm Stop Tag Operation



## 5-6-11 Settings Required to Start External Applications

A specified external application can be started while Monitor Plus is in use.

Set the application name, application path, and argument for the desired external application in this window. The argument is executed by being passed to the external application.

### Settings

#### Buttons and Application Name

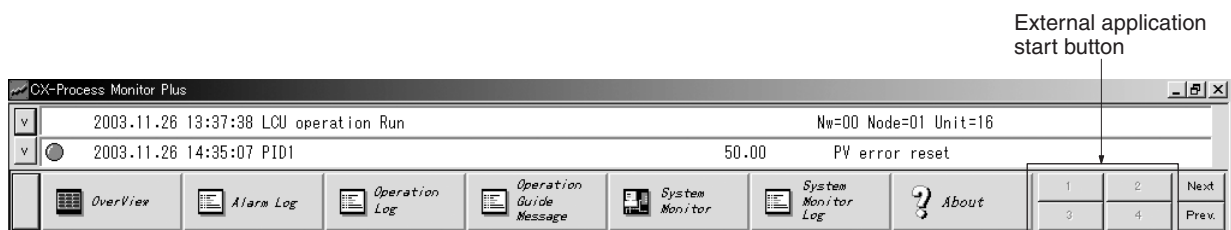
Set the external application names allocated to the external application start buttons on the screen as follows:

- Buttons:

The characters set here are displayed on the external application start buttons.

- Application name:

The application names set here are displayed as pop-ups on the screen.



**Path of Application**

Set the path to the application that you want to execute.

**Argument**

Set the argument to pass to the external application. If the argument contains a space, enclose the argument in double quotation marks.

For example, make the following settings to open the file C:\Project Folder\TagList.csv with Microsoft Excel:

Application name: Excel

Application path: C:\Program Files\Microsoft Office\Office10\EXCEL.EXE

Argument: C:\Project Folder\TagList.csv

**Options**

Select one of the following two display methods for when an external application is started from the CX-Process Monitor Plus.

**Open Monitor Plus Screen from the External Application.**

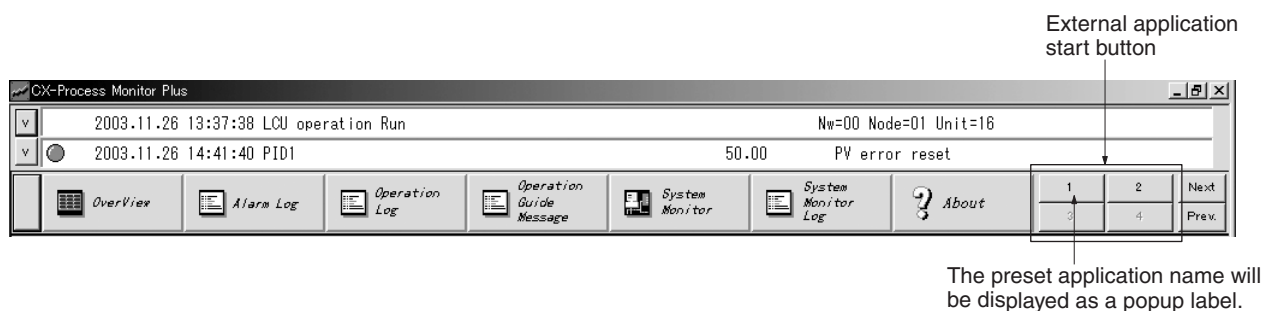
The CX-Process Monitor Plus display will be removed and the external application will be displayed over the entire screen.

**Utilize Launcher Screen.**

The external application will be displayed with a part of the CX-Process Monitor Plus Screen (the Launcher Window) remaining.

**Starting an External Application**

To start an external application, click the external application's start button.

**Re-displaying CX-Process Monitor Plus from an External Application****When Open Monitor Plus Screen from the External Application Is Selected**

From the external application, execute Hmene.exe with no argument.

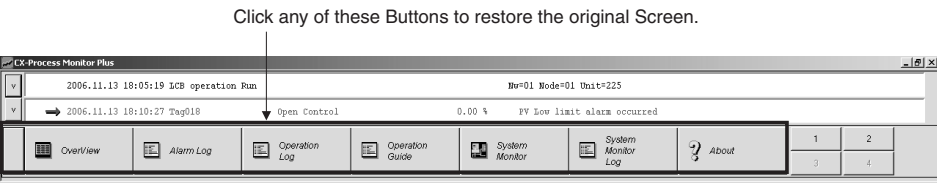
This file is installed in the system folder, so there is no need to specify the path.

Even if the CX-Process Monitor Plus Screen is not displayed while the external application is running, processes such as alarm monitoring and trend collection continue.

**When Utilize Launcher Screen Is Selected**

When an external application has been started, only the top of the Monitor Plus Window will be displayed, as shown in the following diagram.

To return to the original Screen, click any one of the Buttons in the area shown below.



When the external application’s Window is maximized, the Monitor Plus Window may be hidden in the background behind the external application. In this case, adjust the external application’s window size if necessary.

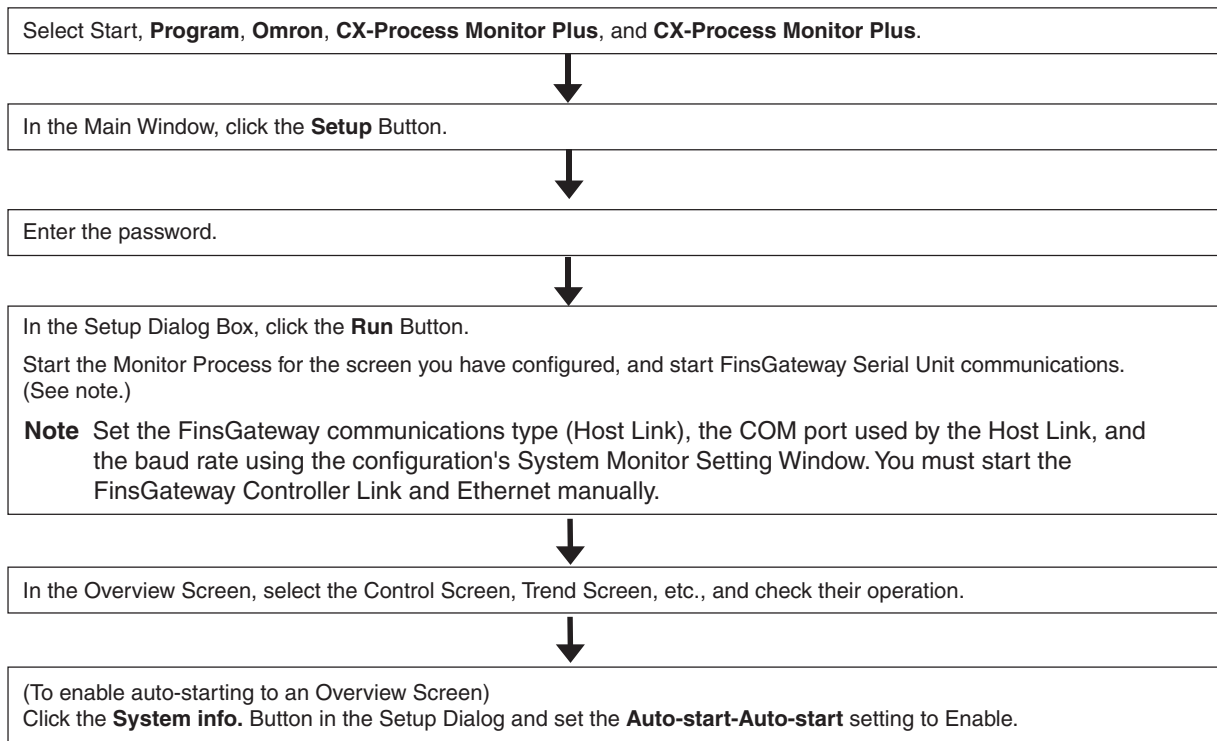
**Note** When a user–created external application is started, it may have some effect on Monitor Plus. Consider the effects of the external application on Monitor Plus before starting the external application.



## 5-7 Checking Configurations

Start the monitor process with the **Setup** Button in the Main Window, and display the Overview Screen to check that the screen configurations have been set correctly.

Refer to the sections from 4-5 onwards for details on operations on Monitor Screens selected from the Overview Screen.



### 5-7-1 Starting the Monitor Process and Displaying the Overview Window

- 1,2,3...**
- In the Main Window, click the **Setup** Button.  
A dialog box will be displayed to input the password.
  - Input the password and click the **OK** Button.  
The Setup Dialog Box will be displayed.
  - Click the **Run** Button.
  - The Monitor Process will start and the Setup Dialog Box will be closed.  
Only if using Serial (i.e., Host Link) communications, FinsGateway Serial Unit communications with the PLC will start according to the following communications conditions set using the System Monitor Setting Window (using the System Monitor Builder Button in the Setup Dialog Box) at the same time as the Monitor Process starts. Unless **Initialize Serial Port** in the Serial Communications Detailed Settings Dialog Box is selected, however, communications will not start automatically. Refer to 5-3 *System Monitor Settings* for details.
    - Communications type: Serial (Host Link)
    - COM port used and baud rate (if using Host Link)

**Note** (a) PLC network address, node address, and Unit address communications are based upon the settings made using the CX-Process Tool (select **Settings, Network Settings**). (Set the node address and Unit address using the System Monitor Settings Window to use the System Monitor Screen).

