Instruction
Manual

FA-M3
Programming Tool WideField
Instruction Manual

IM 34M6Q14-01E

YOKOGAWA
Yokogawa Electric Corporation

IM 34M6Q14-01E
1st Edition

Product Information

Range-free Multi-controller FA-M3

- Model Name: SF610-ECW
- Name: FA-M3 Programming Tool WideField

The Document Set No. and Document Model Name are as follows.

If you have any questions or comments about this product, please inform us of the Document No. You will need either the Document Set No. or the Document Model Name for additional purchases of this manual.

- Document Set No.: IM34M6Q14-00E *1
- Document Model Name: DOCIM

*1: This document set includes the “FA-M3 Programming Tool WideField Instruction Manual” (IM34M6Q14-01E) and the “FA-M3 Programming Tool Instruction Manual-Application” (IM34M6Q14-02E).

Media No. IM 34M6Q14-01E (CD) 1st Edition : July 2000 (YK)

Precautions

■ Precautions Concerning This Manual

- Please make sure that this manual reaches all users.
- Operation of this product should only be attempted after reading and gaining a thorough understanding this manual.
- This manual only provides a detailed description of the functions of the product, and does not guarantee that it is suited to the customer's purposes.
- Transferring or copying all or part of this manual with consent is strictly forbidden.
- The contents of the manual may be changed without notice in the future.
- If you find any mistakes or misprints in this manual, please contact our sales department or the representative you purchased it at.

■ Precautions Concerning Protection, Safety, and Alterations to This Product.

- The following symbols are used concerning safety precautions for this product and this manual.

"Caution" This designates locations where it is necessary to refer to the operation manual in order to protect human life and machinery when using this product. Further, any safety precautions aimed to prevent death or the danger of bodily injury from coming to users through electrocution, etc. are specifically described in this manual.

"Protective Earth Terminal" Be sure to ground the equipment before operation.

"Functional Earth Terminal" Be sure to ground the equipment before operation.

"Alternating Current"

"Direct Current"

The symbols below are only used in the manual.

WARNING

"Warning"
Precautions concerning danger of system trouble that could damage hardware or software are described.

CAUTION

"Caution" Precautions concerning operation or functions of the product are described.

TIP

"Tip" Explanations and tips are described.

SEE ALSO

"Reference" Places or pages in the manual are provided for reference.

- Follow all directions in this manual when using this product in order to ensure the safety and protection of this product or systems controlled by this product. Furthermore, we shall not guarantee the safety of this product if it is used in a manner that does not accord with the directions laid out herein as such use may cause the protective features of the product to malfunction.
- In the event that protective or safety circuits are installed in the product or in systems controlled by the product, make sure they are installed separately outside the product.
- When replacing parts or expendable supplies, always use replacement items designated by our company.
- Please consult with our customer relations desk in the sales department before using this product for systems that involve the safety of human lives and therefore require a high level of safety, such as equipment used in connection with nuclear power or radiation, railway equipment, aircraft equipment, medical equipment, etc.
- Any alterations whatsoever to this product are strictly forbidden.

■ Exemptions

- We do not in any way guarantee this product, except as stipulated in the warranty.
- We shall not shoulder any responsibility for damages that the customer or any third party may suffer through use of this product, or for any indirect damages that the customer or any third party may suffer through unforeseeable faults in the product.

■ Precautions Concerning Software

- We do not in any way guarantee this software, except as stipulated in the warranty.
- Use the software with one designated computer only. Purchase more copies of the software for use with other computers.
- Any copying of the software for purposes other than back-up is strictly forbidden.
- Carefully store all original media included in the software.
- Any reverse engineering of the software, such as reverse compiling or reverse assembly, is strictly forbidden.
- Use by any third party of all or part of this software through transfer, exchange, or loan without previous approval from us is strictly forbidden.

■ General Precautions Concerning the FA-M3

● Avoid the following locations for installation

- Locations in direct sunlight or that exceed a temperature range of 0 to 50°c.
- Locations where humidity exceeds a range of 10% to 90%, or where rapid temperature changes may cause condensation to form.
- Locations near corrosive or combustible gases.
- Locations subject to strong shaking or shocks.
- Locations where there is the possibility of exposure to excessive levels of radiation.

● Use proper materials when setting up external wiring.

- Use copper wiring rated above 75°c for external wiring.

● Firmly screw in any attachment screws.

- Tighten module screws and terminal screws to avoid malfunction.
- Use appropriate tightening torque for terminal blocks.
- The appropriate torque is 0.8N • m.

● Firmly lock all connecting cables.

- Lock all connectors on connecting cables and re-check them before running electricity through them.

● Emergency stop circuits should be on an external relay circuit.

- Arrange the external stop circuit on devices using this product on an external relay circuit, and be sure to include the run/stop status of this product as well.

● Grounding should be done separately with a type 3 earth.

- Avoid using this product's earth terminal [FG] with a heavy current earth, using a type 3 earth separately.

● Take steps to avoid noise.

- We recommend you avoid assigning AC input/output modules around the CPU module when assigning input and output.

● Provision of maintenance parts.

- Make sure maintenance parts such as back-up modules, etc. are prepared ahead of time.

● Discharge static electricity ahead of time.

- Dry locations tend to generate static electricity, so be sure to touch grounded metal to get rid of any static before touching the devices.

● Avoid using thinner for cleaning.

- Clean any stains from the surface of the product by wetting a soft cloth with water or a neutral cleanser, wringing it out thoroughly, and wiping softly.
- Do not use benzene, thinner, or other volatile products or chemicals to wipe the product, as this can lead to deformation or discoloration which can cause malfunction.

● Avoid high temperatures and humidity when storing.

- The CPU module contains a battery, so avoid high temperatures and humidity when storing.
- Battery life in high temperature conditions decreases rapidly. (A storage temperature between -20°c and +75°c.)

● Attach and remove modules with the power off.

- Attach and remove modules with the power module off. Doing this with the power on can lead to malfunctions.

● Do not touch parts inside modules.

- With some types of modules, opening the right-side lid allows attachment of ROM packs and operation of setting switches. When doing this, do not touch any of the other parts on the board, as this can damage parts and lead to malfunctions.

Preface

■ Overview of This Manual

This manual is the operation manual for the Range-free Multi-controller FA-M3 Programming Tool. (We will call it WideField here.) It describes how to use WideField to create, run, monitor, and debug ladder programs.
For any questions you may have, please contact the store where you purchased the product at or the nearest representative from the list on the back of this manual.
We also recommend using this manual in combination with the operation manuals for you computer or printer, as need be.

■ Layout of the Manual

This manual is divided into 2 parts: A and B.

Part A describes the steps in creating programs and actual operation to help users with no experience using WideField install the software and create simple programs. It also describes object ladder programs.

Part B describes operations such as program creation, sending, and monitoring.

Part A Introductory Manual

● Chapter 1 Overview

Describes a general overview of the functions provided by WideField.

● Chapter 2 Operating Environment

Describes the computer environment that WideField operates in, and the sequence CPUs for program development with WideField.

● Chapter 3 Installation and Booting

Describes how to install, start, and shut down WideField.

● Chapter 4 Basic Specifications

Describes WideField's screen layout as well as basic operations.

● Chapter 5 Object Ladders

Gives a general description of object ladder programs that can be created with WideField.

● Chapter 6 Program Development Procedure

Describes object ladder programming with WideField.

Part B Operation Manual

Offline Section

Online Section

● Chapter 12 Using the Debugging Function

Describes debugging functions such as forced set, reset, data value change, etc.

● Chapter 13 Online Edit

Describes how to change programs online.

● Chapter 14 Protective Functions

Describes the system log display and the user log functions.

● Chapter 15 Managing the ROM

Describes ROM management, such as sending created programs to the ROM pack, deleting information from the ROM pack.

● Chapter 16 I/O Module Setup

Describes network settings using an FA link and diagnostic functions.

Supplementary Functions Section

● Chapter 17 Sampling Trace Tool

Describes the setting when using the FA-M3 sampling trace as well as how to run an actual sampling trace.

● Chapter 18 Device Manager

Describes setup and modification of FA-M3 CPU module devices, how to send those settings from the computer to the FA-M3 and how to send FA-M3 device status to the computer.

Object Ladder Section

● Chapter 19 Use of Local Devices

Describes how to create programs using local devices as well as how to reuse them.

● Chapter 20 Using Macros

Describes how to create and manage macros.

● Chapter 21 How to Use Group Tag Names

Describes how to define tags that use group tag names as well as programming using group tag names.

Appendix

Appendix 1 Error Messages

Index

■ How to Read This Manual

Be sure to read the “Preface” as well as “How to read this manual” before using WideField.

The WideField Part A Manual describes how to set up the application as well as a basic overview.
The WideField Part B Manual describes all the functions provided by the application.

The manuals are written so that you can get an understanding of the specifications of the application, with each item written independently so you can refer to any particular when you need to know more about a certain function.

We have tried to make the operation and editing functions of the WideField application as close to the specifications of other generally available Windows software as possible. Accordingly, the manuals do not contain any information on editing screens which are not specific to WideField.

■ Notation

● Notation for Windows Screens and Operation

Quotation marks contain symbols, explanations, and names.

Ex.: “WideField”, “object ladder”, “local device”

Brackets contain menu bar menus, commands, and buttons.

Ex.: Click on [File] - [New] from the menu bar.
Use the mouse to click on [File] in the menu bar and click on [New] in the pull down menu.

● Notation in WideField Figures and Screens

Figures in the text are for a Windows 95 environment.

Some icons and application names may be different in a WindowsNT or Windows 98 environment.

Some of the figures in this manual may for reasons of convenience be emphasized, simplified, or abbreviated. Also, some screen images may not be the same as those in this manual due differences in the operating machine being used.

● Function Keys and Short Cut Keys

WideField menus can be operated with function keys and short cut keys, and not just with the mouse.

As a rule, this manual describes operation with a mouse, and does not list function keys or short cut keys that overlap with mouse operation.

■ Other Instruction Manuals

Please be sure to refer to the instruction manuals below.

- Please read the FA-M3 Programming Tool Read Me First (IM34M6Q14-11E)

The manual varies depending on the type of sequence CPU module being used.

F3SP28 F3SP38 F3SP53 F3SP58

- Sequence CPU Instruction Manual-Functions (for F3SP28, 38, 53, 58) 2nd edition or later (IM34M6P13-01E)
- Sequence CPU Instruction Manual-Instructions (IM34M6P12-03E) 2nd edition or later

F3SP05 F3SP21 F3SP25 F3SP35

- Sequence CPU Instruction Manual-Functions (for F3SP21, 25, 35) (IM34M6P12-02E) 2nd edition or later
- Sequence CPU Instruction Manual-Instructions (IM34M6P12-03E)2nd edition or later

Refer to the operation manuals below as needed.

● Advanced Operation of WideField

- FA-M3 Programming Tool Instruction Manual-Application (IM34M6Q14-02E)

● Fiber-optic FA Bus Functions

- Fiber-optic FA Bus Module, Fiber-optic FA Bus Type 2 Module Instruction Manual (IM34M6H45-01E)

● FA Link Functions

- FA Link Module, FA Link H Module, Fiber-optic FA Link H Module Instruction Manual (IM34M6H43-01E)

● Specifications and Layout*1 of the FA-M3, Mounting and Wiring, Testing, Protection and Inspection, also, Module Mounting Restrictions for Whole Systems

*1: See specific manuals for products other than the power module, base module, I/O module, cables, and terminal block units.

- Hardware Manual (IM34M6C11-01E) 5th edition or later.

Copyrights and Trademarks

■ Copyrights

Our company reserves all copyrights for all programs and online manuals included in the CD-ROM.
The online manuals have PDF security settings on them so that they cannot be modified, although printing is possible.
Only print the online manuals for use with this product. When using online manuals that have been printed out, please make sure that there are no discrepancies with the latest edition. Confirm that the latest edition of the CD-ROM corresponds with the edition number.
Copying, transferring, selling, or distributing the online manuals to third parties is forbidden. Further, registering or recording videotapes without consent is also forbidden.

■ Trademarks

- Microsoft® and Windows® are registered trademarks of the Microsoft Corporation, USA.
- Ethernet is a proprietary name of the XEROX Corporation, USA.
- All other proper names including proprietary names and company names used in this text are trademarks or registered trademarks of those companies.

Blank Page

FA-M3
FA-M3 Programming Tool WideField
Instruction Manual

IM 34M6Q14-01E 1st Edition

CONTENTS

FA-M3
FA-M3 Programming Tool WideField Instruction Manual
PART-A Introductory Manual

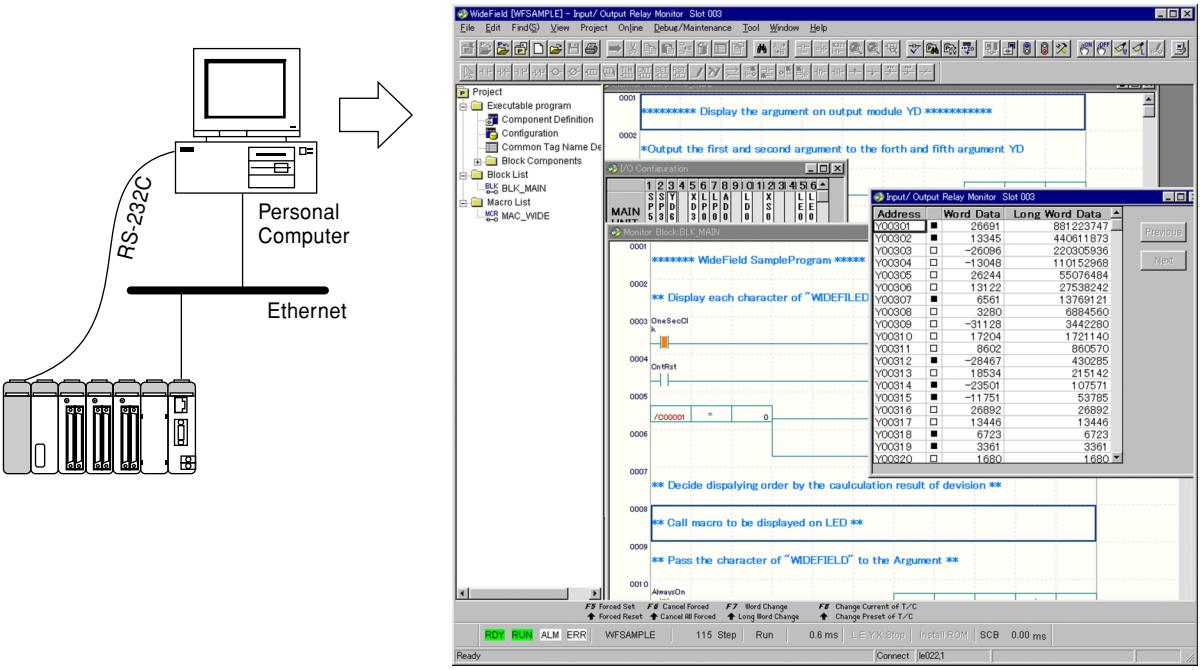
IM 34M6Q14-01E 1st Edition

CONTENTS

A1. Overview

The WideField software provides a Windows environment to develop programs which operate with FA-M3. Using this tool, developers are able to carry out all aspects of development, from creating programs to debugging and maintenance. It can be connected to an FA-M3 via an RS-232C or Ethernet connection, and supports a variety of functions to make development more efficient, such as editing in multiwindows, monitor functions, and working with other tools.

With this software it is not only possible to carry out program partition and parallel development, but also object ladder program development as well, which increases the independence between the program and the data. Thanks to this, it is possible to create programs with a high rate of reusability. For further details on object ladder programs, see "Chapter A5."



FA010101E.EPS

Figure A1.1 WideField Operating Diagram

Blank Page

A2. Operating Environment

This programming tool's operating environment is as follows.

Table A2.1 Operating Environment

Item	Specifications
OS	Microsoft Windows95 Microsoft Windows98 Microsoft Windows NT Workstation 4.0 ServicePack3 and higher Japanese
CPU	Pentium 133MHz or higher
Memory	32MB or more recommended
Hard Disk Capacity	100MB or more
Disk Drive	CD-ROM Disk Drive
Display	800 x 600 dots or more At least 256 colors
Connection	• RS-232C Communication (Asynchronous) 9600bps, 19200bps, 38400bps, 57600bps, 115200bps*1 • Ethernet Communication
Printer	Any printer compatible with the OS listed above

TA020101E.EPS

*1: The communication speed varies depending on the CPU being connected.

CAUTION

Set the display font size to a small font size. The text on the screen will be displayed incorrectly if a large font size is chosen.

This software supports the following Sequence CPU. However, functions may different according to the CPU. For details, see "Sequence CPU Operating Manual Functions."

Table A2.2 CPU Types

Type	Basic Specifications
F3SP05-0P	Program Capacity 5K Steps
F3SP21-0N	Program Capacity 10K Steps
F3SP25-2N	Program Capacity 20K Steps
F3SP35-5N	Program Capacity 100K Steps
F3FP36-3N	Program Capacity 40K Steps
F3SP28-2N	Program Capacity 30K Steps
F3SP38-6N	Program Capacity 120K Steps
F3SP53-4H	Program Capacity 56K Steps
F3SP58-6H	Program Capacity 120K Steps

TA020102E.EPS

■ Connections with FA-M3

FA-M3 sequence CPU module and WideField can be connected via RS-232C or Ethernet.

● Connection with RS-232C

Prepare an FA-M3 CPU cable as shown below. Select the cable with appropriate serial port connector for the PC to use.

Table A2.3 Cables for CPU Port

Type	Basic Specifications Code	Style Code	Specifications	
KM11	-2T	*A	Cable length 3m	Compatible with DOS/V machines and D-sub 9 pin.
	-3T	*A	Cable length 5m	
	-4T	*A	Cable length 10m	

TA020103E.EPS

(1) Serial Port Connections
Plug into the serial port at the back of the PC.

(2) Connect to Programmer Port of Sequence CPU Module
Remove the protecting cover from the sequence CPU module to be accessed and set from WideField, and plug in firmly.

● Ethernet Connections

Connect PC's (10BASE5/10BASE-T) connector to the (10BASE5/10BASE-T) connector of the Ethernet interface module with (10BASE5/10BASE-T) cable.

SEE ALSO

For details about Ethernet connections, see "Ethernet Interface Module Instruction Manual" (IM34M6H24-01E).

A3. Installation and Booting

This section describes how to install and uninstall this programming tool, creation of short-cut icons, and how to start and shut down the software.

A3.1 Installation

This section describes how to install this programming tool. Be sure the following cautions before installing.

CAUTION

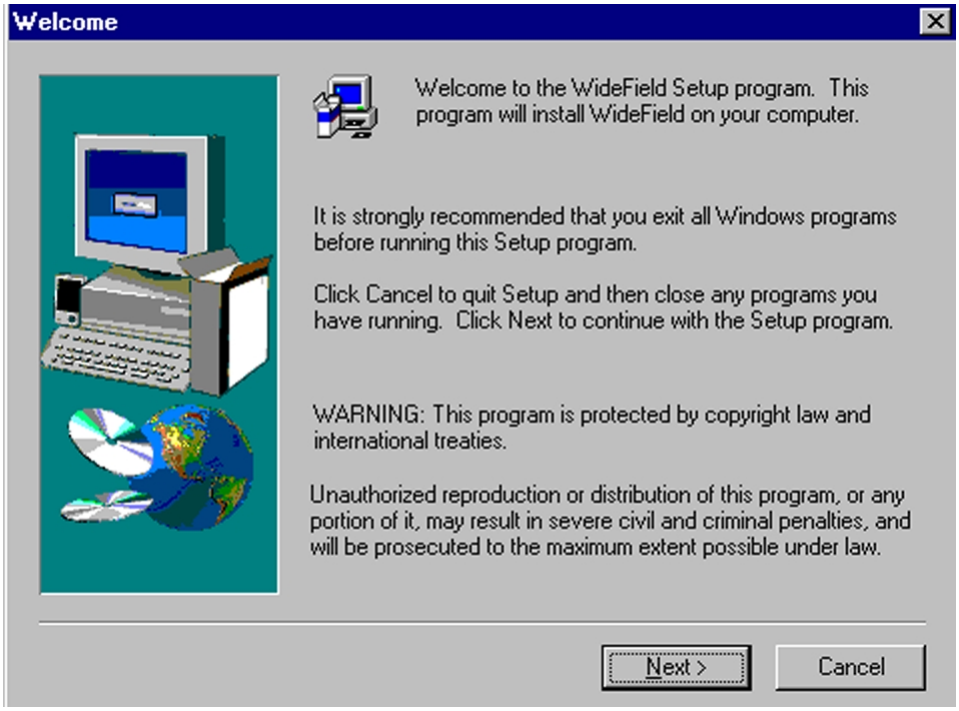
- Shut down all other applications before installing.
- If the installation is interrupted, install from the beginning.
- If you are going to overwrite a previously installed version, uninstall it, and then install.

(1) Insert the WideField CD-ROM into the CD-ROM drive.

(2) Run the Explorer by clicking on [Start] - [Programs] - [Explorer].

(3) Click on the CD-ROM drive.
Run the [Setup.exe] from the file list.

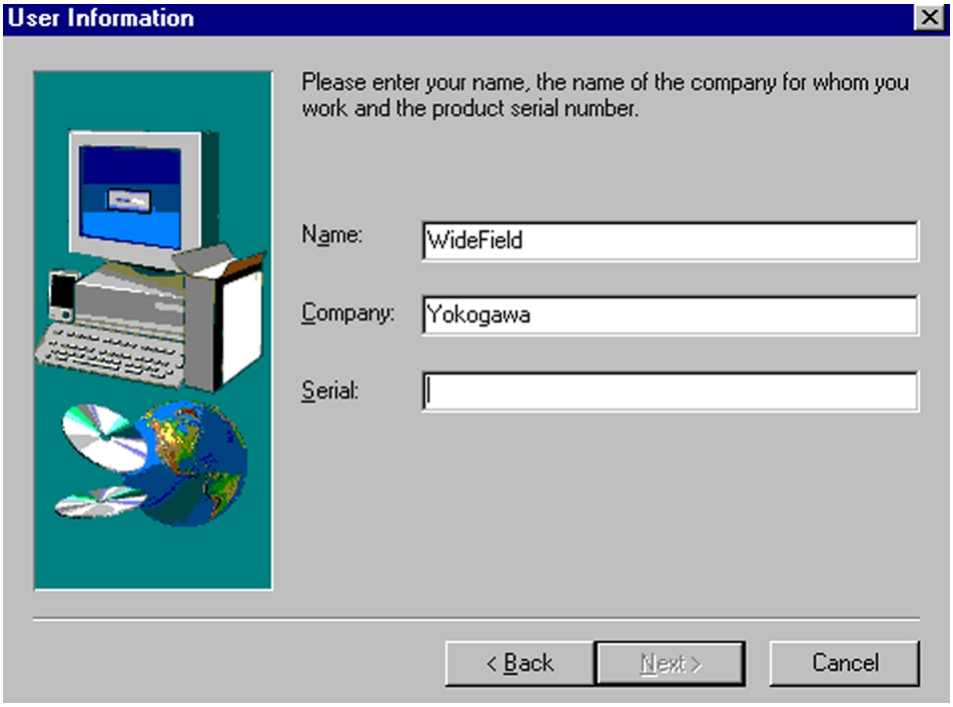
(4) After a few seconds, the following screen will appear, and Click [Next].



FA030101E.EPS

Figure A3.1 Installation Screen 1

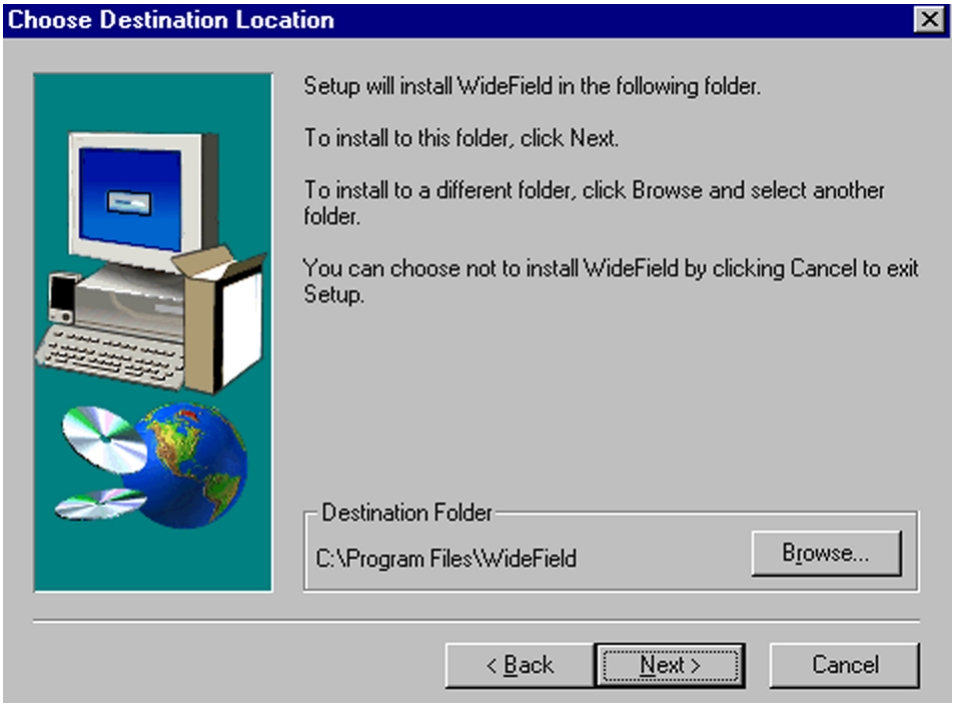
(5) The [User Information] dialog box will be displayed after the [Product License]. Enter the CD_KEY included in the box, and select the [Next] button.



FA030102E.EPS

Figure A3.2 Installation Screen 2

(6) Specify the installation destination. Click [Browse] to change the destination, otherwise click [Next].



FA030103E.EPS

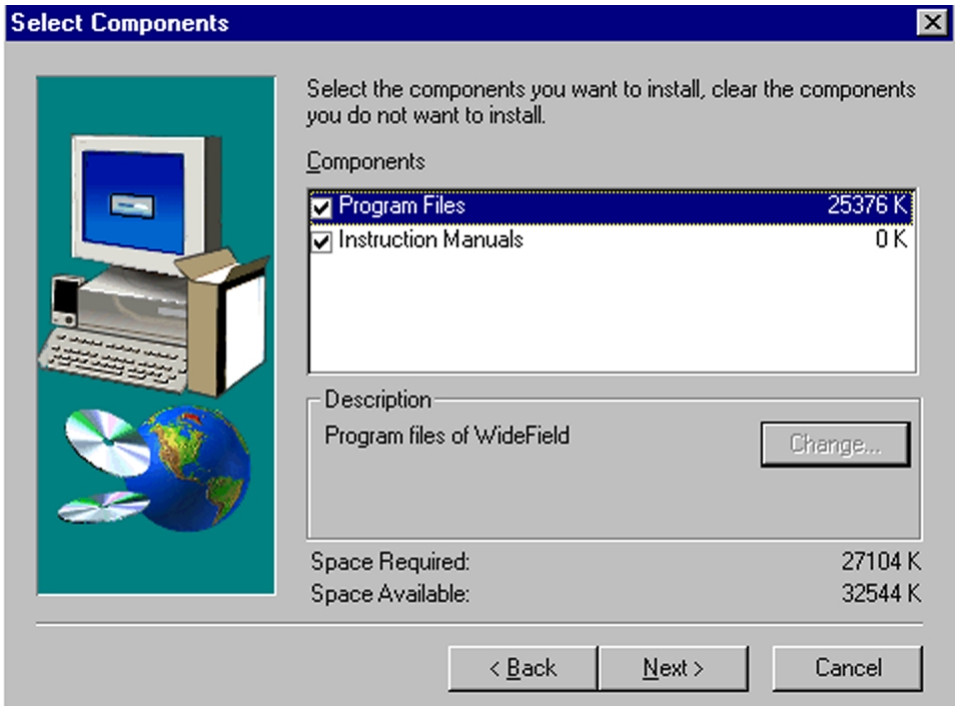
Figure A3.3 Installation Screen 3

(7) If [Browse] is selected, select the destination drive and folder to be changed and click [OK]. Figure A3.3;Installation Screen 3; is displayed again.

FA030104E.EPS

Figure A3.4 Installation Screen 4

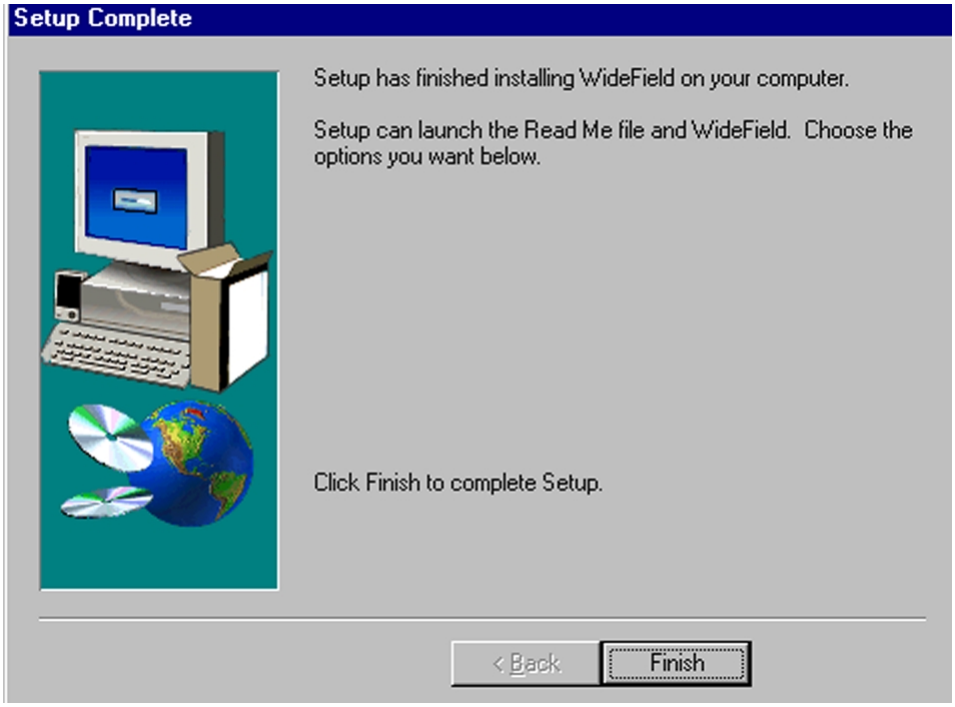
(8) Confirm the components and the capacity of the disk drive (necessary capacity and available space). After confirming, click [Next].



FA030105E.EPS

Figure A3.5 Installation Screen 5

(9) After completing installation, the following screen will be displayed. Click [Finish] and installation will be finished.



FA030106E.EPS

Figure A3.6 Installation Screen 6

(10) Now, start this development tool by clicking on [Start] - [Program] - [WideField]. See the next section to start from the short-cut icon.

A3.2 Creating Short-Cut Icons

(1) Click [Start] - [Programs] - [Explorer] to run Explorer.

(2) Move this development tool to the folder installed. The following application exists. The other executable files in the same folder cannot be run alone.

Table A3.1 List of Applications

Application Name	Description
WideField.exe	Main WideField Program
FAM3Device.exe	Device Management Tool
FAM3Trace.exe	Sampling Trace Tool

TA030201E.EPS

(3) For all the application has the same procedure to create the short-cut icon, following describes about WideField.exe for example.
Click [WideField.exe] and drag it onto the desktop.

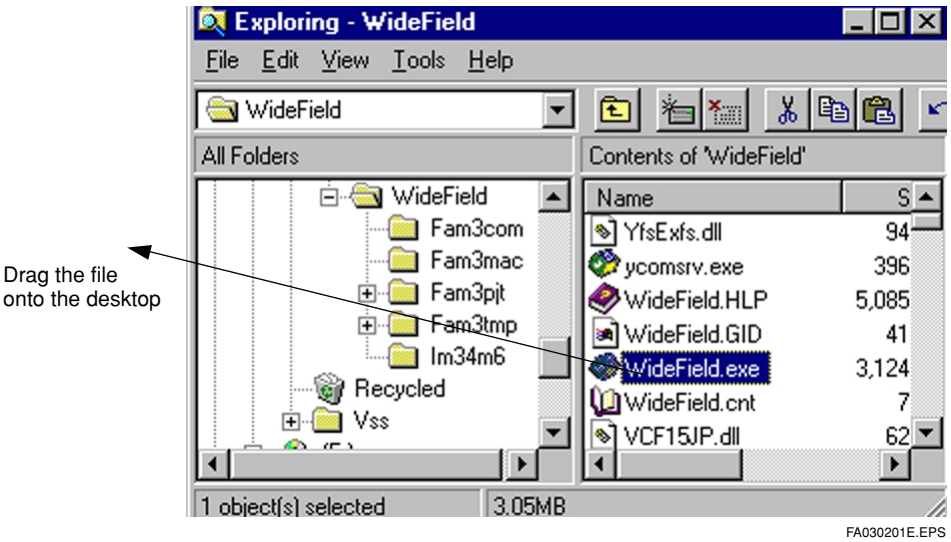


Figure A3.7 Creating Short-Cut Icons

(4) Short-cut icon has been created on the desktop.

Figure A3.8 Short-Cut Icon

TIP

Right-click on the short-cut icon created and use the [Change Name] menu to change the name of the short-cut icon.

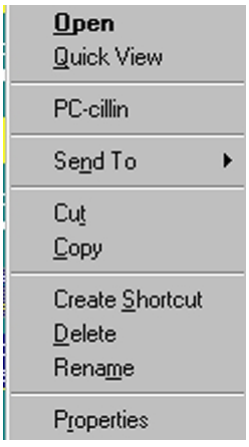


Figure A3.9 Changing Name

A3.3 Uninstalling

(1) Click [Start] - [Settings] - [Control Panel] to run the Control Panel.

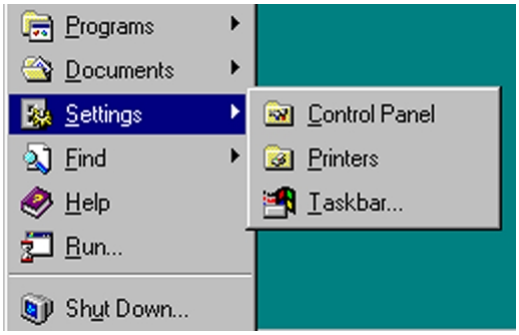
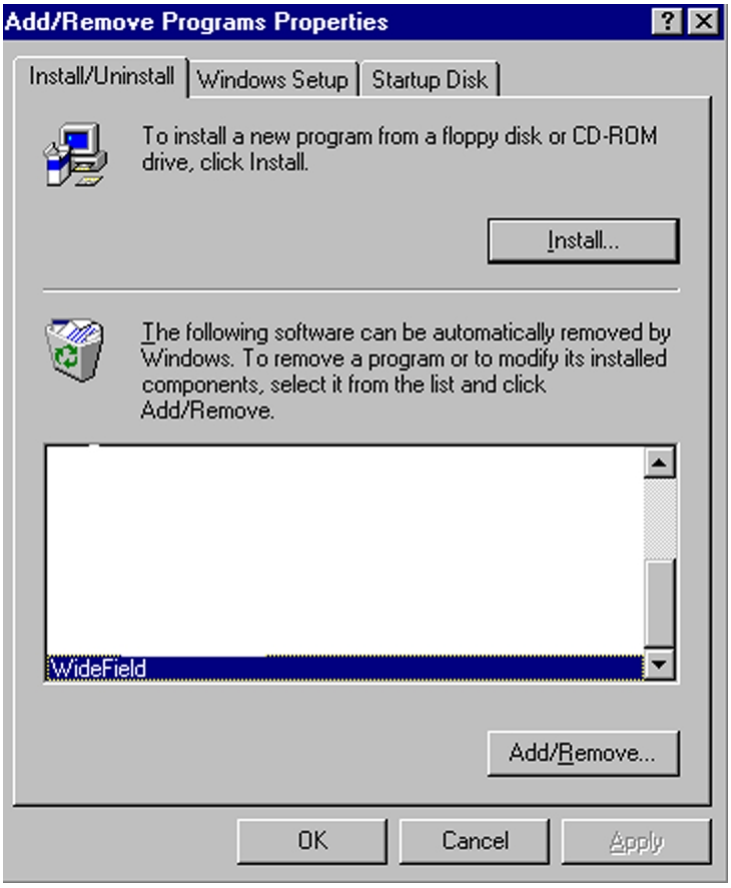


Figure A3.10 Running Control Panel

(2) The Control Panel is displayed. Double click [Add/Remove Programs].

Figure A3.11 Removing Applications

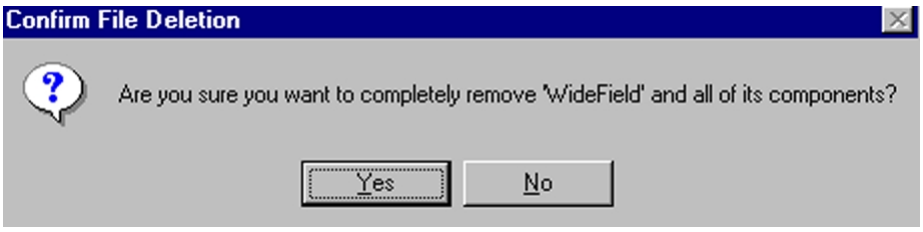
(3) Select the software to be removed. Select WideField and then choose the [Add/Remove] button.



FA030303E.EPS

Figure A3.12 Select WideField

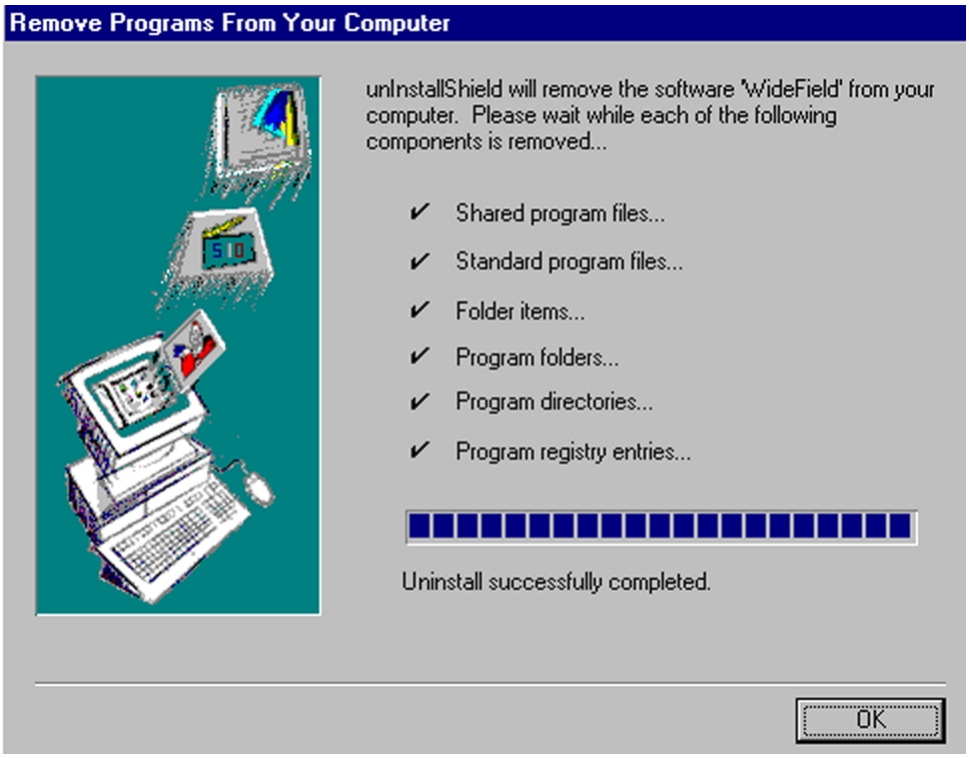
(4) After confirming the name of the software, click [Yes]. Click [No] to return to the screen, Figure A3.12



FA030304E.EPS

Figure A3.13 Confirmation Message

(5) Uninstalling is begin. Once it is completed, click [OK].



FA030305E.EPS

Figure A3.14 Complete Application Removal

CAUTION

- Uninstalling will delete all applications in this development tool. It is not possible to remove only part of the applications.
- The program environments you have developed will remain after uninstalling.

A3.4 Starting and Shut Down

This section describes how to start and shut down each applications.

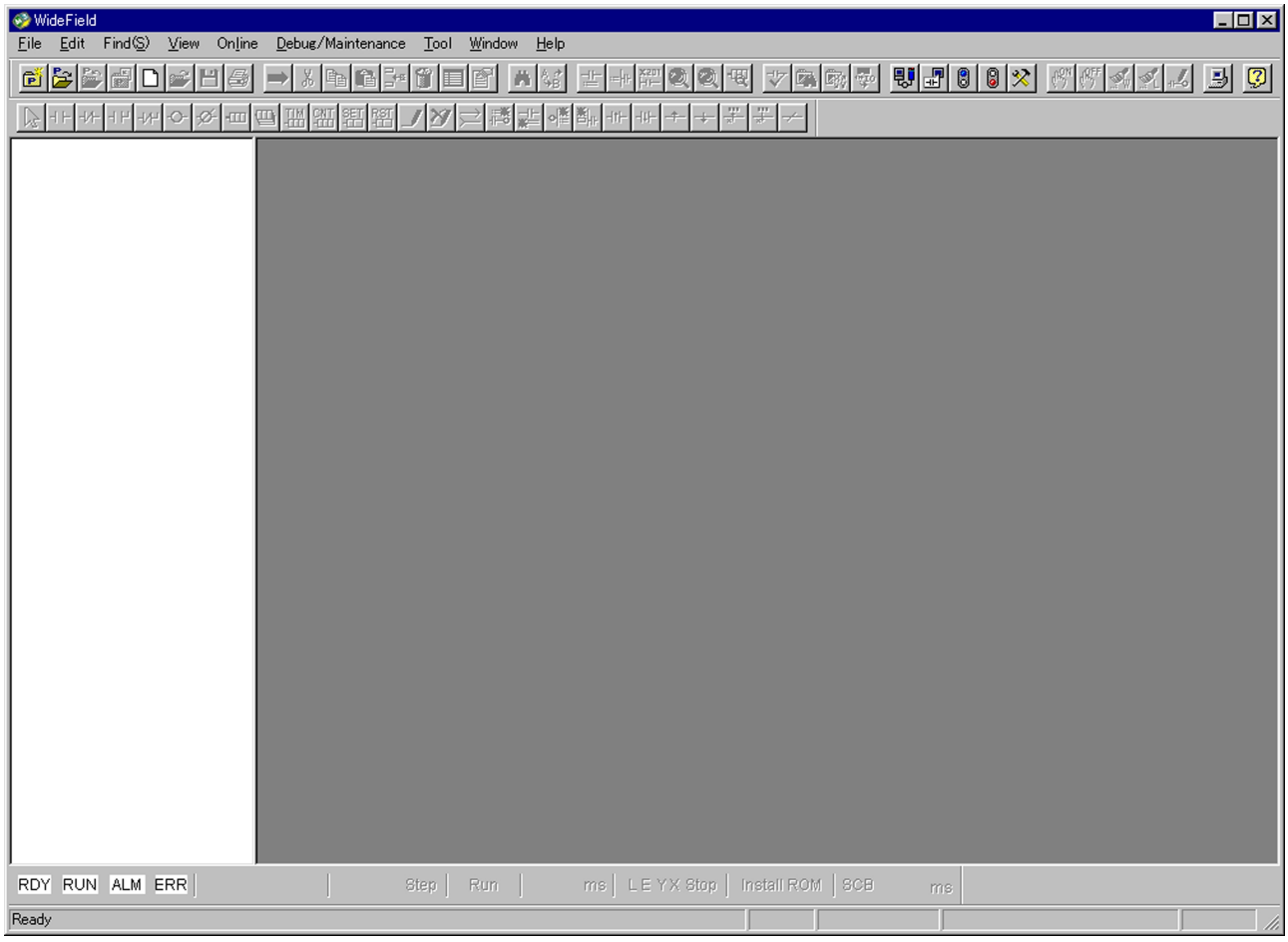
A3.4.1 Procedure for Starting WideField

(1) Click [Start], then click [Programs] - [WideField] - [WideField].

FA030401E.EPS

Figure A3.15 Selecting WideField

(2) WideField start-up screen appears.



FA030402E.EPS

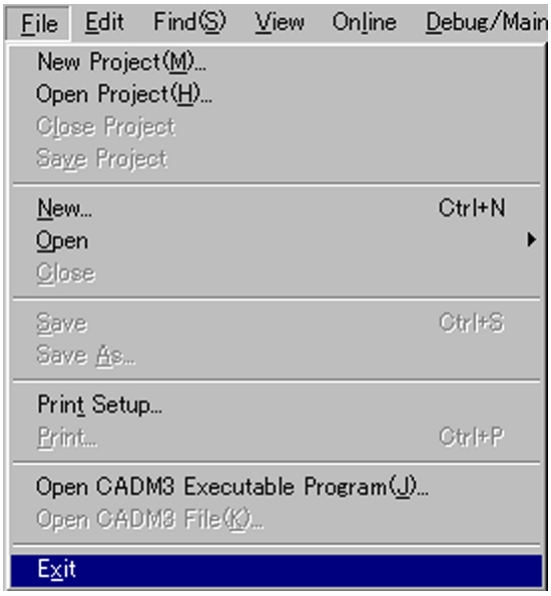
Figure A3.16 WideField Start-Up Screen

TIP

Start from a short-cut icon is also possible. Double-click the short-cut icon to start the program.

A3.4.2 Procedure for Shutting Down WideField

(1) Select [File] - [Exit] from the menu bar. WideField will then shut down.



FA030403E.EPS

Figure A3.17 Selecting Shut Down Application

TIP

It is also possible to shut down the application from the application control menu. Click on the application icon. Select [Close] from the drop down menu.

FA030404E.EPS

Figure A3.18 Selecting [Close]

A3.4.3 Procedure for Starting Help

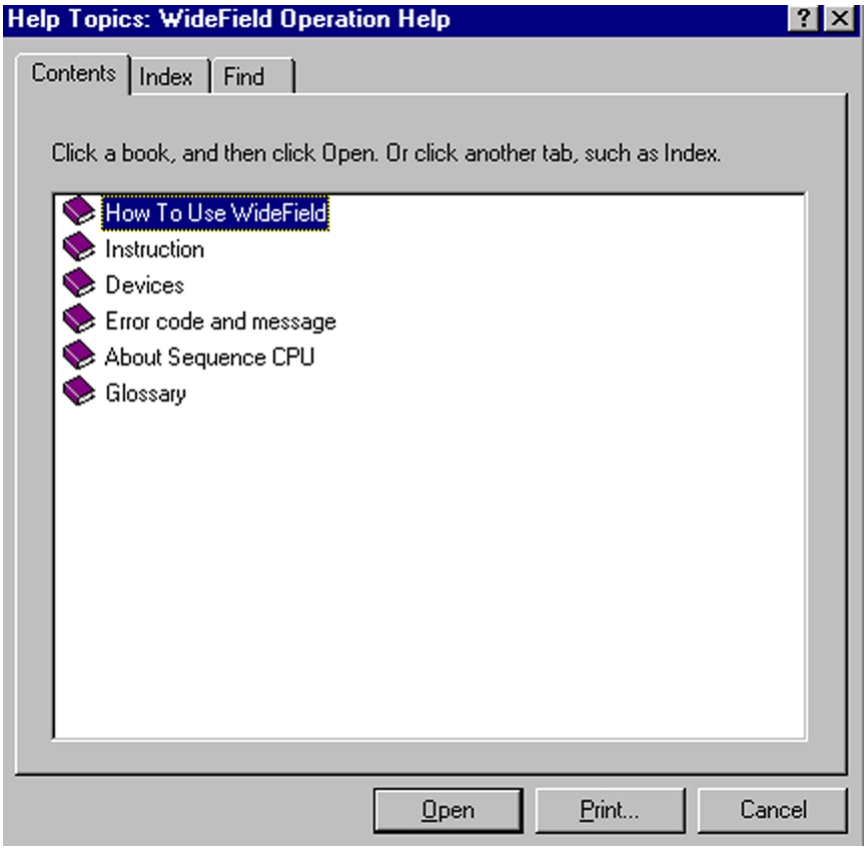
WideField has a Help function, which includes items such as how to operate WideField, instruction functions, device types, error codes, and so on. Start and use it whenever as required. It is used same as other Windows software help. See the Windows operating manual.