(b) If using Controller Link or Ethernet, you must start FinsGateway communications manually. (Set Controller Link and Ethernet communications type using the System Monitor Settings Window to use the System Monitor Screen).

5. The Overview Screen will be displayed as shown in *Section 4-5 Overview Screen*. Check to make sure that screens selected and set in the Overview Screen are operating correctly. For details on individual screens, refer to the sections from 4-7 onwards.

## 5-7-2 Setting the Auto-start Function

- 1,2,3...**
1. Click the **System Info.** Button in the Setup Dialog Box.
  2. Select **Auto-start.**
  3. Set **Auto-start** to *Enable*.

**Note** If the auto-start function is enabled, an Overview Screen will be displayed as soon as the CX-Process is started. The auto-start setting can be disabled by either of the following two methods.

- Double-click the MonitorCom.exe file from your Explorer to open the System Information settings and disable auto-starting under the *Auto-start* settings.
- Click the right mouse button at the top of an Overview Display and then click the Yes Button on the dialog box that will appear to open the System Information settings. Disable auto-starting under the *Auto-start* settings.

## 5-7-3 Ending the Monitor Process

- 1,2,3...**
1. Click the **Close** Button in the upper right corner of the Overview Screen.
  2. If a monitor process such as data collection or trend collection is in progress, a dialog box will be displayed to confirm that the monitor process is to be ended. Click the **Yes** Button.
  3. The monitor process will be ended.



## **SECTION 6**

### **Troubleshooting**

This section describes errors that can occur while using the CX-Process Monitor Plus.

The following table shows the causes of errors that may occur during CX-Process Monitor Plus operations, and the action to take to clear the errors. Clear the cause of the error using the table below.

| Phenomenon                                                                            | Cause                                                                                                                                                                                                                            | Action                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cannot display Tag names.                                                             | No tag names have been registered in the tag settings for Monitor Plus using CX-Process Tool.                                                                                                                                    | Register the tag name using CX-Process Tool, and then compile the tags for Monitor Plus.                                                                                                                                                                                                                                                                                                                        |
| The Loop Control Unit reads Information Not Refreshed in the System Monitor Screen.   | The computer communications type setting in the System Monitor Builder Screen is incorrect.                                                                                                                                      | Change the communications type setting.                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                       | The Loop Control Unit's address in the System Monitor Screen's node settings and the actual Loop Control Unit's address do not agree.                                                                                            | Change the Loop Control Unit's address in the node settings to agree with the actual Loop Control Unit's address.                                                                                                                                                                                                                                                                                               |
| Error in Data Refresh Check is displayed in the System Monitor Messages.              | The Monitor Tag settings between CX-Process Tool and CX-Process Monitor Plus agree, but the Function Block data when the Monitor Tag settings were made using CX-Process Tool have not been downloaded to the Loop Control Unit. | Download the Function Block from when the Tags were set using CX-Process Tool to the Loop Control Unit, and restart the Loop Control Unit.                                                                                                                                                                                                                                                                      |
|                                                                                       | Power supply to the PLC Unit is turned OFF.                                                                                                                                                                                      | Turn ON the power supply to the PLC Unit.                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                       | Communications cable is not connected.                                                                                                                                                                                           | Connect the communications cable.                                                                                                                                                                                                                                                                                                                                                                               |
| Cannot move from the Overview Screen to the Control Screens or Tuning Screens.        | The tag number registered using CX-Process Tool cannot be set correctly in the CX-Process Monitor Plus.                                                                                                                          | Reset the Tags using the Graphic Builder Screen and the CRT Builder Screen.                                                                                                                                                                                                                                                                                                                                     |
| Error in Data Link Status Communications is displayed in the System Monitor Messages. | If the communications type setting is not CLK, the power supply to the PLC is turned OFF, or the communications cable is not connected.                                                                                          | Turn ON the power supply to the PLC Unit, or connect the communications cable.                                                                                                                                                                                                                                                                                                                                  |
| The message dialog box Could Not Initialize FinsGateway is displayed.                 | FinsGateway Serial Unit initialization failed. (i.e., network address set using CX-Process Tool and FinsGateway Serial Unit network address do not agree.)                                                                       | <ol style="list-style-type: none"> <li>1. Make sure the network address set using CX-Process Tool, and FinsGateway Serial Unit network address agree.</li> <li>2. Compile the Monitor Tags, and then reset the node PLC using the System Monitor Builder Screen.</li> <li>3. (If the above two actions fail)<br/>Clear the Initialize Serial Port check box using the System Monitor Builder Screen.</li> </ol> |
| Definitions Don't Agree With System is displayed in the System Monitor Messages.      | The actual Loop Control Unit in the System Monitor Builder Screen has not been set using the System Monitor Builder.                                                                                                             | Register the actual Loop Control Unit using all the System Monitor Builders.                                                                                                                                                                                                                                                                                                                                    |
|                                                                                       | The network address when the Tag settings were made using CX-Process Tool, and the node address settings, do not agree with the actual Unit.                                                                                     | <ol style="list-style-type: none"> <li>1. Make sure the network address and node address set using CX-Process tool, and the actual node address agree.</li> <li>2. Compile the monitor Tags using CX-Process Tool, and then reset the node PLC using the System Monitor Builder Screen.</li> </ol>                                                                                                              |
| A timeout occurred in communications with the Ne□, Node□ PLC.                         | A timeout occurred in communications with the CPU Unit.                                                                                                                                                                          | <p>Check to make sure that the PLC power is turned ON.</p> <p>Check to make sure that the FinsGateway settings are correct.</p>                                                                                                                                                                                                                                                                                 |

| Phenomenon                                                                                                                                                        | Cause                                                                                                                                                                                                                                                                                                                          | Action                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| An illegal response was received from the Net□, Node□ PLC.                                                                                                        | An illegal response was received from the CPU Unit.                                                                                                                                                                                                                                                                            | Check to make sure that the FinsGateway settings are correct.<br>Check for an error at the CPU Unit and remove the cause of the error if necessary.                                                                                                                                                                                                                                                                                    |
| A timeout occurred in communications with an LCB registered at Net□, Node□.<br>A timeout occurred in communications with an LCU registered at Net□, Node□, Unit□. | A timeout occurred in communications with the Loop Controller.                                                                                                                                                                                                                                                                 | Check to make sure that the Loop Controller is correctly installed.                                                                                                                                                                                                                                                                                                                                                                    |
| An illegal response was received from an LCB registered at Net□, Node□.<br>An illegal response was received from an LCU registered at Net□, Node□, Unit□.         | An illegal response was received from the Loop Controller.                                                                                                                                                                                                                                                                     | Check to make sure that the Loop Controller is correctly installed.<br>Check for an error at the Loop Controller.                                                                                                                                                                                                                                                                                                                      |
| The LCB model registered at the Net□, Node□ is incorrect.<br>The LCU model registered at Net□, Node□, Unit□ is incorrect.                                         | The Loop Controller model is incorrect.                                                                                                                                                                                                                                                                                        | The registered Loop Controller is not the one that is connected. Check the model.                                                                                                                                                                                                                                                                                                                                                      |
| The EM bank number for the LCB registered at Net□, Node□ is incorrect.                                                                                            | The EM bank number used by the LCB is incorrectly set.                                                                                                                                                                                                                                                                         | The EM bank numbers that can be used by Loop Control Boards are 0 to C. Set a number within this range.                                                                                                                                                                                                                                                                                                                                |
| The HMI interface setting for the LCB registered at Net□, Node□ is incorrect.                                                                                     | The HMI interface settings for the LCB are not enabled.                                                                                                                                                                                                                                                                        | The CX-Process Monitor Plus will not operate correctly if the HMI interface settings for the LCB are not enabled.<br>Enable the HMI interface settings.                                                                                                                                                                                                                                                                                |
| Block Execution Error is displayed in the System Monitor Messages.                                                                                                | An execution error has occurred in the Function Block data downloaded to the Loop Control Unit.                                                                                                                                                                                                                                | <ol style="list-style-type: none"> <li>1. Click the <b>E</b> Button on the Loop Control Unit in the System Monitor Screen.</li> <li>2. Click the <b>Execution Error</b> Button in the Function Block Error Dialog Box.</li> <li>3. Check the Execution error's Function Block using the Details Of Function Block Error Dialog Box.</li> <li>4. Correct the settings for the relevant Function Block using CX-Process Tool.</li> </ol> |
| Unit Address Setting Disagrees With Actual Unit Number is displayed in the System Monitor Messages.                                                               | The actual Loop Control Unit's address and the node PLC's Unit address in the System Monitor Builder Screen do not agree.                                                                                                                                                                                                      | Make sure the actual Loop Control Unit's address and the System Monitor Builder's node PLC Unit's address agree.                                                                                                                                                                                                                                                                                                                       |
| ERROR CODE: is displayed during Loop Control Unit Run/stop in the System Monitor Screen.                                                                          | The FinsGateway setting or the network setting is incorrect.                                                                                                                                                                                                                                                                   | Correct the FinsGateway setting and the network settings.                                                                                                                                                                                                                                                                                                                                                                              |
| An address error message is displayed on the System Monitor Screen.                                                                                               | <p>It's possible that the ladder program or another Unit is writing data to the area of memory used for system information. The system information is stored in the following areas.</p> <p>DM 16020 to DM 16044 for the Loop Control Unit</p> <p>20 words from the first word used for the HMI for the Loop Control Board</p> | Check the ladder program and Unit configuration to see if the system information area is being written to.                                                                                                                                                                                                                                                                                                                             |