■ Starting from the Start Menu

Select [Start] - [Programs] - [WideField] - [WideField Help] from the start menu to start the help.

FA030405E.EPS

Figure A3.19 Start Help from the Start Menu



FA030406E.EPS

Figure A3.20 Help Start-Up Screen

■ Starting from the WideField Menu Bar

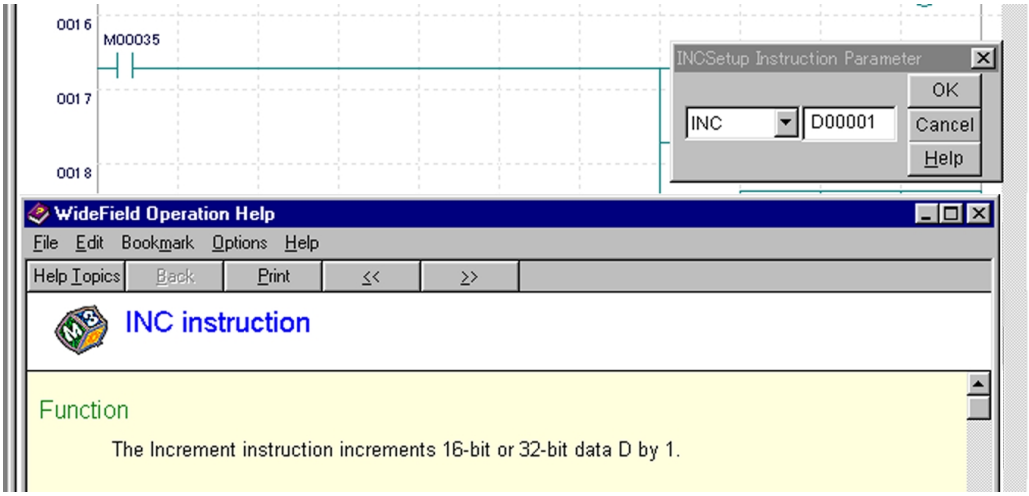
Select [Help] - [WideField Help], or [Help] - [Contents and Index] from WideField to start.

FA030407E.EPS

Figure A3.21 Starting Help from the WideField Menu Bar

■ Start Using the Help Button

Select the help button in dialog boxes, and the Help is displayed.



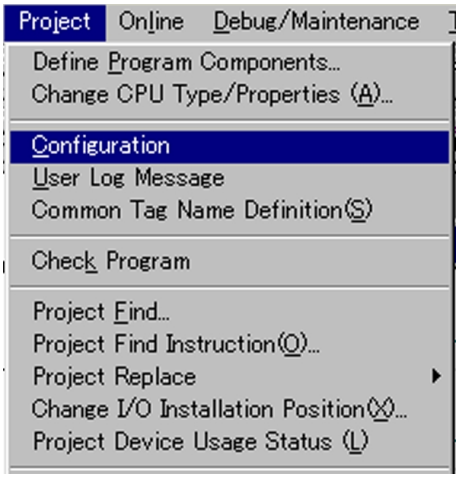
FA030408E.EPS

Figure A3.22 Help Button

■ Starting from F1 key

Press the F1 key to start the WideField Help. The following method may be used.

● Activate a menu, and call up the help for the use of menu command.



FA030409E.EPS

Figure A3.23 Calling Menu Command Help

With the menu selected as shown in Figure A3.22, pressing the F1 key will call up the help for the selected menu command (in this example, help for configuration).

● Calling up the help for a dialog box with the box displayed

With a dialog box displayed front, pressing the F1 key will display the help for the dialog box. (Some dialog such as Windows standard dialog boxes may not have their help items displayed.)

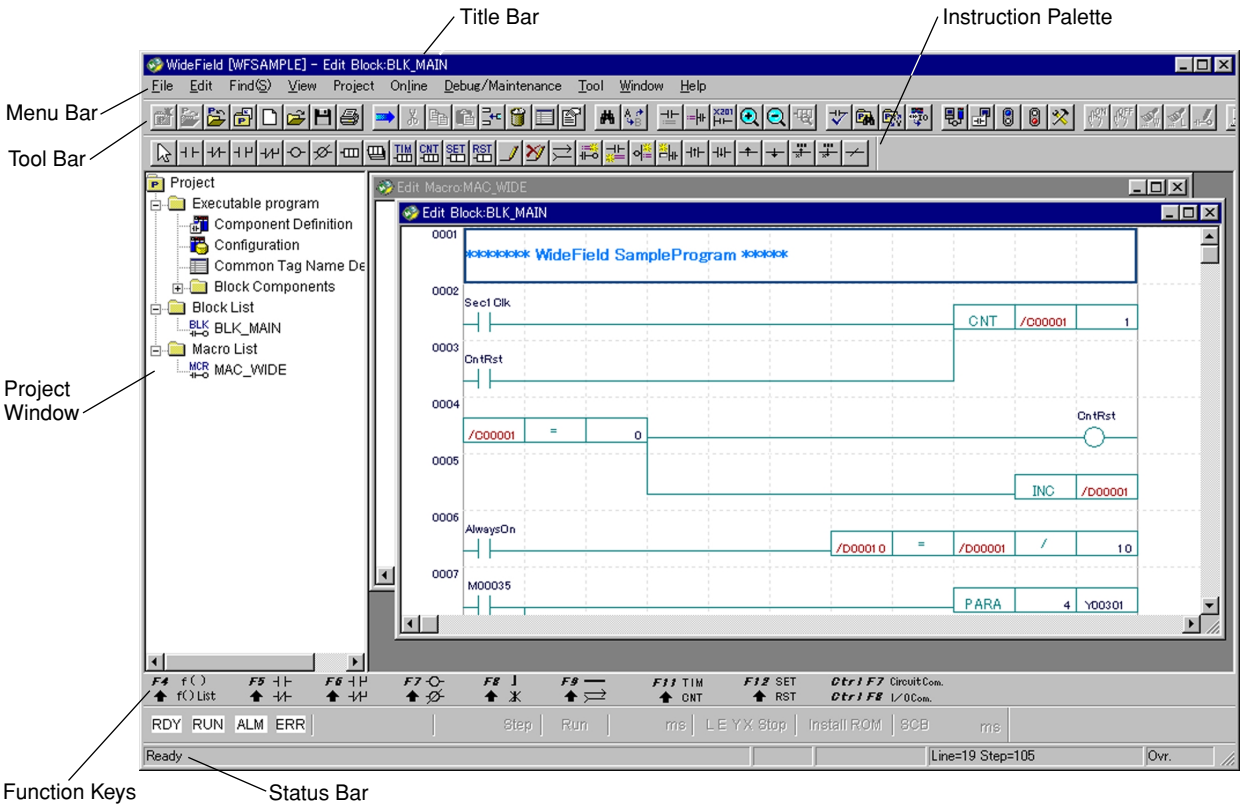
Blank Page

A4. Basic Specifications

This section describes basic specifications such as screen layout, function list and key operation.

A4.1 Screen Layout

This section describes the layout of the screen.



FA040101E.EPS

Figure A4.1 Screen Layout

■ Title Bar

The names of opened projects, active windows and the filename being edited are displayed in the title bar.

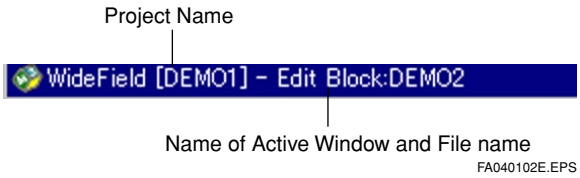


Figure A4.2 Layout of Title Bar

■ Menu Bar

The names of menus which can be used with this development tool are displayed in the menu bar, and can be selected from here.

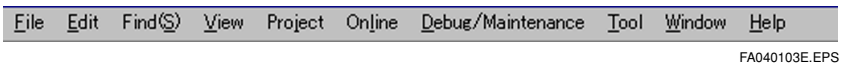


Figure A4.3 Layout of Menu Bar

■ Tool Bar

Icons for the most often used menus from the menu bar are displayed in the tool bar.
Menus may be selected from the tool bar not only from the menu bar.
Menu is registered to the tool bar in the environment settings.
You can also switch between displaying and not displaying the tool bar at [View] - [Toolbar].

Figure A4.4 Layout of Toolbar

■ Command Palette

Icons for commands and comments are displayed in the command palette. Select commands from the command palette to create the circuit. You can also switch between displaying and not displaying the command palette at [View] - [Instruction Palette].

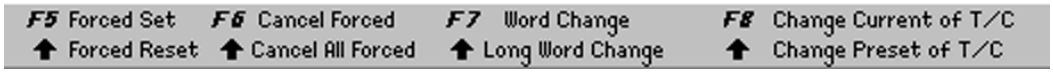
Figure A4.5 Layout of Instruction Palette

■ Function Keys

The function keys bring up command and comment icons on the circuit edit screen. The debug function is displayed on the monitor screen. It is also possible to select commands and menus from the function keys, other than from the menu bar or command palette. You can also switch between displaying and not displaying the function keys at [View] - [Function Keys]. When in the block edit screen or the online edit screen, the command function keys are displayed, while the debug function keys are displayed when in the online edit screen.

FA040106E.EPS

Figure A4.6 Layout of Instruction Function Keys

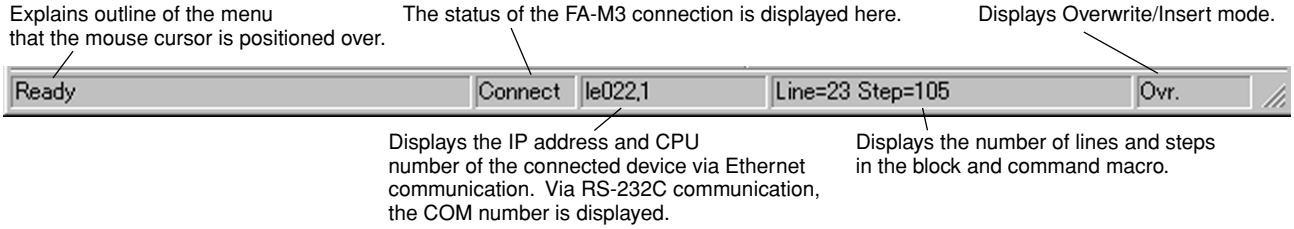


FA040107E.EPS

Figure A4.7 Layout of Debug Function Keys

■ Status Bar

The status of a variety of information concerning this development tool is displayed on the status bar. You can also switch between displaying and not displaying the status bar at [View] - [Status Bar].

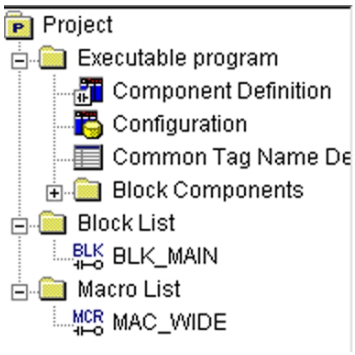


FA040108E.EPS

Figure A4.8 Layout of Status Bar

■ Project Window

The layout of opened projects is displayed in the project window. Executable programs, lists of the blocks inside projects and command macros are displayed. You can also switch between displaying and not displaying the project window at [View] - [Project Window].



FA040109E.EPS

Figure A4.9 Layout of Project Window

You can call up the screen directly from the project window.

● Executable Program Layout Definition Screen

Double click on [Layout Definition].

● Configuration Settings Screen

Set the configuration to [Setup] with the executable program layout definition to display [Configuration] in the project window. Double click on [Configuration].

● User Log Message Creation Screen

Set the user log message to [yes] with the executable program layout definition to display “User Log Message” in the project window. Double click on [User Log Message].

● Common Tag Definition Screen

Double click on [Common Tag Name Definition].

● Block Edit Screen

Double click on either block name in the block layout or the block name in the block list.

● Command Macro Edit Screen

Double click on the macro name in the Instruction macro list.

A4.2 Function List

Below is a list of all functions.

Table A4.1 Function List (1/3)

Menu Bar	Menu Command	Description
File	New Project	Creates a new project.
	Open Project	Opens an existing project.
	Close Project	Closes an opened project.
	Save Project	Saves an opened project by overwriting
	New	Creates a new block, command macro, or group template.
	Open	Opens any type of file (blocks, command macros, system logs, user logs, group templates).
	Close	Closes any type of file and screen that has been opened.
	Save	Overwrites and saves any type of file that has been opened. The menu changes to [File Reflection] during the program monitor and the macro monitor, and the contents of the online edit are reflected in the file.
	Save As	Saves opened blocks or command macros with a different file name. The menu changes to [Different File Reflection] during the program monitor and the macro monitor, and the contents of the online edit are reflected in the other file.
	Print setup	Settings Sets the printer.
	Print	Prints out screen or project.
	Open CADM3 Executable Program	Converts a CADM3 executable program to WideField project format, and opens the project.
	Open CADM3 File	Opens a CADM3 block and macro file.
	Exit	Exit the application.
Edit	Undo	Cancels the previous operation and returns to the original state.
	Convert	Converts a ladder diagram into an object.
	Cut	Cuts out the designated area and stores it in the clipboard.
	Copy	Copies the designated area and stores it in the clipboard.
	Paste	Pastes the contents of the clipboard onto the designated area.
	Delete	Deletes the designated area.
	Image Copy	Saves the circuits in the designated area to the clipboard as a bitmap.
	Insert Line	Inserts 1 line.
	Delete Line	Deletes the line and space in the designated area.
	Temporary Delete	Deletes the area designated temporarily. The deleted area simply changes color without disappearing.
	Undo Temporary Delete	Objects temporarily deleted are restore.
	Ladder Symbol	Displays the circuit command symbols.
	Page Break	Inserts a page break mark in the circuit comment for printing.
	Hide Circuit	Hides all circuits from the previous circuit comment until the next one.
	Show Circuit	Show hidden circuits and redisplays them.
	Hide All Circuits	Hides all circuits between circuit comments and displays them.
	Show All Circuit	Shows all hidden circuits and redisplays them.
	Block Tag Definition	Displays the tag definition screen.
	Local Device/Properties	Defines the number of local devices and the properties in a block.

TA040201E.EPS

Table A4.1 Function List (2/3)

Menu Bar	Menu Command	Description
Find	Find	Searches for a device.
	Find Instruction	Searches for a instruction.
	Find Next	Searches again for the previous item.
	Jump	Jumps to the designated place. The submenu contains jumps to the first line, the last line, to a designated line number, and to a designated command number.
	Replace	Replaces a circuit device with another.
	Device Usage Status	Displays devices currently used in the block by marking them.
View	Tool Bar	Switches between displaying and hiding the tool bar.
	Instruction Palette	Switches between displaying and hiding the command palette.
	Status Bar	Switches between displaying and hiding the status bar.
	Function Keys	Switches between displaying and hiding the function keys.
	Action Monitor	Switches between displaying and hiding the movement monitor.
	Project Window	Switches between displaying and hiding the project window.
	Display Comment I/O	Switches between displaying and hiding the I/O comment.
	Instruction Number Display	Switches between displaying and hiding the command number.
	Display Address	Switches between displaying the tag name and the address.
	Redraw	Redraws a circuit.
	Zoom	Displays circuits enlarged or reduced. Enlarge and Reduce are listed in the submenu.
	Detail	Displays the current values of the register, etc.
	Display Format	Changes the display format. The different formats are: decimal, hexadecimal, binary, character string, and floating point.
	Suspend monitor	Stops monitoring the entire screen temporarily. During this state, the menu displays [Restart Monitor].
Project	Define	Defines the executable program configuration.
	Change CPU Type/ Properties	Defines the information of the CPU type and its properties.
	Configuration	Sets the configuration in a project.
	User Log Message	Creates a user log message in a project.
	Common Tag Name Definition	Defines the common tag name in all blocks in a project.
	Check Program	Checks the syntax in all blocks in a project.
	Find in Project	Searches for and displays a list of all devices, block names, and labels in a project.
	Find Instruction in Project	Searches for and displays a list of all commands in a project.
	Replace in Project	Replaces all the tag names and addresses for all blocks in a project.
	Change I/O Installation Position	Executes a comprehensive change of all addresses of input/output relays with change of the I/O slot.
	Project Device Usage Status	Displays devices in use in all blocks in a project by marking them.
	Insert File	Copies block and common tag definitions from other folders into the project.
	Rename File	Changes the names of blocks and command macros in a project.
	Delete File	Deletes blocks and command macros in a project.
	Register Macro	Registers command macros in a project to the macro folder.
	Get macro	Extracts command macros from the macro folder into the project.

TA040202E.EPS

Table A4.1 Function List (3/3)

Menu Bar	Menu Commnd	Description
Online	Connect	Connects the PC and the FA-M3.
	Disconnect	Disconnects the PC and the FA-M3.
	Program Monitor	Monitors the CPU's program block with a circuit.
	Macro Monitor	Monitors the CPU's instruction macros with a circuit.
	Device Monitor	Monitors the CPU's devices.
	Configuration	Displays the CPU's configuration.
	Operating Mode	Switches the operation mode. There are submenus for change to operation mode, stop, and debug mode.
	Download	Downloads executable programs from the PC to the CPU.
	Upload	Uploads executable programs to the PC from the CPU.
	Compare File and CPU	Compares an executable program between the PC and the CPU.
	ROM Management	Control the ROM pack. There are submenus for file to ROM download, CPU to ROM upload, cross-checking files with ROM, erasing ROM, switching to ROM writer mode, and canceling ROM writer mode.
	Extended Functions	Executes a variety of controls for the CPU. There are submenus for temporarily changing communication speed, setting the time, program clear, device clear, reset start, and exclusive access right control.
Debug/ Maintenance	Forced Set	Forcibly set a device.
	Forced Reset	Forcibly reset a device.
	Cancel Forced Set/Reset	Cancels a device that has been forcibly set or reset.
	Cancel All Forced Set/Reset	Cancels all devices that have been forcibly set or reset.
	Change Word Data	Changes a device's current values to word data.
	Change Long Word Data	Changes a device's current values to long word data.
	Change Current Value of Timer/Counter	Changes the current values of the timer/counter.
	Change Preset Values of Timer/Counter	Changes the set values of the timer/counter.
	Start Online Editing	Starts the online edit. The menu display will change to [Quit Online Edit] while in online edit.
	Start Block	Starts a stopped block.
	Stop Block	Stops a launched block.
	Stop Refreshing	Stops a refresh. There are submenus for input [X] stop, output [Y], common [E/R] stop, and link [L/W] stop.
	Restart Refreshing	Restarts all points of the refresh.
	Display Alarm	Displays all the alarms that the CPU is currently generating. When the alarms are displayed, the display changes to [Redisplay Alarm].
	Cancel Alarm	Cancels the CPU's alarm data.
	Display System Log	Displays the CPU's error history. While the error history is displayed, the menu display will change to [Redisplay System Log].
	Display User Log	Displays the CPU's user history. While the error history is displayed, the menu display will change to [Redisplay User Log].
	Clear Log	Clear the displayed user or system logs.
Tool	Set Environment	Sets the PC's environment.
	Set I/O Module	Starts the FA link tools.
Windows	Cascade	Displays the windows overlapped.
	Tile	Displays the windows arranged.
	Arrange Icons	Arranges the icons.
Help	WideField Help	Displays the help by function.
	Contents and Index	Displays help by keyword.
	About WideField	Displays WideField version information.

TA040203E.EPS

A4.3 List of Generated Objects

This section describes the generated objects.

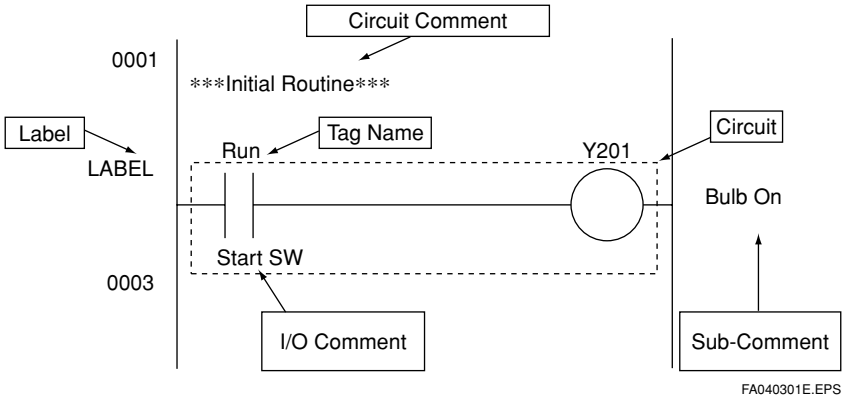
A4.3.1 Generated File

Table A4.2 Specifications of Generated File

Generated File	Icon	Extension	Item	Specifications
Project File	_	.YPJT	File Name	String of letters and numbers within 8 characters beginning with a character. Special characters as "-" (hyphens) and "_" (underbars) can be used.
			Project Title	Up to 32 characters. Letters, numbers, special characters, Chinese characters, hiragana, and katakana may be used.
Executable Program File		.YPRG	File Name	Only one with the same name as the project can be created inside a project.
			Number of Component Blocks	Up to 1024. (Varies depending on the CPU.)
			Configuration Settings	Up to 1. (Not need to be set.)
			User Log Message Settings	Up to 1. (Not need to be set.)
Configuration File		.YC□□	File Name	Only one with the same name as the project can be created inside a project. (□□□ are the number corresponding to the CPU type.)
User Log Message File		.YUMS	File Name	Only one with the same name as the project can be created inside a project.
			Number of Message Characters	Up to 32 characters. Letters, numbers, special characters, Chinese characters, hiragana, and katakana may be used.
			Number of Messages	Up to 64
Common Tag Name Definition File		.YCMN	File Name	Only one with the same name as the project can be created inside a project.
			Number Registered	Up to 5120 data.
Block File		.YBLK	File Name	Only one with the same name as the project can be created inside a project.
			Number of Steps	Up to 10K steps.
			Number of Lines	Up to 4000 lines.
Block tag Name Definition File		.YSIG	File Name	Can be created with the same name as the block.
			Number Registered	Up to 5120 data.
Instruction Macro File		.YMCR	File Name	String of letters and numbers within 8 characters beginning with a character. Special characters as "-" (hyphens) and "_" (underbars) can be used.
			Number of Steps	Up to 10K steps.
			Number of Lines	Up to 4000 lines.
Macro Tag Name Definition File		.YMCS	File Name	Can be created with the same name as the macro.
			Number Registered	Up to 5120 data.
Group Template File		.YGRP	File Name	String of letters and numbers within 8 characters beginning with a character. Special characters as "-" (hyphens) and "_" (underbars) can be used.
			Number Registered	Up to 64 data.
System Log File		.YSLG	File Name	String of letters and numbers within 8 characters beginning with a character. Special characters as "-" (hyphens) and "_" (underbars) can be used.
User Log File		.YULG	File Name	String of letters and numbers within 8 characters beginning with a character. Special characters as "-" (hyphens) and "_" (underbars) can be used.
Sampling Trace File		.TRF	File Name	String of characters and numbers within 8 characters beginning with an English character.
Device Management File		.DVF	File Name	String of characters and numbers within 8 characters beginning with an English character.
FA Link Settings File		.FAI	File Name	String of characters and numbers within 8 characters beginning with an English character.

TA040301E.EPS

A4.3.2 Circuit Elements



FA040301E.EPS

Table A4.3 Specifications of Circuit Elements

Element	Item	Specifications
Tag Name	Number of Characters	String of characters and numbers within 16 characters beginning with an English character. Special characters as "-" (hyphens) and "_" (underbars) can be used. However, strings that are not distinguishable from the device name are not allowed.
	Number Registered	Up to 5120 within each block.
Circuits	Number of Lines in 1 Circuit	Up to 25 lines.
	Number of Instructions in 1 Circuit	Up to 128 instructions.
	Continued Lines	Up to 3 lines.
	Number of Vertical Columns	Fixed at 11 columns.
Circuit Comment	Number of Characters	Up to 72 characters. Letters, numbers, special characters, Chinese characters, hiragana, and katakana may be used.
	Number Registered	Up to 3000 together with the sub-comment in the entire executable program.
Sub-Comment	Number of Characters	Up to 24 characters. Letters, numbers, special characters, Chinese characters, hiragana, and katakana may be used.
	Number Registered	Up to 3000 together with the sub-comment in the entire executable program.
I/O Comment	Number of Characters	Up to 32 characters. Letters, numbers, special characters, Chinese characters, hiragana, and katakana may be used.
	Number Registered	Up to 5120 in each block
Title	Number of Characters	Up to 24 characters. Letters, numbers, special characters, Chinese characters, hiragana, and katakana may be used.
Label	Number of Characters	A string of characters and numbers beginning with 1 or more letters. Special characters as "-" (hyphens) and "_" (underbars) can be used.
	Number Registered	There is a limitation within the entire executable program. (Varies depending on the CPU.)

TA040302E.EPS

A4.3.3 Folders

Table A4.4 Folder Specifications

Generated Object	Item	Specifications
Folder	Number of Characters	Up to 255 Letters.

TA040303E.EPS

A4.4 Shortcut Keys

Shortcut keys are keys assigned certain menus or instructions to select menus or input instructions from the keyboard. For example, input [Ctrl] + [N] to select the [New Document] menu. Below is a list of the shortcut keys.

Table A4.5 List of Shortcut Keys (1/2)

Classification	Shortcut Key	Icon	Description
Menu	[Ctrl] + N		New Document
	[Ctrl] + S		Save, File Reflection
	[Ctrl] + P		Print
	[Ctrl] + Z		Restore
	[Ctrl] + U		Convert
	[Ctrl] + X		Cut
	[Ctrl] + C		Copy
	[Ctrl] + V		Paste
	[Delete]		Delete
	[Shift] + [Insert]		Insert line
	[Shift] + [Delete]		Delete line
	[Alt] + [Enter]		Local device properties
	[Ctrl] + F		Find
	[F3]		Find next
	[Ctrl] +R		Replace
	[Ctrl] + [Home]		Move to top of line
	[Ctrl] + [End]		Move to end of line
	[Ctrl] + I		Display I/O comment
	[Ctrl] + K		Display instruction number
	[Ctrl] + A		Display address
	[Ctrl] + W		Display details
	[F5]		Forced set
	[Shift] + [F5]		Forced reset
	[F6]		Cancel forced set/reset
	[Shift] + [F6]		Cancel all forced set/reset
	[F7]		Change word data
	[Shift] + [F7]		Change long word data
	[F8]		Change current value of timer/counter
	[Shift] + [F8]		Change preset value of timer/counter
	[Ctrl] + H		Start block
	[Ctrl] + L		Stop block
	[F1]		Help

TA040401E.EPS

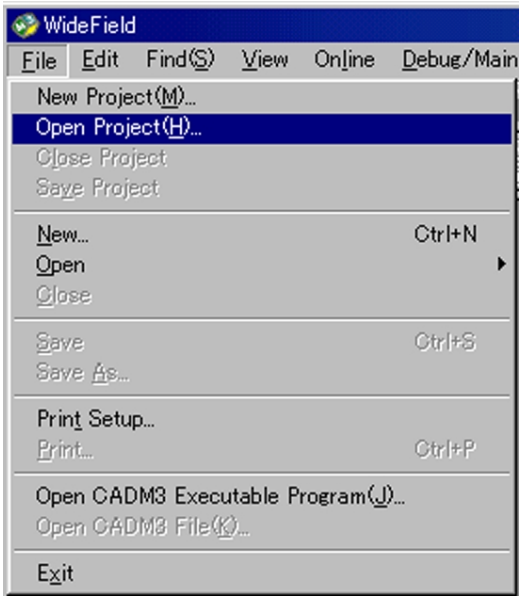
Table A4.5 List of Shortcut Keys (2/2)

Description	Shortcut Key	Icon	Classification
Instruction	[F4]		Application instruction
	[Shift] + [F4]		Application instruction list
	[F5]		Contact A
	[Shift] + [F5]		Contact B
	[F6]		Contact A OR
	[Shift] + [F6]		Contact B OR
	[F7]		OUT
	[Shift] + [F7]		OUTN
	[F8]		Insert connect line
	[Shift] + [F8]		Delete connect line
	[F9]		Horizontal line
	[Shift] + [F9]		Continuation line
	[F11]	TIM	TIM
	[Shift] + [F11]	CNT	CNT
	[F12]	SET	SET
	[Shift] + [F12]	RST	RST
	[Ctrl] + [F7]		Circuit comment
	[Ctrl] + [F8]		I/O comment
	[Ctrl] + [F9]		Subcomment
	[Ctrl] + [F6]		Label

TA040402E.EPS

■ Access Keys

Access key is the alphabet assigned to the end of each menu titles so that menu selection can be done from the keyboard. For example, input [ALT] + [F] to open the file menu. Hear, input [H] to select the [Open Project] menu.



FA040401E.EPS

Figure A4.10 Access Keys

A4.5 Basic Keys

Keys which can be used with this tool and their uses are listed below.

Table A4.6 Basic Keys

Key	Use
[Esc]	• Interrupts execution • Cancels the selection of a instruction
[Tab]	• Switches the input area in a dialog
[Insert]	• Switches between overwrite and insert mode
[Ctrl]	• Selects menu in combination with other keys
[Alt]	• Selects menu bar in combination with other keys
[Page Up]	• Scrolls the screen up
[Page Down]	• Scrolls the screen down
[Delete]	• Deletes elements where the cursor is positioned • Deletes 1 character
[Shift]	• Inputs the character in the shift position
[Back Space]	• Deletes the character left of the cursor position
[Enter]	• Enters carriage return
[$]	• First character in a hexadecimal number
[%]	• First character in a floating point number
["]	• The beginning and last character in a character string
[.]	• The character which defines the division between a group name and its member
[/]	• First character in a local device

TA040501E.EPS

A4.6 Type of Screens

This section describes the different types of screens and their limitation. There are the following types of screens.

● Window

Can be operated in multi-windows, enlarged and reduced. Up to 10 window-type screens can be opened at the same time. To close a screen select [File] - [Close].

● Modeless Dialog

Operate the menu bar to move control to a window-type screen. To close a modeless dialog-type screen, click on the button displayed on the screen. Instructions from menu to the modeless dialog are invalid.

Types of screen and their limitations are summarized in the table on the next page.

Table A4.7 Types of Screens

Main Item	Type of Screen	Purpose Screen	Type	Limits
Edit Block	Circuit Edit Screen	Create block circuits	Window	1 screen for each block
	Tag Name Definition Edit Screen	Carries out block tag definition.	Modeless Dialog	1 screen for each block
	Device Usage Status Display Screen	Displays a list of devices used in a block.	Modeless Dialog	1 screen for each block
Edit Instruction Macro	Circuit Edit Screen	Creates macro circuits.	Window	1 screen for each macro
	Tag Name Definition Edit Screen	Carries out macro tag name definition.	Modeless Dialog	1 screen for each macro
	Device Status Display Screen	Displays a list of devices used in a macro.	Modeless Dialog	1 screen for each macro
System Log/ User Log Reference	Reference Screen for System	Log Reads the system log file.	Window	UP to 10 screen
	User Log Reference Screen	Reads the user log file.	Window	UP to 10 screen
Edit Group Template	Group Template Edit Screen	Sets the members in a group.	Window	UP to 10 screen
Compose Project	Tag Name Definition Edit Screen	Carries out tag definition common to all blocks.	Modeless Dialog	1 screen.
	Program Check Results Screen	Displays a list of errors detected in a syntax check.	Window	1 screen.
	Device Extraction List Screen	Displays a list of places found in device extraction.	Window	UP to 10 screen
	Device Usage Status of Project Display Screen	Displays a list of devices used in all blocks.	Modeless Dialog	1 screen.
Program Monitor	Start Block Status Display Screen	Displays a list with block launch status.	Window	1 screen.
	Circuit Monitor Screen	Monitors blocks with circuits.	Window	1 screen for each block
	Device Usage Status Screen	Displays a list of devices used in a block.	Modeless Dialog	1 screen for each block
Macro Monitor	Circuit Monitor Screen	Monitors macros with circuits.	Window	1 screen for each macro
	Device Usage Status Screen	Displays a list of devices used in a block.	Modeless Dialog	1 screen for each macro
Device Monitor	I/O configuration Display Screen	Displays a list with the I/O Architecture.	Window	1 screen.
	Device Monitor Screen	Monitors devices as a list.	Window	UP to 10 screen
Alarm Monitor	Alarm Monitor Screen	Reads the CPU's alarm status.	Window	1 screen.
Compare File and CPU	Cross-check Results Screen	Displays a list of differences found in a cross-check.	Window	1 screen.

TA040601E.EPS

Blank Page

A5. Object Ladders

This section describes object ladders for object-oriented design.

■ What are object ladders?

Object ladders are the name Yokogawa Electric Corporation use for the new type of object-oriented ladder program that we have proposed, which uses a step ahead of structured programming.

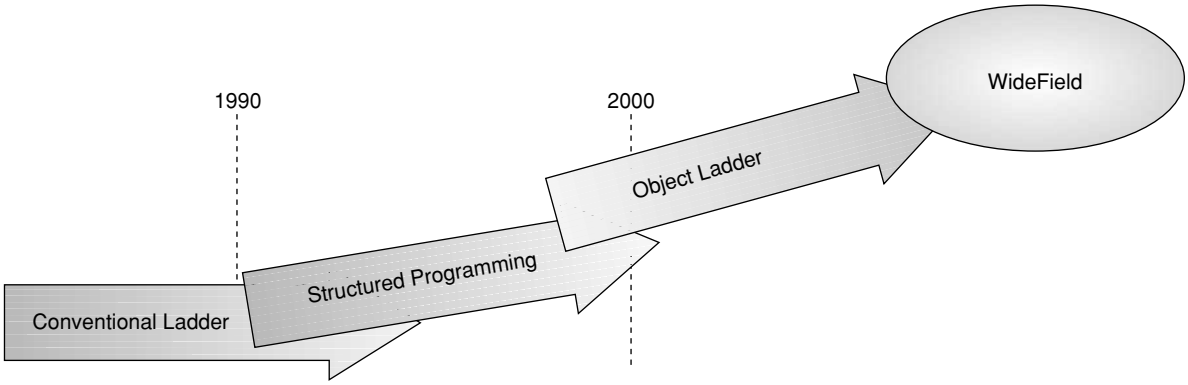


Figure A5.1 The Transition of Ladders

- With standard structured programming, it was possible to divide a program, but with object ladders, not only is that possible, but it is also possible to use the divided program and its related data as a single **block**.
- It is a ladder program that brings together data as well as processes (hyper blocks, component macros) and programs using them as conceptual “objects.”
- Objects are made up of the “data” and the “programs” that manipulate that data. With “object ladders,” which are made up of “hyper blocks,” “component macros” and “local devices,” it is possible to attain a high degree of functional independence.
- Creating programs designed using **object ladders** allows the developer to not only review entire blocks, but also to add or recombine blocks when customizing a device for a customer.

TIP

“Structured programming” - first proposed by Yokogawa Electric Corporation in 1989 - made it possible to divide increasingly large and complex ladder programs according to function, making it easier for designers to understand program design. In the 90’s it became popular among customers as an easy method for the designer him or herself to control productivity and maintainability. Later, PLC makers began developing products based on this concept, to the point where today it is the industry standard.

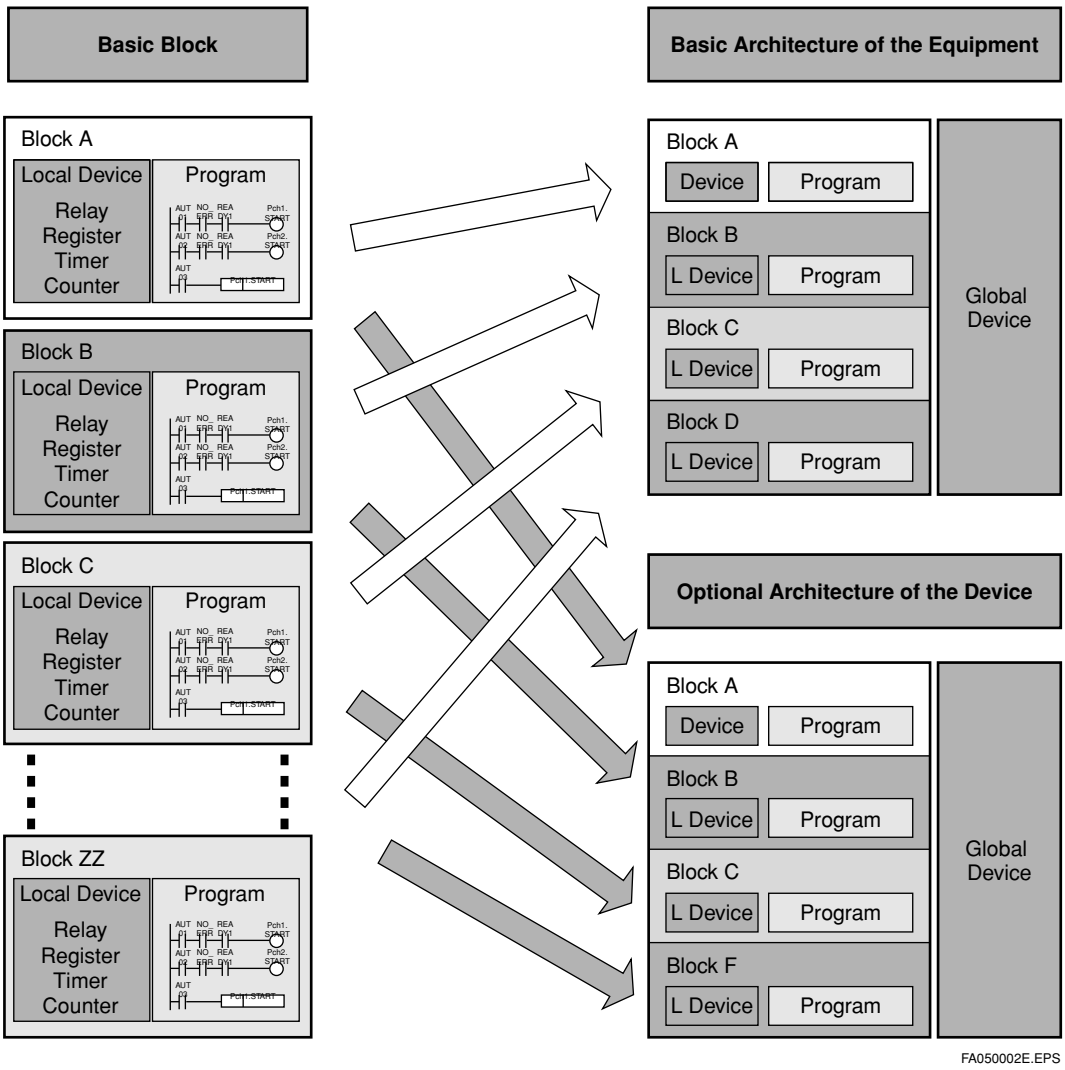


Figure A5.2 Custom Design

■ Realizing object-oriented design

- Abstraction
  Using “Group tag names” and “local devices,” divide physical elements and logical elements, and use the latter to describe the system.
- Divide into parts
  Using “component macros” and “hyper blocks,” promote reuse for division of elements into parts and standards. Basic blocks become easier to understand and “extensionality” and “reusability” increase through dividing into parts.
- Harmonization
  The “Collective change of I/O positions” function allows for flexibility when rebuilding abstracted objects.
- Visualization
  Use visual expression to their full extent with the “folding function” and “use of Windows” to make understanding even more intuitive.

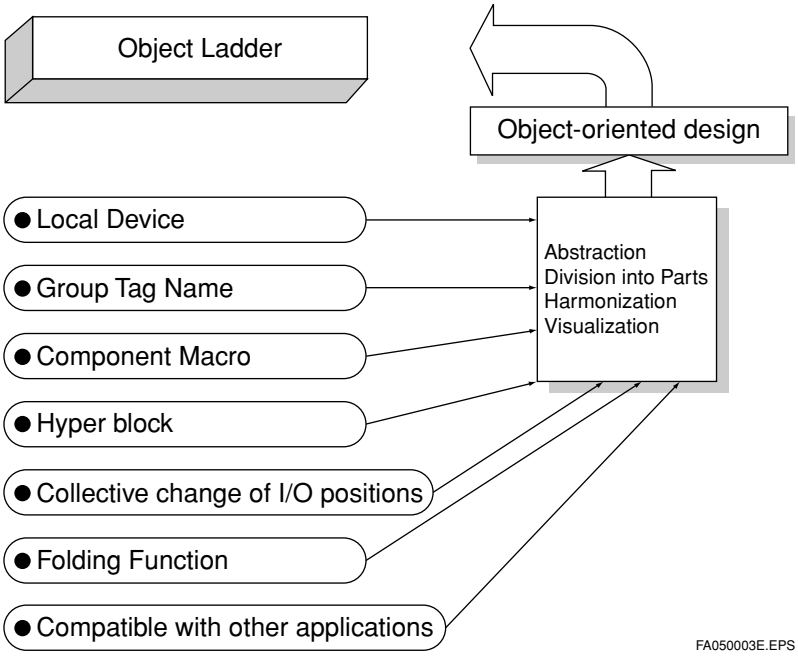


Figure A5.3 Object-Oriented Design

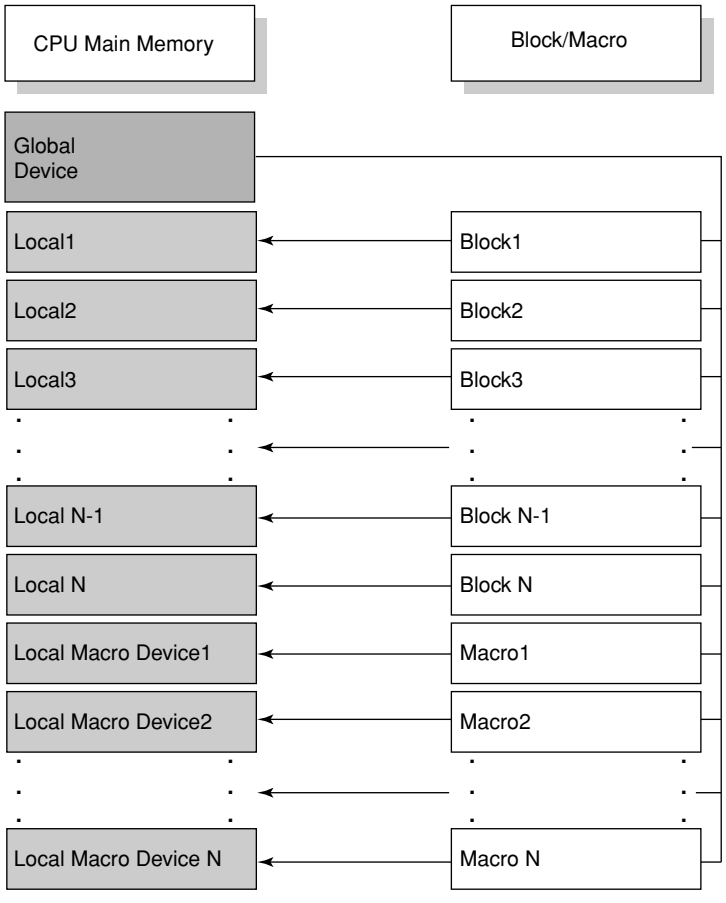
SEE ALSO

See the relevant chapter in “Part B. Operation Manual” for each of the individual items described in object-oriented design.

A5.1 Architecture of Object Ladders

A5.1.1 Local Devices

- This function is key for **object ladders**.
- Since “local devices” are independent within a block, the device address never overlaps with other “blocks” or “macros.”
- By differentiating devices that are common to the whole program (global devices) and devices that can only be used within a block (local devices), block independence is heightened, making reuse and diversified development even easier.
- There is no need to change the addresses of local devices when reusing “blocks” and “macros.”
- If “local devices” are run out, it is possible to increase them without affecting other blocks.
- “Global devices” and “local devices” are displayed in different colors, so they are easily distinguishable.



- Local devices can also be operated in a standard environment (no need for a memory card).
- Run at the same speed as global devices.

Figure A5.4. Conceptual Diagram of Device Operation with CPU

A5.1.2 Group Tag Names and Grouping of Tags

- You can group tag names and use the tag group as one data structure.
- You can use them simply by giving the tag group a name, like with object language data structures.
- If there are elements in the same architecture, grouping the tag names makes is possible to recognize data connectivity/structure/cluster by simply looking at the tag name.

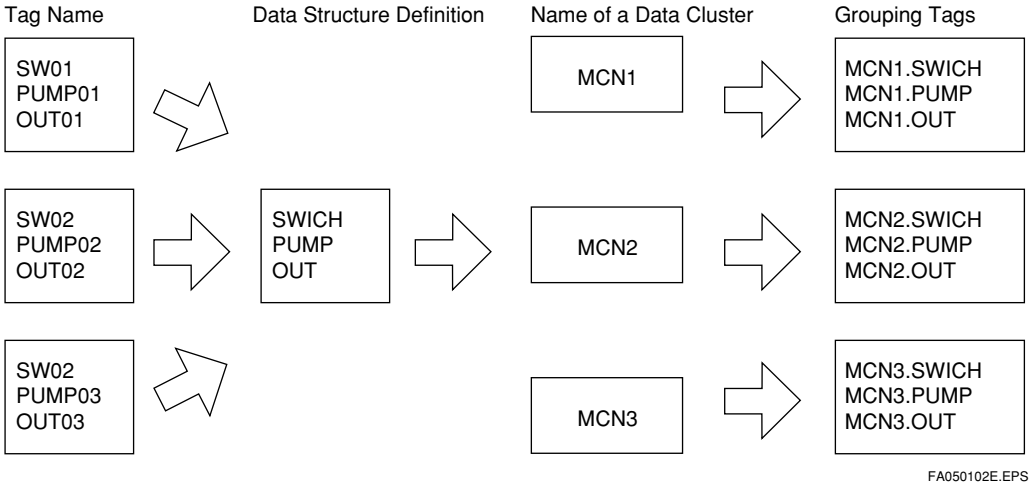


Figure A5.5 Grouping Tags

■ Example of Use of Group Tag Names

We will use the definition of an input/output relay for an F3NC52-0N two-axial control positioning module as an example.

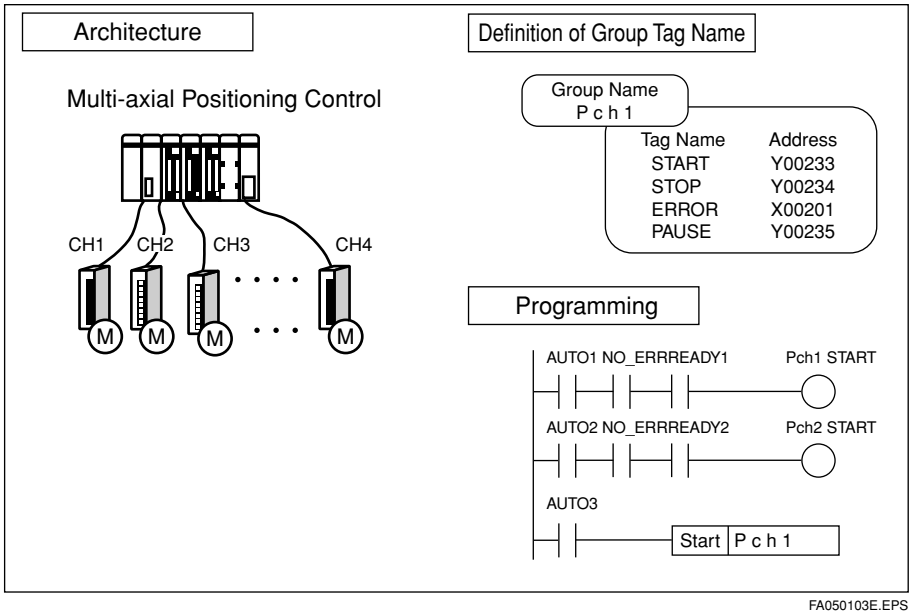
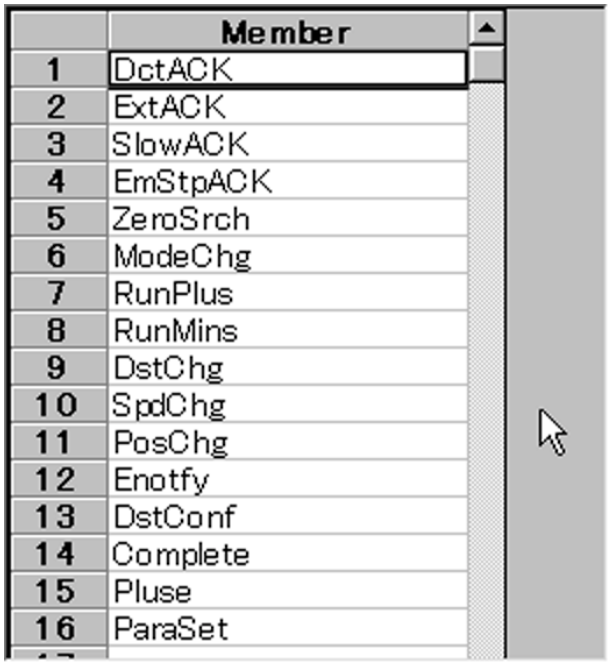


Figure A5.6 Image of Usage Example of Group Tag Names

(1) Select [File] - [New Document] - [Common Data] from the menu bar, and define the group template related to the device to be used. In the figure below, X□□□01 and X□□□17 are the input relays of operation instruction start ACK for Axis 1 and Axis 2. Define the group template related to the input relay, and make it “MOTION.”

Input Relay Number		Operation when ON
AX1 (Axis 1)	AX2 (Axis 2)	
X□□□01	X□□□17	Operation Instruction Start ACK
X□□□02	X□□□18	Extension Instruction ACK
X□□□03	X□□□19	Deceleration Stop ACK
X□□□04	X□□□20	Immediate Stop ACK
X□□□05	X□□□21	Complete Original Point Search
X□□□06	X□□□22	Control Mode Switch ACK
X□□□07	X□□□23	Positive Direction Run
X□□□08	X□□□24	Negative Direction Run
X□□□09	X□□□25	Target Value Change ACK
X□□□10	X□□□26	Speed Change ACK
X□□□11	X□□□27	Current Position Write ACK
X□□□12	X□□□28	Error Notification
X□□□13	X□□□29	Specified Point Detection Notification
X□□□14	X□□□30	Positioning Completion
X□□□15	X□□□31	Pulse Output Completion
X□□□16	X□□□32	Parameter Setup ACK



FA050104E.EPS

Figure A5.7 Example of Group Template Definition

(2) Select [Edit] - [Block Tag Definition] from the menu bar and define the group tag names for axis 1 and axis 2.

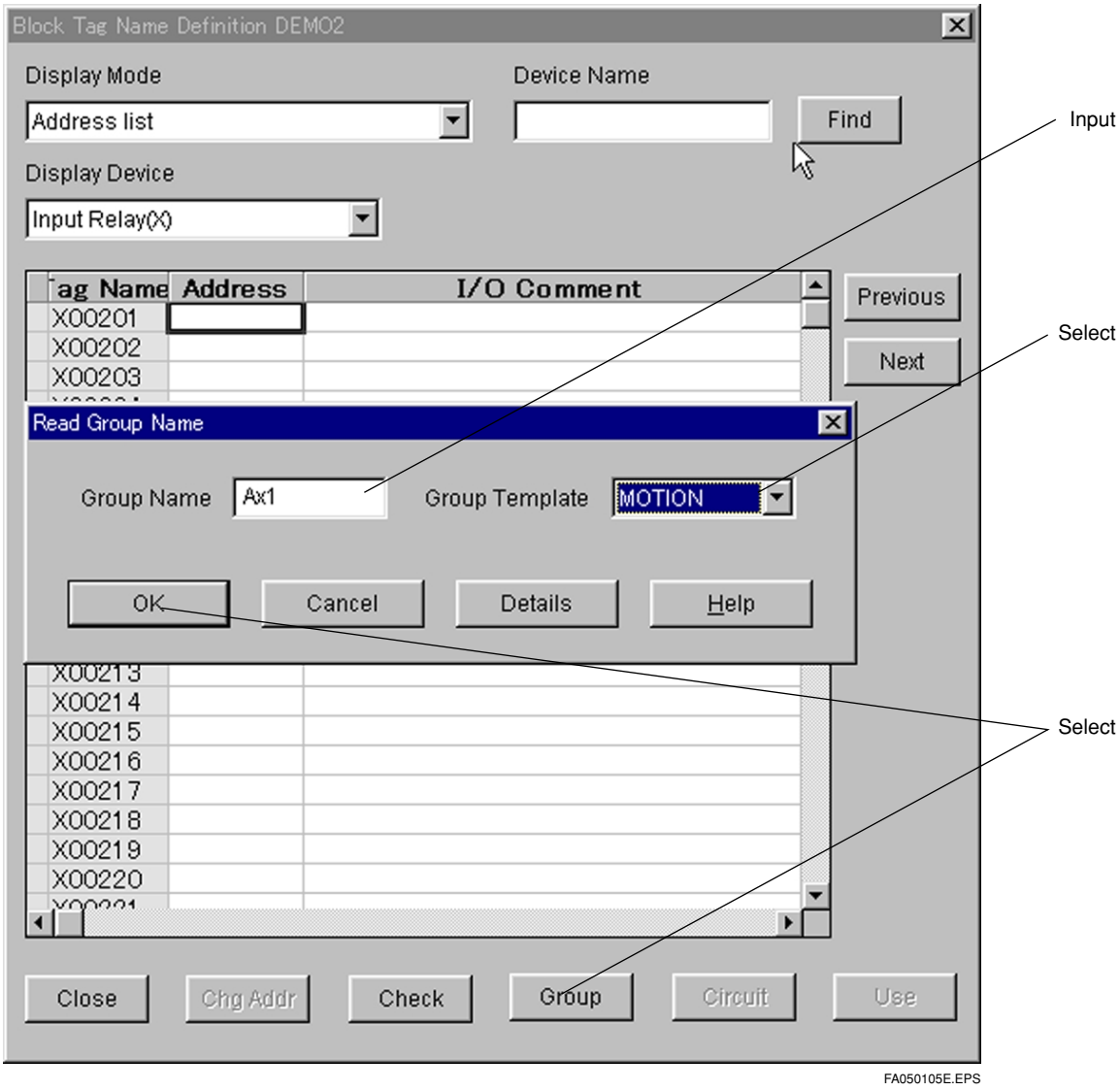


Figure A5.8 Block Tag Definition Screen

(3) Click the X201 address line and select the [Read Group] button. Select the MOTION group template, input AX1 as the group name and click on the [OK] button.

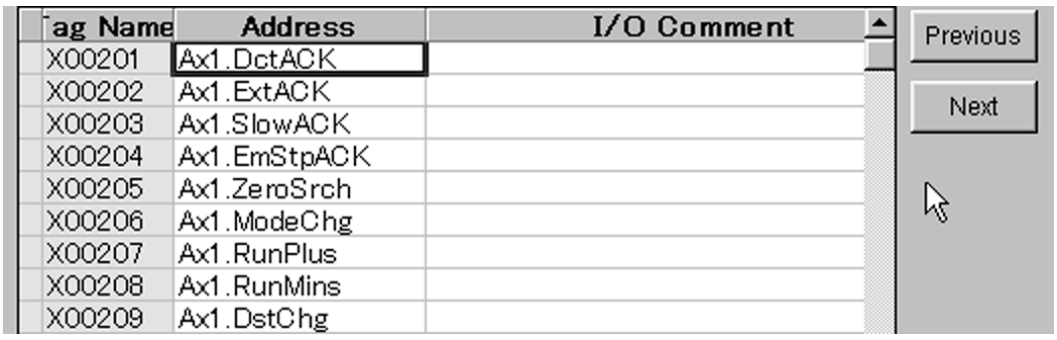


Figure A5.9 Example of Entry of Group Tag Name (Example giving the group name AX1 to axis 1)

(4) Next click the X217 address line, select the [Read Group] button, then select the MOTION group template and input AX2 as the group name and click on the [OK] button.

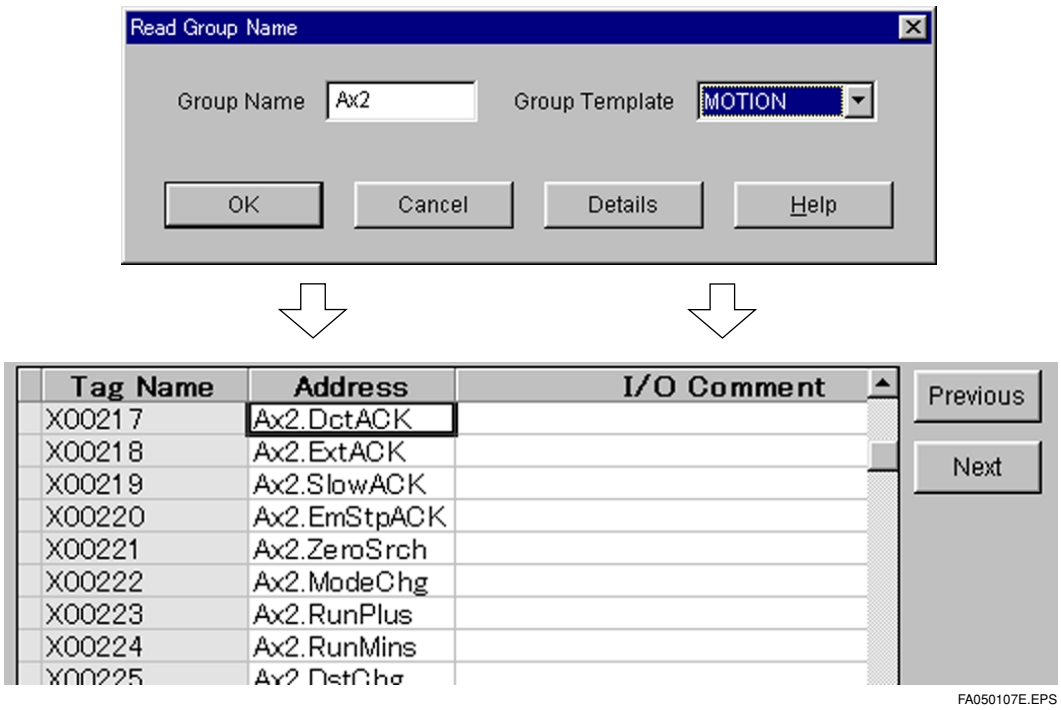


Figure A5.10 Creating a Group Tag Name (Example giving the group name AX2 to axis 2)

X201 is AX1.DctACK and gets the name AX1.DctACK, so just by looking at the [Group Name, Member Name] it is possible to tell what tag for what function is for what axis.

(5) An example of programming using group tag names.

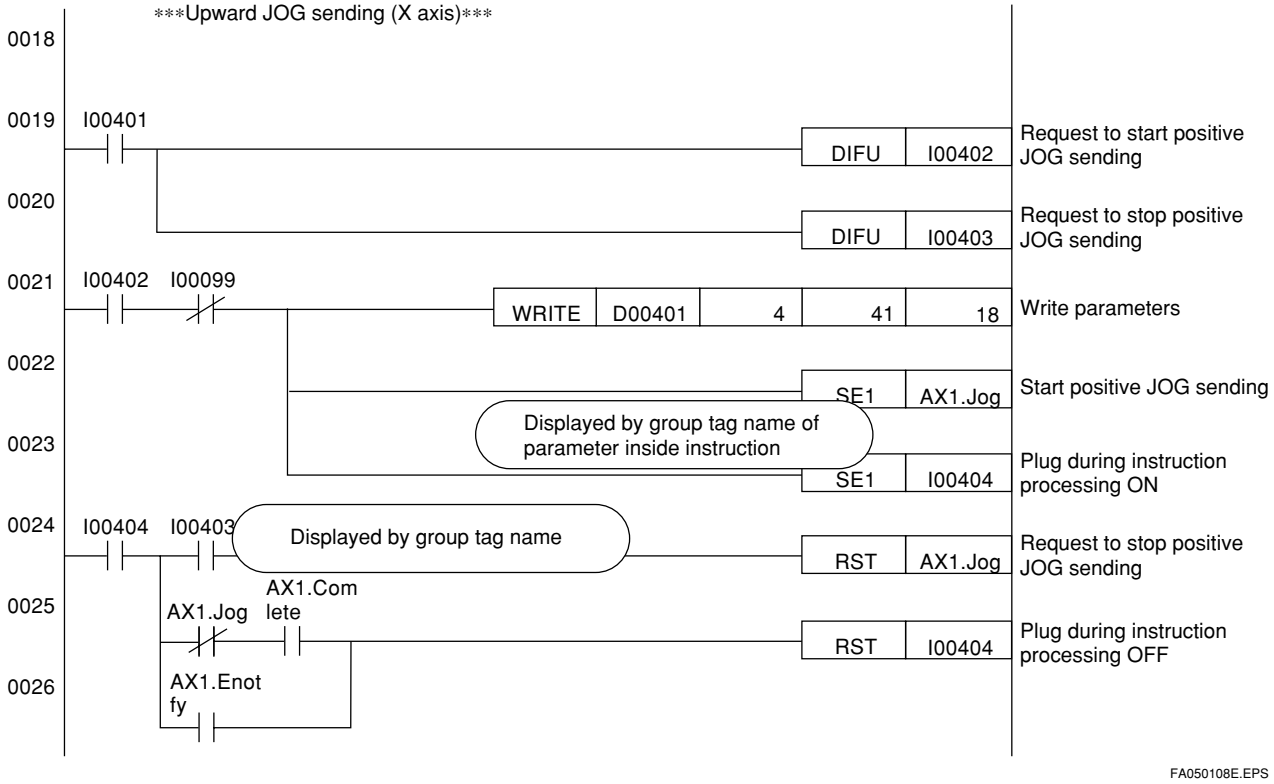


Figure A5.11 Example of a Program using Group Tag Names

SEE ALSO

See “Part B. Operation Manual. B21. Using Group Tag Names” for further details on group tag names.

A5.1.3 Component Macros

- Possible for users to create their own instructions.
- Easy standardization and part-division of program.
- Reusability becomes easy by disposing the macro functions into component and turning the elements into parts and standardizing them.
- It is possible to describe parameters (up to 16) inside a instruction, just as with standard instructions, making their use the same.
- With WideField online edit, etc., is possible, allowing for operation just as with standard instructions.

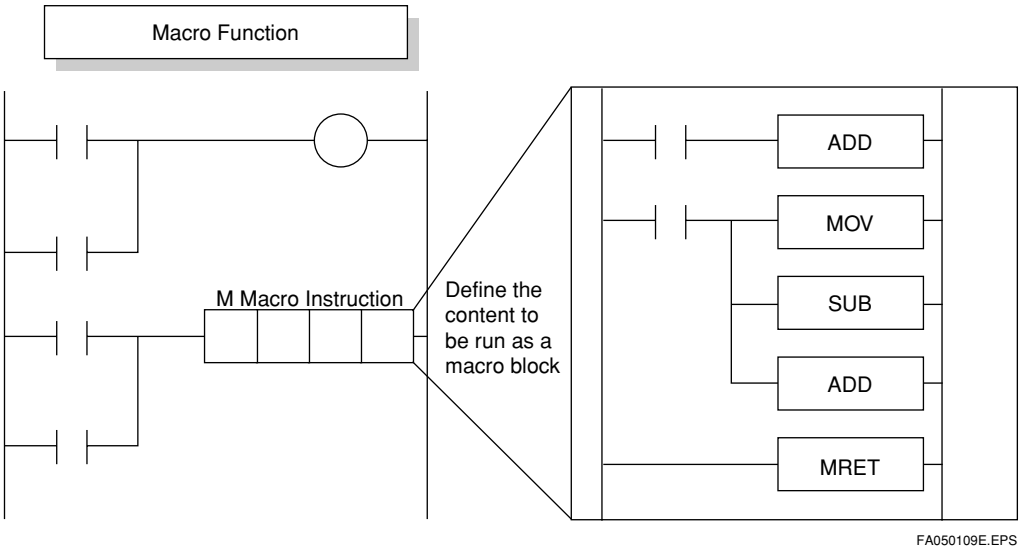


Figure A5.12 Macro Instruction

CAUTION

There are some limitations. See “Part B. Operation Manual. B20. Using Macros” for further details.

A5.1.4 Hyper blocks

Even if program division and block making is possible in structured programming, it has not been possible to divide devices. However, use of “local devices” in **object ladders** makes it possible to deal with “data” and “programs” as single “objects,” allowing for “complete independence” and “reusability.”

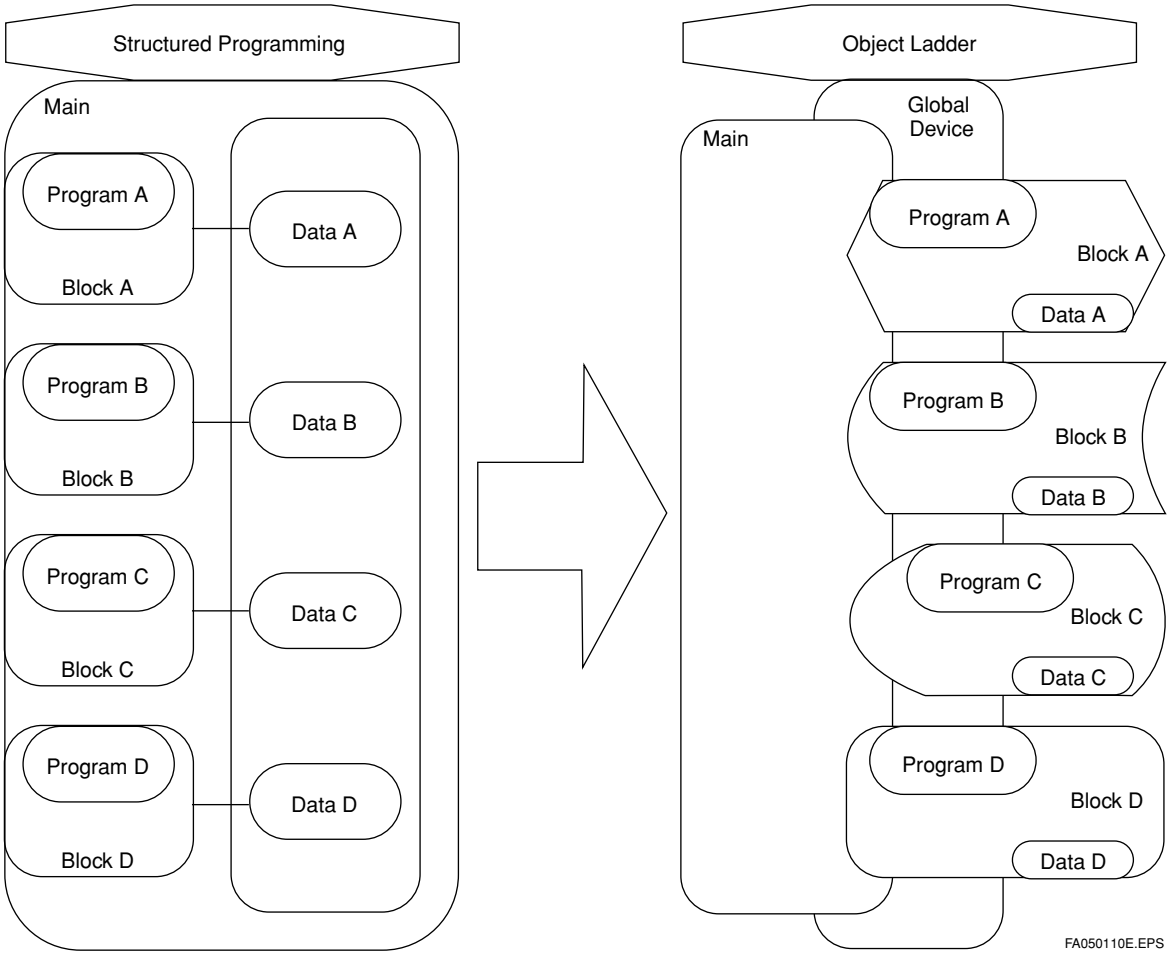


Figure A5.13 Turning Blocks into Objects

A5.1.5 Index View

- Existing ladder programs make it necessary to scroll through the details of a program to find things even if “blocks” and “macros” are made into “objects.” However, by folding using flow charts/processes with “object ladders” you can use visual expression to its fullest and make understanding that much more intuitive.
- It is possible to check/grasp the entire structure of a program.
- It is possible to understand the structure of the entire program by folding and developing each circuit comment, and then to go to the location you are looking for and carry out detailed debugging.
- Maintenance of renovations made after other developers have worked on a program is also easy.

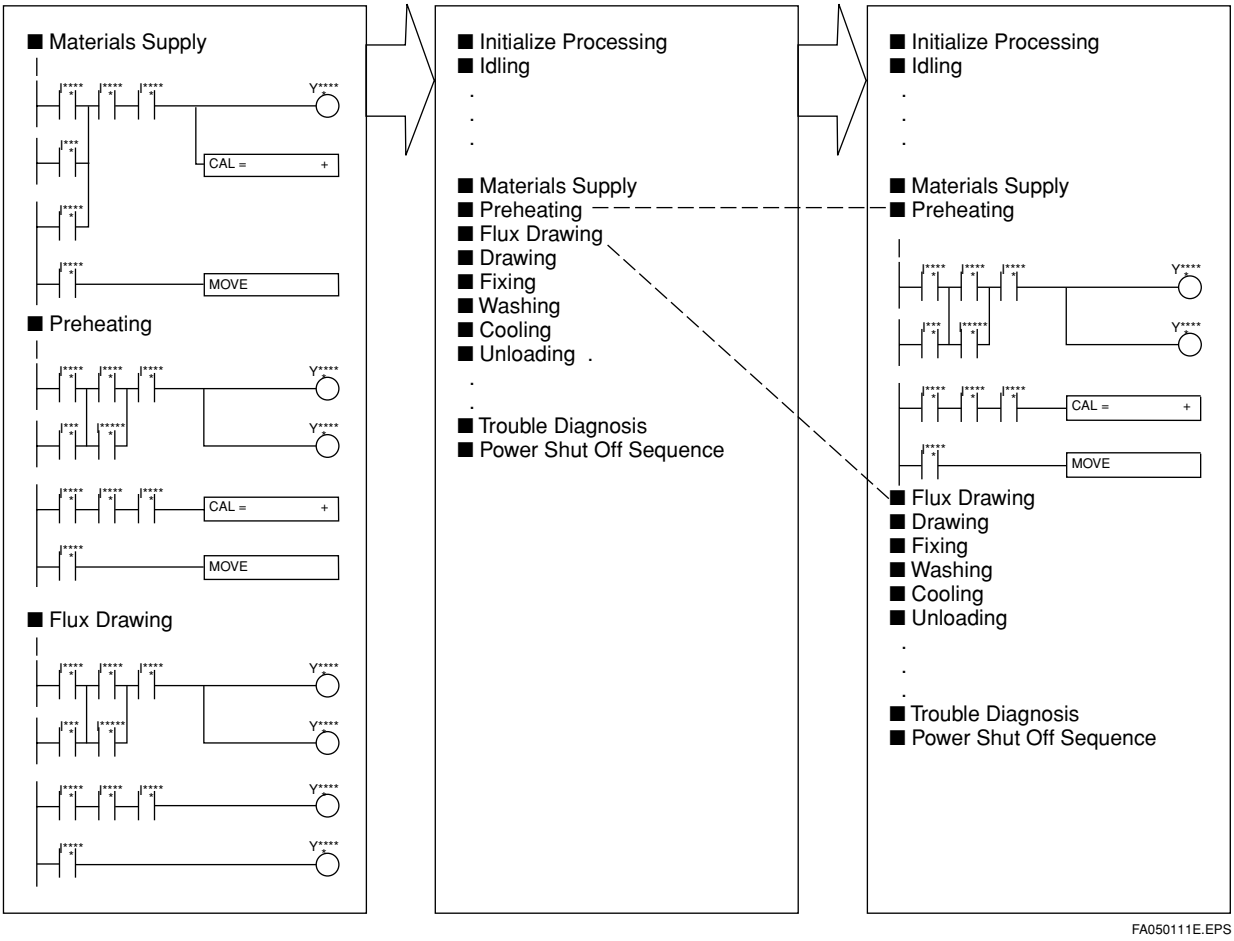


Figure A5.14 Folded View

A5.1.6 Compatible with Other Applications

Data conversion is simple and easy when making design drafts/completed literature, tag definitions, etc.

■ MS-Excel

You can take data such as device names and comments from an MS-Excel screen and put it right into WideField, and vice-versa.

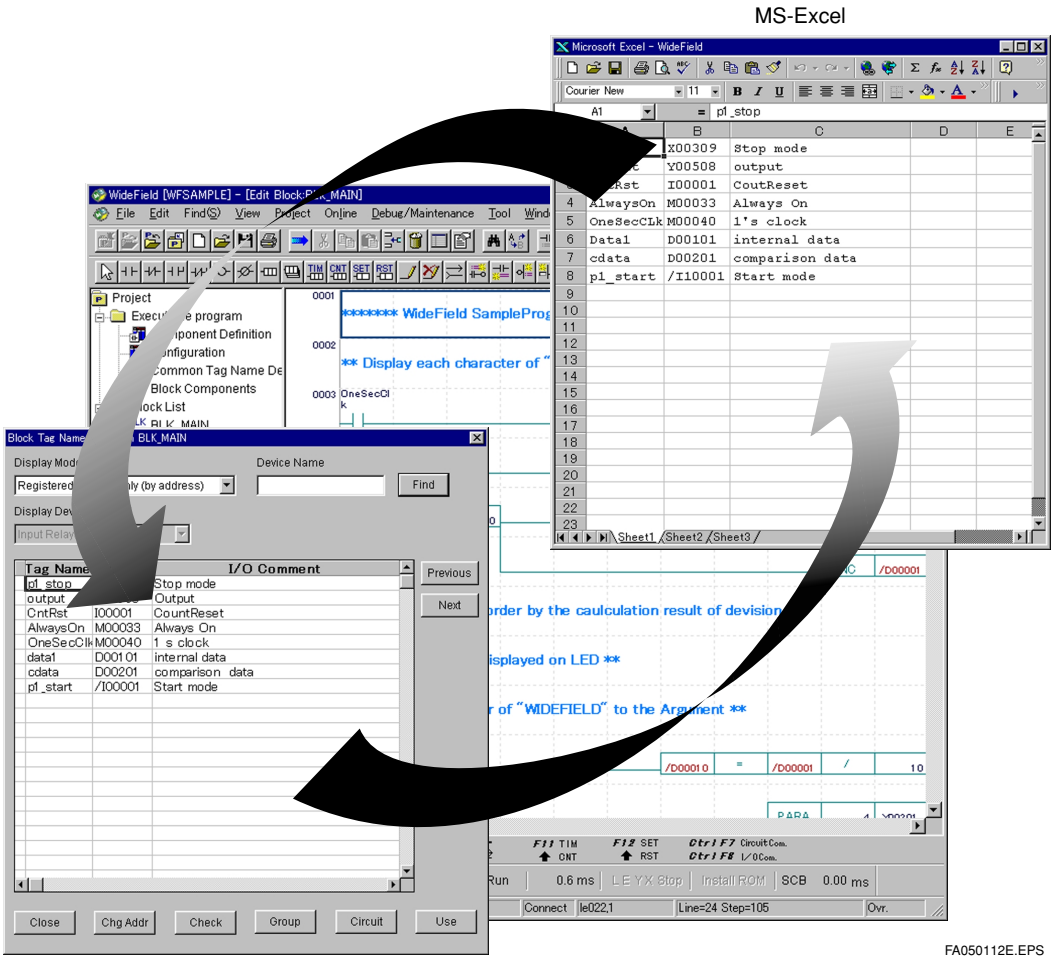


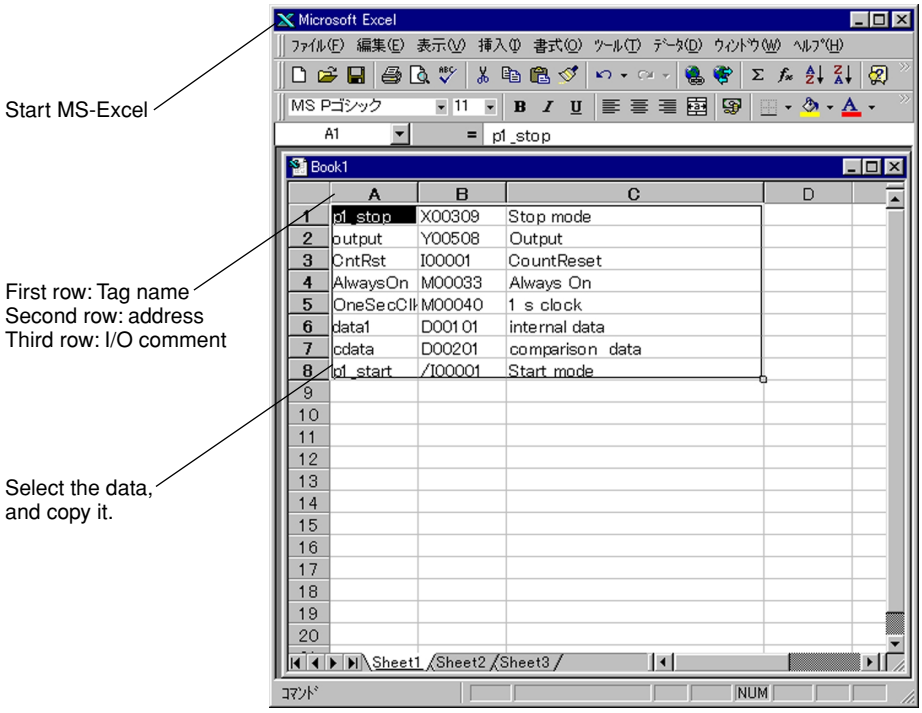
Figure A5.15 Compatible Conversion between MS-Excel and WideField

● Tag Definition (Example)

(1) Open MS-Excel

(2) Enter the tag name in the first row, the address in the second row, and the I/O comment in the third row.

(3) Select the necessary data in MS-Excel and then select [Edit] - [Copy] from the MS-Excel menu bar.

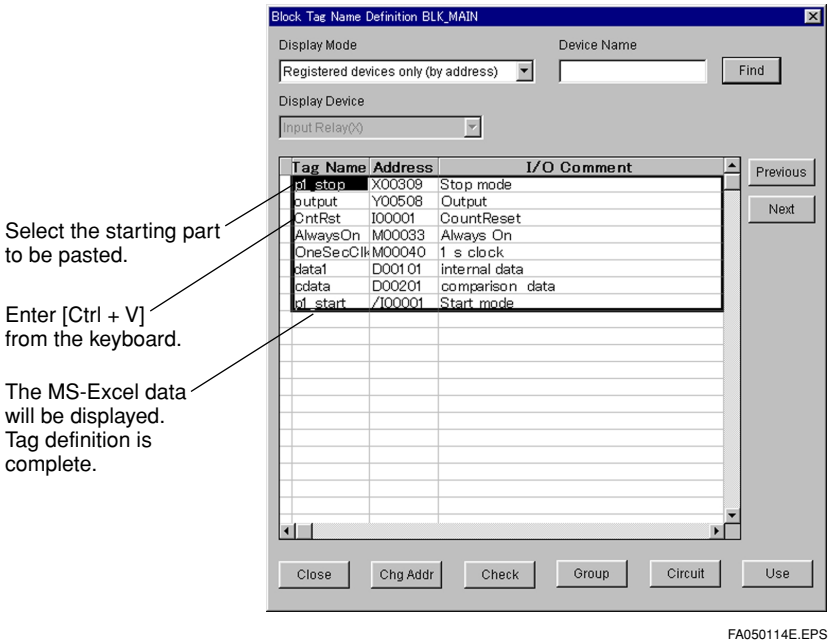


FA050113E.EPS

Figure A5.16 Entering and Selecting MS-Excel Data

(4) Open WideField and then open the tag definition screen which carries out tag definition.

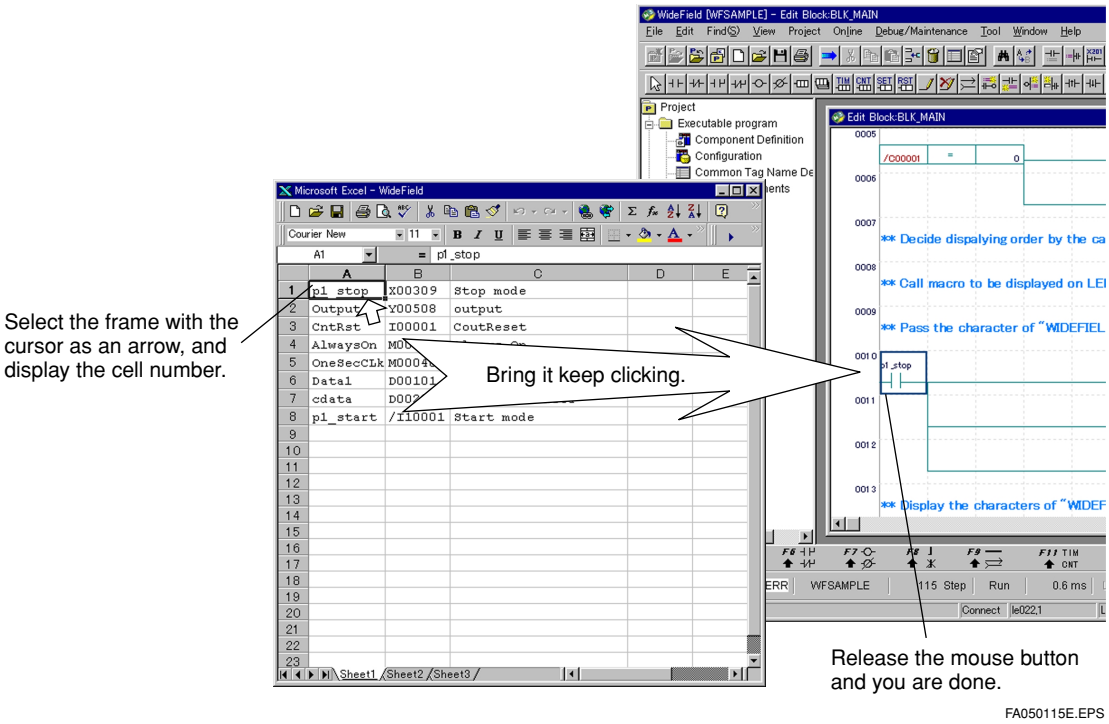
(5) Select the tag name part to be pasted in the WideField block tag definition screen, enter [Ctrl + V] from the [keyboard] and the process is complete.



FA050114E.EPS

Figure A5.17 The WideField Tag Definition Screen

● Parameter Entry (Example)

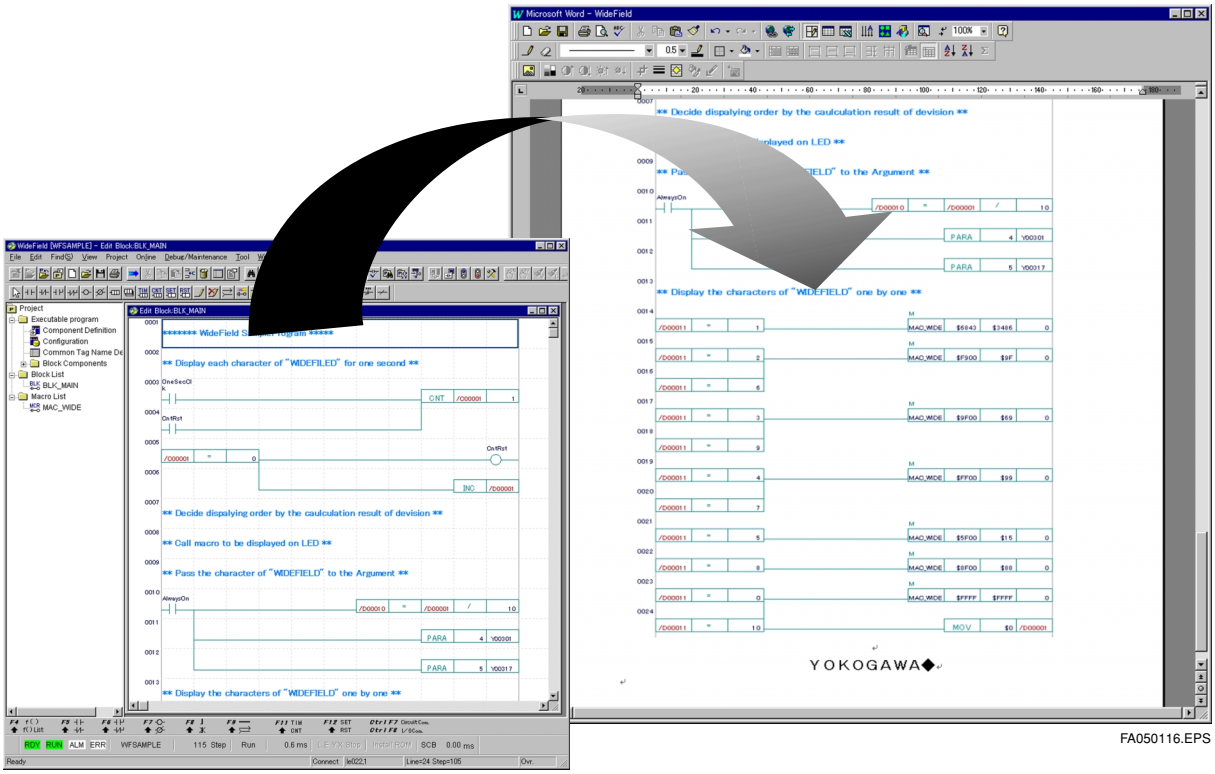


FA050115E.EPS

Figure A5.19 Example of Fusion with MS-Excel

■ MS-Word

It is also possible to paste circuit patterns in such tools as MS-Word when creating design drafts and reports.

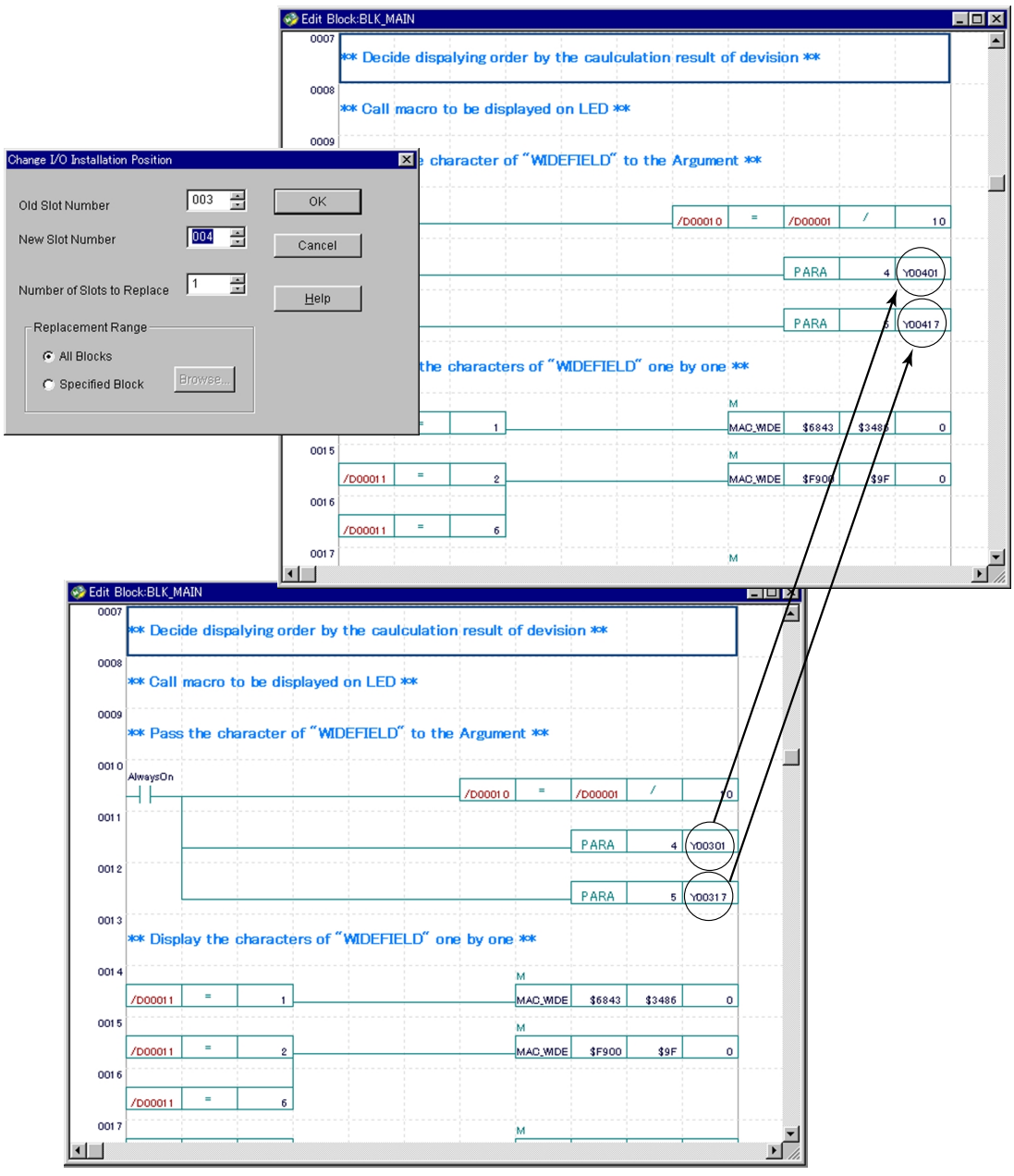


FA050116.EPS

Figure A5.20 Example of Fusion with MS-Word

A5.1.7 Collective Change of I/O Installation Position

- You can easily change a ladder program when changing the position of a module.
- You can change all assignments for input/output relays related to I/O, as well as I/O access instruction parameters.
- All parameters in any type of instruction can be changed at once.



FA050117E.EPS

Figure A5.21 Change I/O Installation Position

SEE ALSO

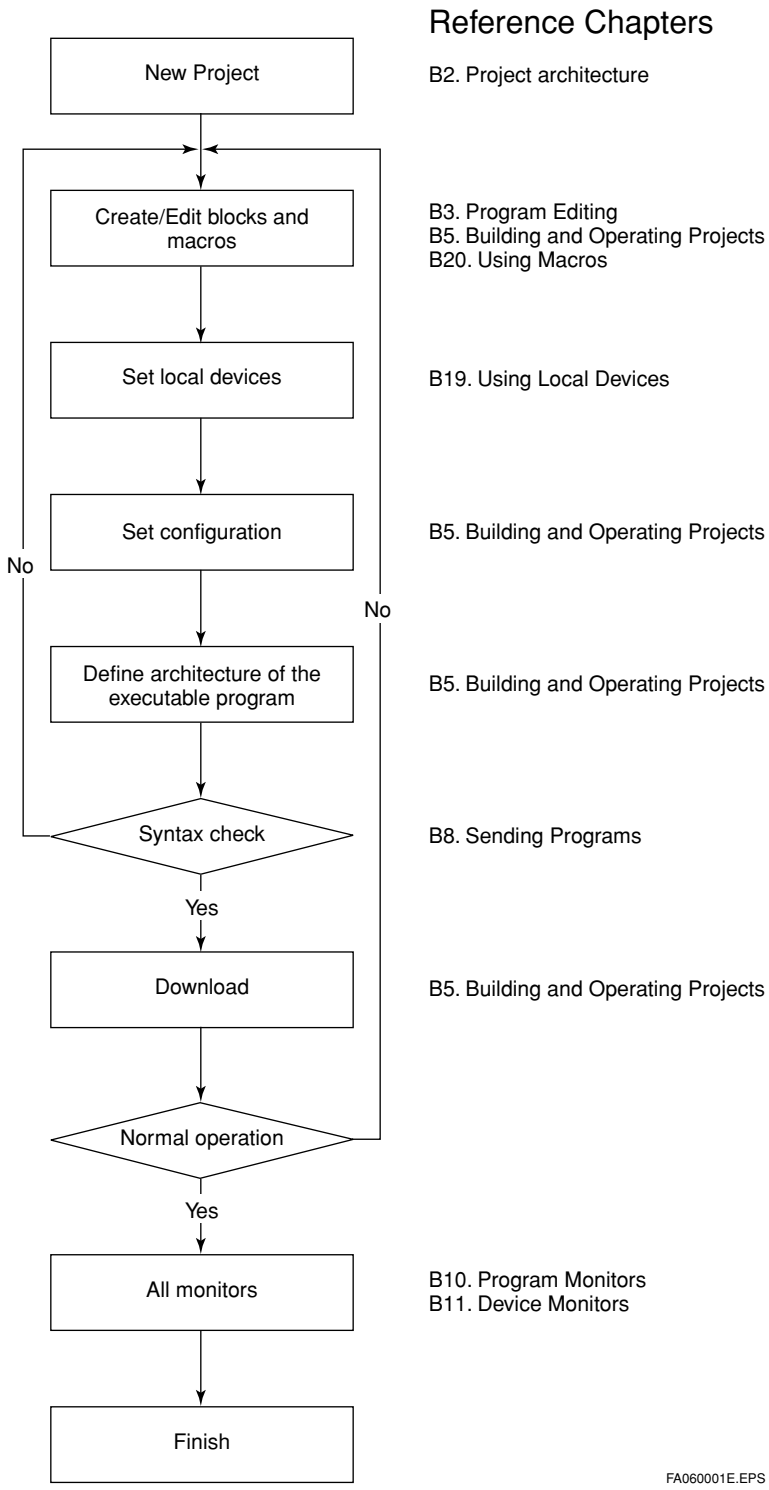
See “Part B. Operation Manual. B5.2.5. Change I/O Installation Position Function” for further details on I/O plug-in position change.

Blank Page

A6. Program Development Procedure

This section describes the order for developing programs using "object ladder," by using a simple application as an example.

■ Program Creation Procedure



■ Sample Program Architecture

- Sample programs are in the “WFSample” folder in the “Fam3pjt” folder under the “WideField” folder.
- It is a program which displays all the letters in “WideField” one at a time for 1 second each to the F3YD32 output module.
- The architecture of the program is divided into the block (BLK_MAIN) and the macro (MAC_WIDE), and passes the parameters from the block to the macro as arguments, which are then displayed by the subprogram to the output module (YD32).

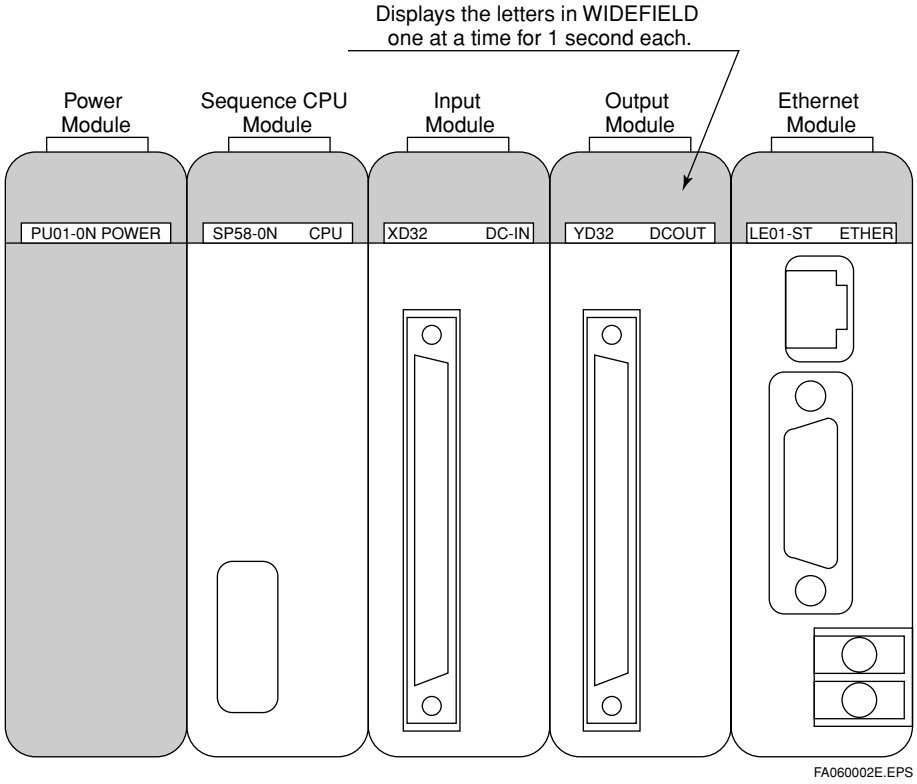


Figure A6.1 Sample Program Module Architecture and Image

A6.1 Creating a New Project

(1) Select [Start] - [Programs] - [WideField] - [WideField] from the task bar in the Windows screen, and start “WideField.”