| Phenomenon                                  | Cause                                                                                                                                                                           | Action                                                                                                                                                                                                                                        |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring cannot be performed normally.    | After generating the tag file for Monitor Plus, newly updated tag information or network settings have not been set correctly.                                                  | Correctly set the tag information of network settings updated on a Builder Screen.                                                                                                                                                            |
|                                             | After generating the tag file for Monitor Plus, the data set with the CX-Process Tool has not been downloaded to the Loop Control Unit/Board.                                   | After changing the program with the CX-Process Tool and generating the tag file for Monitor Plus, download the data that was set to the Loop Control Unit/Board.                                                                              |
|                                             | It's possible that the ladder program or another Unit is writing data to the area of memory used for data exchange between the function blocks and the CX-Process Monitor Plus. | Check the ladder program and Unit configuration to see if any of the following areas of memory are being written to.<br>Loop Control Units: Memory area specified for Send All Block<br>Loop Control Board: Memory area being used by the HMI |
| Tag names that are newly set cannot be set. | The CX-Process Monitor Plus was not restarted after generating a tag file for Monitor Plus during CX-Process Monitor Plus operation.                                            | Restart the CX-Process Monitor Plus.                                                                                                                                                                                                          |

# Appendix A

## Reading/Writing Function Block ITEMS

The following tables show which tag ITEMS can be monitored or set using CX-Process Monitor Plus for function blocks for which CSV tags are set.

### Basic PID (Block Model 011)

| ITEM type      | ITEM | Tag ITEM | Data description                                                                   | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|------------------------------------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                                                    |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_ST    | Stop block operation command(0: Cancel stop, 1: Stop)                              | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R               | R                   |                   |
| Analog input   | 007  | PV       | PV input                                                                           | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 008  | HH_SP    | High/high alarm setting                                                            | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 009  | H_SP     | High alarm setting                                                                 | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 010  | L_SP     | Low alarm setting                                                                  | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 011  | LL_SP    | Low/low alarm setting                                                              | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 013  | HH       | High/high alarm output                                                             | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 014  | H        | High alarm output                                                                  | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 015  | L        | Low alarm output                                                                   | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
| Contact output | 016  | LL       | Low/low alarm output                                                               | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 017  | ALM_OFF  | Alarm stop switch<br>0: Alarm, 1: Stop                                             | 0 or 1             | R (Color)                                  | R               | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter      | 019  | PV_ABN   | PV execution error display<br>0:Normal,<br>1:Error → MAN-UAL mod                   | 0 or 1             |                                            | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 023  | SP       | Local Set Point setting                                                            | -15.00 to +115.00% |                                            | W               | W              |               |                    |                                      | W               |                     |                   |
|                | 024  | CAS_SET  | Set Point setting mode<br>0: Local only<br>1: Remote/Local                         | 0 or 1             |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
|                | 026  | R/L_SW   | Remote/Local switch<br>0: Local<br>1: Remote<br>Note: Valid only when ITEM024 is 1 | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Analog output  | 029  | SP       | Current Set Point output                                                           | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 035  | AT       | AT command/AT Executing                                                            | 0.1                |                                            |                 | R/W            | R             | R                  | R                                    | R/W             | R                   | R                 |
|                | 041  | DVA_SP   | Deviation alarm setting (Hysteresis is set at ITEM012.)                            | 0 to 115.00%       |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 042  | DVA      | Deviation alarm output                                                             | 0 or 1             |                                            | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |



| ITEM type      | ITEM | Tag ITEM | Data description                                                                     | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|--------------------------------------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                                                      |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Parameter      | 054  | P        | Proportional band                                                                    | 0.1 to 999.9%      |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 055  | I        | Integral time (0: No integral action)                                                | 0 to 9999 s        |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 056  | D        | Differential time (0: No differential action)                                        | 0 to 9999 s        |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 076  | MH_LMT   | High MV limit                                                                        | ±320.00%           |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 077  | ML_LMT   | Low MV limit                                                                         | ±320.00%           |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 078  | MHA      | MV upper limit output value<br>1: Upper limit or more<br>0: Less than upper limit    | 0 or 1             | R                                          |                 | R              | R             | R                  | R                                    | R               | R                   |                   |
|                | 079  | MLA      | MV lower limit output value<br>1: Lower limit or less<br>0: Greater than lower limit | 0 or 1             | R                                          |                 | R              | R             | R                  | R                                    | R               | R                   |                   |
| Contact input  | 086  | A/M_SW   | Auto/Manual switch<br>0: Manual, 1: Auto                                             | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter      | 089  | MV       | Host display of MV                                                                   | ±320.00%           |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 091  | MV_ABN   | MV execution error display<br>0: Normal, 1: Error                                    | 0 or 1             |                                            |                 |                | R             | R                  | R                                    | R               | R                   | R                 |
|                | 098  | MV_IDX   | MV execution error display<br>0: Normal, 1: Error                                    | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 099  | OP_MK    | Label                                                                                | 0 to 15            |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## Advanced PID (Block Model 012)

| ITEM type      | ITEM | Tag ITEM | Data description                                      | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|-------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                       |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_ST    | Stop block operation command(0: Cancel stop, 1: Stop) | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R               | R                   |                   |
| Analog input   | 007  | PV       | PV input                                              | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 008  | HH_SP    | High/high alarm setting                               | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 009  | H_SP     | High alarm setting                                    | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 010  | L_SP     | Low alarm setting                                     | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 011  | LL_SP    | Low/low alarm setting                                 | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 013  | HH       | High/high alarm output                                | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 014  | H        | High alarm output                                     | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 015  | L        | Low alarm output                                      | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 016  | LL       | Low/low alarm output                                  | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |

| ITEM type               | ITEM | Tag ITEM | Data description                                                                                        | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|-------------------------|------|----------|---------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                         |      |          |                                                                                                         |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input           | 017  | ALM_OFF  | Alarm stop switch<br>0: Alarm, 1: Stop                                                                  | 0 or 1             |                                            | R (Color)       | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter               | 019  | PV_ABN   | PV execution error display<br>0:Normal, 1:Error → MAN-UAL mode                                          | 0 or 1             |                                            |                 | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                         | 023  | SP       | Local Set Point setting                                                                                 | −15.00 to +115.00% |                                            | W               | W              |               |                    |                                      | W               |                     |                   |
|                         | 024  | CAS_SET  | Set Point setting mode (default)0: Local only1: Remote/Local<br>Note: Setting to 0 invalidates ITEM026. | 0 or 1             |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
|                         | 026  | R/L_SW   | Remote/Local switch<br>0: Local, 1: Remote<br>Note: Valid only when ITEM024 is 1                        | 0 or 1             |                                            | R/W             | R/W            |               |                    |                                      | R/W             | R                   |                   |
| Analog output           | 029  | SP       | Current Set Point output                                                                                | −15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter               | 035  | AT       | AT command/AT Executing                                                                                 | 0.1                |                                            |                 | R/W            | R             | R                  | R                                    | R/W             | R                   | R                 |
|                         | 041  | DVA_SP   | Deviation alarm setting (Hysteresis is set at ITEM012.)                                                 | 0 to 115.00%       |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output          | 042  | DVA      | Deviation alarm output                                                                                  | 0 or 1             | R                                          | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
| Parameter               | 054  | P        | Proportional band                                                                                       | 0.1 to 999.9%      |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                         | 055  | I        | Integral time (0: No integral action)                                                                   | 0 to 9999 s        |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                         | 056  | D        | Differential time (0: No differential action)                                                           | 0 to 9999 s        |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                         | 076  | MH_LMT   | High MV limit                                                                                           | ±320.00%           |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                         | 077  | ML_LMT   | Low MV limit                                                                                            | ±320.00%           |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output          | 078  | MHA      | High MV limit arrival output<br>1: Limit or more, 0: Less than limit                                    | 0 or 1             | R                                          |                 | R              | R             | R                  | R                                    | R               | R                   |                   |
| Contact output          | 079  | MLA      | Low MV limit arrival output<br>1: Limit or less, 0: Not limit or less                                   | 0 or 1             | R                                          |                 | R              | R             | R                  | R                                    | R               | R                   |                   |
| Contact input/parameter | 086  | A/M_SW   | Auto/Manual switch<br>0: Manual, 1: Auto                                                                | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter               | 089  | MV       | Host display of MV                                                                                      | ±320.00%           |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                         | 091  | MV_ABN   | MV execution error display<br>0: Normal, 1: Error                                                       | 0 or 1             |                                            | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                         | 098  | MV_IDX   | MV index position                                                                                       | −15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                         | 099  | OP_MK    | Label                                                                                                   | 0 to 15            |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## 2-position ON/OFF (Block Model 001)