(2) In WideField, select [File] - [New Project] from the menu bar.

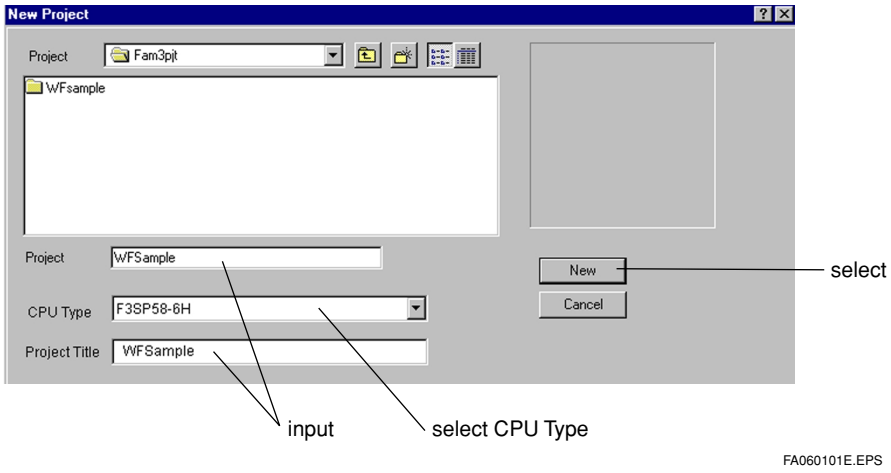


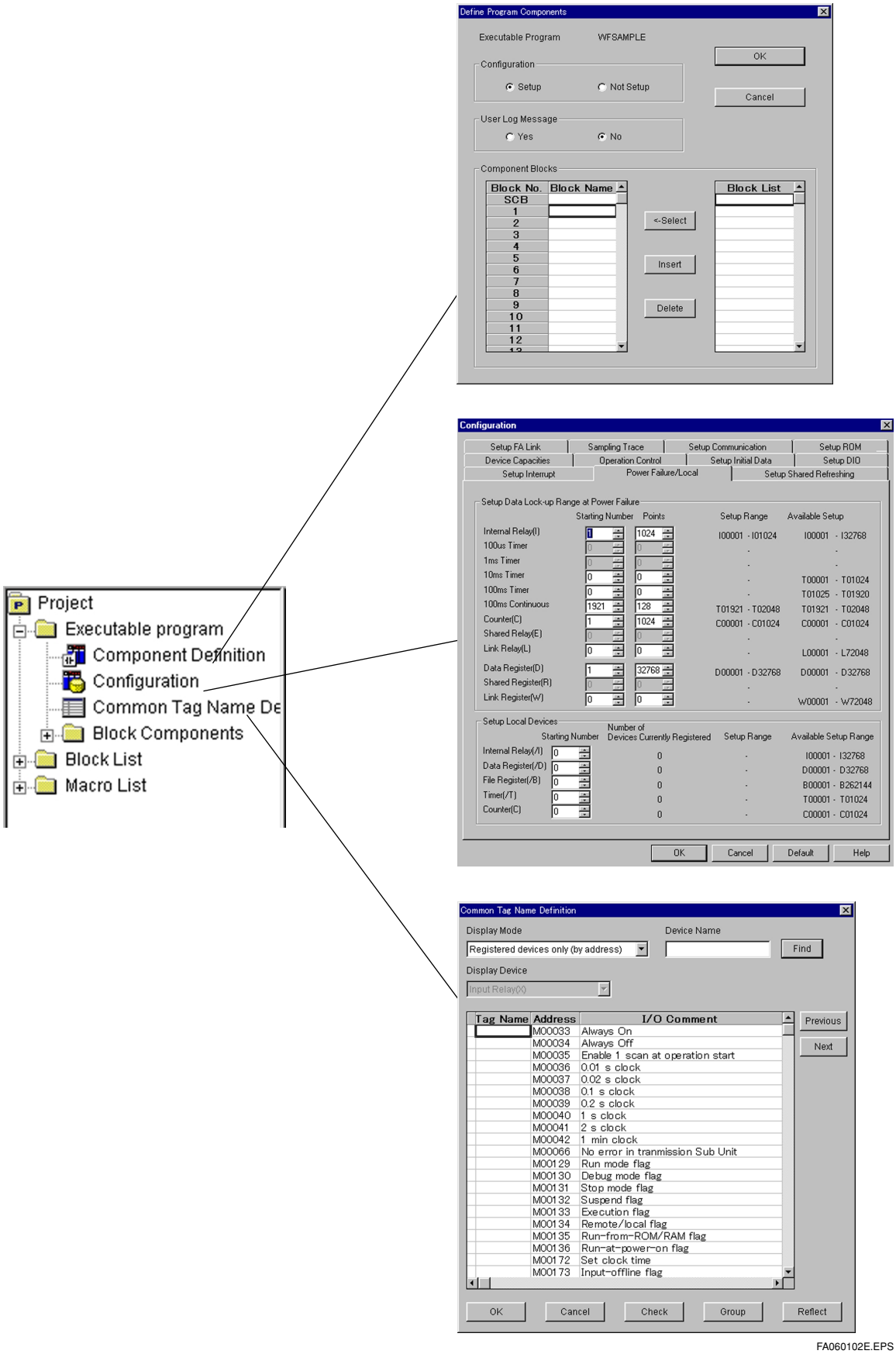
Figure A6.2 Creating a New Project

(3) From the display screen, enter/select [Project Name], [Project Title] and [CPU Type], and then select [New Document].

(4) The architecture will be displayed in the “project window” on the left of “WideField.”

(5) Double clicking each of the items in the “executable program” in the “project window” will start each of the setting screens.

(6) Settings can be carried out in each of the setting screens.



FA060102E.EPS

Figure A6.3 The Project Window and other Screens During Creation of a New Project

A6.2 Creating a Block

See "Sequence CPU Instruction Manual. Instructions" for details concerning entered instructions.

(1) Select [File] - [New] from the menu bar to make the "new document screen." appear.

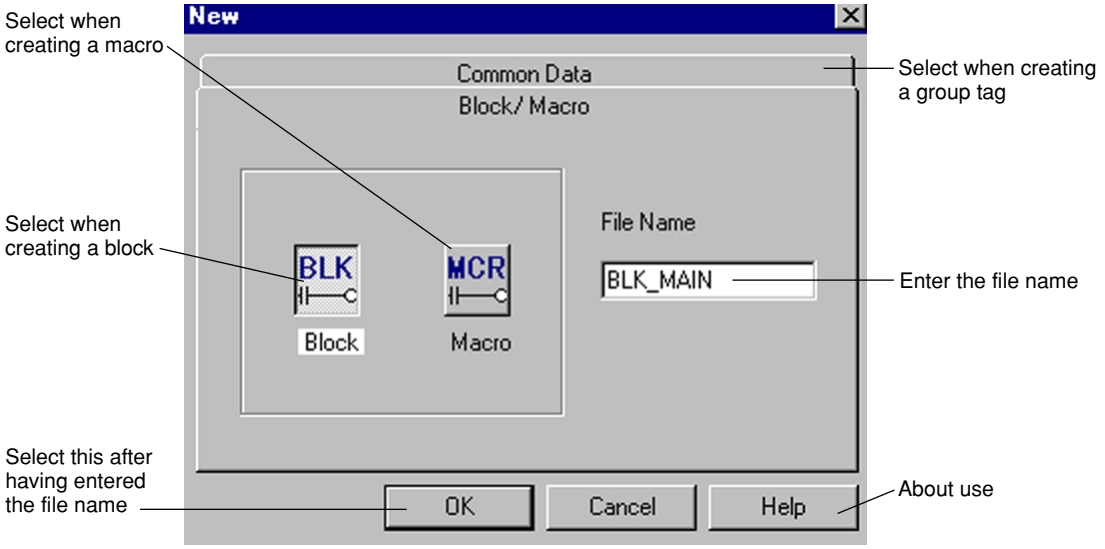


Figure A6.4 New Block Creation Screen

(2) Enter the file name in the "new document screen," and select [OK].

(3) The block edit screen will be displayed in the "WideField" screen.

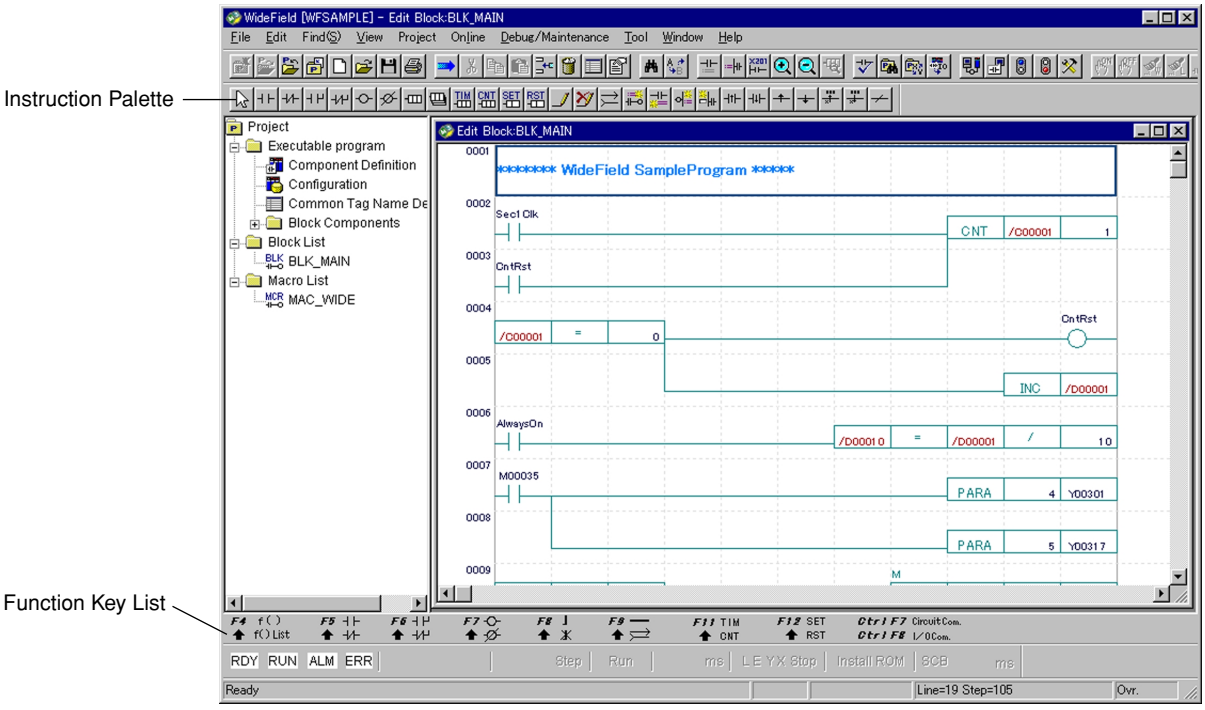
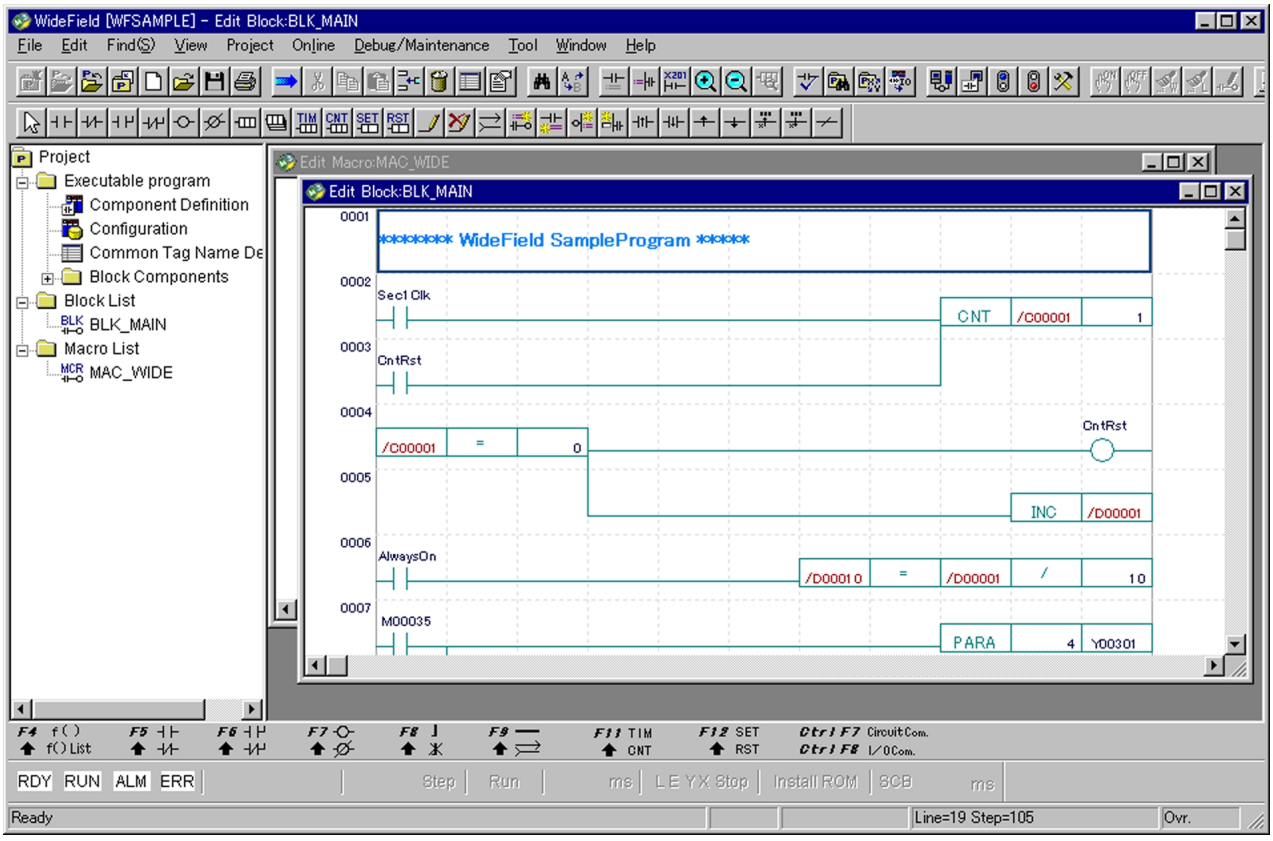


Figure A6.5 Block Edit Screen

(4) Create a program using the instruction palette and function keys, etc.

(5) Create a macro that will display each of the characters in "WIDEFIELD" one at a time.

(6) When you have finished creating the “program” and “comments,” select [File] - [Save] from the menu bar to save the contents.



FA060203E.EPS

Figure A6.6 List of Block and Macros Created

A6.3 Program Component Difinition

When creation of the program is finished, carry out the "executable program architecture definition."

(1) Select [Project] - [Define Program Components] from the menu bar, or double click on the [Executable Program] - [Component Difinition] from the "project window."

(2) Carry out the settings according to what is to be set, on in the "Define Program Components Screen."

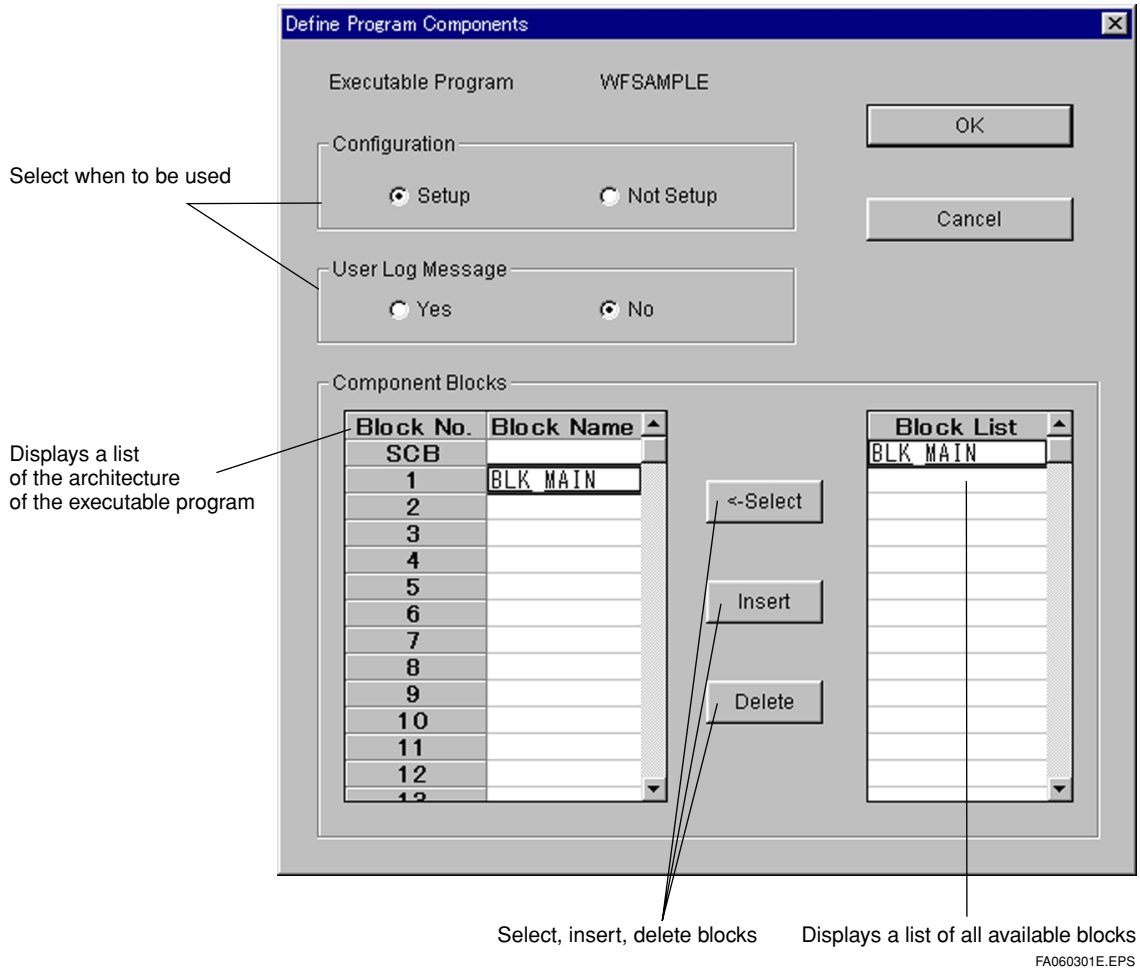


Figure A6.7 Executable Program Architecture Definition Screen

(3) Set the "Component Blocks" and then select [OK].

(4) The architecture will be displayed in the “Block Components” in “Executable Program” in the “Project Window.”

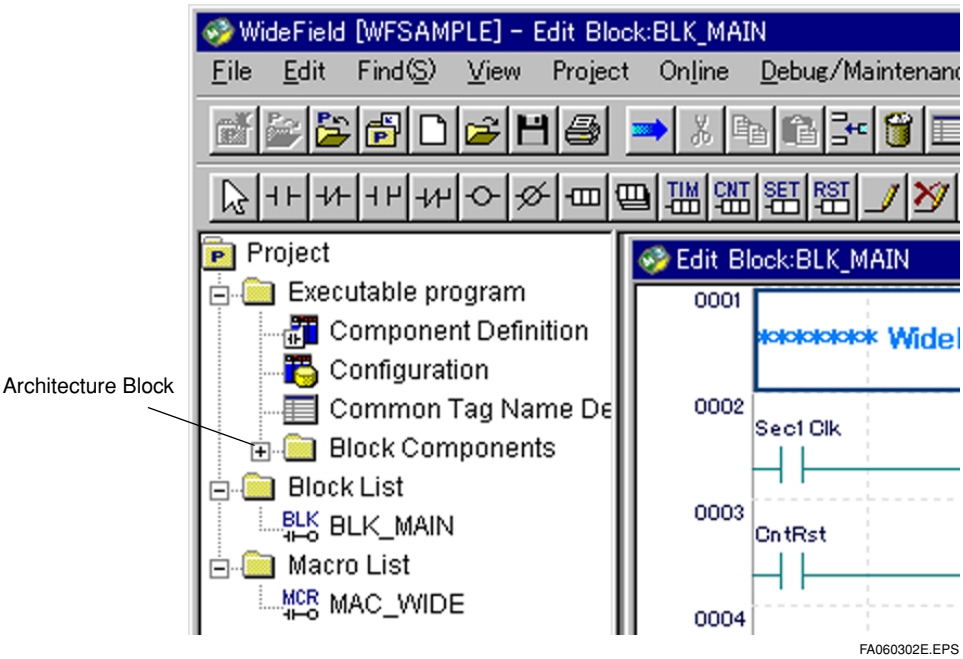


Figure A6.8 The Architecture Block in the Project Window

(5) You may also reuse the used block in other projects.

(6) Changing the architecture is carried out at step (2).

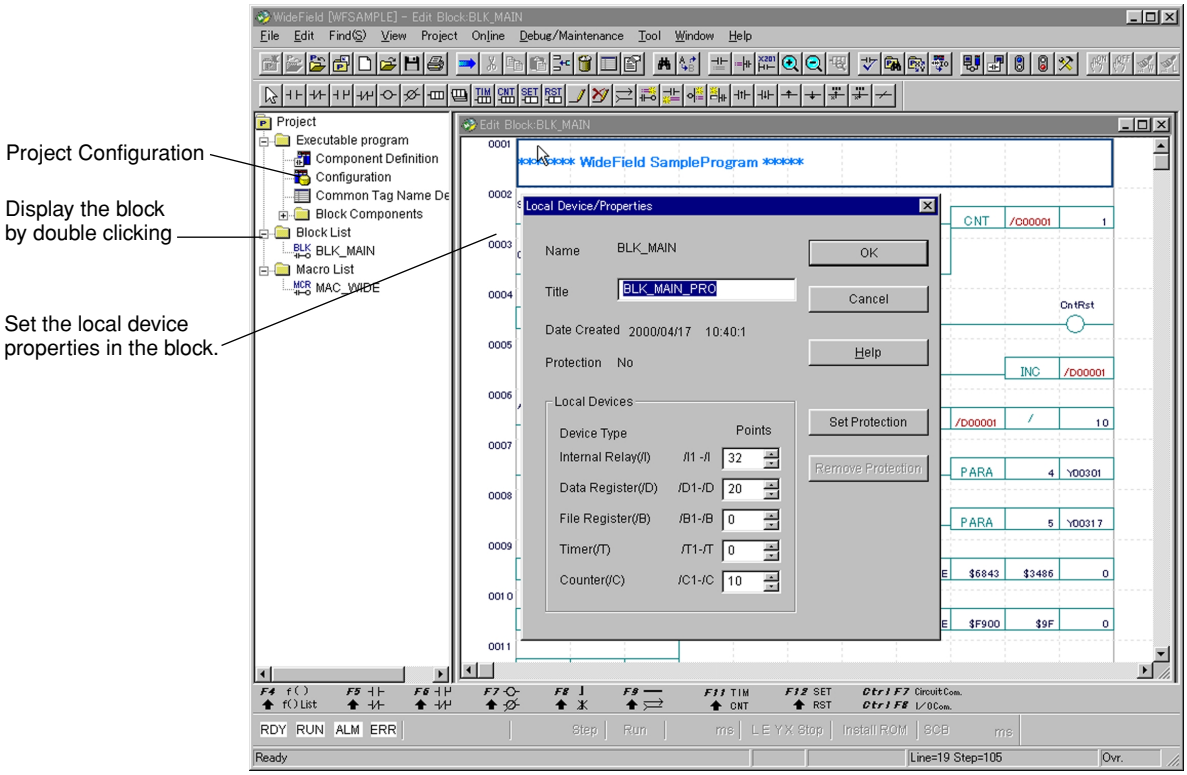
SEE ALSO

See “Part B. Operation Manual. B5. Building and Operating Projects” for further details on how to reuse blocks in other applications.

A6.4 Local Devices

Set the local devices to used in the blocks.

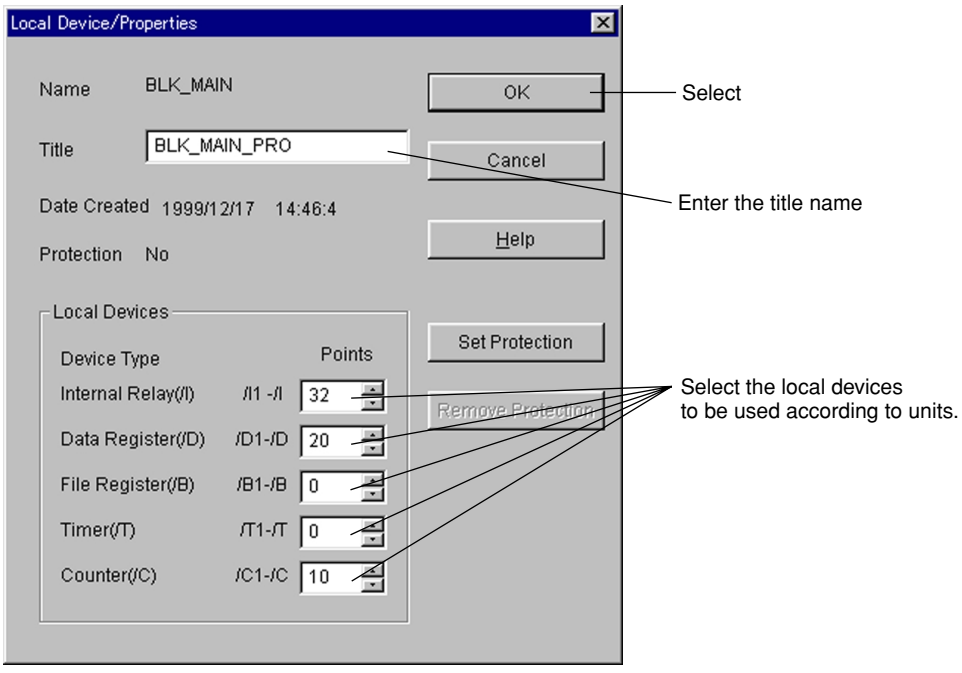
(1) Double click the “block” that sets the “local device” from among the [Block List] in the “Project Window,” and the circuit will be displayed.



FA060401E.EPS

Figure A6.9 Block Display

(2) Select [Edit] - [Local Device/Properties] from the menu bar.



FA060402E.EPS

Figure A6.10 The Block Local Device Properties Screen

(3) Set the number of “local devices” to be used according to the units.

Table A6.1 Example of Settings for the Local Devices

Device Type	Symbol	Number of Units	Example of Setting
Internal Relay	/I	32	/I1 to /I32, 64, 96, . . .
Data Register	/D	2	/D1 to /D2, 4, 6, 8, . . .
File Register	/B	2	/B1 to /B2, 4, 6, 8, . . .
Timer	/T	1	/T1 to /T1, 2, 3, 4, . . .
Counter	/C	1	/C1 to /C1, 2, 3, 4, . . .

TA060401E.EPS

(4) Select [File] - [Save] from the menu bar to save the settings.

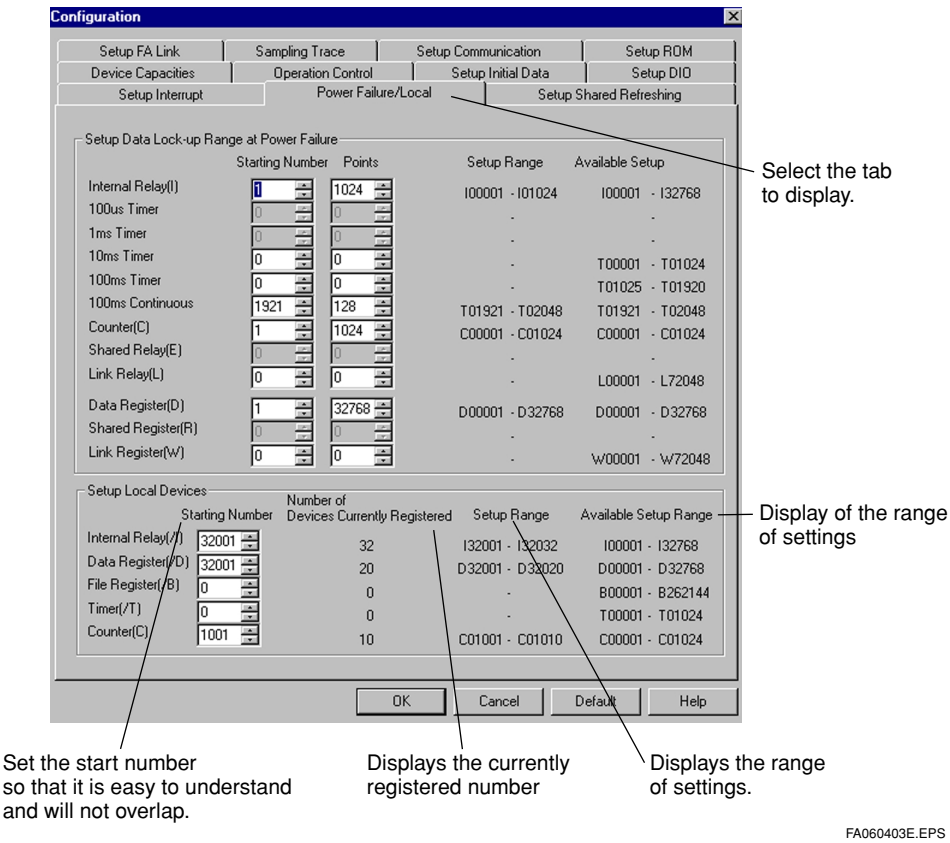
(5) Set the settings for all blocks using the local devices. (Repeat steps (2) - (4).)

(6) After making settings/changes, be sure to save. Any settings or changes not saved will not be reflected in the “configuration.”

(7) Select [Project] - [Configuration] from the menu bar to display the “Configuration Screen.” Or, double click on [Executable Program] - [Configuration] from the “Project Window” to display the screen. See the “Sequence CPU Instruction Manual” for details on setting the configuration.

(8) Select the “Device Capacities” tab in the “Configuration” screen.

(9) The settings will be reflected in the block and displayed, but the local devices used with macros will not be displayed. See “Part B. Operation Manual. B20. Using Macros” for further details.



FA060403E.EPS

Figure A6.11 Configuration Settings

(10) Set the start number so that it is easily distinguishable from the “global devices.” E.g., Data Register (/D) from No. 1001

(11) After selecting “Start Number,” select [OK] from the “Configuration Screen.”

SEE ALSO

See “Part B. Operation Manual. B5. Building and Operating Projects” for further details about the setting item/content of the “Configuration.”

A6.5 Download

Run a syntax check on the program you have created, and if there are no problems, download it and start operation.

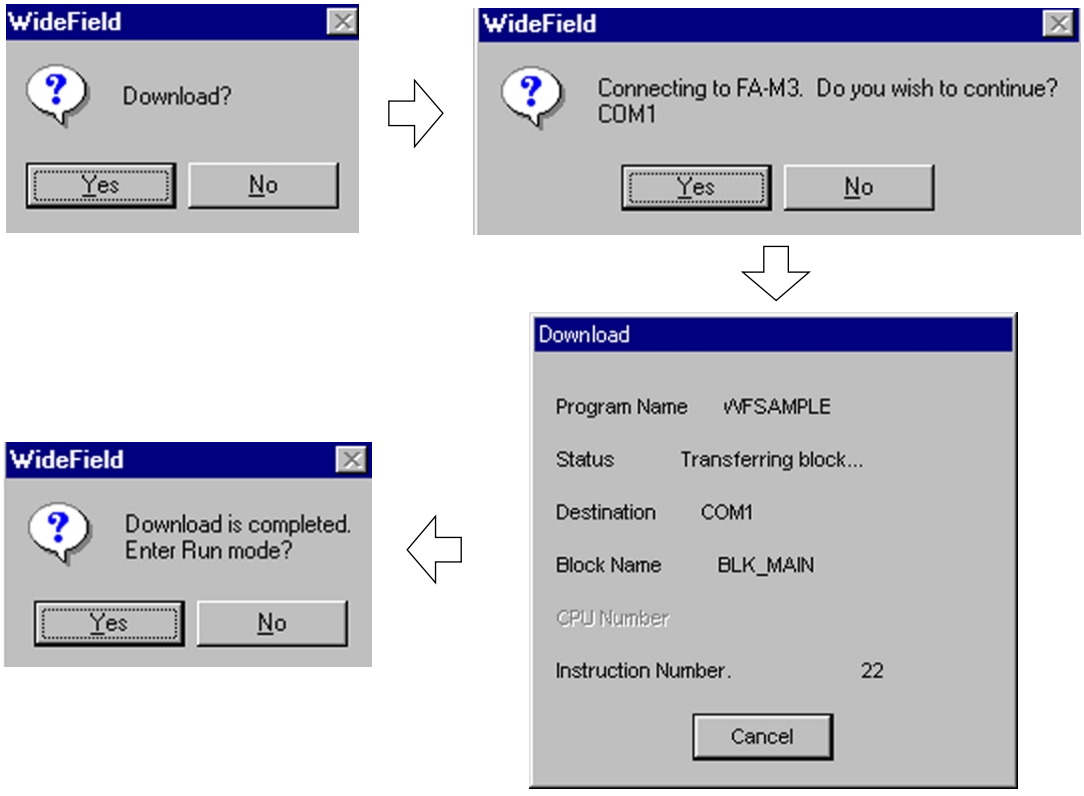
■ Download

Download if there are no problems with the “Check Program.” When trying to download any programs that have not had a “Check Program” run on them, it starts before download.

(1) Select [Online] - [Download] from the menu bar.

(2) Connect if it is not.

(3) The confirming messages indicating the download is completed successfully and asking whether or not to start is displayed. Download is complete when the operation begins.



FA060501E.EPS

SEE ALSO

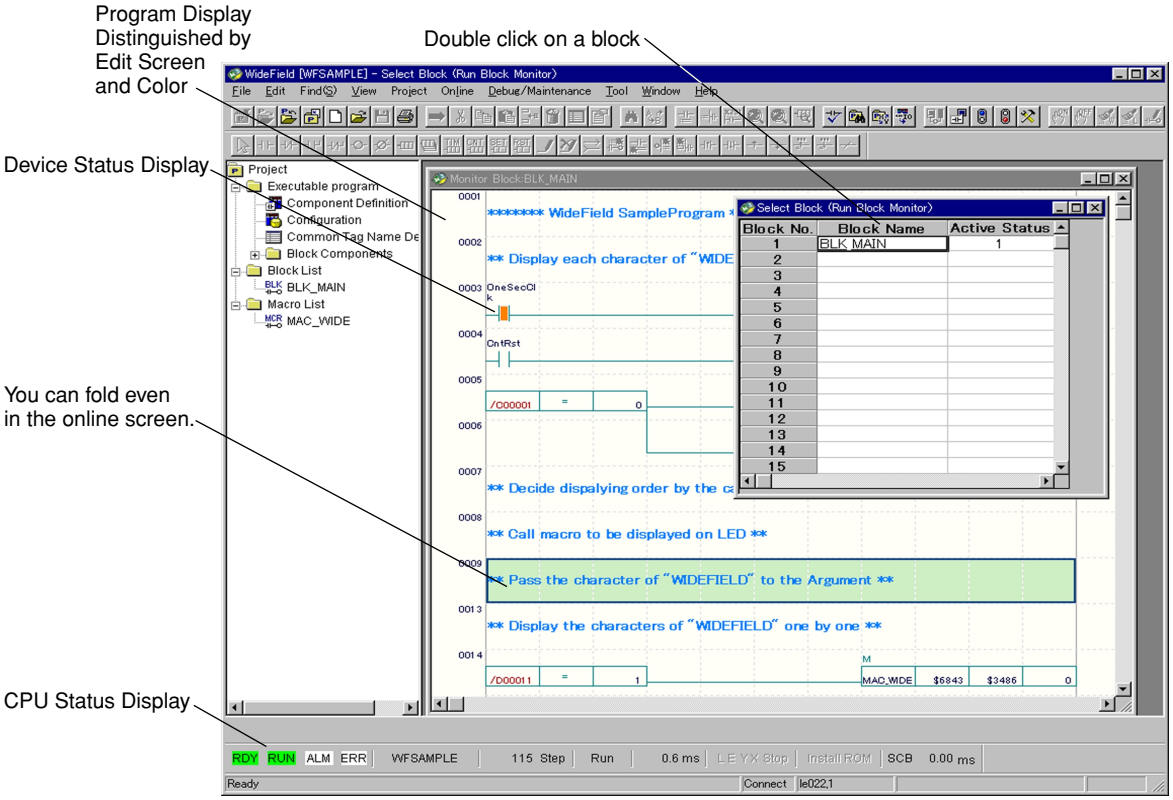
See “Part B. Operation Manual. B8. Sending Programs” for further details about “Communication Environment Settings,” “Check Program,” “Connect/Disconnect.”

A6.6 Monitor Functions

You can monitor running programs and devices with WideField.

■ Program Monitor

Select [Online] - [Program Monitor] from the menu bar, and double click on the block to be monitored from the “Select Block” screen.



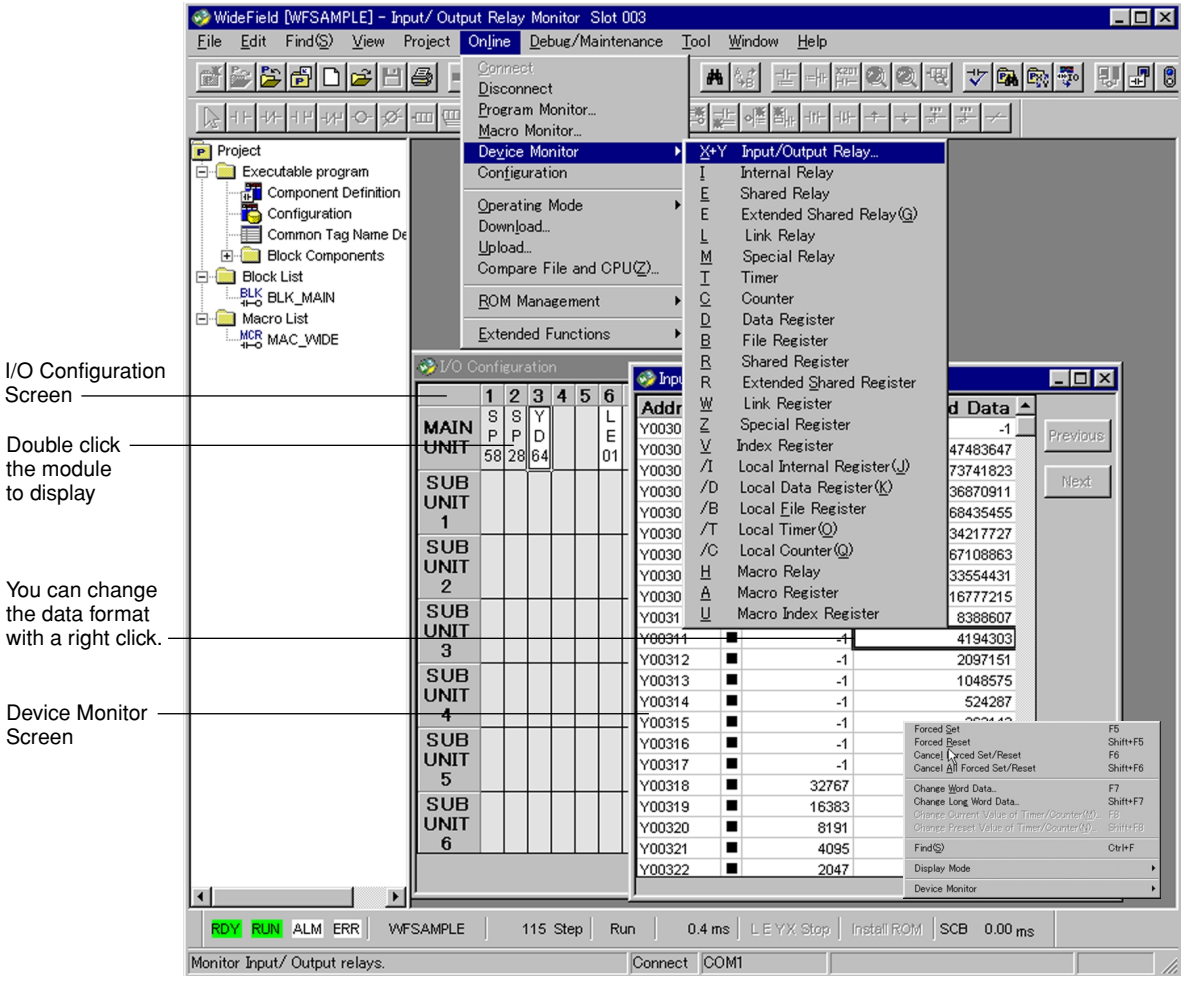
FA060601E.EPS

Figure A6.12 Program Monitor Screen

■ Device Monitor

(1) Select the device to be monitored from the submenu of [Online] - [Device Monitor].

(2) When monitoring a module device, double click on the module from the displayed “I/O Configuration Screen,” and the device monitor screen will be displayed. You can change the display format of all the device values. See “Part B. Operation Manual. B11. Device Monitor” for further details.



FA060602E.EPS

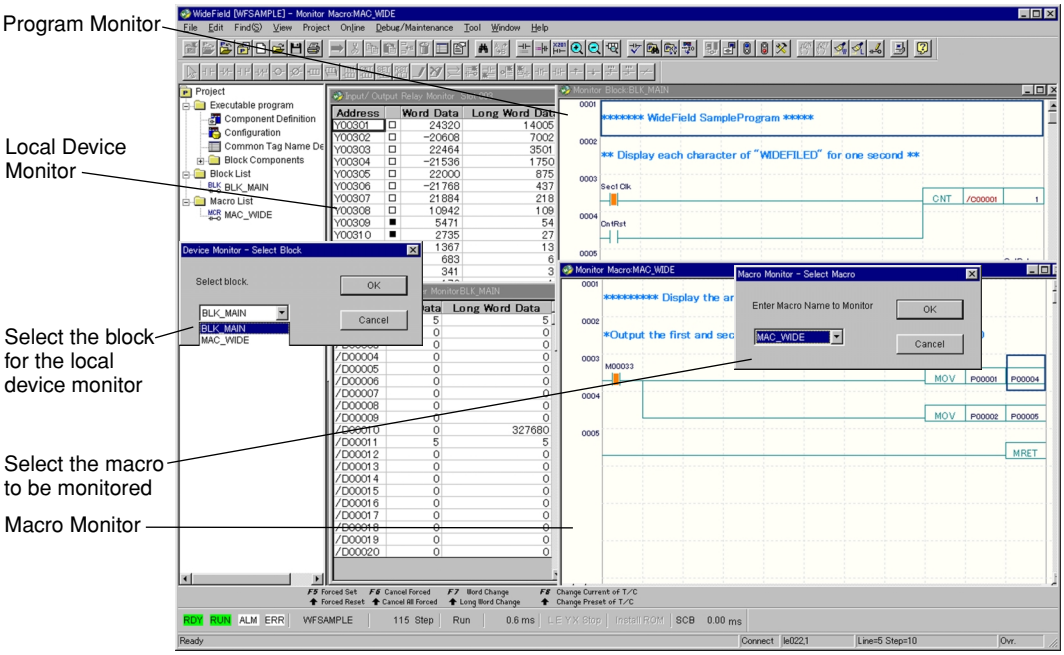
Figure A6.13 Device Monitor Screen

■ Macro Monitor and Local Device Monitor

(1) Select [Online] - [Macro Monitor] from the menu bar and the [Select Macro] will be displayed.

(2) Select the macro to be displayed, and the select [OK].

(3) When monitoring a [local device,] select the device to be monitored from the [Submenu] of the menu bar [Online] - [Device Monitor], and it will be displayed.



FA060603E.EPS

Figure A6.14 Screens being Monitored

SEE ALSO

See “Part B. Operation Manual. B9. Operation Mode Settings and Operation Status Monitors. B10. Program Monitors. B11. Device Monitors. B13. Online Edit” for further details on monitor functions.

Blank Page

FA-M3
FA-M3 Programming Tool WideField Instruction Manual
PART-B Operation Manual

IM 34M6Q14-01E 1st Edition

CONTENTS

Blank Page

B1. Initial Setup of the WideField Tool

This section describes the method for setting the WideField tool when you first use it. Although the tool is set up so that it can be used with the default settings right after being installed, you can nevertheless build an environment that is easier for you to use by registering icons you often use in the toolbar, for example, or by customizing the colors, etc.

B1.1 Layout of the Tools, and Locations of Generated Data

WideField is made up of the WideField program itself and support tools, such as device management, and sampling traces. You can change the location of data or make other such changes to the WideField environment with the environment settings explained in the next section. The data for the support tools is stored in the Fam3dat folder, created in the install drive. (The data position for the support tools is fixed.) Also, the other computers to be connected to the support tools (the communications settings) can be set from WideField.

Figure B1.1 Layout of the Tools

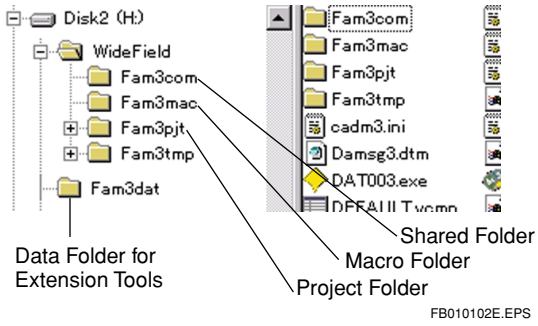


Figure B1.2 Position of Data after WideField Has Been Installed

B1.2 Environment Setup

The environment settings are a function that allows you to set your PC's environment when using WideField. You can set the following 5 items. The time the settings go into effect varies according to the item.

Table B1.1 Settings

Setting	Overview	Time it goes into effect	CAUTION
Setup Folder	You can set the development environment by changing the position of the folders that the program is stored in.	This goes into effect whenever you open a new screen.	Close all screens when making changes (the WideField start-up initial state).
Setup Communication	You can set the computers you are connected to as well as the conditions. You can also set the communication conditions for the device management tool, the sampling trace tool, and the FA link settings tool here.	This goes into effect the next time you connect to the FA-M3.	Change the communication settings only when you are disconnected from the FA-M3.
Setup Circuit Display	You can set the colors, etc. of the circuit components.	These changes go into effect immediately, even for screens that are currently open.	
Setup Program Check	You can set the weight of the errors in the program syntax check.	This goes into effect from the next time you run a syntax check.	
Setup Toolbar	You can set the registered icons.	This goes into effect immediately.	

TB010201E.EPS

B1.2.1 Basic Operation of the Setup Environment Dialog

■ Opening the Setup Environment Dialog

(1) Select [Tool] - [Setup Environment]. The Setup environment screen will be displayed.