| ITEM type      | ITEM | Tag ITEM | Data description                                      | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|-------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                       |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_ST    | Stop block operation command(0: Cancel stop, 1: Stop) | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R               | R                   |                   |
| Analog input   | 007  | PV       | PV input                                              | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 008  | HH_SP    | High/high alarm setting                               | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 009  | H_SP     | High alarm setting                                    | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 010  | L_SP     | Low alarm setting                                     | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 011  | LL_SP    | Low/low alarm setting                                 | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 041  | DVA_SP   | Deviation alarm setting                               | 0 to 115.00%       |                                            | R               | R/W            | R             | R                  | R                                    | W               |                     |                   |
| Contact output | 013  | HH       | High/high alarm output                                | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                | 014  | H        | High alarm output                                     | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                | 015  | L        | Low alarm output                                      | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                | 016  | LL       | Low/low alarm output                                  | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                | 042  | DVA      | Deviation alarm output                                | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
| Contact input  | 017  | ALM_OFF  | Alarm stop switch                                     | 0 or 1             | R (Color)                                  |                 | R/W            |               |                    |                                      |                 |                     |                   |
| Parameter      | 019  | PV_ABN   | PV execution error display                            | 0 or 1             |                                            |                 | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 023  | SP       | Local Set Point setting                               | -15.00 to +115.00% |                                            | W               | W              |               |                    |                                      | W               |                     |                   |
|                | 024  | CAS_SET  | Set Point setting mode                                | 0 or 1             |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
|                | 026  | R/L_SW   | Remote/Local switch                                   | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Analog output  | 029  | SP       | Current Set Point output                              | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 093  | MV       | Host display of MV                                    | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 099  | OP_MK    | Label                                                 | 0 to 15            |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## 3-position ON/OFF (Block Model 002)

| ITEM type      | ITEM | Tag ITEM | Data description                                      | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|-------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                       |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_ST    | Stop block operation command(0: Cancel stop, 1: Stop) | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R               | R                   |                   |
| Analog input   | 007  | PV       | PV input                                              | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 008  | HH_SP    | High/high alarm setting                               | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 009  | H_SP     | High alarm setting                                    | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 010  | L_SP     | Low alarm setting                                     | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 011  | LL_SP    | Low/low alarm setting                                 | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 041  | DVA_SP   | Deviation alarm setting                               | 0 to 115.00%       |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 013  | HH       | High/high alarm output                                | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                | 014  | H        | High alarm output                                     | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                | 015  | L        | Low alarm output                                      | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                | 016  | LL       | Low/low alarm output                                  | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                | 042  | DVA      | Deviation alarm output                                | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
| Contact input  | 017  | ALM_OFF  | Alarm stop switch                                     | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Parameter      | 019  | PV_ABN   | PV execution error display                            | 0 or 1             |                                            |                 |                | R             | R                  | R                                    | R               | R                   | R                 |
|                | 023  | SP       | Local Set Point setting                               | -15.00 to +115.00% |                                            | W               | W              |               |                    |                                      | W               |                     |                   |
|                | 024  | CAS_SET  | Set Point setting mode                                | 0 or 1             |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
|                | 026  | R/L_SW   | Remote/Local switch                                   | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Analog output  | 029  | SP       | Current Set Point output                              | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
|                | 093  | MVH      | Host display of MVH                                   | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 095  | MVL      | Host display of MVL                                   | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Parameter      | 099  | OP_MK    | Label                                                 | 0 to 15            |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## Blended PID (Block Model 013)

| ITEM type                | ITEM | Tag ITEM | Data description                                       | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|--------------------------|------|----------|--------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                          |      |          |                                                        |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input            | 000  | MT_ST    | Stop block operation command (0: Cancel stop, 1: Stop) | 0 or 1             | R (Color)                                  | R (Color)       | R              | R             | R                  | R                                    | R               |                     |                   |
| Analog input             | 007  | PV       | PV input                                               | 0 to 9999          |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter                | 027  | K1       | Ratio                                                  | 0 to 3.2000        |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Accumulated value output | 012  | Q1       | Accumulated value                                      | 0 to 9999          |                                            |                 | R              | R             | R                  | R                                    | R               |                     |                   |
|                          | 013  | Q2       | Accumulated value                                      | 0 to 9999          |                                            |                 | R              | R             | R                  | R                                    | R               |                     |                   |
| Analog output            | 016  | Y1       | Instantaneous value output                             | 0 to 320.00%       |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
|                          | 029  | Y2       | Current Set Point instantaneous value output           | 0 to 320.00%       |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter                | 031  |          | Cumulative deviation High/high alarm output            | ±320.00%           |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 032  |          | Cumulative deviation High alarm setting                | ±320.00%           |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 033  |          | Cumulative deviation Low alarm setting                 | ±320.00%           |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 034  |          | Cumulative deviation Low/low alarm setting             | ±320.00%           |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output           | 036  | DHH      | Cumulative deviation High/high alarm output            | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                          | 037  | DH       | Cumulative deviation High alarm output                 | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                          | 038  | DL       | Cumulative deviation Low alarm output                  | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
|                          | 039  | DLL      | Cumulative deviation Low/low alarm output              | 0 or 1             | R (Color)                                  | R (Color)       | R (Color)      | R             | R                  | R                                    | R               | R                   | R                 |
| Contact input            | 017  | ALM_OFF  | Alarm stop switch                                      | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 014  | S1       | Counter reset                                          | 0 or 1             |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Parameter                | 054  | P        | Proportional band                                      | 0.1 to 999.9%      |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 055  | I        | Integral time                                          | 0 to 9999 s        |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 056  | D        | Differential time                                      | 0 to 9999 s        |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 076  | MH_LMT   | High MV limit                                          | ±320.00%           |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 077  | ML_LMT   | Low MV limit                                           | ±320.00%           |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact input            | 086  | A/M_SW   | Auto/Manual switch                                     | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Parameter                | 089  | MV       | Host display of MV                                     | ±320.00%           |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 091  | MV_ABN   | MV error display<br>0: Normal, 1: Error                | 0 or 1             |                                            |                 |                | R             | R                  | R                                    | R               | R                   | R                 |
|                          | 098  | MV_IDX   | MV index position                                      | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 099  | OP_MK    | Label                                                  | 0 to 15            |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## Batch Flowrate Capture (Block Model 014)

| ITEM type                | ITEM | Tag ITEM | Data description                                        | Data range     | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|--------------------------|------|----------|---------------------------------------------------------|----------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                          |      |          |                                                         |                | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input            | 000  | MT_ST    | Stop block operation command(0: Cancel stop, 1: Stop)   | 0 or 1         | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R               | R                   |                   |
| Accumulated value input  | 007  | P1       | PV input                                                | 0 to 9999      |                                            |                 |                | R             | R                  | R                                    | R               |                     |                   |
| Accumulated value output | 012  | Q1       | Accumulated value (lower 4 digits)                      | 0000 to 9999   |                                            |                 | R              | R             | R                  | R                                    | R               |                     |                   |
|                          | 013  | Q2       | Accumulated value (upper 4 digits)                      | 0000 to 9999   |                                            |                 | R              | R             | R                  | R                                    | R               |                     |                   |
| Contact input            | 014  | S3       | Accumulation counter reset switch (1: Reset)            | 0 or 1         |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Analog output            | 016  | Y1       | Instantaneous value output                              | 0 to 320.00%   |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter                | 023  | SP       | Local SP setting                                        | 0 to 9999      |                                            | W               | W              |               |                    |                                      | W               |                     |                   |
| Contact input/parameter  | 026  | R/L_SW   | Remote/Local switching<br>0: Local, 1: Remote           | 0 or 1         |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Accumulated value output | 029  | SP       | Current Set Point output                                | 0 to 9999      |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
|                          | 032  | B0       | Overrun setting (value subtracted from BM)              | 0 to 9999      |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 033  | BP       | Pre-batch setting (value subtracted from BM)            | 0 to 9999      |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 034  | B1       | Flowrate limitation                                     | 0 to 9999      |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Analog output            | 035  | SM       | Batch accumulated value (lower 4 digits)<br>Fixed value | 0000 to 9999   |                                            | R               | R              | R             | R                  | R                                    | R/W             |                     |                   |
| Contact input            | 036  | S1       | Run switch (0: Reset, 1: Run)                           | 0 or 1         |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
|                          | 037  | S2       | Control interrupt switch (1: Interrupt)                 | 0 or 1         |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Contact output           | 038  | U1       | Main batch output                                       | 0 or 1         |                                            | R               | R              | R             | R                  | R                                    | R/W             | R                   |                   |
|                          | 039  | U2       | Pre-batch output                                        | 0 or 1         |                                            | R               | R              | R             | R                  | R                                    | R/W             | R                   |                   |
| Contact input/parameter  | 086  | A/M_SW   | SW<br>0: Manual, 1: Auto                                | 0 or 1         |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter                | 089  | MV       | Host display of MV                                      | ±320.00%       |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 091  | MV_ABN   | MV error display<br>0: Normal, 1: Error                 | 0 or 1         |                                            | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                          | 098  | MV_IDX   | MV index position                                       | -15 to 115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                          | 099  | OP_MK    | Label                                                   | 0 to 15        |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## Indication and Setting (Block Model 031)

| ITEM type               | ITEM | Tag ITEM | Data description                                      | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|-------------------------|------|----------|-------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                         |      |          |                                                       |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input           | 000  | MT_ST    | Stop block operation command(0: Cancel stop, 1: Stop) | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R               | R                   |                   |
| Analog input            | 007  | PV       | PV input                                              | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter               | 008  | HH_SP    | High/high alarm setting                               | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                         | 009  | H_SP     | High alarm setting                                    | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                         | 010  | L_SP     | Low alarm setting                                     | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                         | 011  | LL_SP    | Low/low alarm setting                                 | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output          | 013  | HH       | High/high alarm output                                | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                         | 014  | H        | High alarm output                                     | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                         | 015  | L        | Low alarm output                                      | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                         | 016  | LL       | Low/low alarm output                                  | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
| Contact input           | 017  | ALM_OFF  | Alarm stop switch<br>0: Alarm, 1: Stop                | 0 or 1             | R (Color)                                  |                 | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter               | 019  | PV_ABN   | PV error display<br>0: Normal, 1: Error               | 0 or 1             |                                            |                 | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                         | 023  | SP       | Local Set Point setting                               | -15.00 to +115.00% |                                            | W               | W              |               |                    |                                      | W               |                     |                   |
|                         | 024  | CAS_SET  | Set Point setting mode                                | 0 or 1             |                                            | R/W             | R              | R             | R                  | R                                    | R               | R                   |                   |
| Contact input/parameter | 026  | R/L_SW   | Remote/Local switch                                   | 0 or 1             |                                            |                 | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Analog output           | 029  | SP       | Current Set Point output                              | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter               | 099  | OP_MK    | Label                                                 | 0 to 15            |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## Indication and Operation (Block Model 032)

| ITEM type      | ITEM | Tag ITEM | Data description                                                                     | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|--------------------------------------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                                                      |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_ST    | Stop block operation command(0: Cancel stop, 1: Stop)                                | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R               | R                   |                   |
| Analog input   | 007  | PV       | PV input                                                                             | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R/W             |                     |                   |
| Parameter      | 008  | HH_SP    | High/high alarm setting                                                              | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 009  | H_SP     | High alarm setting                                                                   | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 010  | L_SP     | Low alarm setting                                                                    | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 011  | LL_SP    | Low/low alarm setting                                                                | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 013  | HH       | High/high alarm output                                                               | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 014  | H        | High alarm output                                                                    | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 015  | L        | Low alarm output                                                                     | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 016  | LL       | Low/low alarm output                                                                 | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
| Contact input  | 017  | ALM_OFF  | Alarm stop switch<br>0: Alarm, 1: Stop                                               | 0 or 1             | R (Color)                                  |                 | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter      | 019  | PV_ABN   | PV error display<br>0: Normal, 1: Error                                              | 0 or 1             |                                            |                 | R              | R             | R                  | R                                    | R               | R                   | R                 |
| Parameter      | 076  | MH_LMT   | High MV limit                                                                        | ±320.00%           |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 077  | ML_LMT   | Low MV limit                                                                         | ±320.00%           |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 078  | MHA      | MV upper limit output value<br>1: Upper limit or more<br>0: Less than upper limit    | 0 or 1             | R                                          |                 | R              | R             | R                  | R                                    | R               | R                   |                   |
|                | 079  | MLA      | MV lower limit output value<br>1: Lower limit or less<br>0: Greater than lower limit | 0 or 1             | R                                          |                 | R              | R             | R                  | R                                    | R               | R                   |                   |
| Analog input   | 084  | X1       | Auto input                                                                           | ±320.00%           |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Contact input  | 086  | A/M_SW   | Auto/Manual switch<br>0: Manual, 1: Auto                                             | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter      | 089  | MV       | Inversion of host display of MV                                                      | ±320.00%           |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 091  | MV_ABN   | MV execution error display<br>0: Normal, 1: Error                                    | 0 or 1             |                                            | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 098  | MV_IDX   | MV index position                                                                    | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 099  | OP_MK    | Label                                                                                | 0 to 15            |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.



## Ratio Setting (Block Model 033)

| ITEM type     | ITEM | Tag ITEM | Data description                                                      | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|---------------|------|----------|-----------------------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|               |      |          |                                                                       |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input | 000  | MT_ST    | Stop block operation command (0: Cancel stop, 1: Stop)                | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R               | R                   |                   |
| Analog input  | 007  | PV       | Reference input                                                       | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter     | 019  | PV_ABN   | PV error display<br>0: Normal, 1: Error                               | 0 or 1             |                                            |                 | R              | R             | R                  | R                                    | R               | R                   | R                 |
|               | 023  | SP       | Local ratio setting                                                   | -15.00 to +115.00% |                                            | R/W             | R/W            | R             | R                  | R                                    | R               |                     |                   |
| Contact input | 024  | CAS_SET  | Ratio setting mode<br>0: Local only<br>1: Remote/Local                | 0 or 1             |                                            |                 | R              | R             | R                  | R                                    | R               | R                   |                   |
|               | 026  | R/L_SW   | Remote/Local switch<br>0: Local, 1: Remote                            | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter     | 054  | K1       | Ratio range (sets signal ratio range corresponding to Set Point=100%) | ±10.000            |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|               | 055  | A1       | Input bias                                                            | ±320.00%           |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|               | 056  | B1       | Output bias                                                           | ±320.00%           |                                            |                 | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|               | 076  | MH_LMT   | High MV limit                                                         | ±320.00%           |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|               | 077  | ML_LMT   | Low MV limit                                                          | ±320.00%           |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact input | 086  | A/M_SW   | Auto/Manual switch<br>0: Manual, 1: Auto                              | 0 or 1             |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter     | 089  | MV       | Host display of MV                                                    | ±320.00%           |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|               | 091  | MV_ABN   | MV error display<br>0: Normal, 1: Error                               | 0 or 1             |                                            | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|               | 098  | MV_IDX   | MV index position                                                     | -15.00 to +115.00% |                                            | R               | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|               | 099  | OP_MK    | Label                                                                 | 0 to 15            |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## Indicator (Block Model 034)

| ITEM type      | ITEM | Tag ITEM | Data description                                      | Data range         | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|-------------------------------------------------------|--------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                       |                    | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_ST    | Stop block operation command(0: Cancel stop, 1: Stop) | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R               | R                   |                   |
| Analog input   | 007  | PV       | PV input                                              | -15.00 to +115.00% |                                            | R               | R              | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 008  | HH_SP    | High/high alarm setting                               | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 009  | H_SP     | High alarm setting                                    | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 010  | L_SP     | Low alarm setting                                     | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
|                | 011  | LL_SP    | Low/low alarm setting                                 | -15.00 to +115.00% |                                            | R (- only)      | R/W            | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 013  | HH       | High/high alarm output                                | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 014  | H        | High alarm output                                     | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 015  | L        | Low alarm output                                      | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 016  | LL       | Low/low alarm output                                  | 0 or 1             | R (Color)                                  | R               | R              | R             | R                  | R                                    | R               | R                   | R                 |
| Contact input  | 017  | ALM_OFF  | Alarm stop switch<br>0: Alarm, 1: Stop                | 0 or 1             | R (Color)                                  | R (Color)       | R/W            | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter      | 019  | PV_ABN   | PV error display<br>0: Normal, 1: Error               | 0 or 1             |                                            |                 | R              | R             | R                  | R                                    | R               | R                   | R                 |
|                | 099  | OP_MK    | Label                                                 | 0 to 15            |                                            | R/W             | R/W            | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## High/Low Alarm (Block Model 111)

| ITEM type      | ITEM | Tag ITEM | Data description  | Data range | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|-------------------|------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                   |            | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Analog input   | 008  | PV       | PV input          | ±320.00%   |                                            | R               |                | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 009  | H_SP     | High setting      | ±320.00%   |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |
|                | 010  | L_SP     | Low setting       | ±320.00%   |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 012  | H        | High alarm output | 0 or 1     | R (Color)                                  | R               |                | R             | R                  | R                                    | R               | R                   | R                 |
|                | 013  | L        | Low alarm output  | 0 or 1     | R (Color)                                  | R               |                | R             | R                  | R                                    | R               | R                   | R                 |