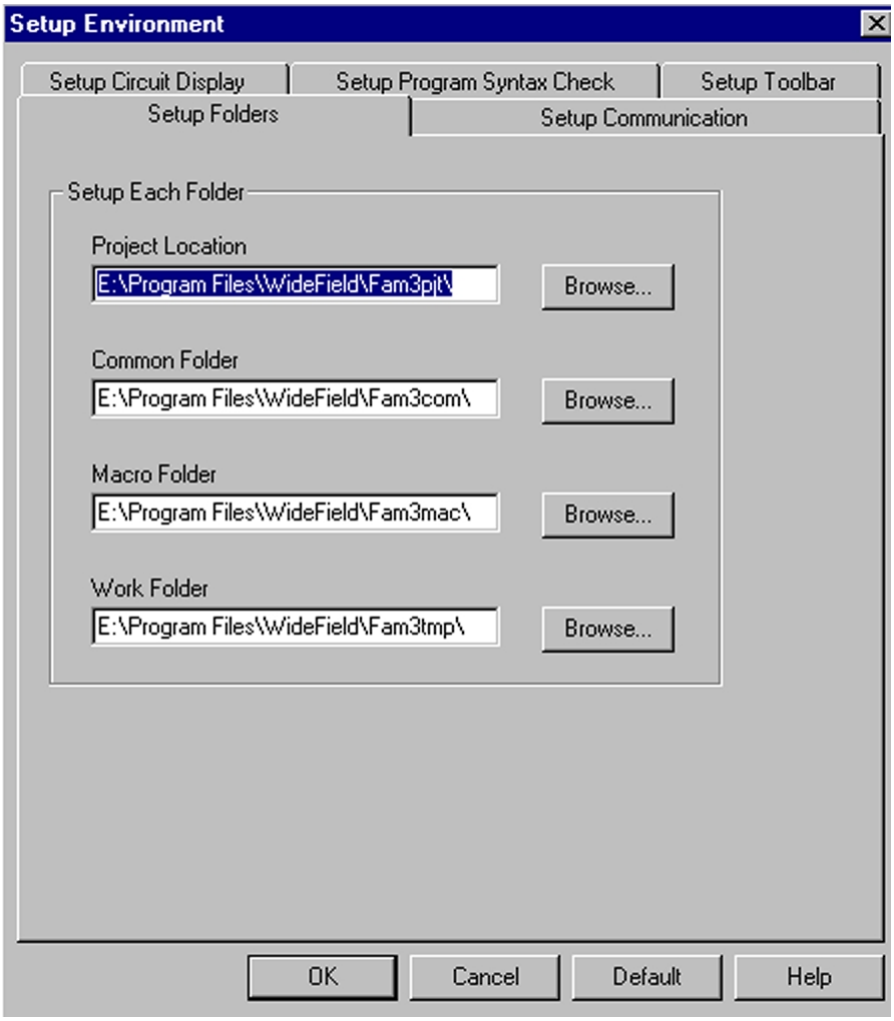


Figure B1.3 The Setup Environment Screen

■ Switching the environment Setup display screens

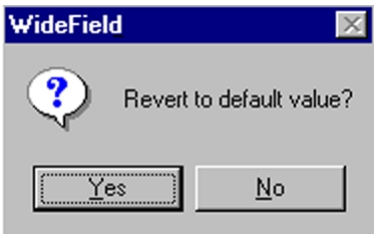
You can switch between the screens by clicking on the tabs at the top, like [Setup Folders] or [Setup Communication].

■ Closing the Setup Environment

(1) Click [OK]. The setting will be saved. Settings will be scrapped if you click [Cancel].

■ Operating Procedure for Default Setting

(1) Click on [Default]. After the confirmation message, click [Yes] and the display screen setting will return to default.



FB010202E.EPS

Figure B1.4 The Default Setting Dialog

B1.2.2 Setup Folders

You can change the setting for the folders where data is stored. The following types of folders can be set.

Table B1.2 Setup Folder

Name	Use	Initial Setting
Project Position	This is the original folder a project is created in. A folder with the same name as the project will be created below the project position.	Installed at \FAM3PJT.
Shared Folder	This folder is where the system log file, the user log file, and the group template file*1 are saved.	Installed at \FAM3COM.
Macro Folder	This is the folder for the master registry of instruction macros.	Installed at \FAM3MAC.
Work Folder	This is where the work files generated temporarily while editing are generated.	Installed at \FAM3TMP.

TB010202E.EPS

*1: See B4.19 about the group template file.

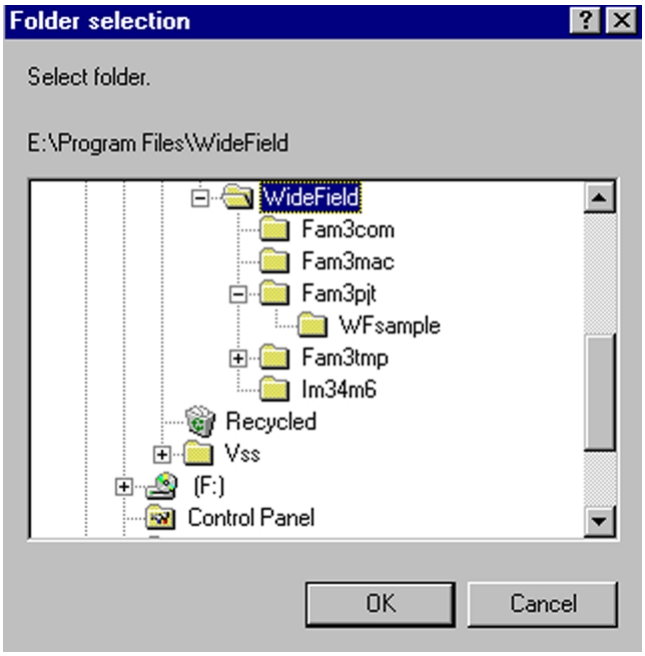
■ Procedure for Setting Folders

(1) Type the name of the folder directly into the folder setting blank.

FB010203E.EPS

Figure B1.5 Typed Folder Setting

(2) Clicking the [Browse] button will display the folder selection screen. Click the folder to be set, and then click [OK]. The folder you clicked will be entered into the blank.



FB010204E.EPS

Figure B1.6 Folder Select Screen

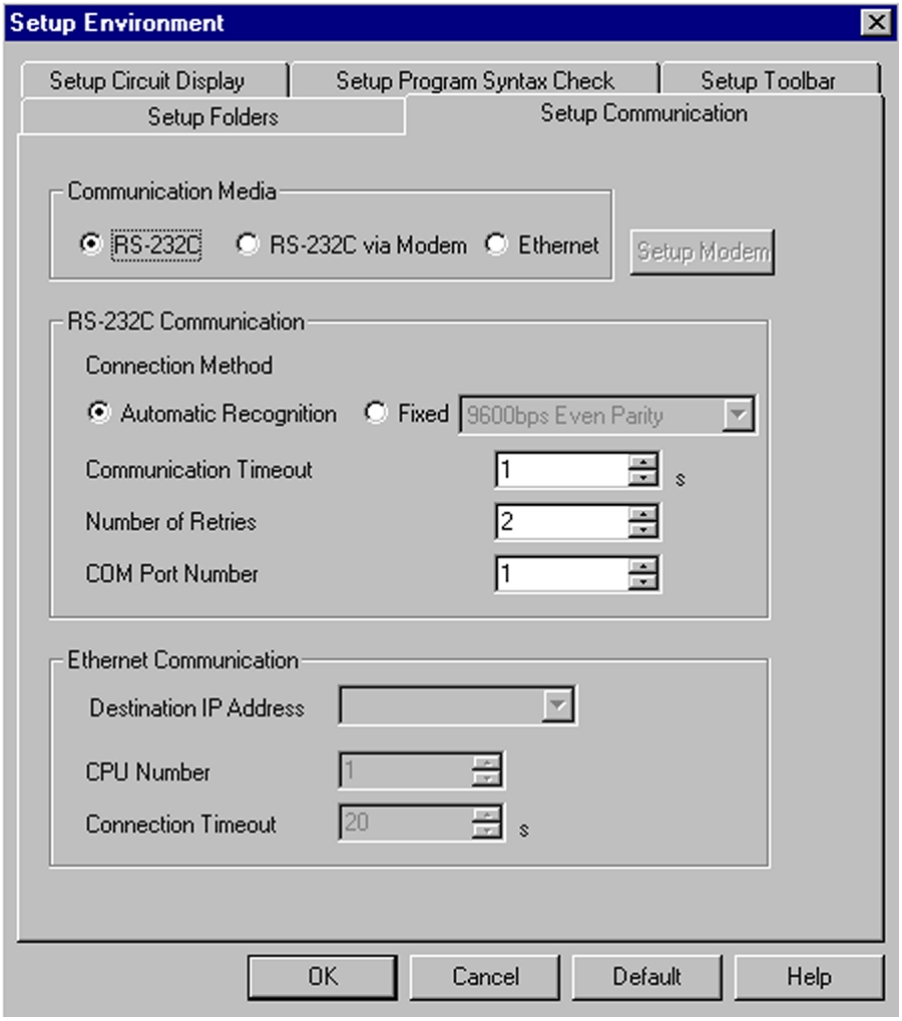
(3) Clicking [Default] will return the Setup environment to how they were before.

B1.2.3 Setup Communication

You can set the method of communication with the FA-M3. The setting are reflected as soon as you connect to the FA-M3.

■ Procedure for Setup Communication

(1) Click the setup communication tab. The following screen will be displayed. Select the communication media from [RS-232C], [RS-232C via modem], and [Ethernet]. The initial setting is RS-232C.



FB010205E.EPS

Figure B1.7 Setup Communication

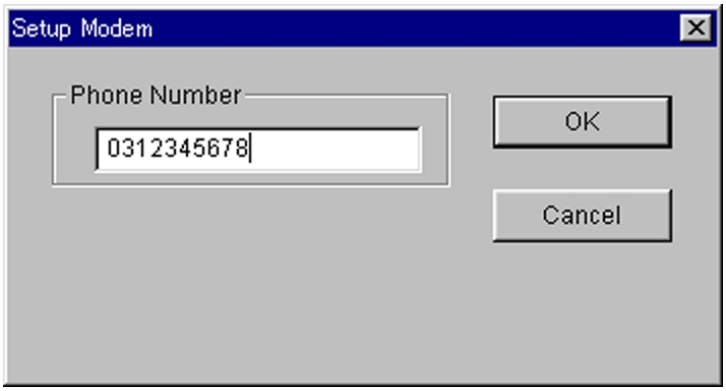
(2) Make the following settings for an RS-232C communication.

- Setting the Connection Method
  Select either auto-detect (adjusting to the CPU communication mode), or fixed mode for your PC's communication setting. If fixed mode is selected, select communication mode from the list box. (Use this when you know your CPU's communication mode.) If auto-detect is selected, it will take some time to connect to the FA-M3. The initial setting is for auto-detect. (You will not need to change any settings if RS-232C via modem is used.)
- Setting the Communication Time-out, etc.
  Set the time-out for ENQ-ACK communication, the number of time to retry, and the COM port number. The initial settings have 1 second for time-out, 2 times for the retry, and the 1 for the COM port number. Normally, you will not have to make any changes. (When an RS-232C via modem is used, set only the time-out for ENQ-ACK communication and the number of times for retry.)

(3) Make the following setting for an Ethernet connection.

- Setting for the other computer
  Set the computer you will be communicating with. You can set either the host name or IP address. It saves up to 16 IP address in the memory, so you can choose an IP address that you set in the past from the list box. The CPU number is set with the spin button. (1-4)
- Connection Time-out
  Set the time-out when connecting to another computer. The initial setting is 20 seconds.

(4) When connecting with an RS-232C via modem, click on [Setup Modem] and set the telephone number of the connection. (Only enter numbers.)



FB010206E.EPS

Figure B1.8 Setting the Telephone Number for the Modem (The example is for the number 03-1234-5678)

CAUTION

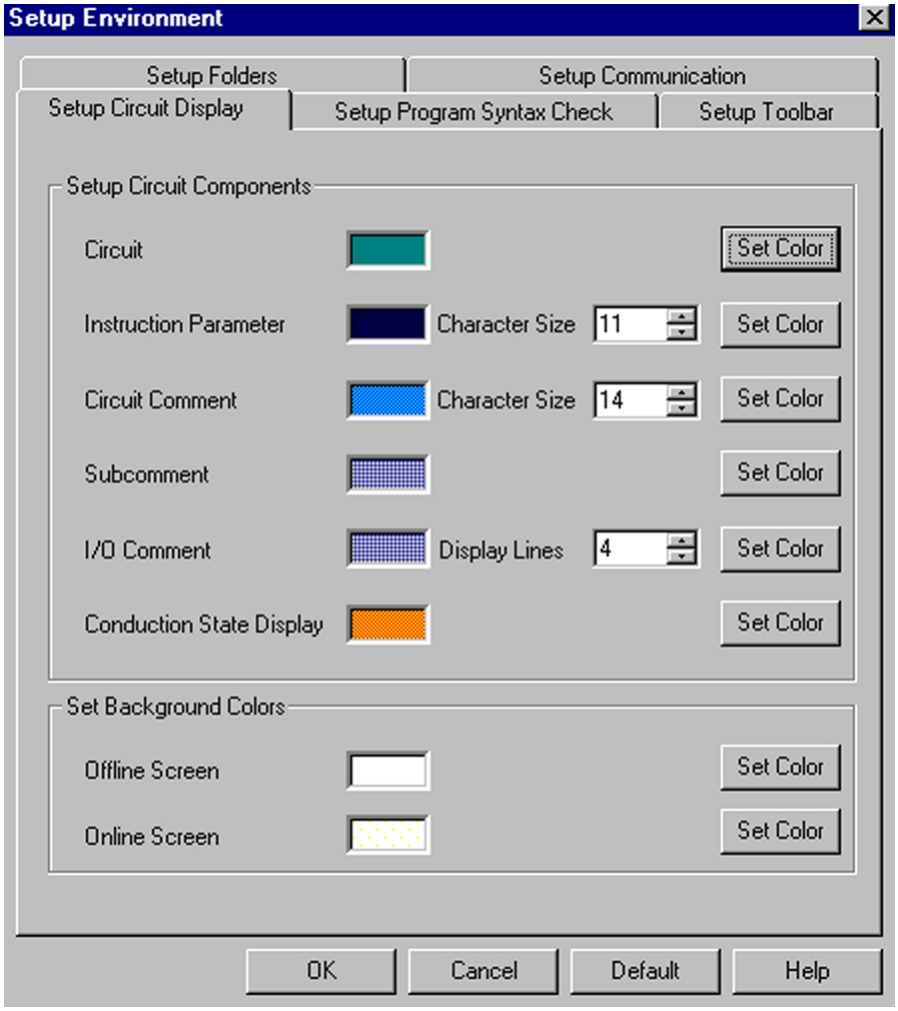
Adjust the modem Setup for communication speed, etc., from the Windows “Control Panel.” Set them by selecting “Control Panel” - “Modem.” See your Windows manual, Windows Help, your modem’s instruction manual, etc. for details.

B1.2.4 Setup Circuit Display

You can change the color of circuit components and the font size.

■ Procedure for Operating the Circuit Display Setup

(1) Click on the circuit display setting tab, and the following screen will be displayed.



FB010207E.EPS

Figure B1.9 Circuit Display Setup

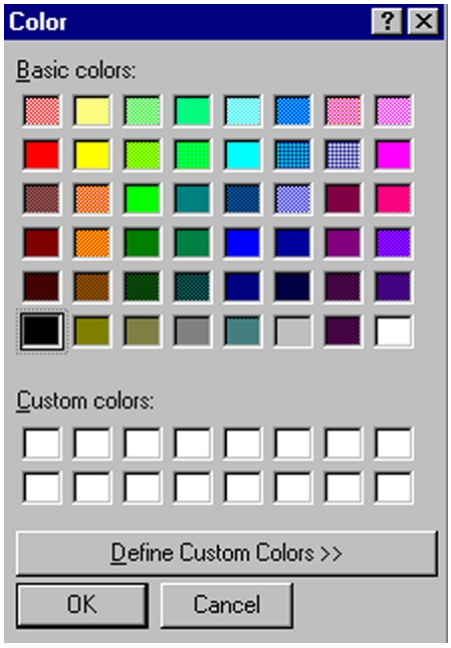
(2) Set the circuit components. Below are the components which can be set.

Table B1.3 Setup Item

Components	Color Setting	Other Settings (Default Value Within the Cut)
Circuit	Can be set	
Instruction Parameter	Can be set	Font Size (11)
Circuit Comment	Can be set	Font Size (14)
Sub-comment	Can be set	
I/O Comment	Can be set	Number of lines displayed (4)
Monitor Conduction Display	Can be set	

TB010203E.EPS

(3) Settings for each color can be changed by selecting the [Color Setup] button. The following screen will be displayed. Click on the color to be set and the select [OK]. The color settings will be reflected right away. Use the spin button to change the font size and the number of lines displayed.



FB010208E.EPS

Figure B1.10 Define Custom Colors

(4) This sets the background colors for the circuit screen. The background color settings go into effect at the next screen. Settings are done as with the circuit components.

Table B1.4 Effectiveness for Background Colors

Setting	Screen
Offline Background Color	Block Edit Screen
	Instruction Macro Edit Screen
Online Background Color	Block Monitor Screen
	Instruction Macro Monitor Screen

TB010204E.EPS

B1.2.5 Setup Program Check

You can change the weight of errors and what to check in the program check. You can set the following items.

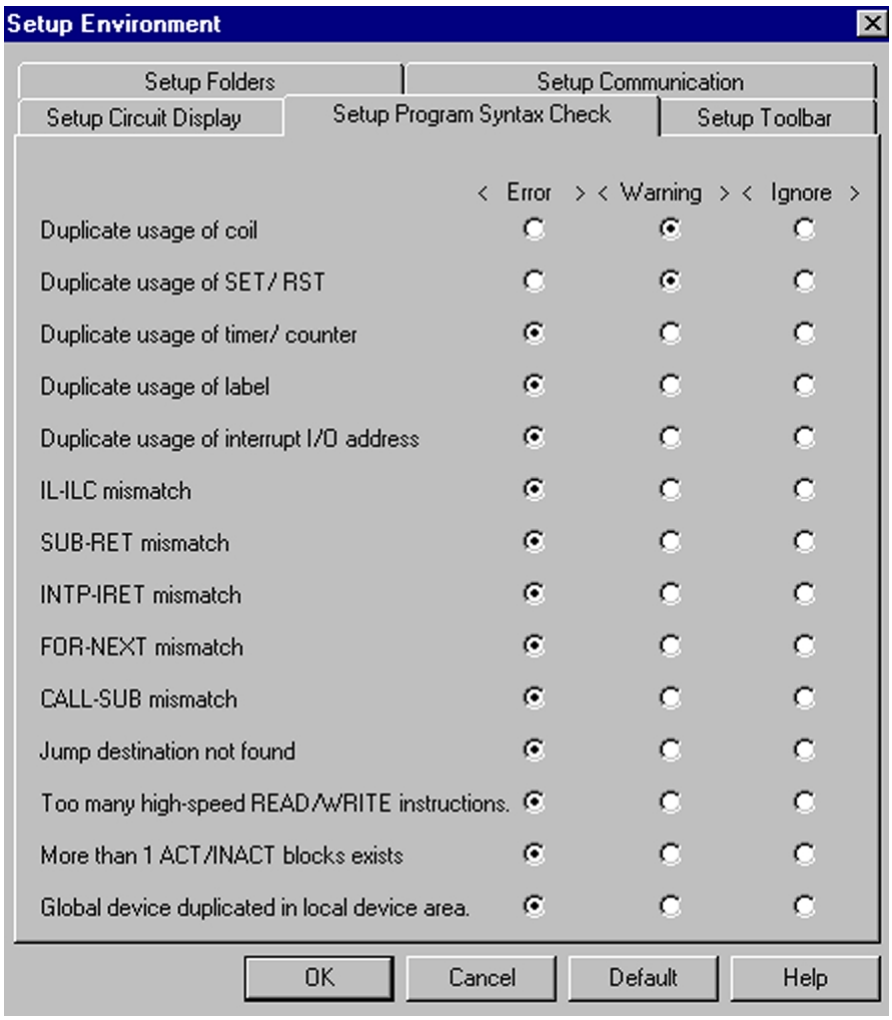
Table B1.5 Syntax Check

Item	Default
Duplicate usage of coil	Warning
Duplicate usage of SET/RST	Warning
Duplicate usage of timer/counter	error
Duplicate usage of label	error
Duplicate usage of interrupt I/O address	error
IL-ILC mismatch	error
SUB-RET mismatch	error
INTP-IRET mismatch	error
FOR-NEXT mismatch	error
CALL-SUB mismatch	error
Jump destination not found	error
Too many high-speed READ/WRITE instructions exceeded maximum.	error
More than 1 ACT/INACT blocks exists	error
Global device duplicated in local device area.	error

TB010205E.EPS

■ Procedure for Operating the Program Check

(1) Click on the “Setup Program Syntax Check” tab. The following screen will appear.



FB010209E.EPS

Figure B1.11 Setup Program Syntax Check

(2) Select from “Error,” “Warning,” and “Ignore.” See “B.5.2.1 Check Program” for further details.

B1.2.6 Setup Toolbar

Select the instruction to register icons in the toolbar from menu. You can register the following instructions.

Table B1.6 Icon Registration (1/3)

Menu Bar	Menu Instruction	Icon
File	New Project	
	Open Project	
	Close Project	
	Save Project	
	New	
	Open Block/Macro	
	Save	
	Print Setup	
	Print	
Edit	Undo	
	Convert	
	Cut	
	Copy	
	Paste	
	Delete	
	Image Copy	
	Insert Line	
	Delete Line	
	Temporary Delete	
	Undo Temporary Delete	
	Page Break	
	Fold Circuit	
	Cancel Circuit Fold	
	Block Tag Definition	
	Local Device Properties	
Find	Find	
	Find Instruction	
	Find Next	
	Jump to Top	
	Jump to End	
	Jump to Specified Line	
	Jump to Specified Instruction Number	
	Replace	
	Device Status	

TB010206E.EPS

Table B1.6 Icon Registration (2/3)

Menu Bar	Menu Instruction	Icon
Display	Operation Monitor	
	I/O Comment Display	
	Instruction Number Display	
	Address Display	
	Redraw	
	Zoom in	
	Zoom out	
	Detailed Display	
	Decimal Display	
	Hexadecimal Display	
	Display String	
	Floating Point Display	
	Binary Display	
	Temporary Monitor Stop	
	Monitor Restart	
Projects	Check Program	
	Find Project	
	Find Project Instruction	
	Change Tag Name	
	Replace Address	
	Change I/O Installation Position	
	Project Device Status	
Online	Connect	
	Disconnect	
	Program Monitor	
	Configuration Display	
	Operating Mode	
	Stop	
	Debug Mode	
	Download	
	Upload	
	Compare File and CPU	

TB010207E.EPS

Table B1.6 Icon Registration (3/3)

Menu Bar	Menu Instruction	Icon
Debug/Maintenance	Forced Set	
	Forced Reset	
	Cancel Forced	
	Cancel All Forced	
	Change Word Data	
	Change Long Word Data	
	Change Current Timer/Counter Value	
	Change Set Timer/Counter Value	
	Start Online Edit	
	Start Block	
	Stop Block	
	Stop Input Refreshing	
	Stop Output Refreshing	
	Stop Shared Refreshing	
	Stop Link Refreshing	
	Restart Refreshing	
	Display Alarm	
	Cancel Alarm	
	Display System Log	
	Display User Log	
	Clear Log	
Other Setup	Setup Environment	
	WideField Help	

TB010208E.EPS

■ Procedure for Operating the Toolbar Setup

(1) Click the “Setup Toolbar” tab. The following screen will be displayed.

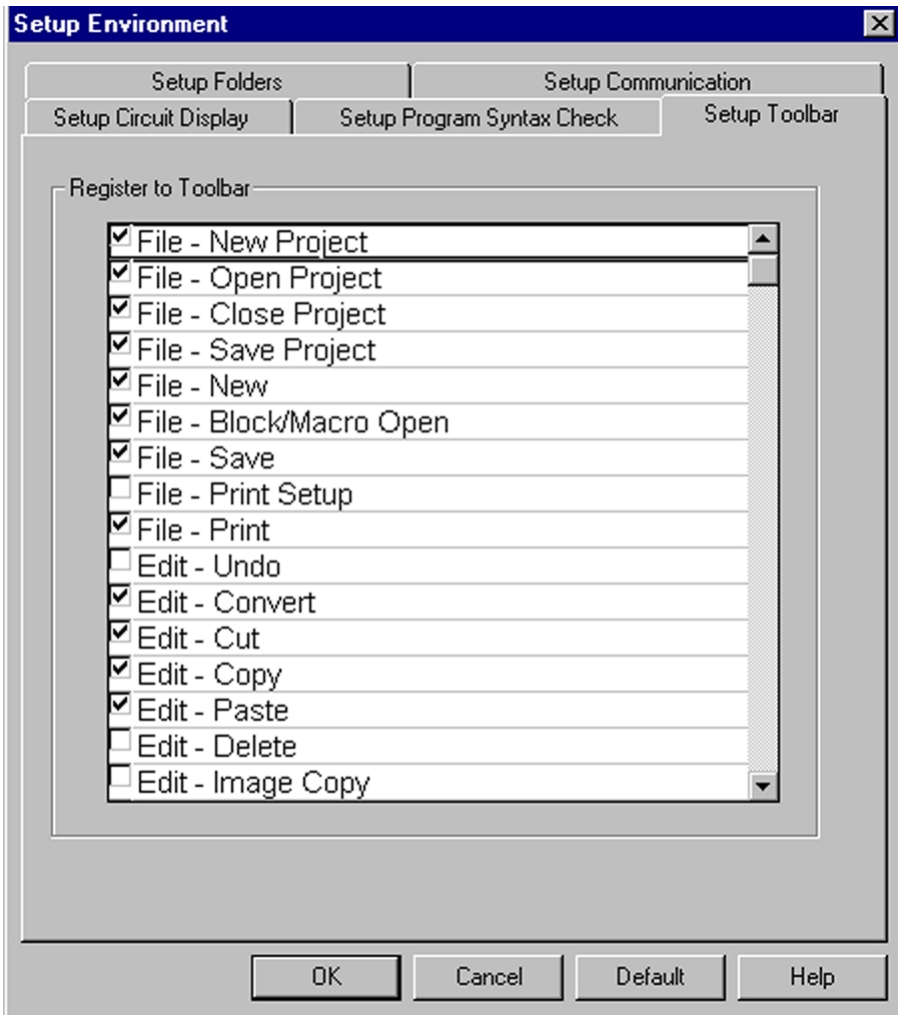


Figure B1.12 Setup Toolbar

(2) Clicking the set instruction check boxes will place a checkmark next to them. Click again to cancel. The checkmark will disappear. Clicking [OK] will reflect the settings.

Blank Page

FA-M3
FA-M3 Programming Tool WideField Instruction Manual
PART-B Offline Section

IM 34M6Q14-01E 1st Edition

CONTENTS

B2. Creating a Project

B2.1 What Is a Project?

B2.1.1 Relationship Between Project and CPU

"Project" refers to the development environment for creating programs run on the FA-M3.

One project is created on each CPU, and the project builds the programs run on the CPU.

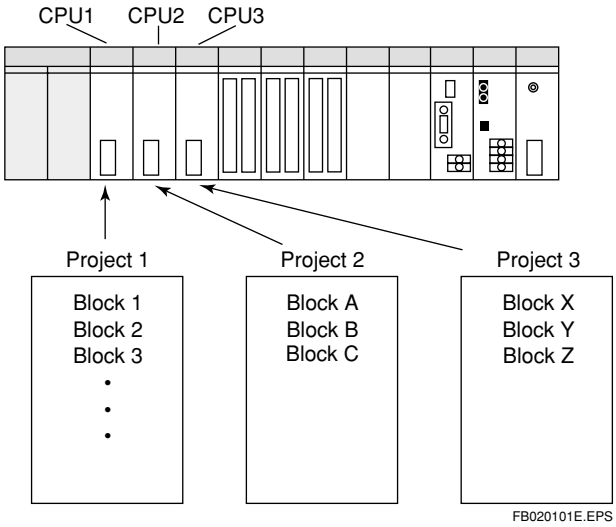


Figure B2.1 Relationship between project and CPU

B2.1.2 Configuration of Project

A project is equivalent to a folder of a personal computer. The project contains programs (blocks, macros) created with the project, configurations, user log messages, common tag name definitions, and executable program files.

Further, the project files for managing this data contain the management information of the entire project.

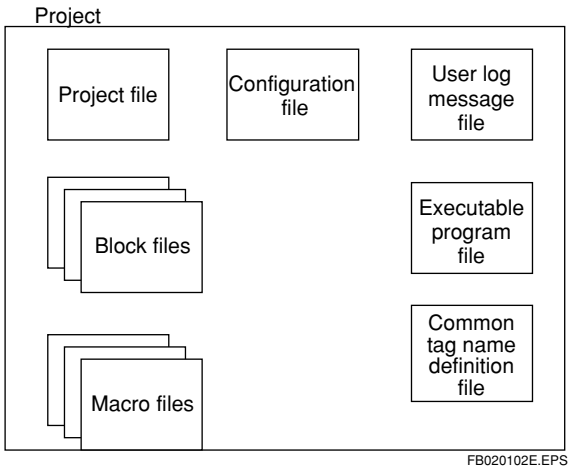


Figure B2.2 Configuration of Project

Table B2.1 Configuration of Project

Type	extension	Contents	tip
Project file	.ypjt	Contains information on the project, such as the project title and CPU type.	
Executable program file	.yprg	Contains definitions of the elements making up the executable program, such as block components.	One can be generated with the same name as the project.
Configuration file	.yc□□*1	Contains the environment for running programs, such as device capacity.	One can be generated with the same name as the project.
User log message file	.yums	Sets and Contains message stored in the user log.	One can be generated with the same name as the project.
Common tag name definition file	.ycmn	Contains tag name definition information shared among multiple blocks.	One can be generated with the same name as the project.
Block file	.yblk	Contains circuits.	
Block tag name definition file	.ysig	Contains names, addresses and I/O comments of tag names used by blocks.	
Instruction macro file	.ymcr	Contains macro circuits.	
Macro tag name definition file	.ymcs	Contains names, addresses and I/O comments of tag names used by macros.	

TB020101E.EPS

*1: □□ indicates the field for the numbers representing the CPU type.EX) F3SP58-6H: extension is .yc58

B2.1.3 Managing Projects Using WideField

Projects can be managed using WideField as follows:

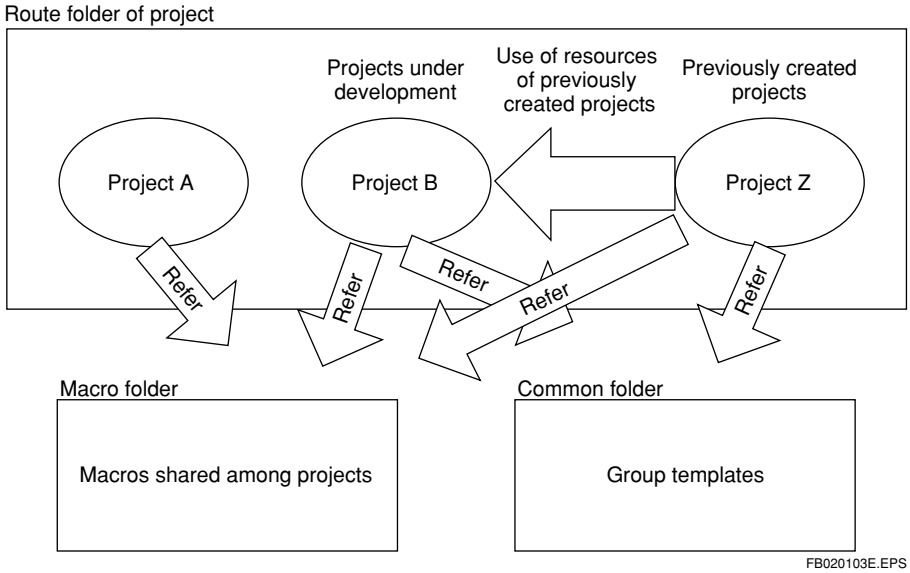


Figure B2.3 Managing Projects Using WideField

Each project can use macros created so as to be shared among projects, and can use templates for grouping tag names.

Further, programs created with other projects can be incorporated in your own projects. (Parts of data of previously created projects can be incorporated easily.)

When necessary, refer to the following sections:

- Incorporating files of other projects B5.3 Managing Files
- Using macros B20. Using Macros
- Using group templates B21. How to Use Group Tag Names

B2.1.4 Limitations When Closing Projects

Some WideField functions can be used without opening a project, and others cannot. Basically, functions such as editing project data offline (block macro edit, configuration edit) cannot be done unless the project is open. Online functions can be used even when the project is not open, but there are some limitations; for instance, the tag names cannot be displayed. Refer to the following list of limitations.

Table B2.2 Project Limitations

Menu Item	Function	When Project Open	When Project Closed
Initial Setup	Environment Setup	○	○
Create/ Reference	Creating block - (including block tag name definitions)	○	×
	Creating instruction macro (including macro tag name definitions)	○	×
	Executable program configuration definition	○	×
	Configuration setup	○	×
	Creating user log message	○	×
	Editing common tag name definition	○	×
	Creating group template	○	○
	System log reference	○	○
	User log refer	○	○
Print	Project printout	○	×
	Screen printout	○	○ (Blocks and macros cannot be printed.)
Help	Help	○	○
Transfer	Download	○	×
	Upload	○	○
	Compare file and CPU	○	×
Online Control	Connection and disconnection	○	○
	Program monitoring	○	○ (Limitations apply, e.g. tag names cannot be displayed.)
	Macro monitoring	○	○ (Limitations apply, e.g. tag names cannot be displayed.)
	Device monitoring	○	○
	Operation monitoring	○	○
	Configuration display	○	○
	ROM management	○	○ (Files cannot be transferred to ROM or collated with CPU.)
	Changing run mode	○	○
	Extension function	○	○
Debug/ Maintenance	Forced set/reset	○	○
	Changing current values and settings	○	○
	Online editing	○	○
	Refresh stop	○	○
	Alarm display	○	○
	System log display	○	○
	User log display	○	○

TB020102E.EPS

B2.2 Creating a Project

B2.2.1 Creating a New Project

This section describes how to create a new project.

When you create a new project, a folder with the same name as the project is created automatically and the files below are generated.

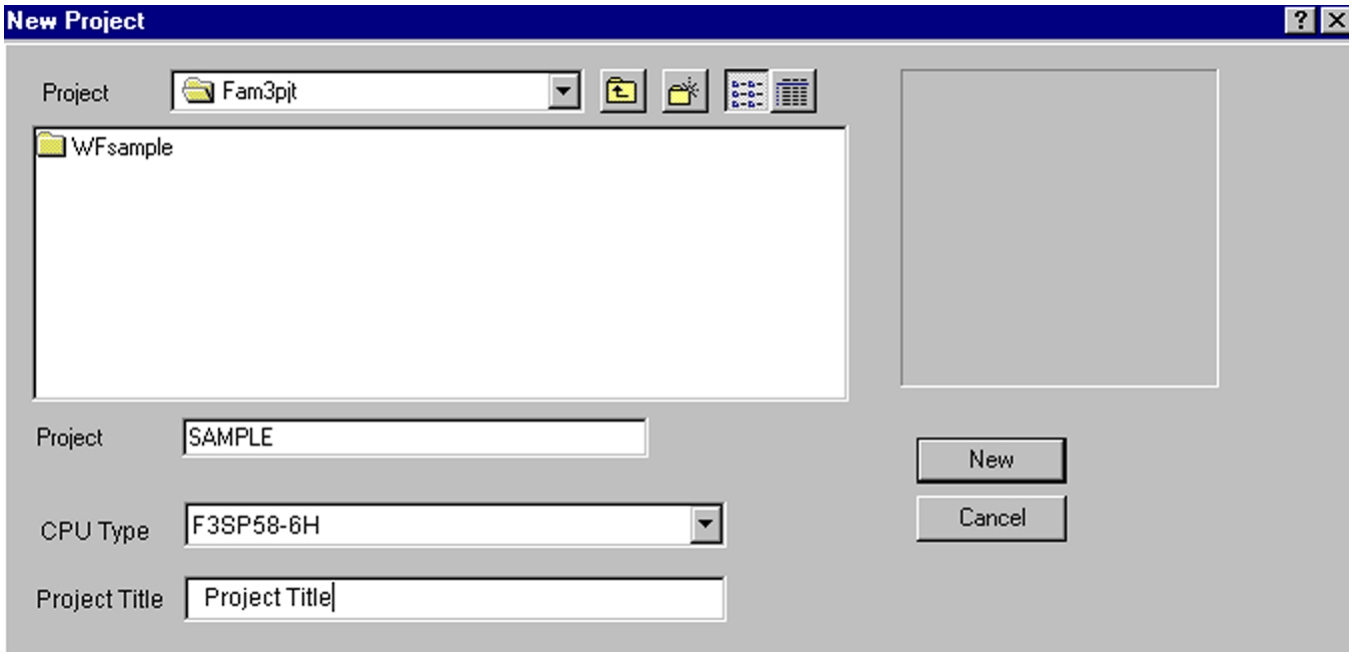
Table B2.3 Files in Project

File	Contents	Default
Project file	The folder containing the CPU type and project files is generated. If there are no project files, the generated folder cannot be recognized as the project.	
Executable program file	The executable program file is generated in the initial status.	Configuration setting ON User log message OFF Configuration Block OFF
Configuration file	When the project is newly created, the configuration file of the specified CPU type is generated.	Default value of each CPU
User log message file	The user log message file is generated in the initial status.	All user log messages are empty.
Common tag name definition file	The file containing I/O comments on special relays and special registers is generated.	

TB020201.EPS

■ Procedure for Creating New Project

(1) Select [File] - [New Project]. The following window appears.

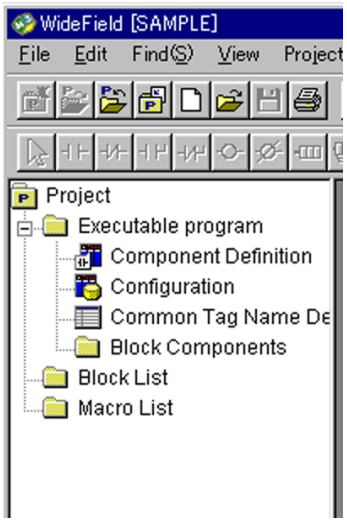


FB020201E.EPS

Figure B2.4 Creating New Project

(2) Enter the project name, type of CPU, and project title.
The type of CPU can be selected from a drop-down list.
The project title does not have to be set.

(3) After entering the above items, click [New].
The new project is created and opens.
The project window displays the project configuration.
Double-click on the icons to open the corresponding edit windows.



FB020202E.EPS

Figure B2.5 Configuration of Project Windows

(4) Click on [Cancel] to cancel creating a new project.

CAUTION

- You cannot create sub-projects within a project (nesting configuration).
- Existing folders cannot be changed to projects.

TIP

The type of CPU and the project title can be changed.

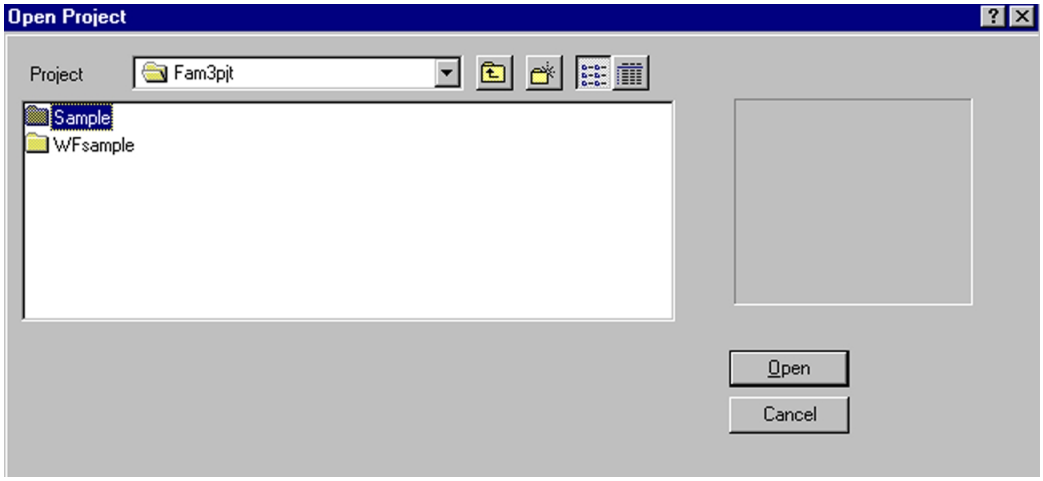
To change these, select [Project] - [Change CPU Type/Properties].

B2.2.2 Opening Project

This section describes how to open an existing project.

■ Procedure for Opening Project

(1) Select [File] - [Open Project].
The window below appears. Double-click on the folder with the same name as the project to move into the project.

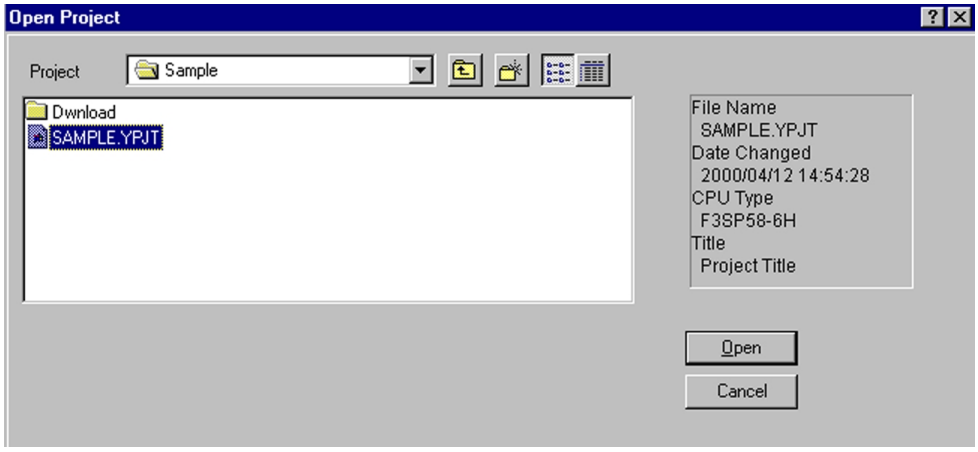


FB020203E.EPS

Figure B2.6 Opening project

(2) The project file is displayed.
Click on the project file to display the following information.
- Project file name
- Date project file updated
- CPU type
- Project title (first 16 characters are displayed)

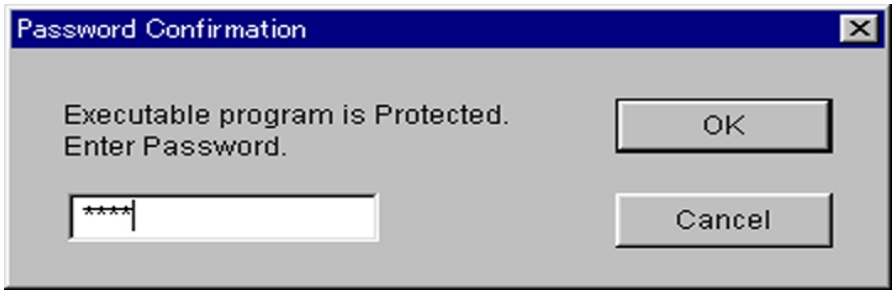
Here, click [Open].
To cancel, click [Cancel].



FB020204E.EPS

Figure B2.7 Displaying Project File

(3) If the executable program in the project has been protected, the password acknowledge dialog appears. Enter your password and click [OK]. The project opens and the project configuration appears in the project window.



FB020205E.EPS

Figure B2.8 Confirm Password Dialog Box

CAUTION

Multiple projects cannot be open at the same time.

B2.2.3 Closing Project

This section describes how to close a project.

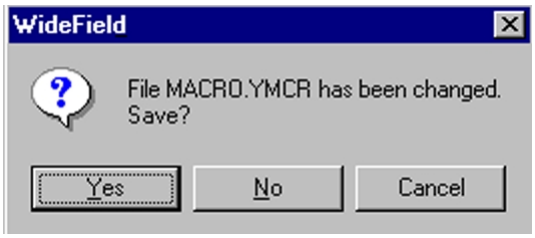
■ Procedure for Closing Project

(1) Select [File] - [Close Project].

If you have been editing a block, a instruction macro or a common tag name definition, the following message appears for each window displayed.

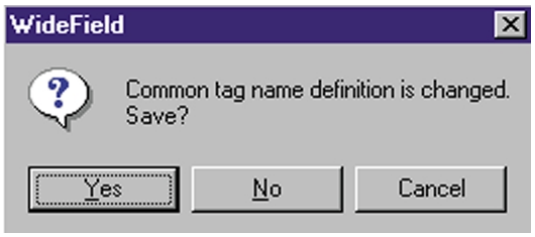
FB020206E.EPS

Figure B2.9 Dialog Box of Save Block



FB020207E.EPS

Figure B2.10 Dialog Box of Save Macro



FB020208E.EPS

Figure B2.11 Dialog Box of Save Common Tag Name Definition

(2) Select [Yes] to save the edited contents, and [No] to abandon them.

(3) When the project is closed, the project window is empty.

B2.2.4 Overwriting and Saving Project

This section describes how to overwrite and save a project.

■ Procedure for Overwriting and Saving a Project

(1) Select [File] - [Save Project].

Any block, instruction macro or common tag name definition being edited will be overwritten and saved.

TIP

You can continue editing after overwriting and saving contents.

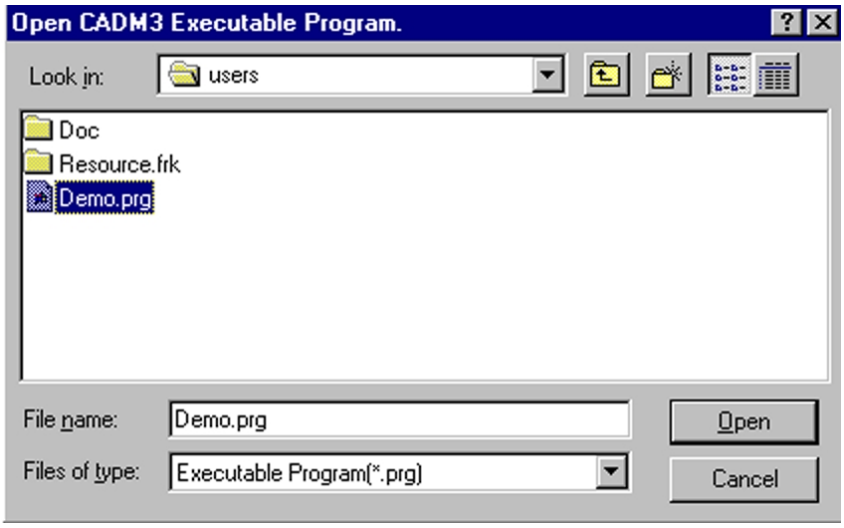
B2.3 Opening Executable Program in CADM3 Format

To use an executable program in Ladder Diagram Support Program M3 (SF510-E3W) format (CADM3 format) in WideField, the program must be loaded into WideField. The only CADM3 executable programs that can be opened are those that do not return errors for syntax check. Refer to the section on editing programs for how to open a program in block file units.

■ Procedure for Opening CADM3 Executable Program

(1) With the project not opened, select [File] - [CADM3 Executable Program].