**Note** Only optional tags can be set.

## Segment Program 2 (Block Model 157)

| ITEM type      | ITEM | Tag ITEM | Data description                                      | Data range  | CX-Process Monitor screen (R:Read W:Write) |                 |                   |                    |                          |               |                 |                     |                   |
|----------------|------|----------|-------------------------------------------------------|-------------|--------------------------------------------|-----------------|-------------------|--------------------|--------------------------|---------------|-----------------|---------------------|-------------------|
|                |      |          |                                                       |             | Over-view Screen                           | Control Screens | Tuning Screens    | Batch Trend Screen | Segment Program 2 Screen | Trend Screens | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_SW    | Stop block operation command(0: Cancel stop, 1: Stop) | 0 or 1      | R                                          | R               | R/W               | R                  | R/W                      | R             | R               |                     |                   |
| Analog input   | 007  | X1       | Reference input                                       | ±320.00%    |                                            | R               | R                 | R                  | R                        | R             | R               |                     |                   |
| Analog output  | 008  | Y1       | Program output                                        | ±320.00%    |                                            | R/W             | R                 | R                  | R                        | R             | R/W             |                     |                   |
| Analog output  | 009  | Y2       | Elapsed time unit                                     | 0 to 3200.0 |                                            |                 |                   |                    |                          |               |                 |                     |                   |
|                | 011  | Y3       | Step output                                           | 0 to 30     |                                            | R               | R                 | R                  | R                        | R             | R               |                     |                   |
| Contact input  | 013  | S1       | Run/stop command                                      | 0 or 1      | R (Color)                                  | R/W             | R/W               | R                  | R                        | R             | R               |                     |                   |
|                | 014  | S2       | Hold switch                                           | 0 or 1      | R (Color)                                  | R/W             | R/W               | R                  | R/W                      | R             | R/W             |                     |                   |
| Contact output | 015  | U1       | X1 input error                                        | 0 or 1      |                                            |                 |                   | R                  | R                        | R             | R               | R                   | R/W               |
|                | 016  | U2       | Arrival at final segment                              | 0 or 1      |                                            |                 |                   |                    |                          |               |                 |                     |                   |
| Contact input  | 017  | S3       | Move to next wait command                             | 0 or 1      |                                            | R/W             | R/W               | R                  | R/W                      | R             | R               |                     |                   |
|                | 018  | S4       | Move to next step command                             | 0 or 1      |                                            | R/W             | R/W               | R                  | R/W                      | R             | R               |                     |                   |
|                | 019  | U10      | Waiting                                               | 0 or 1      |                                            | R               | R                 | R                  | R                        | R             | R               |                     |                   |
| Parameter      | 022  | B0       | Default                                               | ±320.00%    |                                            | R               | R                 |                    | R/W                      |               |                 |                     |                   |
|                | 023  | A1       | Step1 Time width                                      | 0 to 3200.0 |                                            |                 | R/W for each step |                    | R/W                      |               |                 |                     |                   |
|                | 024  | B1       | Step1 Output value                                    | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 025  | J1       | Step1 Time unit                                       | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 026  | A1       | Step2 Time width                                      | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 027  | B1       | Step2 Output value                                    | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 028  | J1       | Step2 Time unit                                       | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 029  | A1       | Step3 Time width                                      | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 030  | B1       | Step3 Output value                                    | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 031  | J1       | Step3 Time unit                                       | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 032  | A1       | Step4 Time width                                      | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 033  | B1       | Step4 Output value                                    | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 034  | J1       | Step4 Time unit                                       | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 035  | A1       | Step5 Time width                                      | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 036  | B1       | Step5 Output value                                    | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 037  | J1       | Step5 Time unit                                       | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 038  | A1       | Step6 Time width                                      | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 039  | B1       | Step6 Output value                                    | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 040  | J1       | Step6 Time unit                                       | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 041  | A1       | Step7 Time width                                      | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 042  | B1       | Step7 Output value                                    | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 043  | J1       | Step7 Time unit                                       | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 044  | A1       | Step8 Time width                                      | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 045  | B1       | Step8 Output value                                    | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 046  | J1       | Step8 Time unit                                       | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 047  | A1       | Step9 Time width                                      | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 048  | B1       | Step9 Output value                                    | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 049  | J1       | Step9 Time unit                                       | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 050  | A1       | Step10 Time width                                     | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 051  | B1       | Step10 Output value                                   | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 052  | J1       | Step11 Time unit                                      | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 053  | A1       | Step11 Time width                                     | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 054  | B1       | Step11 Output value                                   | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 055  | J1       | Step11 Time unit                                      | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 056  | A1       | Step12 Time width                                     | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |
|                | 057  | B1       | Step12 Output value                                   | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                     |                   |

| ITEM type | ITEM | Tag ITEM | Data description    | Data range  | CX-Process Monitor screen (R:Read W:Write) |                 |                   |                    |                          |               |                 |                      |                   |
|-----------|------|----------|---------------------|-------------|--------------------------------------------|-----------------|-------------------|--------------------|--------------------------|---------------|-----------------|----------------------|-------------------|
|           |      |          |                     |             | Over-view Screen                           | Control Screens | Tuning Screens    | Batch Trend Screen | Segment Program 2 Screen | Trend Screens | Graphic Screens | Annun-ciator Screens | Alarm Log Screens |
| Parameter | 058  | J1       | Step12 Time unit    | 0 to 2      |                                            |                 | R/W for each step |                    | R/W                      |               |                 |                      |                   |
|           | 059  | A1       | Step13 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 060  | B1       | Step13 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 061  | J1       | Step13 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 062  | A1       | Step14 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 063  | B1       | Step14 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 064  | J1       | Step14 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 065  | A1       | Step15 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 066  | B1       | Step15 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 067  | J1       | Step15 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 068  | A1       | Step16 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 069  | B1       | Step16 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 070  | J1       | Step16 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 071  | A1       | Step17 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 072  | B1       | Step17 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 073  | J1       | Step17 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 074  | A1       | Step18 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 075  | B1       | Step18 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 076  | J1       | Step18 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 077  | A1       | Step19 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 078  | B1       | Step19 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 079  | J1       | Step19 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 080  | A1       | Step20 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 081  | B1       | Step20 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 082  | J1       | Step20 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 083  | A1       | Step21 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 084  | B1       | Step21 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 085  | J1       | Step21 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 086  | A1       | Step22 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 087  | B1       | Step22 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 088  | J1       | Step22 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 089  | A1       | Step23 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 090  | B1       | Step23 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 091  | J1       | Step23 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 092  | A1       | Step24 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 093  | B1       | Step24 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 094  | J1       | Step24 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 095  | A1       | Step25 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 096  | B1       | Step25 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 097  | J1       | Step25 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 098  | A1       | Step26 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 099  | B1       | Step26 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 100  | J1       | Step26 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 101  | A1       | Step27 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 102  | B1       | Step27 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 103  | J1       | Step27 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 104  | A1       | Step28 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 105  | B1       | Step28 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 106  | J1       | Step28 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 107  | A1       | Step29 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 108  | B1       | Step29 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 109  | J1       | Step29 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 110  | A1       | Step30 Time width   | 0 to 3200.0 |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 111  | B1       | Step30 Output value | ±320.00%    |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |
|           | 112  | J1       | Step30 Time unit    | 0 to 2      |                                            |                 |                   |                    | R/W                      |               |                 |                      |                   |

| ITEM<br>type   | ITEM    | Tag ITEM          | Data<br>description | Data<br>range | CX-Process Monitor screen (R:Read W:Write) |                    |                         |                          |                                |                  |                    |                             |                         |
|----------------|---------|-------------------|---------------------|---------------|--------------------------------------------|--------------------|-------------------------|--------------------------|--------------------------------|------------------|--------------------|-----------------------------|-------------------------|
|                |         |                   |                     |               | Over-<br>view<br>Screen                    | Control<br>Screens | Tuning<br>Screens       | Batch<br>Trend<br>Screen | Segment<br>Program<br>2 Screen | Trend<br>Screens | Graphic<br>Screens | Annun-<br>ciator<br>Screens | Alarm<br>Log<br>Screens |
| ● Wait setting |         |                   |                     |               |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
| Param-<br>eter | 121     | WT_SP01           | Step1 Wait width    | 0 to 320.00%  |                                            |                    | R/W for<br>each<br>step |                          | R/W                            |                  |                    |                             |                         |
|                | 122     | WT_TM01           | Step1 Wait time     | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 123     | WT_SP01           | Step2 Wait width    | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 124     | WT_TM01           | Step2 Wait time     | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 125     | WT_SP01           | Step3 Wait width    | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 126     | WT_TM01           | Step3 Wait time     | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 127     | WT_SP01           | Step4 Wait width    | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 128     | WT_TM01           | Step4 Wait time     | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 129     | WT_SP01           | Step5 Wait width    | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 130     | WT_TM01           | Step5 Wait time     | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 131     | WT_SP01           | Step6 Wait width    | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 132     | WT_TM01           | Step6 Wait time     | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 133     | WT_SP01           | Step7 Wait width    | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 134     | WT_TM01           | Step7 Wait time     | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 135     | WT_SP01           | Step8 Wait width    | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 136     | WT_TM01           | Step8 Wait time     | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 137     | WT_SP01           | Step9 Wait width    | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 138     | WT_TM01           | Step9 Wait time     | 0 to 320.0    |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 139     | WT_SP01           | Step10 Wait width   | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 140     | WT_TM01           | Step10 Wait time    | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 141     | WT_SP01           | Step11 Wait width   | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 142     | WT_TM01           | Step11 Wait time    | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 143     | WT_SP01           | Step12 Wait width   | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 144     | WT_TM01           | Step12 Wait time    | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 145     | WT_SP01           | Step13 Wait width   | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 146     | WT_TM01           | Step13 Wait time    | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 147     | WT_SP01           | Step14 Wait width   | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 148     | WT_TM01           | Step14 Wait time    | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 149     | WT_SP01           | Step15 Wait width   | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 150     | WT_TM01           | Step15 Wait time    | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 151     | WT_SP01           | Step16 Wait width   | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 152     | WT_TM01           | Step16 Wait time    | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 153     | WT_SP01           | Step17 Wait width   | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                | 154     | WT_TM01           | Step17 Wait time    | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
| 155            | WT_SP01 | Step18 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 156            | WT_TM01 | Step18 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 157            | WT_SP01 | Step19 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 158            | WT_TM01 | Step19 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 159            | WT_SP01 | Step20 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 160            | WT_TM01 | Step20 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 161            | WT_SP01 | Step21 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 162            | WT_TM01 | Step21 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 163            | WT_SP01 | Step22 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 164            | WT_TM01 | Step22 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 165            | WT_SP01 | Step23 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 166            | WT_TM01 | Step23 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 167            | WT_SP01 | Step24 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 168            | WT_TM01 | Step24 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 169            | WT_SP01 | Step25 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 170            | WT_TM01 | Step25 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 171            | WT_SP01 | Step26 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 172            | WT_TM01 | Step26 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 173            | WT_SP01 | Step27 Wait width | 0 to 320.00%        |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |
| 174            | WT_TM01 | Step27 Wait time  | 0 to 3200.0         |               |                                            |                    | R/W                     |                          |                                |                  |                    |                             |                         |