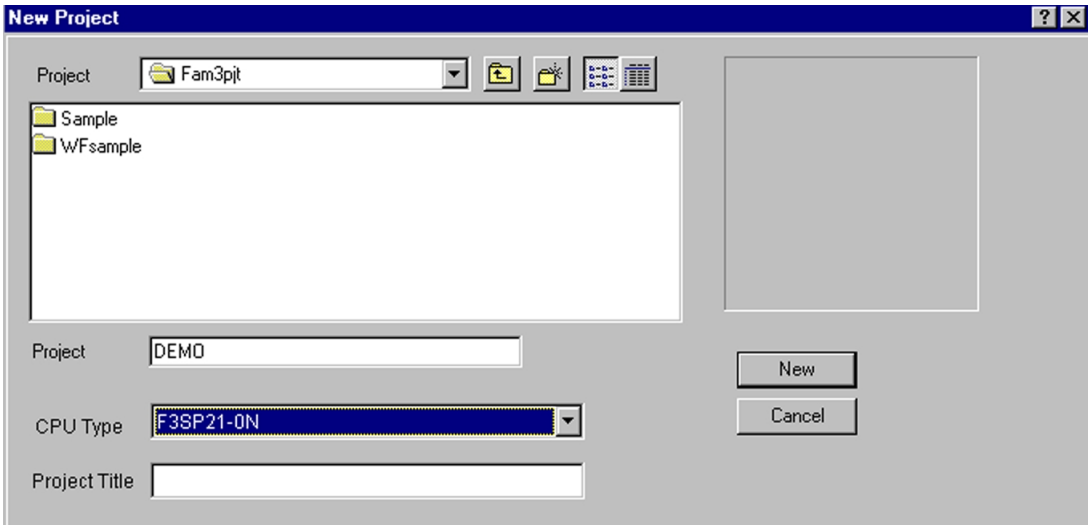
(2) From the window for selecting the executable program, select the CADM3 executable program and then select [Open].



FB020301E.EPS

Figure B2.12 Dialog for Selecting CADM3 Executable Program

(3) Display the dialog box for creating a new project.



FB020302E.EPS

(4) Enter the project name for the new project, and set the CPU type.

(5) Select [New], and the CADM3 executable program and its block components and tag name definitions are converted into WideField format.
To overwrite an existing project, enter the name of the project file and then select [New].

(6) If conversion ends successfully, the newly created project opens. The results of the conversion are displayed in the window.

CAUTION

- If the CPU type has been changed, the configuration is created with the default value of the CPU type after the change. Do configuration settings by setting the CPU type after it has been changed.
- The CPU type can be changed even after conversion. Use WideField to print out the configuration of the previous type, and change the CPU type with [Project] - [Change CPU Type/Properties].
- Ladder blocks saved by mnemonic editing cannot be converted. Do this after saving with the CADM3 ladder diagram edit function.
- The conversion results are saved in text file format in HENKAN.log in the project folder.

B3. Editing Program

B3.1 Cautions for Editing Ladder Diagram

B3.1.1 Limitations for Editing Ladder Diagram

The following limitations apply to entering circuits and creating blocks. Comply with these limitations when entering the information.

- **Maximum Lines That Can Be Created per Block**

  Circuits of up to 4,000 lines (including circuit comments) can be created. Circuits in excess of this amount cannot be entered or edited.

- **Maximum Steps That Can Be Created per Block**

  Circuits of up to 10,240 steps can be created. If more steps than the maximum are entered, an error occurs when they are being converted. To create circuits larger than this maximum, divide the block.

- **Maximum Lines per Circuit**

  One circuit can have up to 25 lines. If more lines than the maximum are entered, an error occurs at conversion.

- **Maximum Instruction per Circuit**

  One circuit can have up to 128 instructions. If more instructions than the maximum are entered, an error occurs at conversion.

- **Maximum Continued Lines per Circuit Comment**

  One circuit comment can have up to 4 continued lines. If more lines than the maximum are entered, an error occurs at conversion.

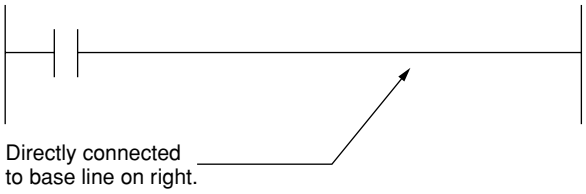
- **Maximum Lines for Continued Circuit**

  Continued circuits can have up to 3 lines. If more instructions™ than the maximum are entered, an error occurs at conversion.

B3.1.2 Circuits Returning Errors

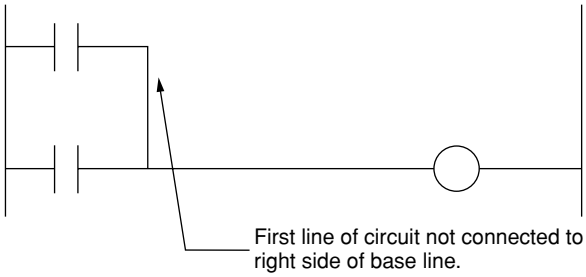
The following circuits return errors at conversion.

● Circuits with No Output Instruction



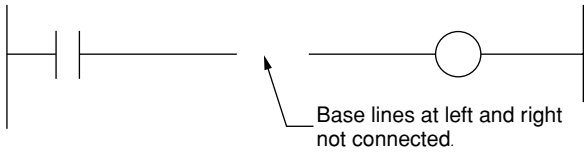
FB030101E.EPS

● Multi-layered Circuits without Output in the First Layer



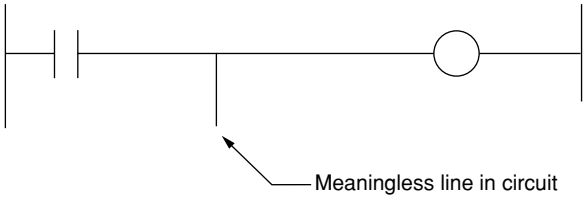
FB030102E.EPS

● Circuits That Are Cut Midway



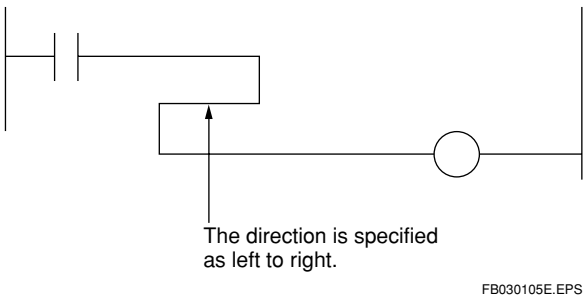
FB030103E.EPS

● Circuits with Extra Lines



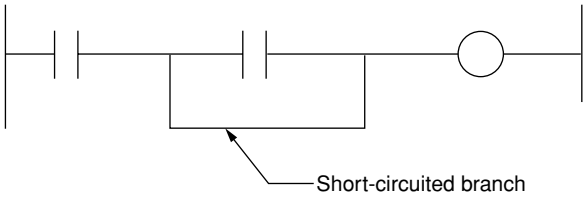
FB030104E.EPS

● Circuits with Opposite Flow from Right to Left



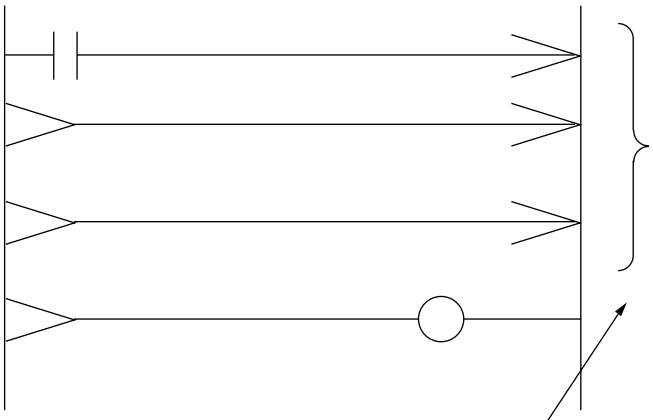
FB030105E.EPS

● Circuits Having Short-Circuit Lines



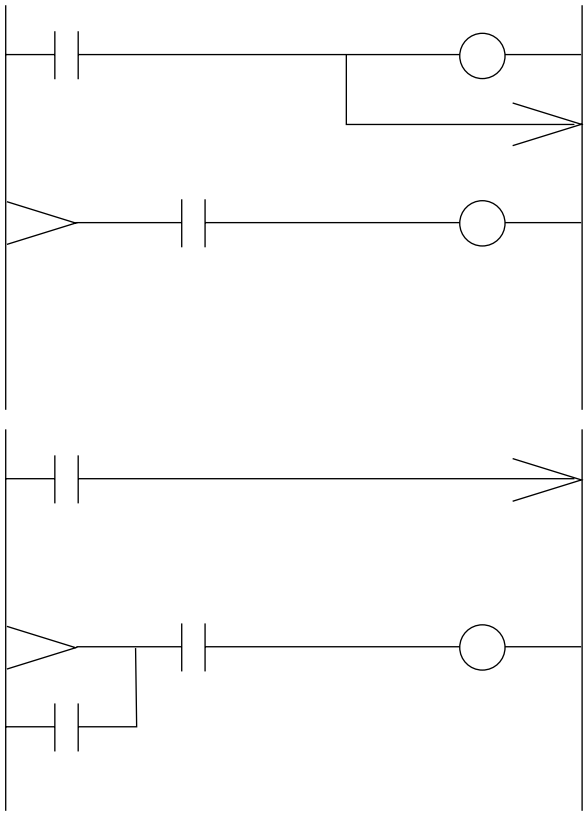
FB030106E.EPS

● Circuits Having 4 or More Continued Lines



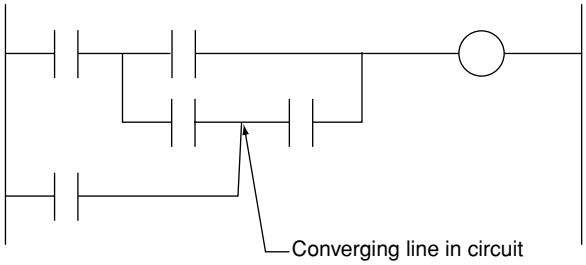
FB030107E.EPS

● Circuits With Incorrect Continuity



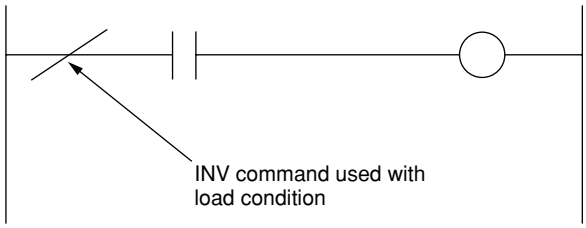
FB030108E.EPS

● **Circuits With Converging Lines**



FB030109E.EPS

● **Circuits having wrongly positioned AND instructions (UP, DWN, UPX, DWNX and INV instructions)**



FB030110E.EPS

B3.1.3 Circuits that cannot be Corrected with Ladder Diagram

Sections (circuits) that cannot be recovered with the ladder diagram are displayed as mnemonics. In this case, the sections displayed as mnemonics cannot be corrected and added with the ladder diagram edit function. (Can be deleted.) Delete these sections after entering the same process with the ladder diagram.

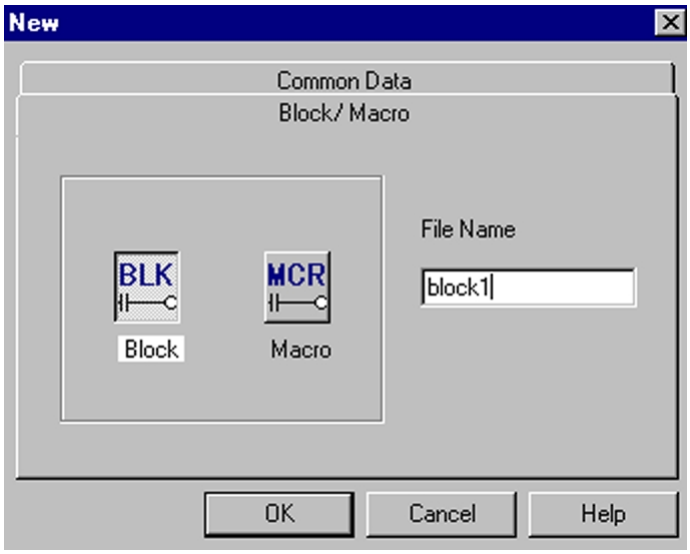
B3.2 Operating Block Files

The block file stores the ladder diagram program. Programs run on the FA-M3 are consists of multiple block files. This section describes how to open, close and save block files.

A project must be open before you can create a program using the ladder diagram. Do the following operations while the project is open.

B3.2.1 Creating New Project File

Select [File] - [New]. The following dialog box appears.



FB030201E.EPS

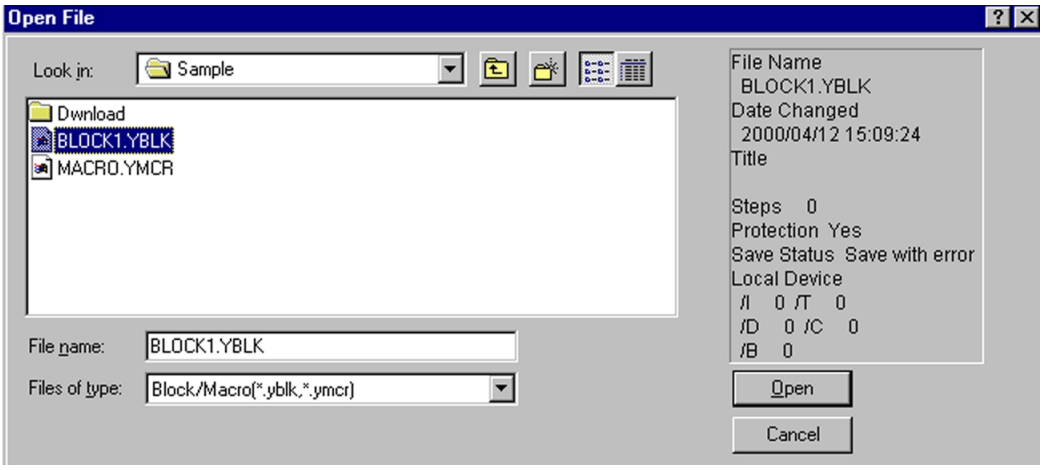
Figure B3.1 Window for Creating New Ladder Diagram

(1) Select the [Block] icon and enter the block name in the file name field.

(2) Select [OK] to open the window for editing ladder diagrams.

B3.2.2 Opening Existing Block File

(1) Select [File] - [Open] - [Block/Macro]. The following dialog box appears.



FB030202E.EPS

Figure B3.2 Dialog Box for Opening File

(2) Select the file to open or enter the file name.

(3) Select [Open]. The window for editing the ladder diagram opens.

(4) If the block is protected, specify the password.

FB030203E.EPS

Figure B3.3 Password Dialog Box

B3.2.3 Saving Block File

There are 2 ways of saving a block file, by overwriting or by naming and saving it.

For saving by overwriting, the file name of the file currently being edited is retained. For saving by naming, the file currently being edited is saved under a different name.

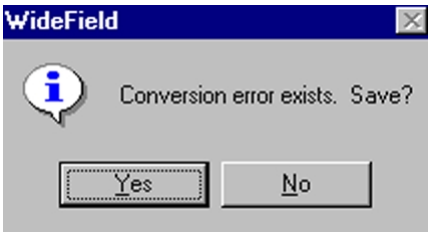
When a file is saved, the block being edited and the tag name definition are saved.

■ Saving by Overwriting

Select [File] - [Save].

(1) The ladder diagram is converted and saved.

(2) If a conversion error occurs, the contents are displayed in the dialog box, and the following dialog box appears.



FB030204E.EPS

(3) Select [Yes] for error save. Select [No] to not save the file.

CAUTION

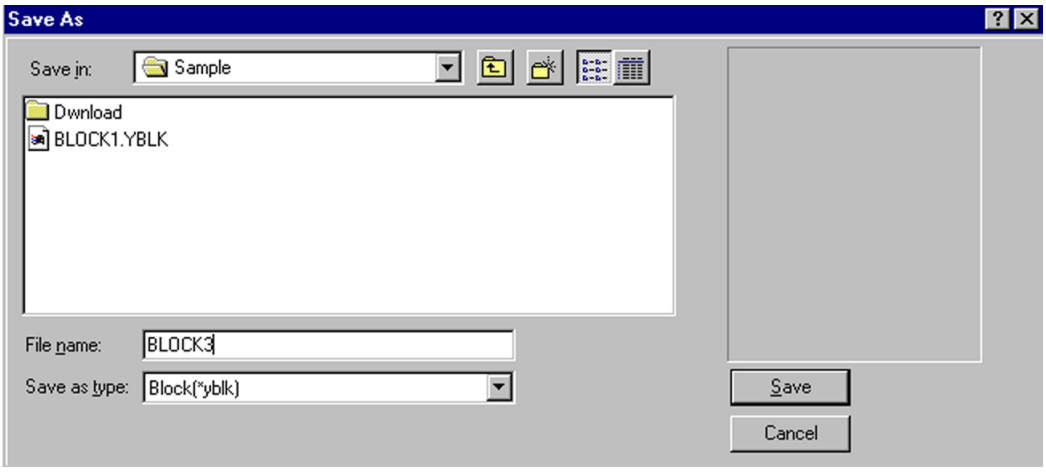
● Error Save

For usual save operations, the edited circuit is converted into the instruction language and then saved. For error save, conversion did not end successfully, so the erroneous section is saved with the error as is. The following operations cannot be done with files that have been error-saved.

- Program check of executable program
- Download
- Project address replacement
- Change of I/O Installation position of project.

■ Naming and Saving

Select [File] - [Save As], and the dialog box appears for naming and saving the file. An existing file cannot be overwritten.



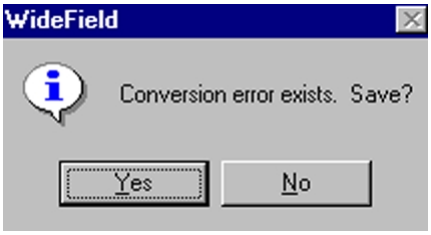
FB030205E.EPS

Figure B3.4 Dialog Box for Naming and Saving File

(1) Enter the new file name.

(2) Select [Save].

(3) If a conversion error occurs, the contents are displayed in the dialog box, and the following dialog box appears.



FB030206E.EPS

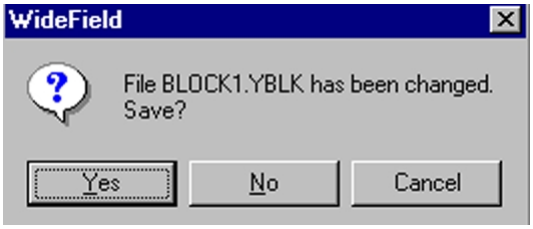
(4) Select [Yes] for error save. Select [No] to not save the file.

CAUTION

When naming and saving a file, the name of the block being edited cannot be changed to the name of the saved block. To edit the block that has been named and saved, open it by selecting [File] - [Open] - [Block/Macro].

B3.2 4 Closing Block File

To close the edit window, select [File] - [Close]. If the block has been changed, the following dialog box appears.



FB030207E.EPS

Figure B3.5 Save Dialog Box

When [Yes] is selected, the file is saved and the window closes.

When [No] is selected, the file is not saved and the window closes.

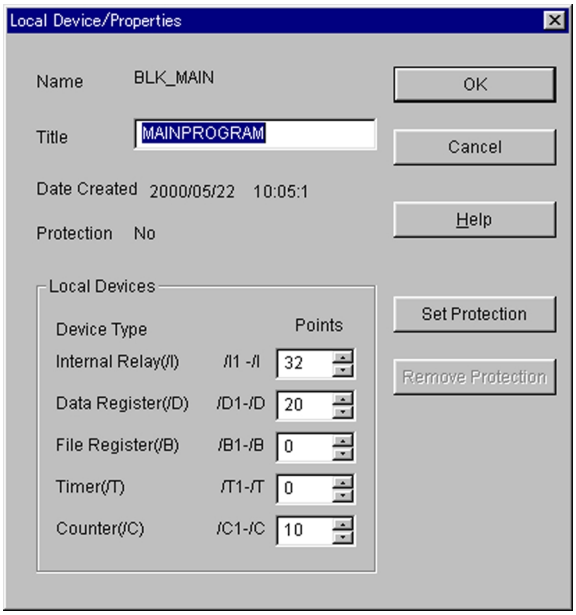
When [Cancel] is selected, the file does not close, but remains displayed.

B3.2.5 Block's Local Device and Property Setting

Block properties are as follows:

- Title
- Number of local devices
- Protect

When the selected block is displayed front, select [Edit] - [Local Device/Properties]. The following window appears.



FB030208E.EPS

Figure B3.6 Block's local device settings and properties window

■ Entering Title

Enter the block title in the title entry field, and select [OK]. Up to 24 characters can be entered for the title, and kanji, hiragana and katakana can be used.

■ Entering Number of Local Devices

In the field for local devices (internal relays, data registers, file registers, timers, and counters), specify the number to be used by the block currently being edited. Next, select [OK].

The numbers of local devices set here can be used for block editing. For instance, when 32 is set for the internal relay, devices from /I1 to /I32 can be used. When 0 is set, the block cannot use that local device.

TIP

Units for setting the number of local devices are as follows:

Local internal relay	In units of 32 points
Local data register	In units of 2 points
Local file register	In units of 2 points
Local timer	In units of 1 point
Local counter	In units of 1 point

The local timer is a 10 ms timer.

To use a local device, it must be set in each block, and the configuration must be set.

Refer to “B19. Use of Local Device.”

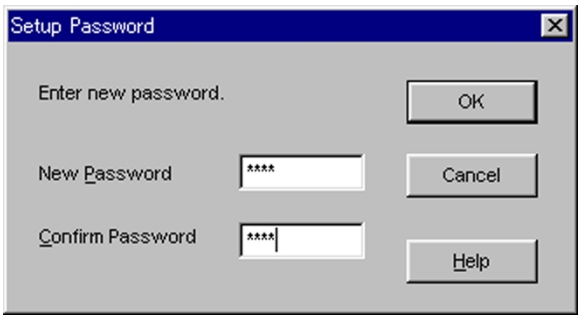
■ Entering Protect Password

(1) Select [Set Protection]. If protection has already been set, the dialog box appears for entering the password. Enter the password and select [OK].
If protection has not been set, the dialog box for entering the password does not appear.

FB030209E.EPS

Figure B3.7 Password Dialog Box

(2) Next, in the setting password screen, enter the password in the fields [New Password] and [Confirm Password].



FB030210E.EPS

Figure B3.8 Setting Password Window

■ Canceling Protection

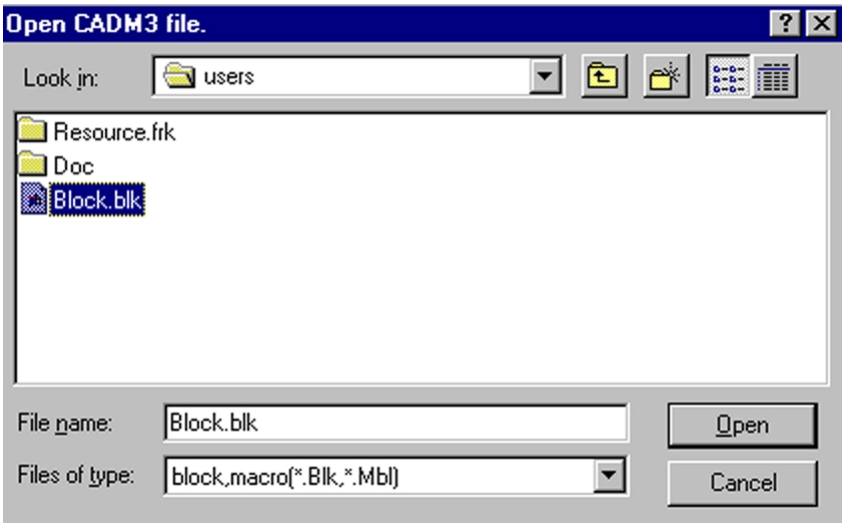
(1) Select [Remove Protection] from the local device’s properties window.

(2) The window appears for entering the password (Figure B3.7 Password Dialog Box). Enter the password and select [OK], and the protection is cancelled.

B3.2.6 Opening CADM3 Block/Macro

Open the file (CADM3 format) created by the Ladder Diagram Support Program M3 (SF510-E3W). To do this, the project must be open.

(1) Select [File] - [Open CADM3 File], and the following dialog box appears.



FB030211E.EPS

Figure B3.9 Dialog Box for Opening File

(2) Move to the folder storing CADM3 files, and select the file to open or enter the block name.

(3) Select [Open], and the file is converted from CADM3 to WideField format, and the window for editing the ladder diagram opens.

(4) If the block is protected, specify the password.

FB030212E.EPS

Figure B3.10 Password Dialog Box

(5) To save the file to the WideField project, select [File] - [Save] or [Save As]. The file is saved in the open project in WideField file format.

CAUTION

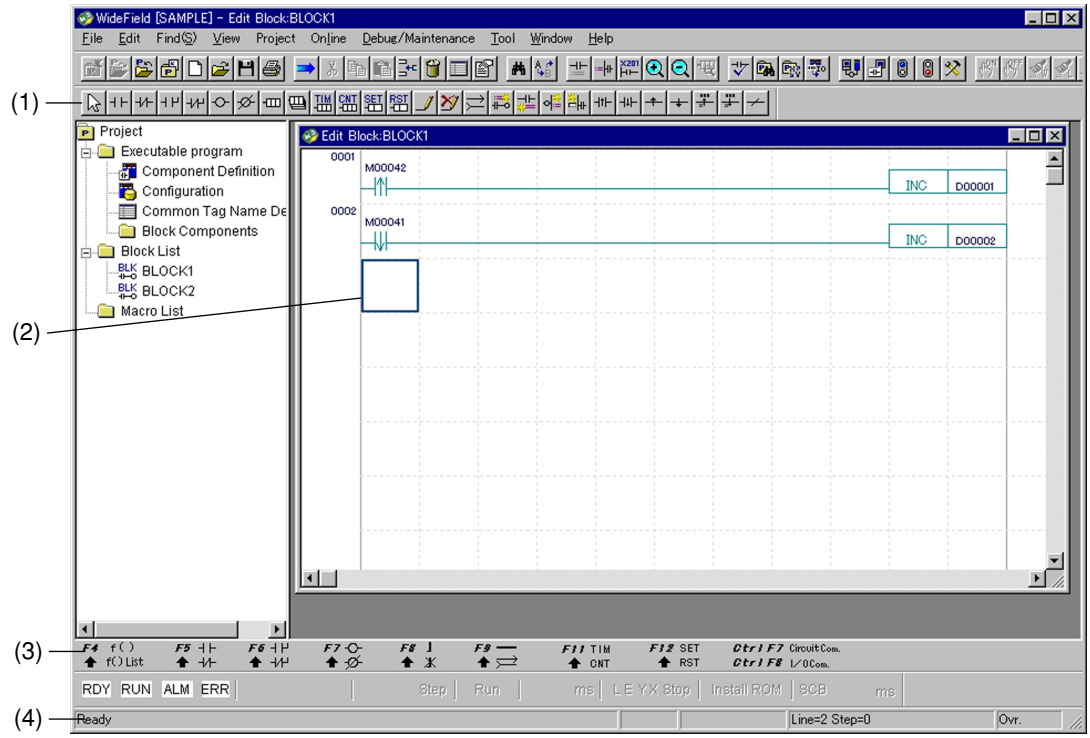
- The CADM3 format file remains as is.
- If a tag name is used in the block to be converted (CADM3 format block), that tag name must be defined in the corresponding block's tag name definition.
- The conversion results are saved in Henkan.log in text file format in the project folder.

B3.3 Editing Ladder Diagram

Enter the instruction and create the ladder diagram circuit.

B3.3.1 Configuring Window

Display the configuration elements of the edit window.



FB030301E.EPS

(1) Instruction Palette
Stores drawing elements for editing circuits using the mouse.

(2) Circuit Edit Window
Window for editing program.

(3) Function Keys
This area displays the assignment of function keys. Drawing cannot be done by clicking on the items displayed here.

(4) Status Bar
Information is displayed for the window being edited.

■ Instruction Palette

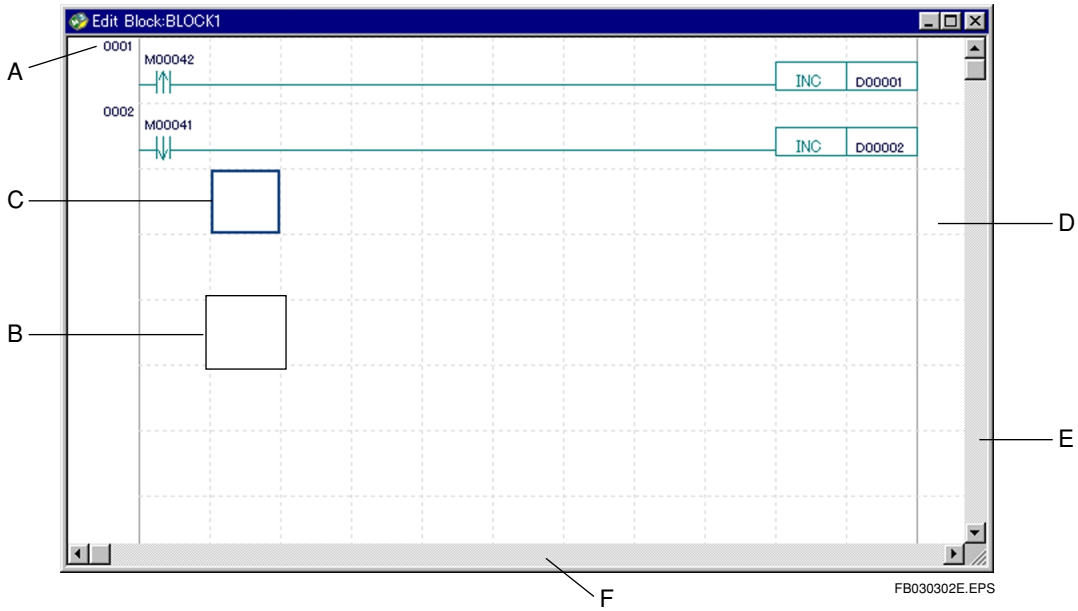
The drawing elements for editing the ladder diagram are stored as icons.

Icon	Name	Explanation
	Selector icon	Returns the mouse indicator to the selector cursor (ordinary cursor). The circuit elements can be selected with the selector cursor, and the functions of circuit elements can be selected by double-clicking on the selector cursor.
	Contact A icon	Changes the mouse indicator to the normally open contact. The normally open contact can be drawn by clicking anywhere on the ladder diagram edit screen.
	Contact B icon	Changes the mouse indicator to the normally close contact. The normally close contact can be drawn by clicking anywhere on the ladder diagram edit screen.
	Contact A OR icon	Changes the mouse indicator to the normally open contact OR. The normally open contact OR can be drawn by clicking anywhere on the ladder diagram edit screen.
	Contact B OR icon	Changes the mouse indicator to the normally close contact OR. The normally close contact OR can be drawn by clicking anywhere on the ladder diagram edit screen.
	Coil icon	Changes the mouse indicator to the coil. The coil can be drawn by clicking anywhere on the ladder diagram edit screen.
	Negative coil icon	Changes the mouse indicator to the negative coil. The negative coil can be drawn by clicking anywhere on the ladder diagram edit screen.
	SET instruction icon	Changes the mouse indicator to the SET instruction. The SET instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	RST instruction icon	Changes the mouse indicator to the RST instruction. The RST instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	Timer instruction icon	Changes the mouse indicator to the TIM instruction. The TIM instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	CNT instruction icon	Changes the mouse indicator to the CNT instruction. The CNT instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	Application instruction icon	Changes the mouse indicator to the application v. The application instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	Instruction list icon	Changes the mouse indicator to the instruction list. The instruction list can be drawn by clicking anywhere on the ladder diagram edit screen.
	Circuit comments icon	Changes the mouse indicator to the circuit comments. The circuit comments can be entered by clicking on any line in the ladder diagram edit screen.
	Sub comments icon	Changes the mouse indicator to the circuit sub-comments. The circuit sub-comments can be entered by clicking on any line in the ladder diagram edit screen.
	I/O comments icon	Changes the mouse indicator to the I/O comments. The I/O comments can be entered by clicking on any element position in the ladder diagram edit screen.
	Label icon	Changes the mouse indicator to the label. The label can be entered by clicking on any line in the ladder diagram edit screen.
	Insert Connect line draw icon	Changes the mouse indicator to the insert line drawing. The line can be drawn anywhere by dragging to the ladder diagram edit screen.
	Delete connect line icon	Changes the mouse indicator to the line deletion. The line can be erased by dragging anywhere on the ladder diagram edit screen.
	Continuation line icon	Changes the mouse indicator to the continuation line cursor. The continuation line can be drawn by clicking on the ladder diagram edit screen.
	Load differential up instruction icon	Changes the mouse indicator to the differential up load instruction cursor. The rising edge differential oad instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	Load differential down instruction icon	Changes the mouse indicator to the differential down load instruction cursor. The falling differential load instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	Compute differential up instruction icon	Changes the mouse indicator to the differential up operation instruction cursor. The rising edge differential operation instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	Compute differential down instruction icon	Changes the mouse indicator to the differential down operation instruction cursor. The falling differential operation instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	Compute differential up with device instruction icon	Changes the mouse indicator to the device-specified differential up operation instruction cursor. The device-specified rising differential operation instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	Compute differential down with device instruction icon	Changes the mouse indicator to the device-specified differential down operation instruction cursor. The device-specified falling differential operation instruction can be drawn by clicking anywhere on the ladder diagram edit screen.
	Inverter instruction icon	Inverter command icon Changes the mouse indicator to the inverter command cursor. The inverter command can be drawn anywhere by clicking anywhere on the ladder diagram edit screen.

TB030301E.EPS

■ Edit Screen

The circuit edit screen is for editing circuits. Here, ladder programs of up to 4,000 lines and 11 columns can be edited. The edit screen is set out like the usual Windows screen; its size can be changed, the display position moved, it can be switched to full-screen display, and the instruction titles can be switched to icons. The screen can be scrolled up and down by using the vertical scroll bar, and moved sideways by using the horizontal scroll bar.



A - Column No./Instruction No. Display Area

For displaying the Column No., Command No., and label currently being edited.

B - Cell

Area for writing the instruction language and parameters. The cell displays the circuit element, tag name, address, and I/O comments.

C - Position Cursor

For specifying where to write instructions, and for selecting instructions. The cursor can be moved by using the mouse or the arrow keys.

D - Sub-comment Display Area

Displays sub-comments.

E - Vertical Scroll Bar

For scrolling the circuit edit screen up and down. The screen can also be scrolled a page at a time by pressing the [Page Up] and [Page Down] keys, and a line at a time by pressing the up/down arrow keys.

F - Horizontal Scroll Bar

For scrolling the circuit edit screen sideways. The screen can also be moved sideways a column at a time by pressing the left/right arrow keys.

TIP

Other settings can be done from the circuit edit screen include displaying/hiding display fields and enlarging/reducing the screen size. For details, see “B3.4 Switching Display”.

■ Function Key

This item shows the function key operations for editing ladder diagrams.
The function key assignment can be displayed. You can select to display or hide the function key bar by selecting [View] - [Function Key].

The function keys are assigned as shown below.

Table B3.2 Assignment of Function Keys

Element Display	Function Key	Outline of Function
	F1	Displays the help function.
	F3	Next candidate
f ( )	F4	Enters an application instruction where the position cursor is, in input format.
[Command list]	Shift + F4	Enters an application command where the position cursor is, in select format.
⊣⊢	F5	Enters an A contact where the position cursor is.
⊣/⊢	Shift + F5	Enters a B contact where the position cursor is.
⊣⊢	F6	Enters an A OR contact where the position cursor is.
⊣/⊢	Shift + F6	Enters a B OR contact where the position cursor is.
-○-	F7	Enters an output coil at the last column where the position cursor is.
-⊘-	Shift + F7	Enters a negative coil at the last column where the position cursor is.
|	F8	Displays a vertical connect line to the right of where the position cursor is. Press [Enter] to enter it.
✳	Shift + F8	Displays a vertical connect line delete position cursor to the right of where the position cursor is. Press [Enter] to enter it.
—	F9	Inputs a horizontal connect line where the position cursor is.
⇉	Shift + F9	Inputs a continuation line at the beginning or end of the line where the position cursor is.
TIM	F11	Inputs a timer instruction at the last column where the position cursor is.
CNT	Shift + F11	Inputs a counter instruction at the last column where the position cursor is.
SET	F12	Inputs a SET instruction at the last column where the position cursor is.
RST	Shift + F12	Inputs a RST instruction at the last column where the position cursor is.
	Ctrl + F6	Inputs a label at the line where the position cursor is.
Circuit comment	Ctrl + F7	Inputs a circuit comment where the position cursor is.
I/O comment	Ctrl + F8	Inputs an I/O comment where the position cursor is.
	Ctrl + F9	Inputs a sub comment at the line where the position cursor is.

TB030302E.EPS

■ Status Bar

The status bar displays information about the block being edited.
The status bar indicates the number of lines, number of steps, and drawing mode (overwrite/insert) during ladder editing.

The information is displayed in the following format.

FB030303E.EPS

Figure B3.11 Status Bar

A - Indicates the number of lines and number of steps of the program block being edited. The number of steps is updated at conversion. It is not updated during editing.

B - In drawing mode, insert or overwrite mode is indicated. The mode can be switched by pressing the [Insert] key.

B3.3.2 Basic Operation

This section describes how to input instructions.

Instructions can be input using the mouse or a function key. Also, from the circuit edit screen, instructions can be entered by direct mnemonic input. Mouse operation is suitable for writing the drawing elements beforehand. The function keys are suitable for simultaneously entering instructions and parameters.

For mouse operation, use the icons on the instruction palette.

For keyboard operation, use the function keys.

■ Procedure for Entering Instructions Using Mouse

(1) Select the instruction to enter from the instruction palette. The mouse cursor changes to the indicator for the selected instruction.

(2) Click on the input position.

(3) The instruction is entered at the cursor position.

■ Procedure for Entering Instructions Using Function Keys

(1) Select the function key for the instruction to enter.

(2) Enter the necessary instruction parameters and select [Enter].

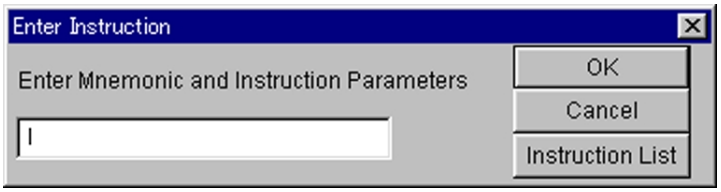
(3) The instruction is entered at the cursor position.

B3.3.3 Procedure for Entering Commands Using Alphanumeric Keys

In addition to the input methods described above, instructions can be entered by directly editing the basic instruction or application instruction using the instruction language (mnemonic format). When using this method, the instruction can be input completely from the alphanumeric keys.

(1) Bring the position cursor to the input position.

(2) Enter the first letter of the mnemonic for the instruction to be input. The following dialog box appears.



FB030304E.EPS

Figure B3.12 Dialog Box for Entering Instruction

The first letter of the instruction mnemonic to be input is displayed in the dialog box.

(3) Finish entering the mnemonic and then select [OK].
Example: LD X201
MOV D1 D2

(4) The instruction is input where the position cursor is.

B3.3.4 Entering Basic Instruction

■ Input Using Mouse

(1) Click on the basic instruction icon on the command tool palette.
When the icon is clicked, the mouse cursor icon changes to the indicator of the selected instruction.

(2) Click on the place where the instruction is to be entered.
When the location is clicked, the selected instruction is written there and the parameter input field appears.

CAUTION

- The indicator of the selected mouse cursor remains after input. To continue writing the instruction, click on the location where it is to be entered. To return the mouse indicator to its original form, press the [Esc] key, click the right button, or click on the selector icon.
- When input an output instruction, the instruction is assigned to the last column and not at the clicked location. In this case, a horizontal connect line leads from the clicked position.

(3) Input the parameter
Input the tag name or address and press [Enter], parameter is input.

Figure B3.13 Parameter Input Field

CAUTION

A text string of up to 8 characters can be displayed in the input field.

If a tag name does not fit on one line, it will be displayed over two lines as below.

Example:

(a) More than eight characters b) Up to eight characters

TAGNAME1234 **TAGNAME**

——| |—— ——| |——

Figure B3.14 Display of Tag Name

■ Input Using Function Key

(1) Bring the position cursor to the input location.

(2) Select the function key for the instruction to be entered. When the function key is pressed the instruction is written at that location, and the input field appears.

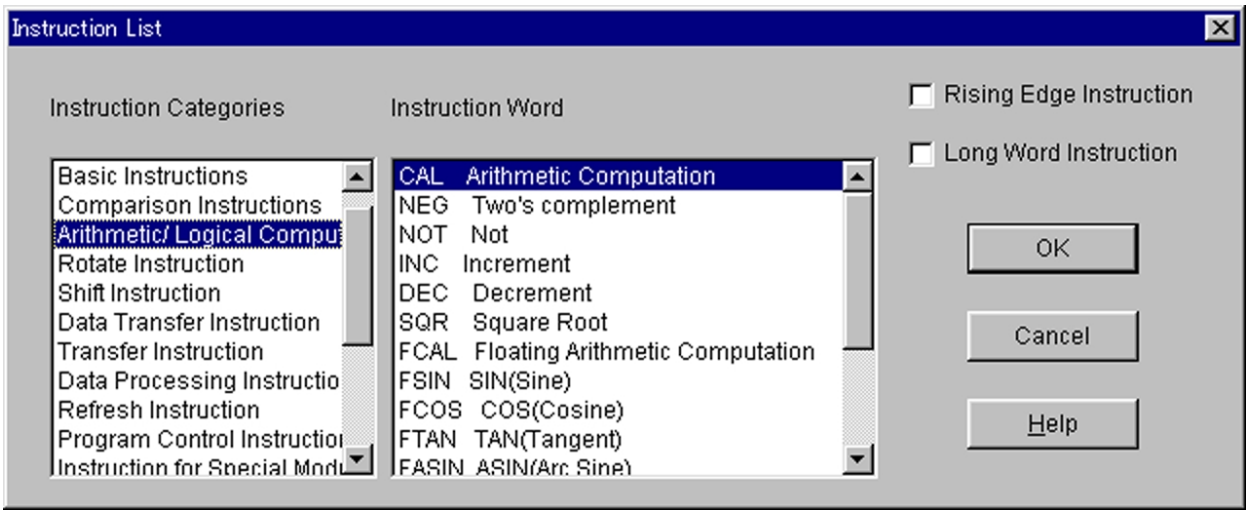
(3) Here, input the tag name or device address and press the [Enter] key. The instruction is assigned to the device. Press the [Esc] key to cancel entering the instruction. Once the instruction is entered, the position cursor moves to the next column.

B3.3.5 Entering Application Instructions

■ Input from Instruction List Screen

● Input Using Mouse

(1) Click on the instruction list icon on the instruction tool palette. When the icon is clicked, the instruction list screen appears.



FB030307E.EPS

Figure B3.15 Instruction List Screen

The instruction list screen displays the types of instruction languages on the left and the instruction languages on the right. If the selected instruction supports rising instruction and long word instruction, these are activated and can be selected.

(2) Select the instruction language and then select [OK]. The instruction list screen closes and the mouse cursor indicator takes the form of the selected instruction.

(3) Click on the location for entering the instruction. The instruction with no parameters is entered at the clicked location.

CAUTION

- The indicator of the selected mouse cursor remains after input. To continue writing the instruction, click on the location where it is to be entered. To return the mouse indicator to its original form, press the [Esc] key, click the right button, or click on the selector icon.
- When input an output instruction, the instruction is assigned to the last column and not at the clicked location. In this case, a horizontal connect line leads from the clicked position.

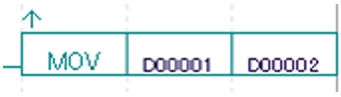
Display Format of Application Instructions

It is displayed as instruction mnemonics, Parameter 1, Parameter 2... If the tag name is longer than 8 characters, it is displayed from the top line; if it has 8 or fewer characters, it is displayed on the bottom line.

(a) Ordinarily

FB030308E.EPS

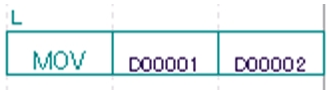
(b) Rising command



FB030309E.EPS

An arrow is displayed above the instruction.

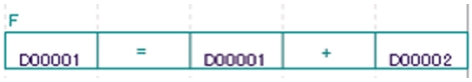
(c) Long word instruction



FB030310E.EPS

“L” is displayed above the instruction.

(d) Floating point instruction



FB030311E.EPS

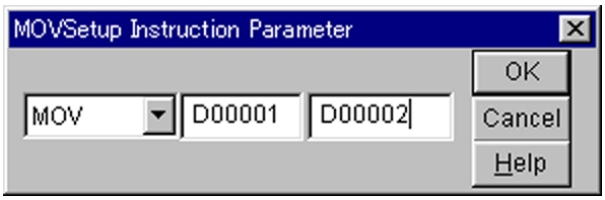
“F” is displayed above the instruction.

● Input Using Function Key

(1) Bring the position cursor to the location for entering the instruction.

(2) Press the instruction list function key. The instruction list screen appears. Select the instruction, and press the [Enter] key.

(3) The parameter input window appears. Input a parameter and press the [Enter] key to enter. To move to another parameter field, press the [Tab] key.



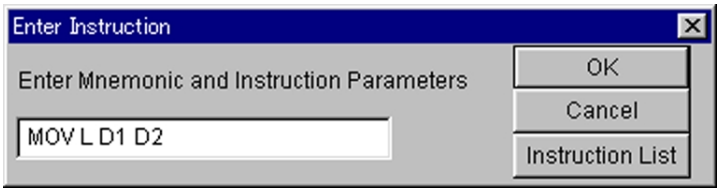
FB030312E.EPS

Figure B3.16 Parameter Input Screen (for MOV instruction)

■ Input from Instruction Input Window

● Input Using Mouse

(1) Click on the application instruction input icon on the instruction tool palette. The instruction input window appears.



FB030313E.EPS

Figure B3.17 Instruction Input Window

(2) Directly enter the instruction to the input field and select [OK]. The indicator of the mouse cursor changes to the form of the selected instruction. Input parameters after the instruction language. Use a space or a comma to delimit the instruction language and parameters.
To cancel this instruction input operation, select [Cancel]. The indicator of the mouse cursor remains the selector cursor.

(3) Click on the location for entering the instruction. The instruction is entered at the clicked location.

CAUTION

- The indicator of the selected mouse cursor remains after input. To continue writing the instruction, click on the location where it is to be entered. To return the mouse indicator to its original form, press the [Esc] key, click the right button, or click on the selector icon of the tool palette.
- When entering an output instruction, the instruction is assigned to the last column and not at the clicked location. In this case, a horizontal connect line leads from the clicked position.

● Input Using Function Key (Entering from Instruction Input Window)

(1) Bring the position cursor to the location for entering the instruction.

(2) Press the application instruction input function key.

(3) Input the instruction directly to the input field and select [OK]. The instruction is entered where the position cursor is.
Example: MOVL D1 D2

● Mnemonic Input Using Keyboard

(1) Bring the position cursor to the location for entering the instruction.

(2) Enter the first letter of the mnemonic of the instruction to be input. The following dialog box appears.

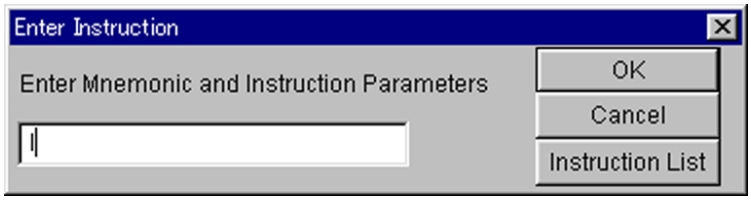


Figure B3.12 Dialog Box for Entering Instruction

The first letter of the instruction mnemonic to be input is displayed in the dialog box.

(3) Finish entering the mnemonic and then select [OK].
Example: MOV D1 D2

(4) The instruction is entered where the position cursor is.

■ Changing Instruction Parameters

● Changing Using Mouse

Double-click on the location where the parameter is to be changed. The parameter input window appears. Input the parameter and click on [OK].

● Changing Using Keys

Bring the position cursor to the location where the parameter is to be changed, and then press [Enter]. Up to 8 characters can be displayed in the input dialog box. Use the arrow keys to scroll.

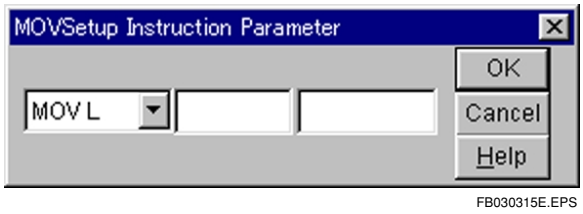


Figure B3.19 Parameter Input Dialog Box (example for MOV command)

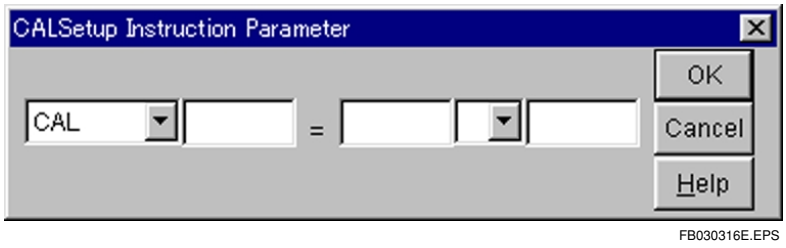


Figure B3.20 Parameter Input Dialog Box (example for CAL command)

Select [OK] to enter the instruction. Select [Cancel] to cancel entering the instruction. Select [Help] to display the help window for that instruction.

TIP

The first field (instruction word field) of the parameter input dialog box is in the form of a drop-down list for easily changing instruction properties (long word instruction, rising edge instruction). Further, for instruction such as CAL, the operators can be changed in the drop-down list.

B3.3.6 Entering Timer Instruction

● Input Using Mouse

(1) Click on the timer instruction input icon on the instruction tool palette.
The indicator of the mouse cursor changes to the form of the TIM instruction.

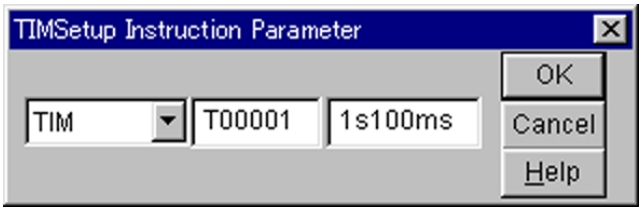
(2) Click on the location for entering the instruction. The TIM instruction is entered at the clicked location.

● Input Using Function Key

(1) Bring the position cursor to the location for entering the instruction.

(2) Press the timer function key.

(3) The timer instruction parameter settings dialog box appears.



FB030317E.EPS

Figure B3.21 TIM Instruction Parameter Setting Dialog Box

(4) Input the parameters and select [OK].

● Changing Parameters

(1) Double-click on the timer instruction and then press the [Enter] key.

(2) The parameter settings dialog box appears.

(3) Input the parameters and select [OK].

B3.3.7 Entering Counter Instruction

● Input Using Mouse

(1) Click on the counter instruction icon on the instruction tool palette. The mouse cursor indicator takes the form of the CNT instruction.

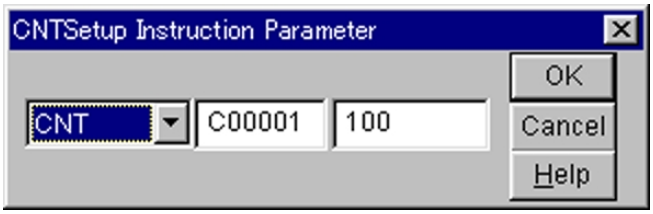
(2) Click on the location for entering the instruction. The CNT instruction is entered at the clicked location.

● Input Using Function Key

(1) Bring the position cursor to the location for entering the instruction.

(2) Press the counter function key.

(3) The counter instruction parameter settings dialog box appears.



FB030318E.EPS

Figure B3.22 CNT Instruction Parameter Setting Dialog Box

(4) Input the parameters and select [OK].

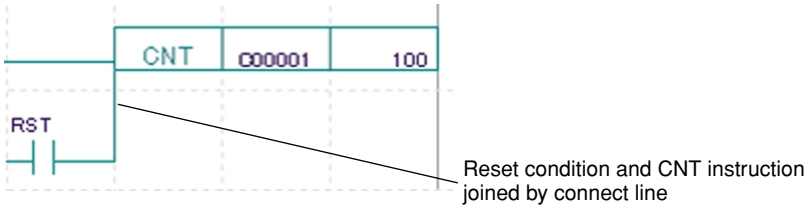
● Changing Parameters

(1) Double-click on the timer instruction and then press the [Enter] key.

(2) The parameter settings dialog box appears.

(3) Input the parameters and select [OK].

The counter reset condition is input on the next line.



FB030319E.EPS

B3.3.8 Deleting Ladder Diagram Elements

Delete ladder diagram elements by the procedure below.

(1) Bring the position cursor to the element to be deleted.

(2) Select [Edit] - [Delete] (or press the [Delete] key).

B3.3.9 Entering Constants (Decimal, Hexadecimal, and Timer Settings), Character Strings, Floating Points, and Block Names

In addition to devices, the instruction parameters include the following:

- Constants
- Text strings
- Floating points
- Block names
- Label names

Some of these instruction parameters cannot be input, depending on the instruction.

■ Entering Constants

● Entering Decimal Constants

There are positive and negative decimal constants.

The ranges that can be handled are as below.

Word instruction	-32768 to 32767(BIN)
Long word instruction	-2147483648 to 2147483647(BIN)

● Entering Hexadecimal Constants

Hexadecimal constants are entered with the prefix [$].

Word instructions can be up to four figures, and long word instructions up to eight figures.

● Entering Timer Settings

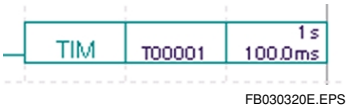
When timer settings use constants, they are entered in the format shown below.

Seconds are suffixed by “s”, and milliseconds by “ms”. Values smaller than a millisecond are entered up to one decimal place.

EXAMPLE:

1s100.0ms indicates 1 second and 100 milliseconds.

Seconds are displayed in the top row and milliseconds up to one decimal place are displayed in the bottom row.



FB030320E.EPS

Figure B3.23 Example of Display of Timer Constant

■ Entering Character Strings

WideField handles text strings of kanji, katakana, alphanumeric and symbols. However, some instructions may not be able to handle certain text strings. Text strings are enclosed in inverted commas (“”).

Word instructions up to 2 ASCII characters can be entered. Long word instructions up to 4 ASCII characters can be entered.

■ Entering Floating Points

The use of floating points is limited to particular commands. Floating points are entered with the prefix “%”. Negative values are entered with “-” after “%”. Floating points can be used with long word commands and floating point instructions.

EXAMPLE:

Display is left-justified, with 8 characters for the argument section and 4 characters for the exponent section.

Display format

%X.XXXXXXEYYY

X.XXXXXX is the argument section, and YYY is the exponent section. The sign is displayed immediately before X.XXXXXX and YYY.

The range of data that can be entered is approximately as follows:

Negative integers $-3.4e^{37}$ to $-1.5e^{-38}$

Positive integers $1.5e^{-38}$ to $3.4e^{37}$

■ Entering Block Names

The block name is input to a parameter of the ACT/INACT instruction. The entered name is always displayed in uppercase.

■ Entering Label Name in Jump or Sub-routine Instruction

The label name is input to a parameter of the JMP/CALL instruction.

B3.3.10 Input/Display of Indexed Devices

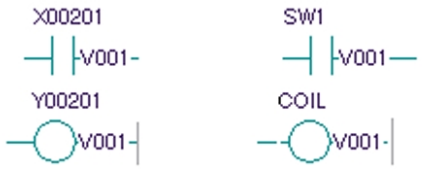
For input indexed devices, place a semi-colon after the device name/tag name, and specify the indexed register. The input method is the same, whether for basic instruction parameters or application instruction parameters.

EXAMPLE:

X201;V001 for input address

SW1;V001 for input tag name

Devices modified by indexes are displayed as below. Tag names can be used for index registers, but the address of the index register is displayed.



FB030321E.EPS

Example of Display of Contact and Coil

FB030322E.EPS

Example of Display of Application Instruction

B3.3.11 Assigning address for Tag Name

If input the tag names that have not been assigned address (undefined tag names) in the circuit edit, addresses must be assigned.

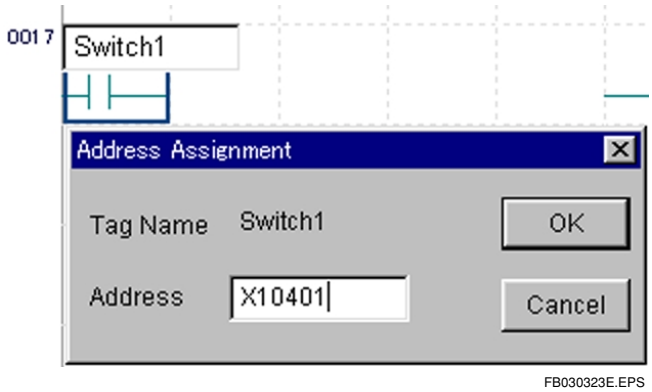


Figure B3.24 Tag Name Address Assignment

When entering circuit instruction parameters, an address assignment dialog box opens if an input tag name has not been assigned an address. When an address is entered, the entered tag name and address are registered automatically in the tag name definition.

CAUTION

Even if “Undo” is selected, the tag name address assignment does not revert to the original address. (The address registered in the tag name definition remains.)

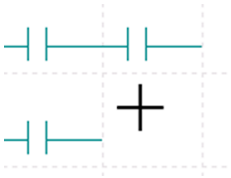
B3.3.12 Inserting Connect Lines

■ Input Using Mouse

Connect lines can be drawn in any direction regardless of whether they are vertical or horizontal lines.

● Inserting Connect Lines

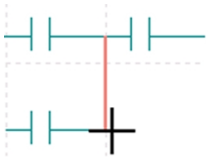
(1) Click on the insertconnect line icon. The mouse cursor changes to the insert connect line cursor.



FB030324E.EPS

Insert Connect Line Cursor

(2) Drag from the start point to the end point. Release the mouse at the end point to draw the connect line. During dragging, the interval between the positions that are being connected is displayed as a bold line in reverse color.



FB030325E.EPS

Display During Drag Operation

The mouse cursor indicator is retained. You can continue drawing lines. To cancel, press the [Esc] key or right-click.

● Deleting Lines

(1) Click on the delete connect line icon. The mouse cursor changes to the delete connect line delete cursor.

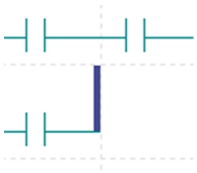
(2) Drag from the start point to the end point. Release the mouse at the end point to erase the connect line. During dragging, the interval between the positions that are being connected is displayed as a bold dotted line in reverse color.
The mouse cursor indicator is retained. You can continue erasing lines. To cancel, press the [Esc] key or right-click.

■ Input Using Function Key

● Entering Vertical Connect Lines

Select the vertical connect line function key. The position cursor changes into the vertical line cursor.

Use the arrow keys to bring the cursor to the input position and press the [Enter] key.



FB030326E.EPS

Figure B3.25 Vertical Line Cursor

The indicator for the vertical line cursor remains after input. To continue entering vertical lines, use the arrow keys to move the vertical line cursor and press the [Enter] key. Press the [Esc] key to cancel.

● Deleting Vertical Connect Line

Press the vertical connect line delete function key, and do the same operation as for input.

The vertical line delete cursor is displayed as with dotted line.

● Entering Horizontal Connect Line

Select the horizontal connect line function key. The horizontal connect line is entered where the position cursor is.

FB030327E.EPS

● Deleting Horizontal Connect Line

Bring the position cursor to the horizontal line to be deleted and select the [Delete] key, in the same way as for ordinary ladder diagram elements.

B3.3.13 Entering Continuation Circuit

● Input Using Mouse

(1) Select the continuation line icon from the tool palette.

(2) Click on the position where the continuation line is to be entered.
When the beginning of the line is clicked, the continuation line is generated from the previous line.
When the line is clicked midway, the continued line is generated to lead to the next line.

● Input Using Function Key

(1) Bring the position cursor to the location where the continuation line is to be written.

(2) Select the continuation line function key.
When the position cursor is at the beginning of the line, the continuation line is generated from the previous line.
When the position cursor is midway in the line, the continuation line is generated to lead to the next line.

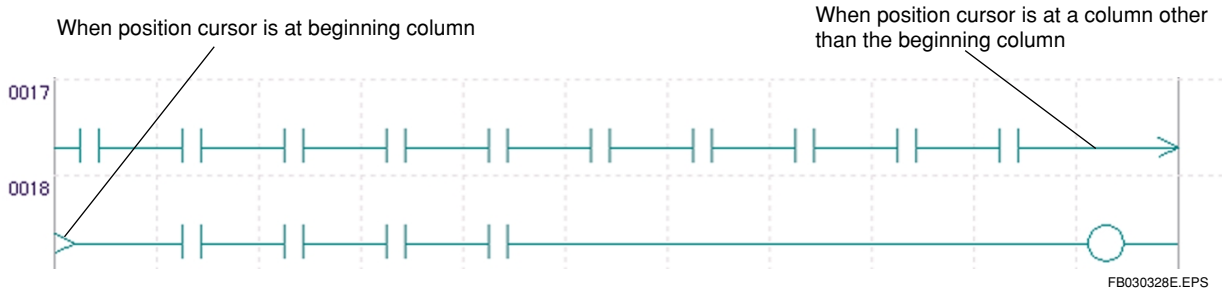


Figure B3.26 Entering continuation Line

B3.3.14 Entering Label

● Input Using Mouse

(1) Select the label icon and click on the line where the label is to be entered. The label edit dialog box opens.

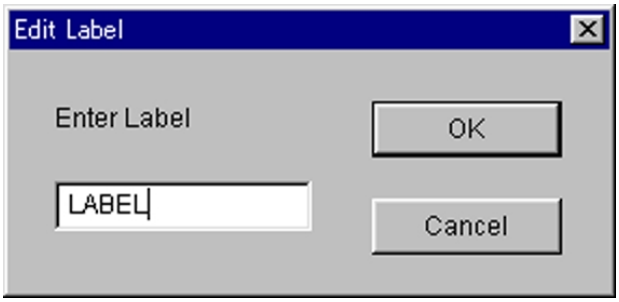


Figure B3.27 Label Edit Dialog Box

(2) Input the label and click [OK], and the label is entered.

Figure B3.28 Display of Label

● Input Using Keyboard

(1) Bring the position cursor to the line where the label is to be entered.

(2) Press [Ctrl]+ [F6], and label input window appears.

(3) Input the label and press the [Enter], and the label is entered.

● Editing Labels

To edit labels, use the same method as for input.

(1) Bring the position cursor to the line where the label is to be entered, and press [Ctrl] + [F6].

(2) Change the label icon and click on the line where the label is to be written.
In both steps (1) and (2), label input window opens. The currently set label is displayed initially. When a new label is input and the [Enter] key pressed, the label changes.

● Deleting Labels

Delete the all characters in the label input window and select [OK].

B3.3.15 Inserting Empty Lines

To insert an empty line into the ladder diagram, select [Edit] - [Insert Line] from the menu.

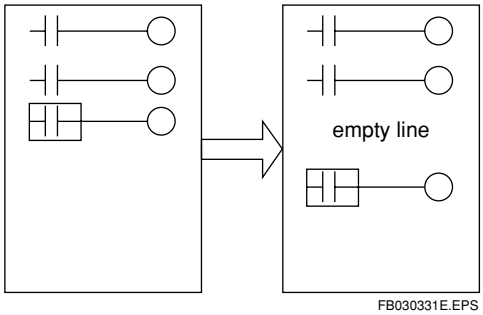


Figure B3.29 Inserting Empty Lines

B3.3.16 Selecting Lines

Lines must be selected for line operations (copy, move, delete). They can be selected using the mouse or the keyboard.

To select lines using the mouse, make the mouse indicator the selector cursor (usual cursor), and drag it to the line number area. Up to 100 lines can be selected at the one time. No more than 100 lines can be selected.

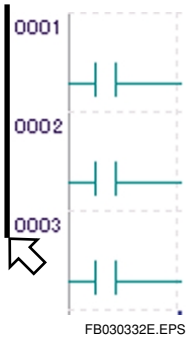


Figure B3.30 Selecting Lines Using Mouse (dragging to line number area)

To select lines using the keyboard, press the [Shift] key plus the up/down arrow keys.

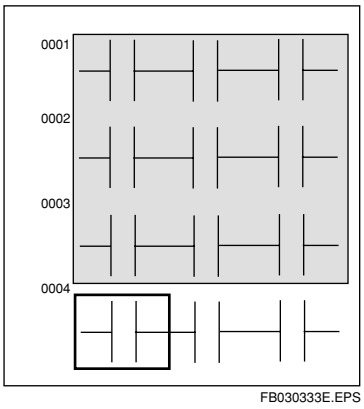


Figure B3.31 Selecting Lines Using Keyboard

B3.3.17 Deleting Lines

Lines in specified areas can be deleted in line units.
The circuit comment and subcomment are also deleted.

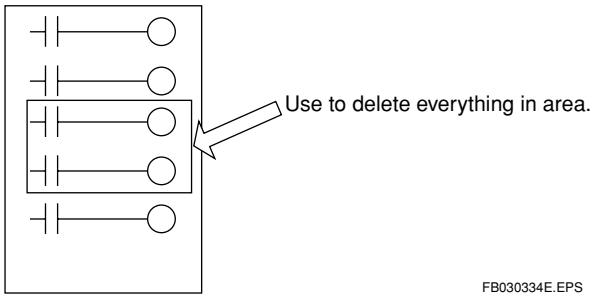


Figure B3.32 Deleting Lines

■ Procedure for Deleting Lines

(1) Select the line.

(2) Select [Edit] - [Delete Line], or press the [Delete] key. The following dialog box appears.

Figure B3.3 Dialog Box for Confirming Deletion of Line

(3) Select [Yes] to delete the line.
Deleted lines cannot be recovered.

B3.3.18 Temporarily Deleting Lines/Recovering Temporarily Deleted Lines

■ Temporarily Deleting Lines

Lines in specified areas can be temporarily deleted in line units. Temporarily deleted lines are displayed with the background color changed.

This function is handy for temporarily deleting lines of circuits while editing programs, when it is not clear whether the lines should be deleted or not.

Circuit comments and sub-comments is also deleted temporarily.

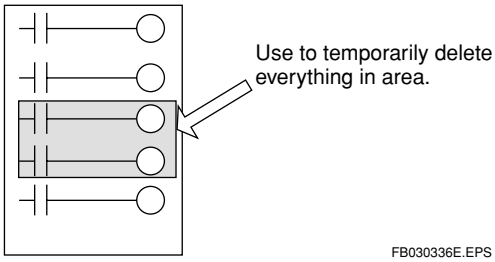


Figure B3.32 Deleting Temporarily

(1) Select the line.

(2) Select [Edit] - [Temporary Delete], or press the [Delete] key. The following dialog box appears.

TIP

When the block is converted, temporarily deleted lines are deleted from the program.

■ Recovering Temporarily Deleted Lines

Temporarily deleted lines in a specified area can be recovered so that they can be edited as usual.

(1) Select the temporarily deleted lines.

(2) Select [Edit] - [Undo Temporary Deleted].
The selected lines revert to ordinary edit status.

B3.3.19 Copying and Pasting Lines

Lines in specified areas can be copied and moved to specified positions in line units. Lines can be copied and pasted to the same or a different window.

Circuit comments and sub-comments can be copied and pasted as well.

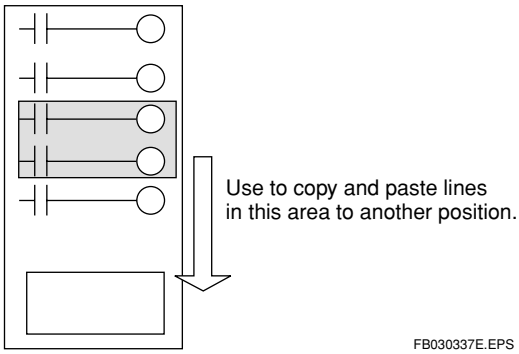


Figure B3.35 Copying and Pasting

(1) Select the line/s to copy and paste.

(2) Select [Edit] - [Copy] or [Cut].
When [Cut] is selected, selected lines are cleared from the screen. (The move function is activated.)

(3) Bring the position cursor to the place for inserting the lines.
To copy and paste to another screen, bring the position cursor to the paste position on the other screen.

(4) Select [Paste] from the Edit menu.
The lines are inserted where the position cursor is.

CAUTION

The operation for copying to another screen is as follows:

- The addresses of the circuit elements actually assigned to the circuit to be copied are copied. If different tag names are assigned to the destination block, the lines will be displayed with the tag names of the destination block.

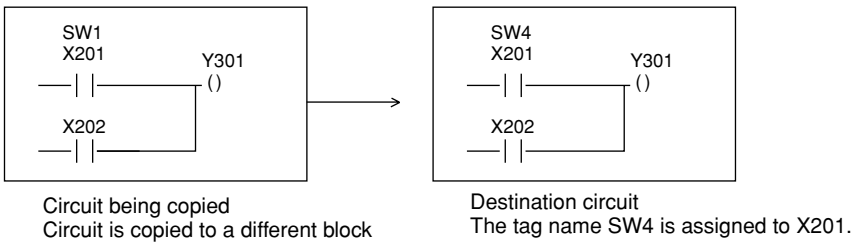


Figure B3.36

B3.3.20 Copying Circuit Image

Using the same procedure as for copying lines, select [Edit] - [Copy Image] to copy the circuit edit image to the clipboard in bit-map format. The copied circuit image can be pasted to such software as MS-Paint and MS-Word.

B3.3.21 Canceling Operation

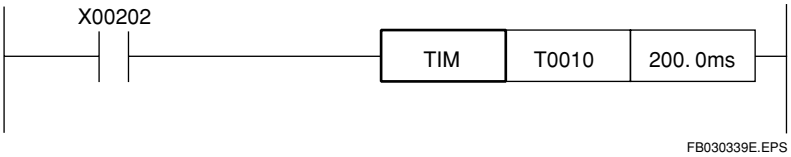
You can cancel the process you have just done.

- Press the [Delete] key to recover a instruction or comment you have just deleted.
- The entered instruction reverts to its status prior to being deleted.

■ Recovering Deleted Instruction/Comment

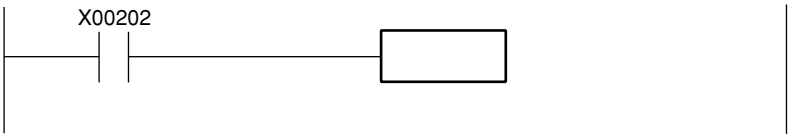
Press the [Delete] key to delete the instruction or comment where the position cursor is. If this deletion is a mistake, you can cancel this operation.

Input example:



FB030339E.EPS

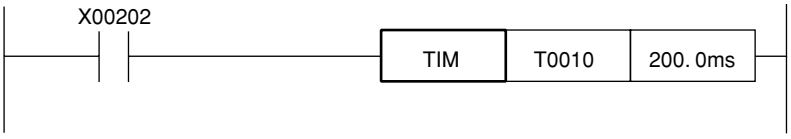
(1) The timer instruction is deleted when the [Delete] key is pressed.



FB030340E.EPS

(2) Select [Edit] - [Undo].

(3) The timer instruction is recovered.



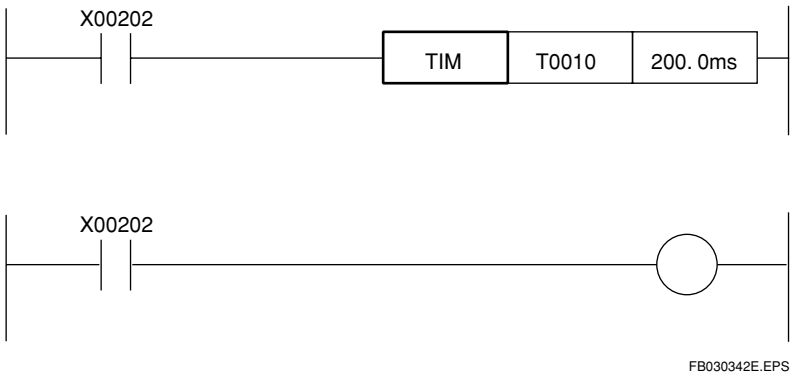
FB030341E.EPS

■ Reverting to Status Prior to Input

If the wrong instruction, etc. is input, you can delete the instruction and revert to the former status.

EXAMPLE:

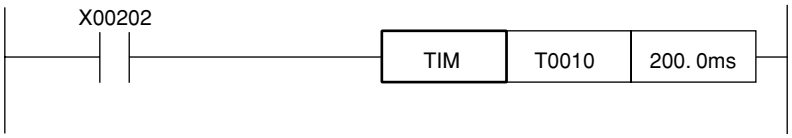
(1) When —◯— is input in overwrite mode, the instruction is overwritten.



FB030342E.EPS

(2) Select [Edit] - [Undo].

(3) The timer instruction is recovered.



FB030343E.EPS

CAUTION

- Operations can be cancelled only when the input/deleted line is in the screen area. Once you scroll the screen, a previous deletion cannot be cancelled. Also, after conversion, operations cannot be cancelled.
- Assignment of addresses to tag names cannot be reverted. (The tag name definition is registered as is.)

B3.3.22 Overwrite Mode and Insert Mode

The input mode for instructions can be overwrite mode or insert mode.

Usually, editing is done in overwrite mode, but insert mode is used for inserting instructions.

● Overwrite Mode

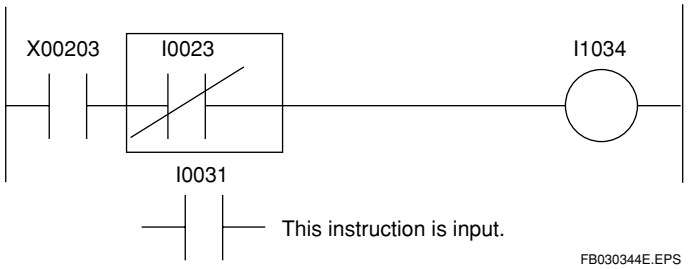
If an instruction is already where the position cursor is, that instruction is cleared and replaced by the newly input instruction.

● Insert Mode

If an instruction is already where the position cursor is, that instruction is moved to the right and in its place the newly input instruction is inserted.

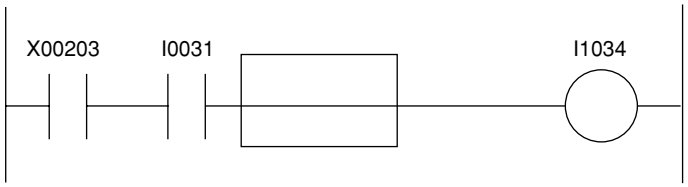
EXAMPLE:

The following example shows the difference between overwrite mode and insert mode for when an instruction is input where the position cursor is.



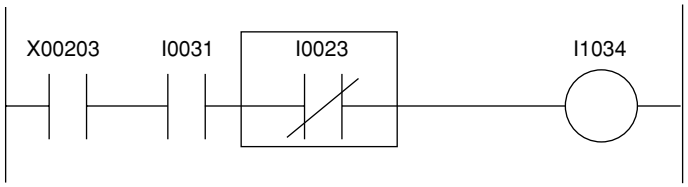
FB030344E.EPS

● In Overwrite Mode



FB030345E.EPS

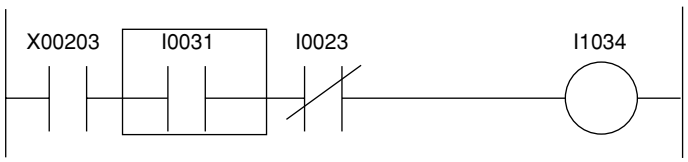
● In Insert Mode



FB030346E.EPS

EXAMPLE:

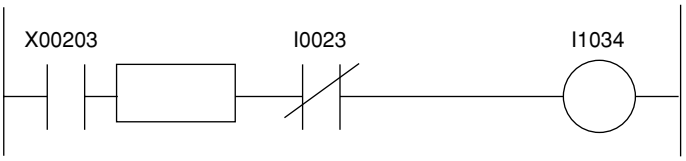
The following example shows the difference between overwrite mode and insert mode for when the [Delete] key is used to delete an instruction where the position cursor is.



FB030347E.EPS

● In Overwrite Mode

The instruction located at the position cursor is deleted.



FB0303408E.EPS

● In Insert Mode

The instruction located at the position cursor is deleted and the instruction on the right shifts.

FB030349E.EPS

TIP

Insert mode is valid for input-type instructions. If output-type instructions are used in insert mode, it overwrites the existing output-type instruction.

B3.3.23 Inputting and Deleting Circuit Comments

Circuit comments are comments that can be written in the same way as circuits. They are always displayed on the block edit screen. Comments are input in line units, and up to 4 lines can be input per comment.

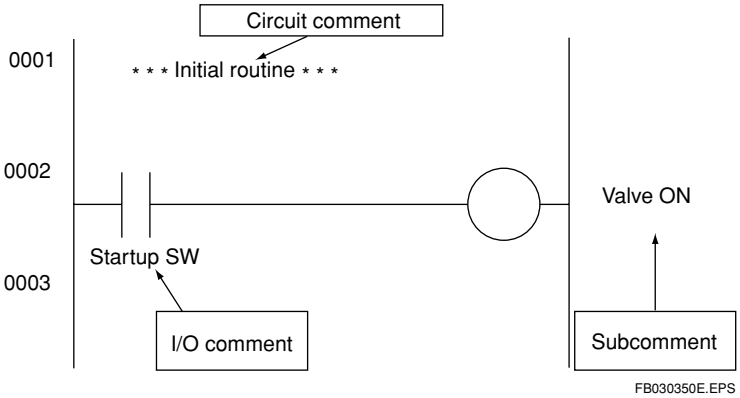


Figure B3.37 Kind of Comments and Example of the display

■ Inputting Circuit Comment

● Input Using Mouse

(1) Click on the circuit comment icon on the instruction tool palette. The mouse cursor changes to the circuit comment input indicator.

(2) Click on the position for inputting the circuit comment. A circuit comment input window opens at the clicked location.

(3) Input the circuit comment and press the [Enter] key. The circuit comment is inserted.

CAUTION

The selected mouse cursor indicator is retained after input. You can continue writing circuit comments; click on the location where you want to write the next comment. To return the mouse cursor to it's former indicator, press the [Esc] key, right-click, or select using the tool palette selector.

The position cursor for circuit comments encloses a line at a time.

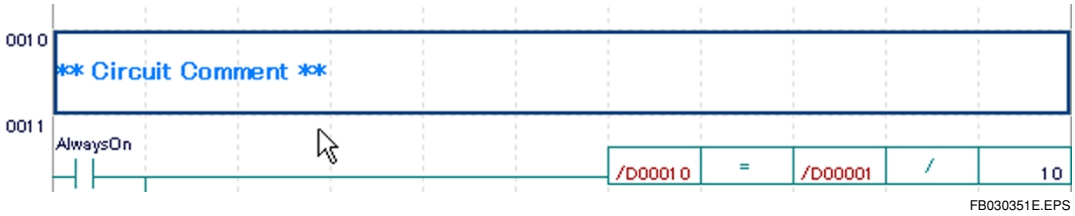


Figure B3.38 Example of Circuit Comment Input

● Input Using Keyboard

(1) Bring the position cursor below the position for inputting the circuit comment.

(2) Select [Ctrl] + [F7]. A circuit comment input field appears at the location of the position cursor.

(3) Enter the circuit comment and press the [Enter] key. The circuit comment is inserted.

● Editing Circuit Comment

There are two ways of editing an existing circuit comment:

(1) Bring the position cursor to where the circuit comment is and press the [Enter] key.

(2) Double-click on the circuit comment.
For both methods, a circuit comment input window opens. Enter changes here and press the [Enter] key. The circuit comment is modified.

■ Deleting Circuit Comment

Bring the position cursor to where the circuit comment is and select [Edit] - [Delete] or press the [Delete] key. The circuit comment is deleted. If all the text is deleted for a circuit comment during circuit comment input, it is left as an empty circuit comment line and the circuit comment line is not deleted.

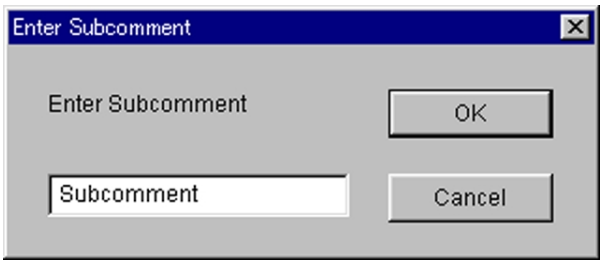
B3.3.24 Entering and Deleting Subcomments

Subcomments are comments that can be written to output-type instructions. They are displayed in the subcomment display area. Subcomments are entered in units of one instruction.

■ Entering Subcomments

● Input Using Mouse

(1) Select the subcomment icon and click on the line where the subcomment is to be input. The dialog box for editing the subcomment appears.



FB030352E.EPS

Figure B3.39 Subcomment Edit Dialog Box

(2) Input the subcomment and select [OK]. The subcomment is entered. The entered subcomment is displayed left-justified.

FB030353E.EPS

Figure B3.40 Example of Subcomment Display

● Input Using Keyboard

(1) Bring the position cursor to the line where the subcomment is to be input.

(2) Press [Ctrl] + [F9]. The dialog box for editing the subcomment appears.

(3) Input the subcomment and press the [Enter] key. The subcomment is entered.

■ Editing Subcomments

To edit a subcomment, use the same method as for input.

(1) Bring the position cursor to the line where the subcomment is to be input, and press [Ctrl] + [F9].

(2) Change to the subcomment cursor. Click on the line where the subcomment is to be input. For both (1) and (2), the subcomment input window opens. The subcomment that has been input already is displayed as the initial display. That subcomment is modified when a new subcomment is input and the [Enter] key pressed.

■ Deleting Subcomments

Delete all the characters in the subcomment window and select [OK]. The subcomment is deleted.

B3.3.25 Entering and Deleting I/O Comments

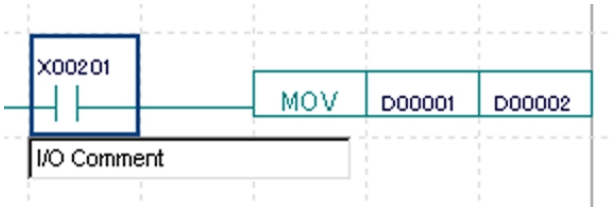
I/O comments are comments that can be written to devices. They are displayed in the I/O comment display area.

■ Entering I/O Comments

● Input Using Mouse

(1) Select the I/O comment icon.

(2) Select the element assigned to the address. The I/O comment input field appears. If the field already contains an I/O comment, this comment is displayed initially.
EXAMPLE



FB030354E.EPS

(3) Input the I/O comment and press the [Enter] key. The comment is entered.

TIP

The entered I/O comment is reflected in the block tag name definition. Press the [Esc] key to clear the input field.

● Input Using Keyboard

(1) Bring the position cursor to the I/O comment input element.

(2) Press [Ctrl] + [F8]. The I/O comment input field appears. If the field already contains an I/O comment, this comment is displayed initially.

(3) Input the I/O comment and press the [Enter] key. The I/O comment is entered.

■ Editing I/O Comments

To edit an I/O comment, use the same method as for input.

(1) Bring the position cursor to the I/O comment input element and press [Ctrl] + [F8].

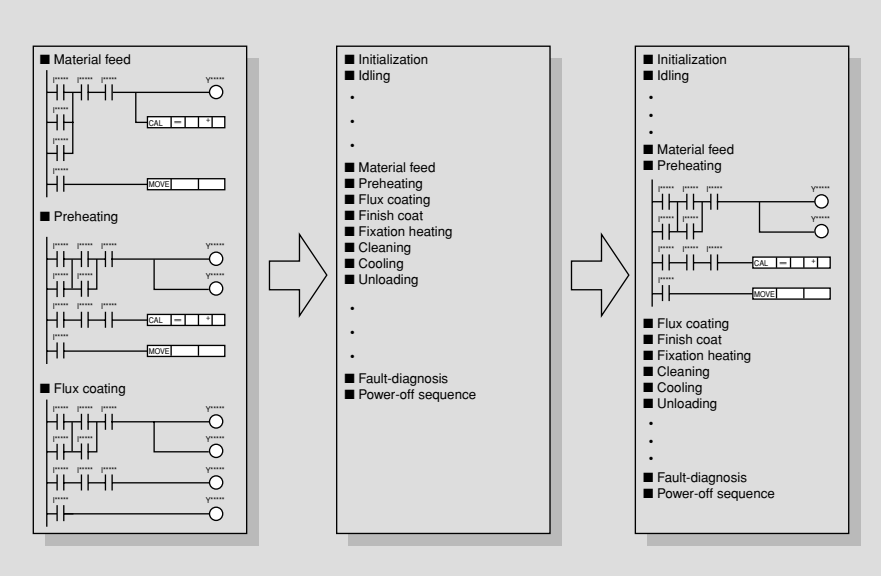
(2) Select the I/O comment icon, and click on the input element.
For both (1) and (2), the I/O comment input window opens. The I/O comment that has been input already is displayed as the initial display. That I/O comment is modified when a new I/O comment is input and the [Enter] key pressed.

■ Deleting I/O Comments

In the operation for editing I/O comments, delete all the characters in the I/O comment and press the [Enter] key.

B3.3.26 Index View

The index view uses circuit comments as indexes, and hides circuits written up to the next circuit comment. The index view is effective for grasping the overall flow of the ladder circuit first, before editing the details.

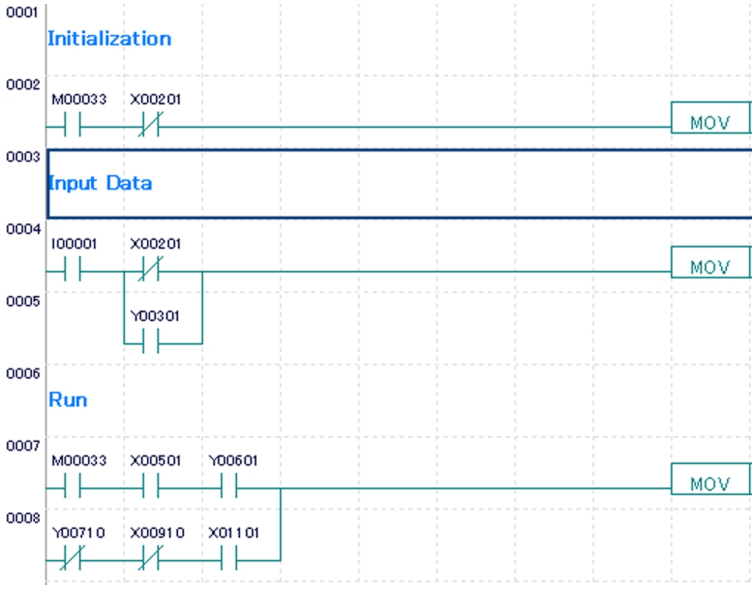


FB030355E.EPS

Figure B3.41 Conceptual View of Folding Function

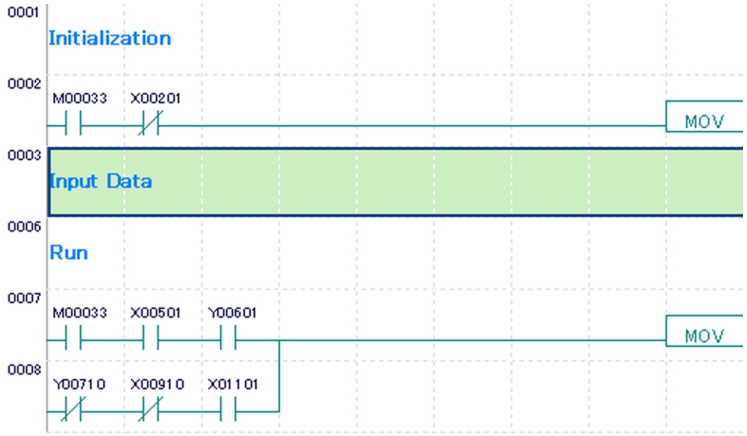
● Hiding Circuits

Bring the position cursor to the circuit comment and select [Edit] - [Hide Circuit]. The circuits up to the next circuit comment are hidden. The circuit comment is highlighted.



FB030356E.EPS

Circuit prior to hiding



FB030357E.EPS

Circuit after hiding

(Example where the third to the sixth circuit comments have been hidden)

Figure B3.42 Example of Folded Circuits

CAUTION

When the last circuit comment of the program has been hidden, the circuits through to the end of the program are hidden.

Highlighted circuit comments indicate circuits where modification is prohibited.

The index view maintains the hide status even when the file has been closed and then opened again.

● Showing Circuit

Bring the position cursor to the hidden circuit comment and select [Edit] - [Show Circuit]. The hidden circuit is displayed.

● Hiding All Circuits

Select [Edit] - [Hide All Circuits]. All circuits in the block are hidden. However, this function does not work when the first line of the block has no circuit comment.

● Showing All Circuits

Select [Edit] - [Show All Circuits]. All hidden circuits in the block are unfolded. When all circuits are shown, the position cursor line is displayed at the top.

B3.3.27 Page Break Function

When “@” is input as the first letter of a circuit comment, this circuit comment is printed at the top of the page at printout. Input it directly by editing the circuit comment.

To cancel the page break function, delete the @ symbol by editing the circuit comment.

The @ symbol can be input at the beginning of a circuit comment by bringing the position cursor to the circuit comment and selecting [Edit] - [Page Break].

B3.4 Switching Display

The ladder diagram edit screen can be switched to display or hide information, and information can be displayed in different sizes using the Zoom function.

B3.4.1 Switching Display for I/O Comments, Tag Names and Addresses, and Instruction Numbers

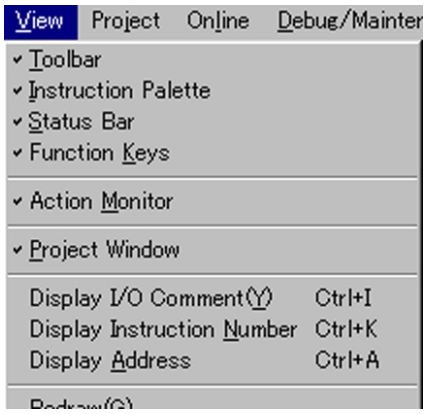
Display can be switched for the items listed in the table below. The setting is valid until the edit screen closes.

Table B3.3 View Function

Item	Function
Display I/O Comment	Displays I/O comments under the ladder diagram components. The same number of I/O comments is displayed as the number of lines set in the environment setting. I/O comments exceeding this amount are not displayed.
Display Address	Switches display from tag name to address.
Display Instruction Number	Displays the instruction number of the first ladder diagram comment under the line no. The instruction number is the five-digit number under the line no., and is displayed with N prefixing the instruction number of the first element of the circuit. If a label has been defined, the instruction number is not displayed on this line.

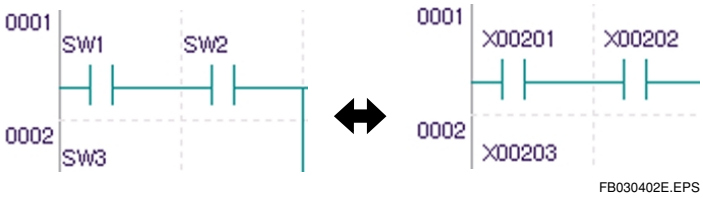
TB030401E.EPS

To switch display, select [View] - [Item] (Display I/O Comment, Display Address, Display Instruction Number) from the menu. The menu item is checkmarked to indicate the current display setting. To cancel this, again select [View] - [Item] from the menu.



FB030401E.EPS

Figure B3.43 Menu for Switching Display



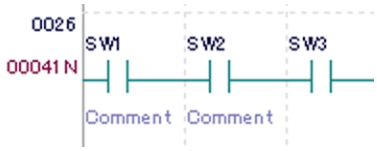
FB030402E.EPS

1: Example of display where address display is not selected

2: Example of display where address display s selected

FB030403E.EPS

3: Example of display where instruction number display is selected



FB030404E.EPS

4: Example of display where I/O comment display is selected

Figure B3.44 Examples of Display Settings

CAUTION

An instruction number is the number assigned to each mnemonic instruction when the ladder diagram is changed into mnemonics. The instruction number is not assigned to circuit comments, subcomments, and I/O comments.

When the circuit has not been converted, the instruction number may not display the correct value. The correct value will be displayed after conversion.

B3.4.2 Zoom Up/Zoom Down

To enlarge the display, select [View] - [Zoom] - [Zoom Up].

To reduce the display, select [View] - [Zoom] - [Zoom Down].

The Zoom function provides 7 degrees of size: three degrees larger, one standard size, and three degrees smaller.

FB030405E.EPS

Figure B3.45 Zoom Menu

B3.5 Displaying Conversion and Errors

The entered circuits are converted into the instruction language.

■ Conversion Procedure

Select [Edit] - [Convert] to convert the entered circuits to the instruction language.

At conversion, the following items are checked:

- Whether there are mistakes in the circuits
- Whether the instruction parameters have been input correctly
- Whether the labels have been input correctly

When the circuits are converted, temporarily deleted lines are cleared from the screen and the deleted lines cannot be recovered. At the same time, the circuits are formed and displayed.

If conversion ends successfully, the successful end dialog message appears.

If a conversion error occurs, the error dialog box appears, and the position cursor moves to where the error is.

CAUTION

The first error that is found during conversion is displayed in the dialog box. Resume converting after correcting this error.

If a folded circuit contains a conversion error, the error is unfolded and the display jumps to the beginning of the circuit having the error.

B3.6 Find/Replace

There are two types of search function, Find Device and Find Instruction.

B3.6.1 Find Device

The Find Device function searches for the three following targets:

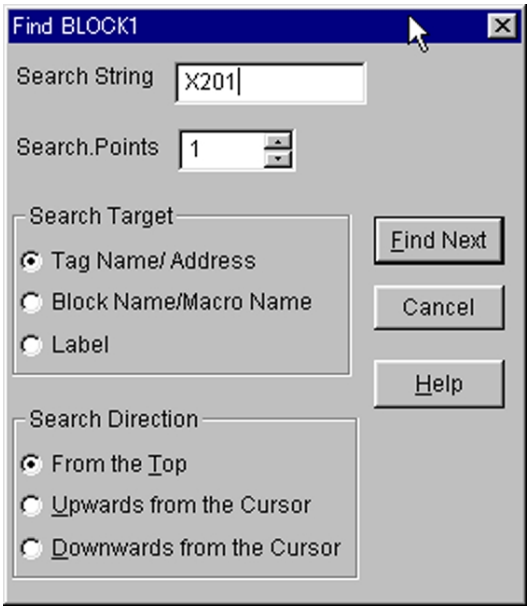
- Tag name/address
- Block name and macro name of macro instructions used in ACT/INACT instructions
- Label (the label itself, and jump and sub-routine instructions having a label as a parameter)

Tag names and addresses can be searched by specifying a device range.

■ Procedure for Ordinary Search

Select [Find] - [Convert] to convert the entered circuits to the instruction language.

Select [Find] - [Find]. The following dialog box appears.



FB030601E.EPS

Figure B3.46 Find Dialog Box

(1) Input the search string.
Input the search string, and specify “1” for the number of searches.

(2) Select the target to be searched.
For tag name/address, the tag names and addresses used in the circuit are searched. For a block name, the block names used with the ACT/INACT instruction are searched. For a label, lines and instructions using labels are searched.

(3) Select the search direction.
When [From the Top] is selected, the block is searched from the beginning to the last line.
When [Upwards from the Cursor] is selected, the block is searched from the position cursor location to the beginning of the block.
When [Downwards from the Cursor] is selected, the block is searched from the position cursor location to the last line of the block.