| ITEM<br>type           | ITEM | Tag ITEM | Data<br>description      | Data<br>range | CX-Process Monitor screen (R:Read W:Write) |                    |                         |                          |                                |                  |                    |                             |                         |
|------------------------|------|----------|--------------------------|---------------|--------------------------------------------|--------------------|-------------------------|--------------------------|--------------------------------|------------------|--------------------|-----------------------------|-------------------------|
|                        |      |          |                          |               | Over-<br>view<br>Screen                    | Control<br>Screens | Tuning<br>Screens       | Batch<br>Trend<br>Screen | Segment<br>Program<br>2 Screen | Trend<br>Screens | Graphic<br>Screens | Annun-<br>ciator<br>Screens | Alarm<br>Log<br>Screens |
| Param-<br>eter         | 175  | WT_SP01  | Step28 Wait width        | 0 to 320.00%  |                                            |                    | R/W for<br>each<br>step |                          | R/W                            |                  |                    |                             |                         |
|                        | 176  | WT_TM01  | Step28 Wait time         | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                        | 177  | WT_SP01  | Step29 Wait width        | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                        | 178  | WT_TM01  | Step29 Wait time         | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                        | 179  | WT_SP01  | Step30 Wait width        | 0 to 320.00%  |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
|                        | 180  | WT_TM01  | Step30 Wait time         | 0 to 3200.0   |                                            |                    |                         |                          | R/W                            |                  |                    |                             |                         |
| ● Step Executing flag  |      |          |                          |               |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
| Con-<br>tact<br>output | 221  | U11      | Step1 Executing<br>flag  | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 222  | U12      | Step2 Executing<br>flag  | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 223  | U13      | Step3 Executing<br>flag  | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 224  | U14      | Step4 Executing<br>flag  | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 225  | U15      | Step5 Executing<br>flag  | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 226  | U16      | Step6 Executing<br>flag  | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 227  | U17      | Step7 Executing<br>flag  | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 228  | U18      | Step8 Executing<br>flag  | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 229  | U19      | Step9 Executing<br>flag  | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 230  | U20      | Step10 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 231  | U21      | Step11 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 232  | U22      | Step12 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 233  | U23      | Step13 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 234  | U24      | Step14 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 235  | U25      | Step15 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 236  | U26      | Step16 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 237  | U27      | Step17 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 238  | U28      | Step18 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 239  | U29      | Step19 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 240  | U30      | Step20 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 241  | U31      | Step21 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 242  | U32      | Step22 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 243  | U33      | Step23 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 244  | U34      | Step24 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 245  | U35      | Step25 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 246  | U36      | Step26 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 247  | U37      | Step27 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 248  | U38      | Step28 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 249  | U39      | Step29 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |
|                        | 250  | U40      | Step30 Executing<br>flag | 0 or 1        |                                            |                    |                         |                          |                                |                  |                    |                             |                         |

## ON/OFF Valve Manipulator (Block Model 221)

| ITEM type     | ITEM | Tag ITEM | Data description                                      | Data range | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|---------------|------|----------|-------------------------------------------------------|------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|               |      |          |                                                       |            | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input | 000  | MT_SW    | Stop block operation command(0: Cancel stop, 1: Stop) | 0 or 1     |                                            |                 |                | R             | R                  | R                                    | R               | R                   |                   |
|               | 012  | S2       | Auto input<br>0:OFF; 1:ON                             | 0 or 1     |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|               | 013  | S3       | Manual input<br>0:OFF; 1:ON                           | 0 or 1     |                                            | R/W             |                | R             | R                  | R                                    | R               | R                   |                   |
|               | 015  | S5       | Open limit switch input                               | 0 or 1     |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|               | 016  | S6       | Close limit switch input                              | 0 or 1     |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|               | 022  | U2       | Valve action time error<br>(1:error)                  | 0 or 1     |                                            | R<br>(Color)    |                | R             | R                  | R                                    | R               | R                   | R                 |
|               | 023  | U3       | Valve open midway<br>(1: Open midway)                 | 0 or 1     |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
| Parameter     | 085  | S4       | Site manipulation switch input<br>(0:Central; 1:Site) | 0 or 1     |                                            | R<br>(Color)    |                | R             | R                  | R                                    | R               | R                   |                   |
|               | 086  | A/M_SW   | Auto/Manual switching<br>0: Manual, 1: Auto           | 0 or 1     |                                            | R/W             |                | R             | R                  | R                                    | R/W             | R                   |                   |
|               | 099  | OP_MK    | Label                                                 | 0 to 15    |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## Motor Manipulator (Block Model 222)

| ITEM type      | ITEM | Tag ITEM | Data description                                      | Data range          | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|-------------------------------------------------------|---------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                       |                     | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_SW    | Stop block operation command(0: Cancel stop, 1: Stop) | 0 or 1              |                                            |                 |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 012  | S2       | Auto input<br>0:OFF; 1:ON                             | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 013  | S3       | Manual input<br>0:OFF; 1:ON                           | 0 or 1              |                                            | R/W             |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 015  | S5       | Answer input                                          | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 022  | U2       | Answer error<br>(1:error)                             | 0 or 1              |                                            | R<br>(Color)    |                | R             | R                  | R                                    | R               | R                   | R                 |
| Analog input   | 032  | X1       | CT input                                              | -320.00 to +320.00% |                                            | R               |                | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 033  | H_SP     | CT input high alarm setting                           | -320.00 to +320.00% |                                            | R (-)           |                | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 036  | H        | CT input high alarm output                            | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               | R                   | R                 |
| Contact input  | 085  | S4       | Site manipulation switch input<br>(0:Central; 1:Site) | 0 or 1              |                                            | R<br>(Color)    |                | R             | R                  | R                                    | R               | R                   |                   |
| Parameter      | 086  | A/M_SW   | Auto/Manual switching<br>0: Manual, 1: Auto           | 0 or 1              |                                            | R/W             |                | R             | R                  | R                                    | R/W             | R                   |                   |
|                | 099  | OP_MK    | Label                                                 | 0 to 15             |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## Reversible Motor Manipulator (Block Model 223)

| ITEM type      | ITEM | Tag ITEM | Data description                                      | Data range          | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|-------------------------------------------------------|---------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                       |                     | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_SW    | Stop block operation command(0: Cancel stop, 1: Stop) | 0 or 1              |                                            |                 |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 012  | S2       | AUTO-FWD input<br>0:OFF; 1:ON                         | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 013  | S3       | AUTO-REV input<br>0:OFF; 1:ON                         | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 014  | S4       | MAN-FWD input<br>0:OFF; 1:ON                          | 0 or 1              |                                            | R/W             |                | R             | R                  | R                                    | R/W             | R                   |                   |
|                | 016  | S6       | MAN-REV input<br>0:OFF; 1:ON                          | 0 or 1              |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |
|                | 018  | S8       | FWD answer input<br>0:OFF; 1:ON                       | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               |                     |                   |
|                | 019  | S9       | REV answer input<br>0:OFF; 1:ON                       | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               |                     |                   |
|                | 023  | U3       | Answer error<br>(1:error)                             | 0 or 1              |                                            | R<br>(Color)    |                | R             | R                  | R                                    | R               | R                   | R                 |
| Analog input   | 032  | X1       | CT input                                              | -320.00 to +320.00% |                                            | R               |                | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 033  | H_SP     | CT input high alarm setting                           | -320.00 to +320.00% |                                            | R (-)           |                | R             | R                  | R                                    | R/W             |                     |                   |
| Contact output | 036  | H        | CT input high alarm output                            | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               | R                   | R                 |
| Contact input  | 085  | S4       | Site manipulation switch input<br>(0:Central; 1:Site) | 0 or 1              |                                            | R<br>(Color)    |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 086  | A/M_SW   | Auto/Manual switching<br>0: Manual, 1: Auto           | 0 or 1              |                                            | R/W             |                | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter      | 099  | OP_MK    | Label                                                 | 0 to 15             |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.



## Motor Opening Manipulator (Block Model 224)

| ITEM type      | ITEM | Tag ITEM | Data description                                            | Data range          | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|-------------------------------------------------------------|---------------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                                             |                     | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Contact input  | 000  | MT_SW    | Stop block operation command(0: Cancel stop, 1: Stop)       | 0 or 1              |                                            |                 |                | R             | R                  | R                                    | R               | R                   |                   |
| Analog input   | 012  | X2       | Auto input                                                  | -320.00 to +320.00% |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
| Parameter      | 013  |          | Manual input target opening setting                         | -320.00 to +320.00% |                                            | R/W             |                | R             | R                  | R                                    | R               | R                   |                   |
| Contact input  | 019  | S3       | Open monitor switch thermal relay operation<br>0:OFF; 1:ON  | 0 or 1              |                                            | R (Color)       |                | R             | R                  | R                                    | R               | R                   | R                 |
|                | 020  | S4       | Close monitor switch thermal relay operation<br>0:OFF; 1:ON | 0 or 1              |                                            | R (Color)       |                | R             | R                  | R                                    | R               | R                   | R                 |
| Contact output | 021  | U1       | Open manipulation output<br>0:OFF; 1:ON                     | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 022  | U2       | Close manipulation output<br>0:OFF; 1:ON                    | 0 or 1              |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
| Analog input   | 032  | X1       | Opening input                                               | -320.00 to +320.00% |                                            | R               |                | R             | R                  | R                                    | R               |                     |                   |
| Parameter      | 033  | H_SP     | Opening input high limit alarm setting                      | -320.00 to +320.00% |                                            | R (-)           |                | R             | R                  | R                                    |                 |                     |                   |
|                | 034  | L_SP     | Opening input low limit alarm setting                       | -320.00 to +320.00% |                                            | R (-)           |                | R             | R                  | R                                    |                 |                     |                   |
| Contact output | 036  | H        | Opening input high limit alarm output                       | 0 or 1              | R (Color)                                  | R (Color)       |                | R             | R                  | R                                    | R               | R                   | R                 |
|                | 037  | L        | Opening input low limit alarm output                        | 0 or 1              | R (Color)                                  | R (Color)       |                | R             | R                  | R                                    | R               | R                   | R                 |
| Contact input  | 085  | S2       | Site manipulation switch input<br>(1: Site, 1: Central)     | 0 or 1              |                                            | R (Color)       |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 086  | A/M_SW   | Auto/Manual switching<br>0: Manual, 1: Auto                 | 0 or 1              |                                            | R/W             |                | R             | R                  | R                                    | R/W             | R                   |                   |
| Parameter      | 099  | OP_MK    | Label                                                       | 0 to 15             |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |

**Note** Only optional tags can be set.

## Timer (Block Model 205)

| ITEM type      | ITEM | Tag ITEM | Data description                     | Data range  | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|----------------|------|----------|--------------------------------------|-------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                |      |          |                                      |             | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Parameter      | 007  | SP       | Setting                              | 0 to 3200.0 |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |
|                | 008  | PRESET   | Prediction (subtracted from setting) | 0 to 3200.0 |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |
| Analog output  | 009  | PV       | Time elapsed                         | 0 to 3200.0 |                                            | R               |                | R             | R                  | R                                    | R               |                     |                   |
| Contact input  | 011  | S1       | Run switch                           | 0 or 1      |                                            | R/W             |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 012  | S2       | Interrupt switch                     | 0 or 1      |                                            | R/W             |                | R             | R                  | R                                    | R               | R                   |                   |
| Contact output | 013  | U1       | Arrival at setting                   | 0 or 1      |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|                | 014  | U2       | Arrival at prediction                | 0 or 1      |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |

**Note** Only optional tags can be set.

## Counter (Block Model 208)

| ITEM type        | ITEM | Tag ITEM | Data description                     | Data range | CX-Process Monitor screen (R:Read W:Write) |                 |                |               |                    |                                      |                 |                     |                   |
|------------------|------|----------|--------------------------------------|------------|--------------------------------------------|-----------------|----------------|---------------|--------------------|--------------------------------------|-----------------|---------------------|-------------------|
|                  |      |          |                                      |            | Over-view Screen                           | Control Screens | Tuning Screens | Trend Screens | Batch Trend Screen | Segment Program 2 Screen (See note.) | Graphic Screens | Annunciator Screens | Alarm Log Screens |
| Parameter        | 007  | SP       | Setting                              | 0 to 9999  |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |
|                  | 008  | PRESET   | Prediction (subtracted from setting) | 0 to 9999  |                                            | R/W             |                | R             | R                  | R                                    | R/W             |                     |                   |
| 80 Analog output | 009  | PV       | Count                                | 0 to 9999  |                                            | R               |                | R             | R                  | R                                    | R               |                     |                   |
| Contact input    | 010  | S1       | Run switch                           | 0 or 1     |                                            | R/W             |                | R             | R                  | R                                    | R               | R                   |                   |
| Contact output   | 012  | U1       | Arrival at setting                   | 0 or 1     |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |
|                  | 013  | U2       | Arrival at prediction                | 0 or 1     |                                            | R               |                | R             | R                  | R                                    | R               | R                   |                   |

**Note** Only optional tags can be set.



# Appendix B

## Differences between Trend Screens and Batch Trend Screens

The following table describes the functional differences between Trend Screens and Batch Trend Screens.

| Item                                          |                                   | Trend Screens                                                                                                                                                                           |                                                                                                                               | Batch Trend Screens                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                   | Realtime trends                                                                                                                                                                         | Historical trends                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                       |
| Starting batch collection                     |                                   | Collection starts when monitor processing is started. (When the <b>Run</b> Button is clicked in the Setup Dialog Box or the Main Window.)                                               |                                                                                                                               | <ul style="list-style-type: none"> <li>Collection starts when the collection start condition is satisfied by the trigger tag (contact ITEM or analog ITEM).</li> <li>Collection starts when the Batch Start Request Button is clicked in the Batch Trend Screen</li> </ul>                                                                                            |
| Stopping batch collection                     |                                   | Collection stops when monitor processing is stopped. (When the CX-Process Monitor Plus is stopped, a message is displayed to confirm that data collection is to be stopped.)            |                                                                                                                               | <ul style="list-style-type: none"> <li>Collection stops when the collection start condition is not satisfied by the trigger tag (contact ITEM or analog ITEM).</li> <li>Collection stops when the Batch Stop Request Button is clicked in the Batch Trend Screen.</li> </ul>                                                                                          |
| Maximum number of registered screens          |                                   | 60                                                                                                                                                                                      | 120                                                                                                                           | 120                                                                                                                                                                                                                                                                                                                                                                   |
| Maximum number of tags                        |                                   | 480                                                                                                                                                                                     | 960                                                                                                                           | 960                                                                                                                                                                                                                                                                                                                                                                   |
| Collection cycle                              |                                   | 1, 2, 5, 10, or 30 s<br>• One collection cycle setting is used for all screens.                                                                                                         | 1, 5, 10, 30, or 60 min<br>• One collection cycle setting is used for all screens.                                            | 1 or 6 s<br>• The setting is made for each screen.                                                                                                                                                                                                                                                                                                                    |
| Collection time (depends on collection cycle) |                                   | 1-s cycle: 10 hours<br>2-s cycle: 20 hours<br>5-s cycle: 50 hours<br>10-s cycle: 100 hours<br>30-s cycle: 300 hours                                                                     | 1-min cycle: 30 days<br>5-min cycle: 150 days<br>10-min cycle: 300 days<br>30-min cycle: 900 days<br>60-min cycle: 1,800 days | 4 hours (collection cycle: 1 s)<br>10 days (collection cycle: 1 min)                                                                                                                                                                                                                                                                                                  |
| Saving collection data                        |                                   | <ul style="list-style-type: none"> <li>Data is saved up to the collection time.</li> <li>From the collection time onwards, old data is deleted and the newest data is saved.</li> </ul> |                                                                                                                               | <ul style="list-style-type: none"> <li>After data collection is stopped, the data is saved as a batch trend file in binary format. (It is automatically deleted when outside of the save time set in the System Info Screen.)</li> <li>After the collection time has expired, the next batch is immediately started if the trigger condition is satisfied.</li> </ul> |
| Saving CSV files                              |                                   | <ul style="list-style-type: none"> <li>A file is saved for each set save period (1 to 240 hours).</li> <li>A file can be saved by clicking a button on the Trend Screen.</li> </ul>     |                                                                                                                               | <ul style="list-style-type: none"> <li>CSV files are saved when data collection is stopped).</li> <li>A file can be saved by clicking a button on the Batch Trend Screen.</li> </ul>                                                                                                                                                                                  |
| Other functions                               | Changing trend definitions online | Pens (tags) displayed on the Trend Screen can be changed, deleted, and added without stopping the CX-Process Monitor Plus.                                                              |                                                                                                                               | ---                                                                                                                                                                                                                                                                                                                                                                   |
|                                               | Referencing past trend data       | ---                                                                                                                                                                                     |                                                                                                                               | <ul style="list-style-type: none"> <li>Trend data collected previously can be displayed on the Batch Trend Screen.</li> <li>Past data can be overlapped with batch trend data currently being collected.</li> </ul>                                                                                                                                                   |



## Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.

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Revision code

The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version.

| Revision code | Date          | Revised content                     |
|---------------|---------------|-------------------------------------|
| 01            | December 2003 | Original production                 |
| 02            | January 2007  | Revised for upgrade to version 2.0. |

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