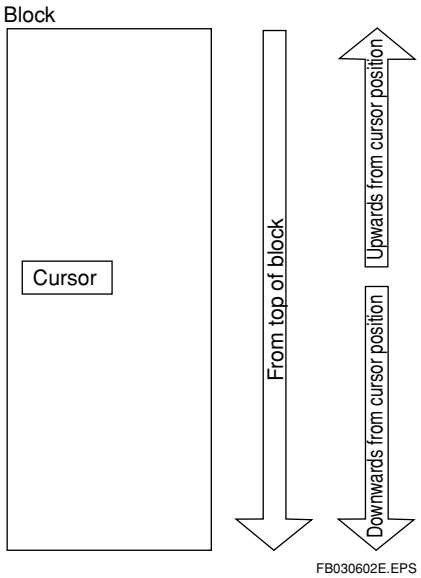


Figure B3.47 Search Direction

(4) Select [Find Next].
If the searched string is found, the display switches to the display containing the searched string.

CAUTION

If the searched string is found in a folded circuit, that circuit is unfolded.

■ Procedures for Searching Tag Names and Addresses in a Specified Range

When the search string is a tag name or address, the search can be confined to a particular range of tag names or addresses by specifying the number of search points. From 1 to 2,048 points can be searched. For example, in the specification below, addresses from X201 to X232 are searched.

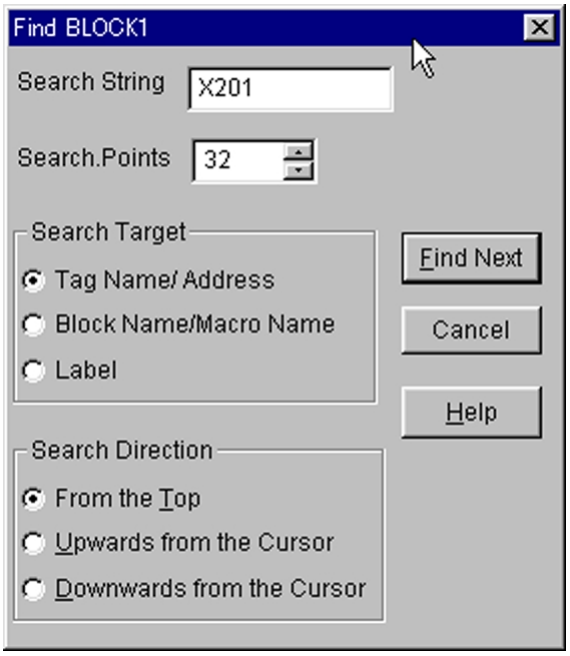
Search string X201 Number of search points 32

When a tag name is specified for the search string, addresses amount of search point number is searched from the address assigned to the tag name.

Search string SW1 Number of search points 32

When SW1 is assigned to X301, X301, X302....X332 are searched.

Select [Find] - [Find]. The following dialog box appears.



FB030603E.EPS

Figure 3.48 Find dialog box for specifying number of search points

(1) Enter the search string.
Enter the search string.

(2) Specify the number of search points.
Specify the number of points to search in the address specified by the search string.

(3) Select the search target.
Select tag name/address.

(4) Select the search direction.
When [From the Top] is selected, the block is searched from the beginning to the last line.
When [Upwards from the Cursor] is selected, the block is searched from the position cursor location to the beginning of the block.
When [Downwards from the Cursor] is selected, the block is searched from the position cursor location to the last line of the block.

(5) Select [Find Next].
If the searched string is found, the display switches to the display containing that string.

CAUTION

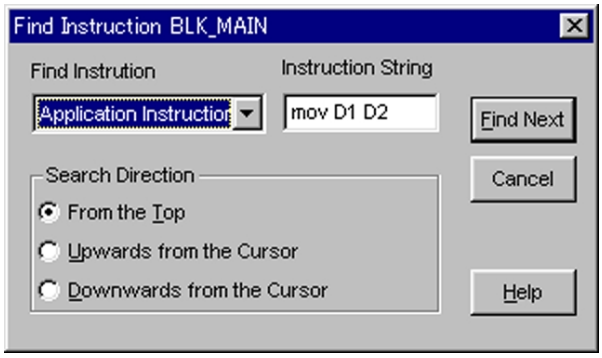
If the searched string is found in a folded circuit, that circuit is unfolded.

B3.6.2 Find Instruction

Find Instruction is a function for searching instructions used in blocks.

■ Procedure for Find Instruction

Select [Find] - [Find Instruction]. The Find Instruction dialog box opens.



FB030604E.EPS

(1) Select the instruction type to be searched from the Find Instruction drop-down list.

Selectable instructions are ⊣ ⊢, ⊣/⊢, —◯, —⊘, and application instructions.

(2) Enter the search string in the instruction string.
For basic instructions, specify a parameter. This can be omitted.
For application instructions, specify an instruction mnemonic. Input can include parameters.
For searching with an option, specify as below, using a space for demarcation.
EXAMPLE:
MOV L P D1 D2 Search with long word and rising-edge options
MOV L D1 D2 Search with long word option

TIP

For searching without specifying options, instructions with options are searched.

(3) When [Find Next] is selected, the search begins according to the search direction. Search can be done in three ways: from the top, from the cursor position up, and from the cursor position down.

(4) When [Cancel] is selected, the Find window closes.

Even when the window has been closed, if [Find] - [Find Next] is selected, the previous search contents can be searched. After searching to the end of the block (or to the top of the block from above the cursor position), the [Search ended] dialog box appears. If the search used no index modifiers, instructions with index modifiers are also found if they match the search pattern.

CAUTION

If the searched string is found in a folded circuit, that circuit is unfolded.

B3.6.3 Finding Next Candidate

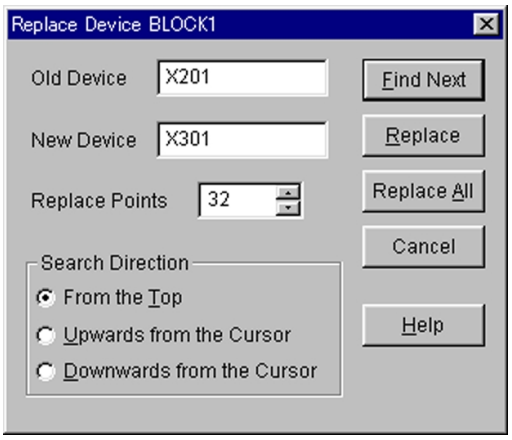
After closing the dialog box for a device search or instruction search, the previous search conditions are remembered. Select [Find] - [Find Next] to continue searching.

B3.6.4 Replace

The replace function is for replacing the tag name/address with a specified tag name/address. In addition to replacing one corresponding tag name/address, consecutive addresses up to 2,048 points can be replaced with the one operation.

■ Procedure for Replacing

Select [Find] - [Replace]. The following dialog box appears.



FB030605E.EPS

(1) Input the tag name/address to be replaced.
Input either the tag name or device address to be replaced.

(2) nput the tag name/address to replace the current one.
Input either the tag name or device address to replace the current one.

(3) Specify the number of replace points.
Specify the replacement range from the specified tag name or address. For example, to replace 32 points from X201, specify 32 for the number of replacement points; then the address from X201 through X232 will be replaced by X301 through X332.

(4) Select the search direction.

(5) Select [Find Next]. Bring the position cursor to the position of the tag name/address to replace.

(6) Select [Replace] and the tag name/address at the position cursor will be replaced. To continue replacing, select [Find Next] again, and find the target to replace. To replace all targets, select [Replace All].

CAUTION

- When the number of points to be replaced is specified with the tag name, the number of points is from the address assigned to the replacement tag name. If the address is not correct after replacement, an error occurs.
- If the replacement tag name is not specified, replacement cannot be done. In this case, the error message [Tag address not assigned] appears in the dialog box.
- If the searched string is found in a hidden 0circuit, that circuit is unfolded.

B3.6.5 Jump

The jump function switches the display of the window of the specified line in the program. There are four jump functions. These are operated from the menu, by selecting [Find] - [Jump], and then the jump destination.

● Jump to Top Line

The window switches to the top line of the program, and the position cursor moves to the first ladder diagram component.

● Jump to Last Line

The window switches to the display that contains the last line of the program, and the position cursor moves to the first ladder diagram component on the last line.

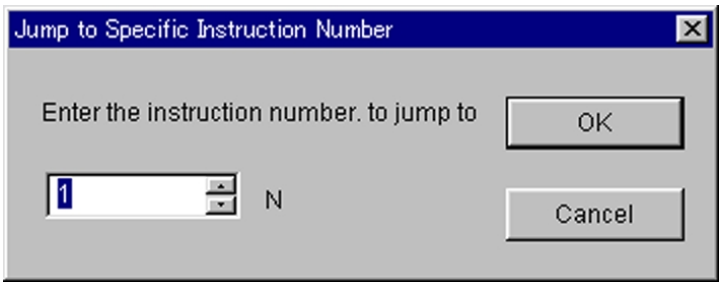
● Jump to Specific Line

The window switches so that the specified line is at the top of the display, and the position cursor moves to the first ladder diagram component on the specified line.

● Jump to Specific Instruction Number

The window switches so that the circuit containing the specified instruction number is at the top of the display, and the position cursor moves to the first ladder diagram component.

When specified line jump or specified instruction number jump is selected, the dialog box below appears. (For an instruction number, the message [Enter the instruction number to jump to] is displayed.) Enter the line no. or the instruction number to jump to, and select [OK].



FB030606E.EPS

Figure B3.49 Jump Dialog Box for Line no. Specification

B3.6.6 Displaying Device Usage Status

Devices used in a block can be searched.

■ Procedure for Displaying Status of Device Usage

Select [Find] - [Device Usage Status]. The dialog box below appears.

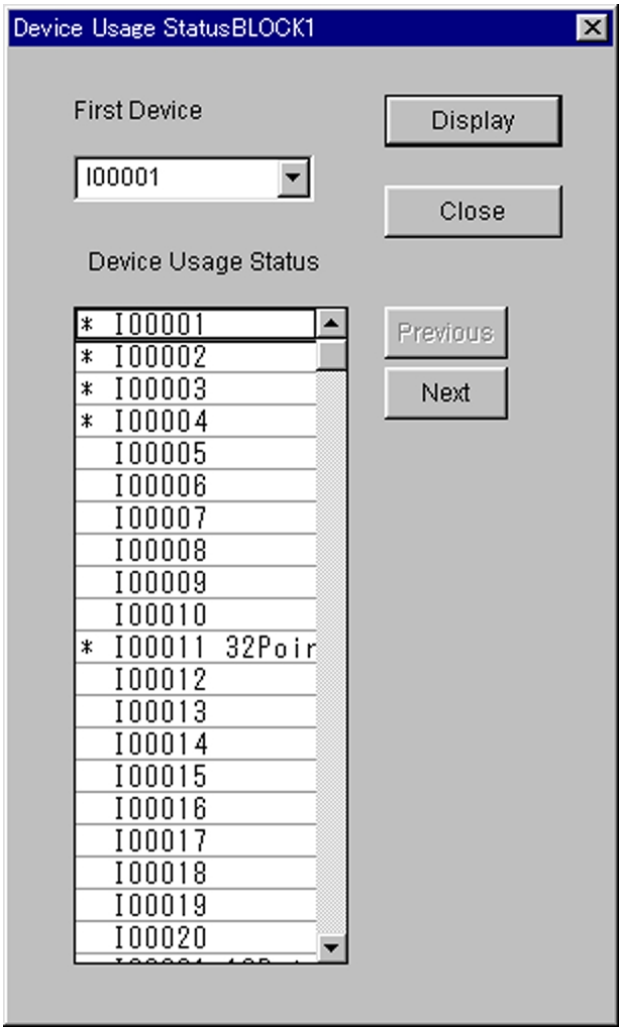


Figure B3.50 Device Usage Status

(1) Enter the device address in the First Device field.

(2) Select [Display]. The device usage status is displayed from the specified device. Up to 256 devices can be displayed at the one time. To display more devices, select [Next]. The next 256 devices are displayed. Select [Previous] to display the previous 256 devices.
Devices used in the program are prefixed by an asterisk. The number of devices used (2 points, 16 points, 32 points) is displayed to the right of the device address. Two points are used for long word instructions with word devices, and 16 points and 32 points are used for words and long words with bit devices. However, when the number of used points is 1, this is left out. Devices used with special instructions that affect multiple devices, and devices modified by indexes are indicated by “Multi-point” on the right of the device address, instead of the number of used points.

CAUTION

- Only devices of converted blocks being edited can be displayed.
- The device usage status for the overall project can be looked up by selecting [Project] - [Project Device Usage Status].

Blank Page

B4. Assigning Tag Names

B4.1 About Tag Name Definition

This section outlines the tag name definition function.

Tag name definition is a function for attaching tag names and I/O comments to addresses. Grouped tag names can also be used for tag names.
The created program is easier to understand when tag names and I/O comments are attached.

There are 3 types of tag name definition: common tag name definition, where the definitions are shared among programs; block tag name definition, where tags used in blocks are defined; and macro tag name definition, where tags used in instruction macros are defined.

In the Tag Name Definition screen, data can be copied and pasted between tables with assigned tag names that have been created with MS-Excel or a similar program.

B4.1.1 Common Tag Name Definitions, Block Tag Name Definitions and Macro Tag Name Definitions

This section describes the differences among common tag name definitions, block tag name definitions, and macro tag name definitions

● Common Tag Name Definitions

These define the tag names used in common by all blocks making up the executable program of the project. After definition, it is reflected in the TAG NAME DEFINITION of each project, and is thus usable by each project. The tag name definitions of all devices except local devices and macro devices can be common tag name definitions.

● Block Tag Name Definitions

These define the tag names used in a particular block. Tag names defined in other blocks cannot be used. The tag name definitions of all devices except macro devices can be block tag name definitions.

● Macro Tag Name Definitions

These define the tag names used in a particular instruction macro. Tag names defined in other macros cannot be used. The tag name definitions of all devices can be macro tag name definitions.

Table B4.1: Devices That Can be Defined

Device Type	Common Tag Name Definitions	Block Tag Name Definitions	Macro Tag Name Definitions
Input Relay (X)	○	○	○
Output Relay (Y)	○	○	○
Internal Relay (I)	○	○	○
Local Internal Relay (/I)	×	○	○
Shared Relay (E)	○	○	○
Link Relay (L)	○	○	○
Special Relay (M)	○	○	○
Timer (T)	○	○	○
Local Timer (/T)	×	○	○
Counter (C)	○	○	○
Local Counter (/C)	×	○	○
Data Register (D)	○	○	○
Local Data Register (/D)	×	○	○
File Register (B)	○	○	○
Local File Register (/B)	×	○	○
Shared Register (R)	○	○	○
Link Register (W)	○	○	○
Index Register (V)	○	○	○
Special Register (Z)	○	○	○
Macro Relay (H)	×	×	○
Macro Register (A)	×	×	○
Macro Index Register (U)	×	×	○
Macro Pointer Register (P)	×	×	○

TB040101E.EPS

○: Devices that can have tag name definitions
×: Devices that cannot have tag name definitions

B4.1.2 Cautions for Defining Tag Name Definitions

Tag name definitions have the following limitations.

● Duplicate Definition of Address

Addresses that have been registered already cannot be registered again.

● Duplicate Definition of Tag Name

Tag names that have been registered already cannot be registered again.

● Registration of Address with Index Modifier

The following type of definition cannot be done:

Tag Name Address

SW X00301;V01

B4.2 Editing Tag Name Definitions

The basic operation for tag name definition windows is the same for common tag name definitions, block tag name definitions, and macro tag name definitions. See the sections on the common tag name definition functions and block and macro tag name definition functions for information about the common functions for common tag name definitions and block and macro tag name definitions.

B4.2.1 Opening, Closing and Saving Tag Name Definition screen

■ Procedure for opening Tag Name Definition screen

Select [Project] - [Common Tag Name Definition]. The Common Tag Name Definition screen opens.

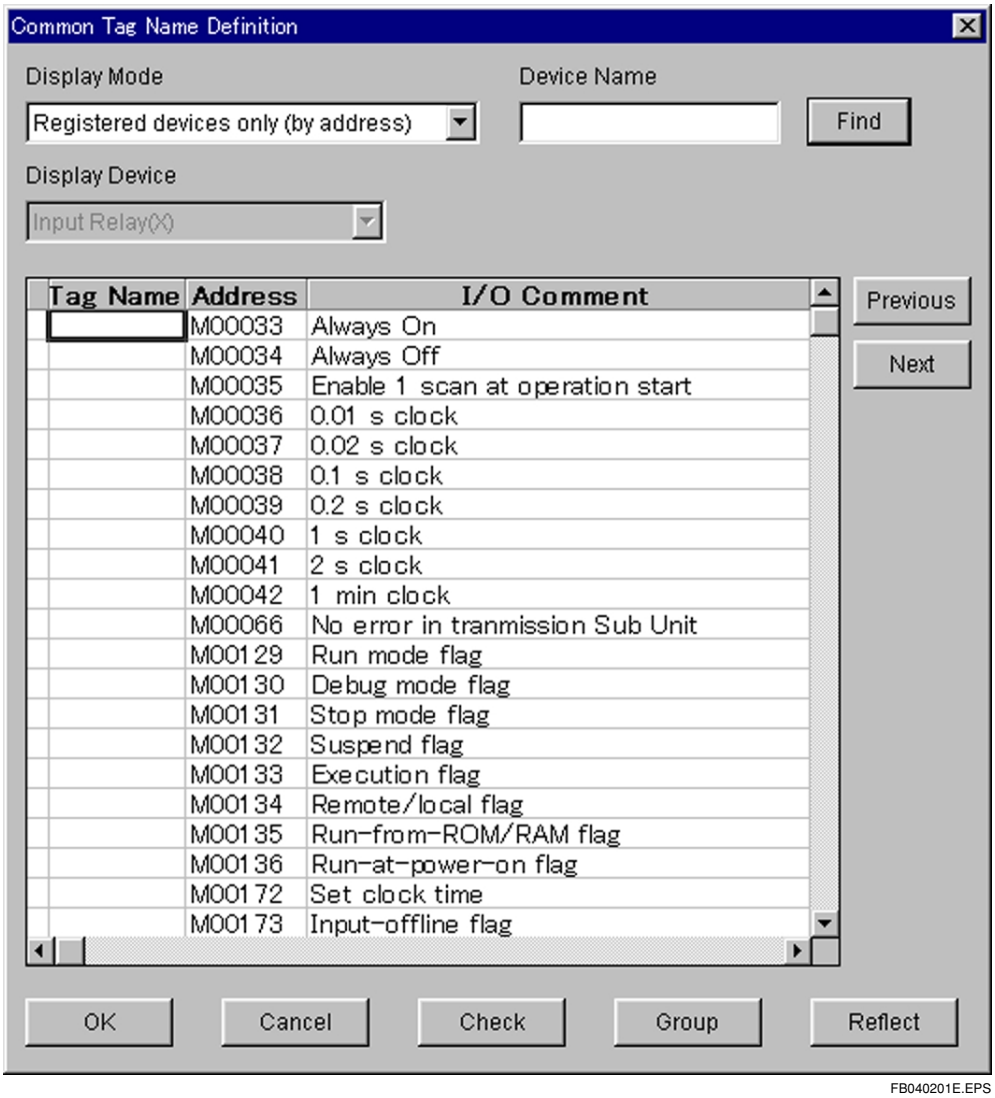


Figure B4.1 Common Tag Name Definition screen

TIP

Reserved I/O comments are already assigned and registered to special relays/registers in the Common Tag Name Definition screen.

■ Procedure for Closing and Saving Common Tag Name Definitions

Select [OK] or [Cancel] in the Common Tag Name Definition screen. When [OK] is selected, the common tag name definition file is saved. When [Cancel] is selected, the screen is closed without saving the file.

If an error occurs, the error message appears, and the position cursor for the Tag Name Definition screen moves to the place where the error occurred.

■ Procedure for Opening Block Tag Name Definition/Macro Tag Name Definition screen

With the first window displayed for block or macro editing, select [Edit] - [Block Tag Name Definition]. The Block Tag Name Definition or Macro Tag Name Definition screen appears.

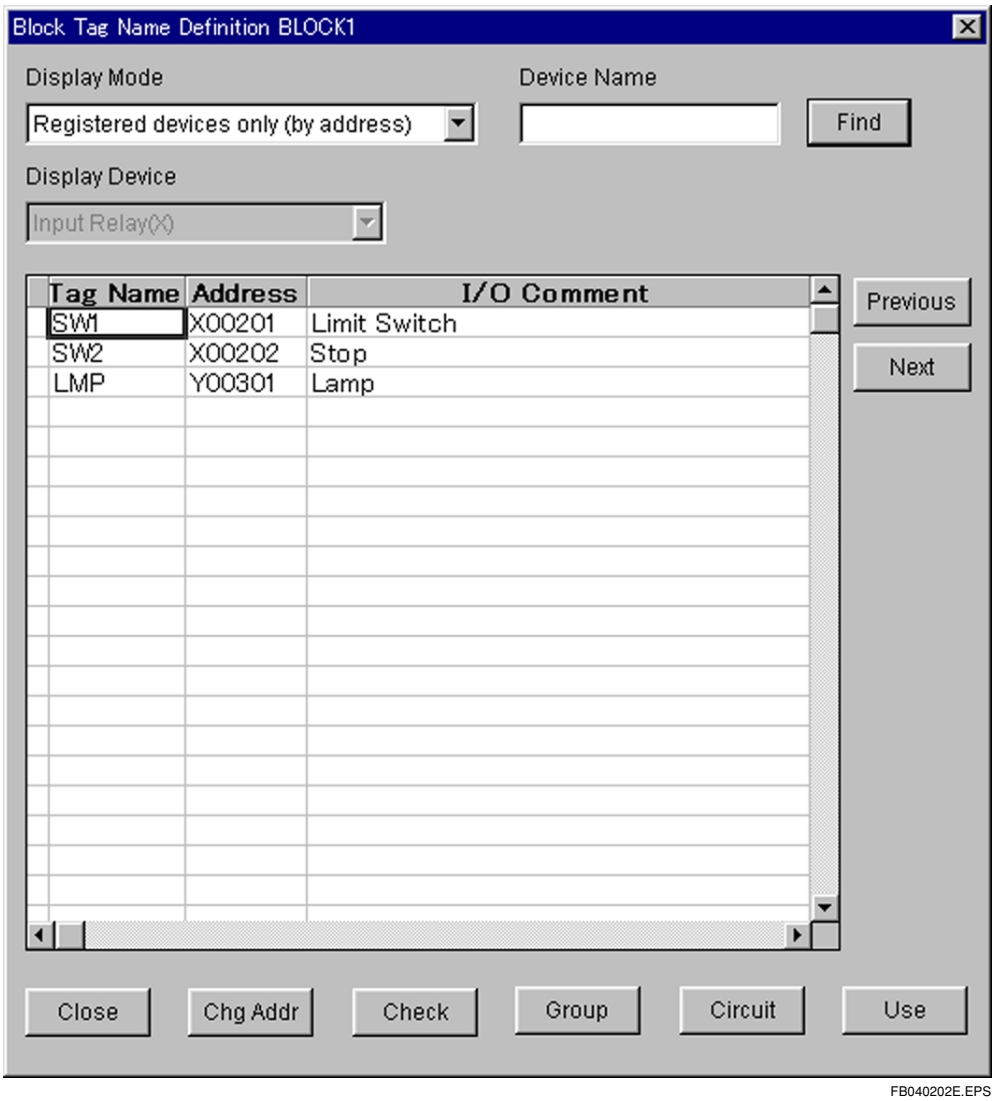


Figure B4.2 Block Tag Name Definition screen

TIP

When the Block Tag Name Definition or Macro Tag Name Definition screen opens, the display mode for the circuit screen temporarily switches to display the address and display without the I/O comment. When the Tag Name Definition screen closes, the former mode returns.

■ Procedure for Closing Block Tag Name Definition /Macro Tag Name Definition Screen

Select [Close] in the Block Tag Name Definition or Macro Tag Name Definition screen. If an error occurs, the error message appears, and the position cursor for the Tag Name Definition screen moves to the place where the error occurred.

■ Saving Block Tag Name Definition /Macro Tag Name Definition Screen

When the Block Tag Name Definition or Macro Tag Name Definition screen is closed or saved, it is saved together with the block or macro circuit.

B4.2.2 Configuration of Tag Name Definition screen

The Tag Name Definition screen has three display modes: address list, registered devices only (by name), and registered devices only (by address). The screen example shown here is for the Block Tag Name Definition screen.

The order of display is device address, tag name, and I/O comment.

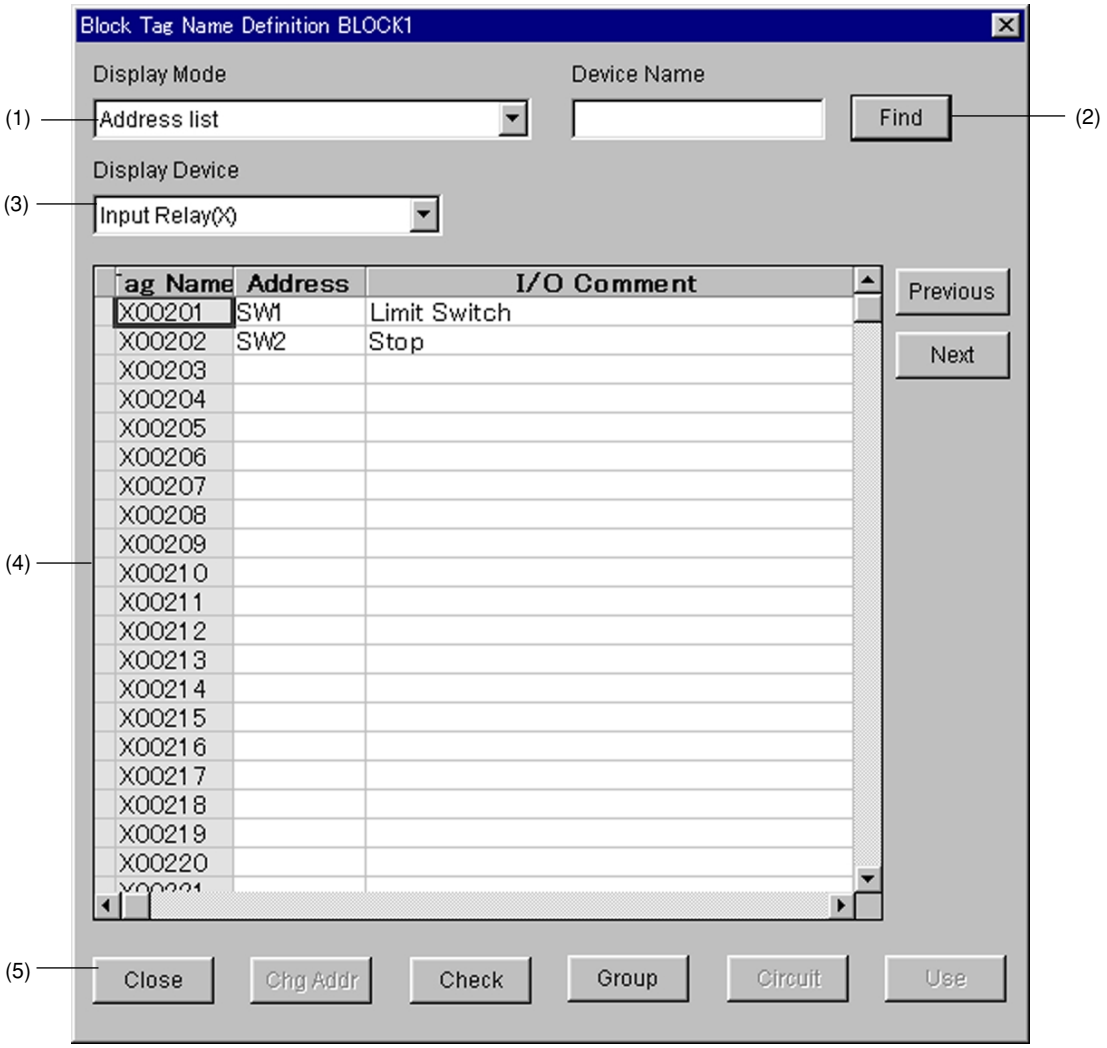


Figure B4.3 Example of Display of Address List

(1) Display mode
The display mode can be selected from address list, registered devices only (by name), and registered devices only (by address).
Registered devices are those with tag names defined.

(2) Find input field.
The tag name definition table can be searched by input the device name or tag name.

(3) Display device
The type of device can be selected when viewing the address list.

(4) Tag name definition area
This area is for defining tag names. Tag names, addresses, I/O comments and extension comments can be entered here. Up to 256 tag names can be displayed at one time. Use the scroll bar on the right to display them. Use [Next] and [Previous] to display the following or preceding 256 items.

TIP

- The items below are displayed by right-clicking the pop-up menu.
  Cut, Copy, Paste, Delete, Insert Line, Delete Line
- The sizes of the address, tag name and I/O comment display areas can be changed by dragging between the cell titles. The setting is valid until the tag name definition window is closed.

FB040204E.EPS

Figure B4.4 Example of Changing Size of Tag Name Area

(5) Buttons
These are the buttons for the various tag name definition functions. The types of buttons displayed differ for common tag name definitions, block tag name definitions, and macro tag name definitions.

Table B4.2 Common Tag Name Definition Buttons

Button	Function
OK	Saves the common tag name definition. At the same time, closes the Common Tag Name Definition screen.
Cancel	Closes the Common Tag Name Definition screen without saving the edited contents.
Check	Checks for errors in the input tag name.
Group	Reads contents of group templates.
Reflect	Reflects contents of common tag name definitions in blocks in the project.
Help	Displays the Tag Name Definition Help screen.

TB040201E.EPS

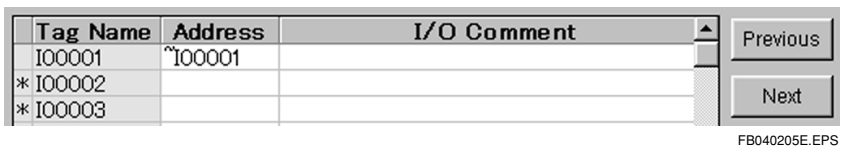
Table B4.3 Block/Macro Tag Name Definition Buttons

Button	Function
Close	Closes the Block/Macro Tag Name Definition screen.
Chg Addr	Reflects contents of the re-assigned tag name in the circuit.
Check	Checks for errors in the input tag name.
Group	Reads contents of group templates.
Circuit	Reads the devices used in the circuit to the Tag Name Definition screen.
Use	Displays defined tag names not used in the circuit.
Help	Displays Help of tag name definition.

TB040202E.EPS

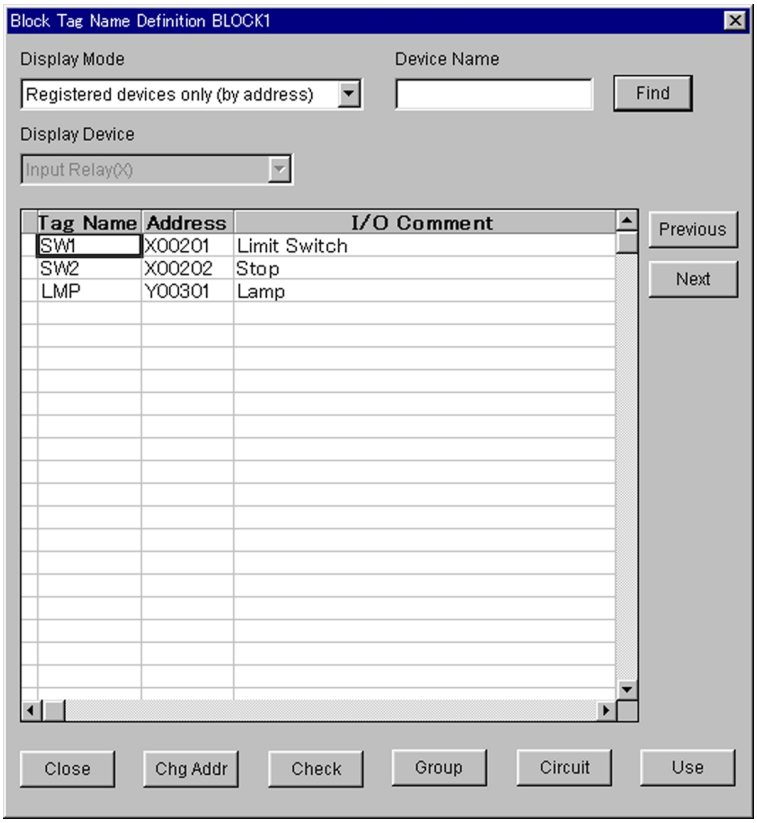
TIP

If just the address has been registered in the display mode for the tag name definition registered devices only, and the tag name and I/O comment have not been entered, the address is displayed prefixed by " ˜ " in the tag name cell when the mode is switched to display the address list; " ˜ " indicates that the address has been registered.



FB040205E.EPS

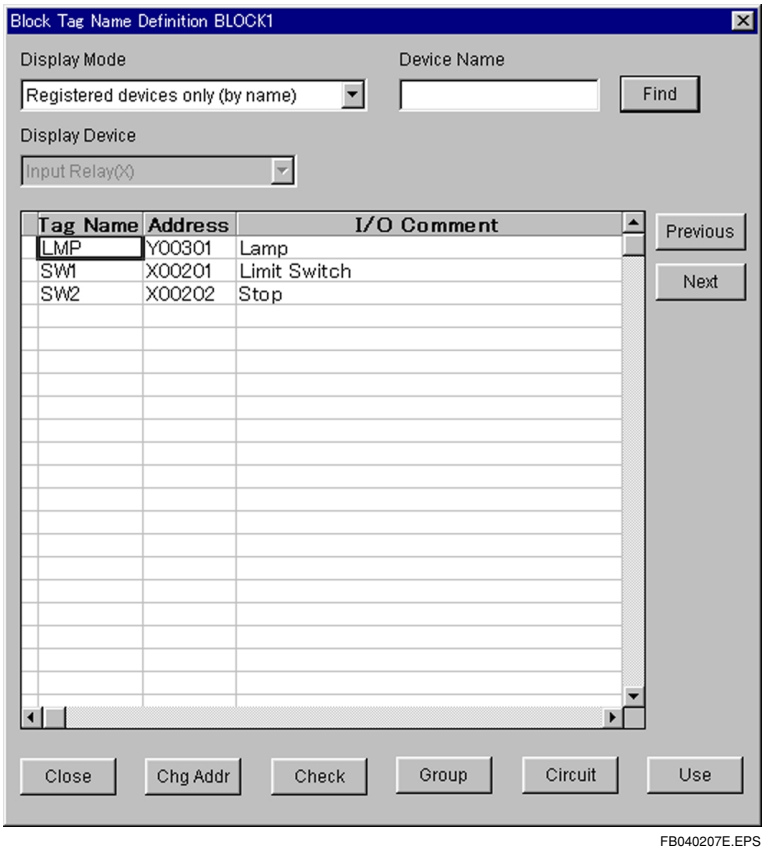
Figure B4.5 Example of Address List Display When Just the Address Has Been Registered



FB040206E.EPS

Note: Display is in the order of tag name, address, and I/O comment.

Figure B4.6 Example of Display of Registered Devices Only (By Address)



FB040207E.EPS

Note: Display is in the order of tag name, address, and I/O comment.

Figure B4.7 Example of Display of Registered Devices Only (By Name)

B4.2.3 Defining Tag Names

■ Defining New Addresses, Tag Names, and I/O Comments

Move the cursor to the table cells to enter tag names, addresses, and I/O comments. Addresses cannot be entered in address list display mode. To insert an empty line, press [Shift] + [Insert].

■ Changing Existing Addresses, Tag Names, and I/O Comments

Click on the cell of the address, tag name or I/O comment to be changed, and input the modifications. Addresses cannot be changed in address list display mode.

■ Deleting Existing Addresses, Tag Names, and I/O Comments

The line where the cursor is can be deleted by pressing [Shift] and [Delete].

When the [Delete] key is pressed, the selected field is deleted.

TIP

The extension comment that appears when the Tag Name Definition screen is scrolled to the right is for future use. Ordinarily, this has no meaning even if it is defined.

B4.2.4 Switching Tag Name Definition screens

Up to 256 tag name definition items can be displayed at the one time. If more than this number of tag name definitions are to be done, the screens must be switched. The Tag Name Definition screens can be switched by using the [Next] and [Previous] buttons displayed on the right. Use the scroll bar to scroll within the range of 256 items.

B4.2.5 Searching Tag Name Definition screens

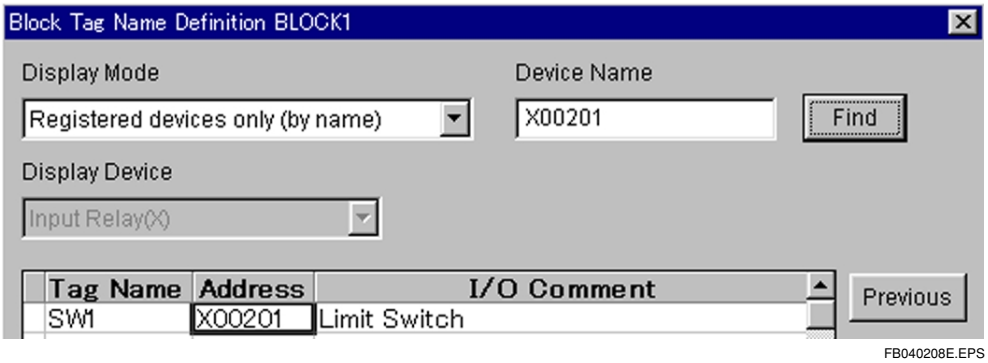


Figure B4.8 Tag Name Definition Find function

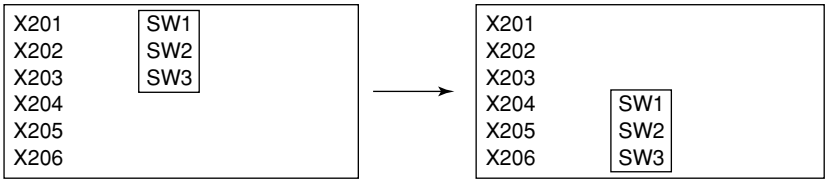
(1) Enter the tag name or address to be searched for and click on [Find] (or press the [Enter] key).

(2) The specified device will be displayed according to the current display mode.

B4.2.6 Copying, Cutting and Pasting Tag Name Definitions

Drag the Tag Name Definitions Display window or use the up-down cursor while pressing the [Shift] key to select the tag name definition display item. Then, right-click on the pop-up window and select [Cut] or press [Ctrl] + [X]. The contents of the tag name definition are copied to the clipboard. Move the cursor and select [Paste]. The copied contents are pasted in the Tag Name Definition window. The copied contents can be pasted to other Tag Name Definition windows as well.

When a tag name has been copied using [Copy] without using [Cut], the tag name will be defined twice after copying. Be sure to correct this.



Selecting SW1, SW2 and SW3 and cutting and pasting to the same window.
Figure B4.9

When there are too many paste items to fit within the window range, the pasted data is abandoned.

B4.2.7 Error Check function

The Tag Name Definition window is not checked for errors when data has been entered. Hence, duplicated tag names and duplicated addresses can be input even though these are illegal for tag name definition. Use the Error Check function to check for duplicated tag names and duplicated addresses. Also, check for errors when closing the Tag Name Definition window.

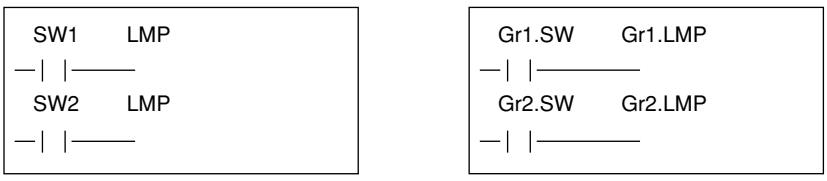
■ Procedure for Checking for Errors

(1) Select [Check].
Tag names are checked for duplicated definitions, and then addresses are checked for duplicated definitions.

(2) When an error is found, the dialog box appears. At the same time, the display moves to the cell where the error is.
If no errors are found, no window opens.

B4.2.8 Grouping Tag Names

Grouped tag names are used for giving meanings to collections of tag names. The program is easier to read when grouped tag names are used.



Conventional programming

Programming using group names

FB040210E.EPS

Figure B4.10 Grouped tag names

In the above example, the groups are divided into Gr1 and Gr2 and independent devices are related by these group names.

The grouped tag names can be assigned in any manner. If multiple identical modules are used for the same type of application, these can be made easy to group by defining group templates.

Select [Group] to read group-defined contents in the Tag Name Definition window.

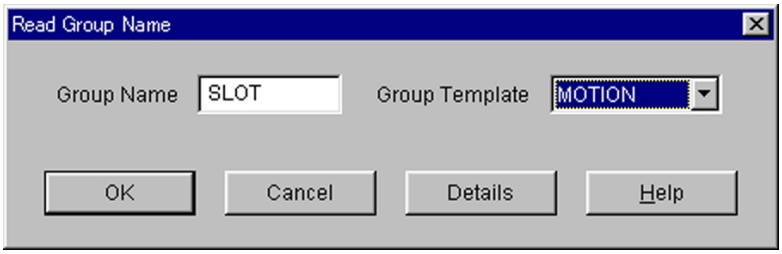
See “B4.4 Defining Group Templates” for the method of creating group templates.

B4.2.9 Reading Group Templates

The reading Group Template is the function which reads group templates to the Tag Name Definition window.

■ Procedure for Reading Group Templates

Select [Group] in the Tag Name Definition screen. The following dialog box appears.



FB040211E.EPS

Figure B4.11 Read Group Window

(1) Select the template from the group template drop-down list.

(2) Input the **Group Name. Member Names** can have up to 7 characters.

(3) Select [OK]. The tag name is entered as group name and member name at the cursor position. Tag names are entered in the order of the members defined by the group template.

Select [Cancel] to cancel read processing.

Select [Details] to see what members are defined by the group template. See “B4.4 Defining Group Templates” for the method of defining group templates. See Chapter B21 for the method of using group tag names. It explains programming using group tag names.

TIP

Members are assigned by address when entered from the address list window. When entered from other windows, the address is not assigned. Enter addresses corresponding to the tag names. The group templates that are read are displayed in the Tag Name Definition screen in the format [Group Name. Member Names]. These are overwritten in address list display mode and inserted in registered device display mode.

B4.3 Block/Macro Tag Name Definition Functions

B4.3.1 Use

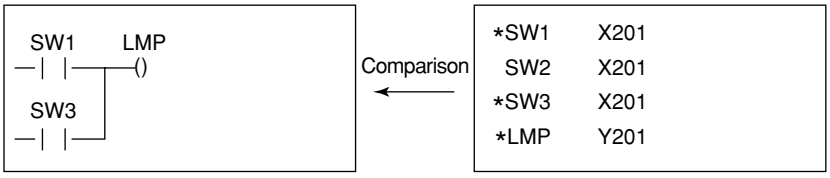
The Use function checks whether the registered tag names are used in the block. This function serves as a guide for deleting definitions of unnecessary tags. When the Use function is implemented, used tag names are prefixed with *. This function can be used when the tag display mode is “Registered devices only.”

■ Procedure for Using Use Function

(1) Select “Registered devices only” (by address or by name) for the Tag Name Definition screen display mode.

(2) Select [Use] in the Tag Name Definition screen.

(3) Tag names used in the block are indicated by an asterisk.



Block

Tag definition

Used tag names are indicated by an asterisk.

FB040301E.EPS

Figure B4.12 Tag Comparison

If tag names without asterisks are not required, select them and delete the tag name definitions.

B4.3.2 Reading devices used in circuit

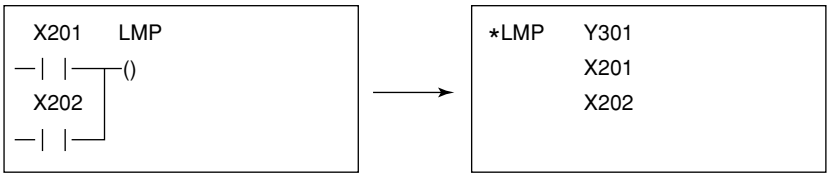
The Circuit function reads devices used in the circuit. It reads devices used in a program block to the tag name definition.

■ Procedure for Using Circuit Function

(1) Select [Registered devices only] (by address or by name) for the Tag Name Definition screen display mode.

(2) Select [Circuit] in the Tag Name Definition screen.

(3) Used devices are added to the tag name definition.



Block

Tag definition

Unassigned devices X201 and X202 are read to the tag name definition.

FB040302E.EPS

Figure B4.13 Reading devices used in circuit

After [Circuit] is selected, tags can be defined for addresses that have not been defined with tag names yet.

B4.3.3 Changing Address

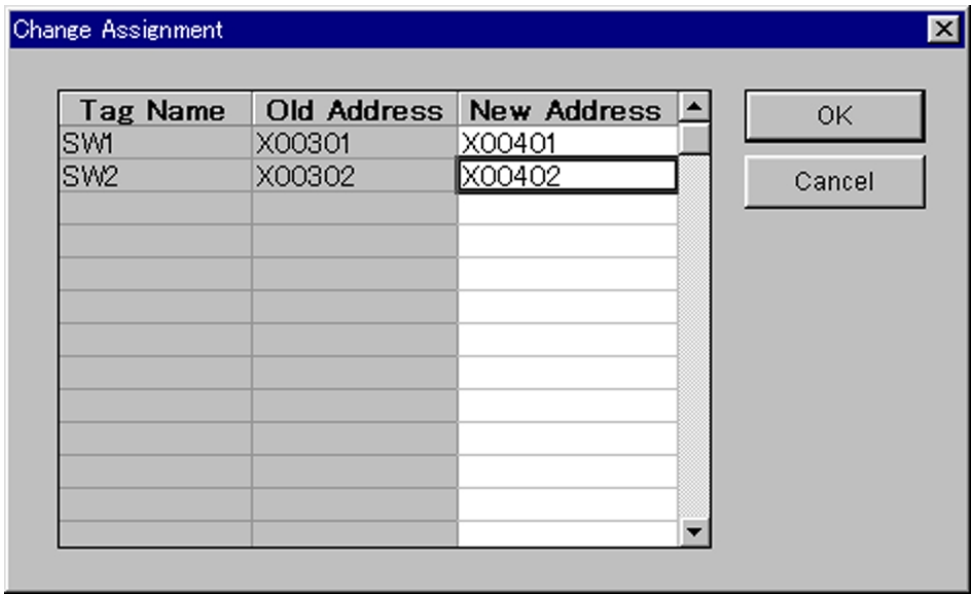
The Change Address function changes the tag name address and reflects this change simultaneously in the circuit. This function does not work in the address list display mode.

Below is an example of a tag name definition being re-assigned.

Tag name	Address
SWITCH1	X00301
SWITCH2	X00302

(1) Specify the target for the address change.
(Specify the range by dragging, and press the [Ctrl] key for specifying a position some distance away. Up to 256 items can be specified. This function is ineffective when nothing is specified.) Specify the above SWITCH1 and SWITCH2.

(2) Click on [Chg Addr].
The following dialog box appears. (The selected tag name and address prior to the change are displayed. For the address prior to the change, the address in the window is entered as is.)



FB040303E.EPS

Figure B4.14 Address Change Dialog Box

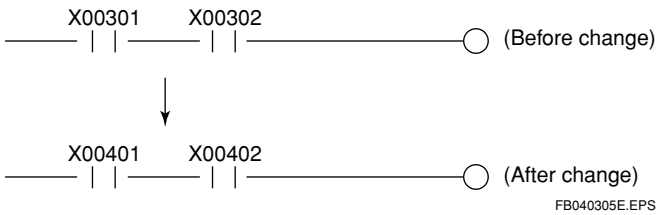
(3) Enter the new address. (The pre-change address can be changed as well.)
When X00301 is to be changed to X00401, and X00302 to X00402, enter X00401 and X00402 and click on [OK]. The tag definition is re-assigned and the new address is reflected in the circuit.

(4) Changing tag name definition

Tag name	Address		Tag name	Address
SWITCH1	X00301	→	SWITCH1	X00401
SWITCH2	X00302		SWITCH2	X00402

FB040304E.EPS

(5) Changing circuit



FB040305E.EPS

B4.4 Defining Group Templates

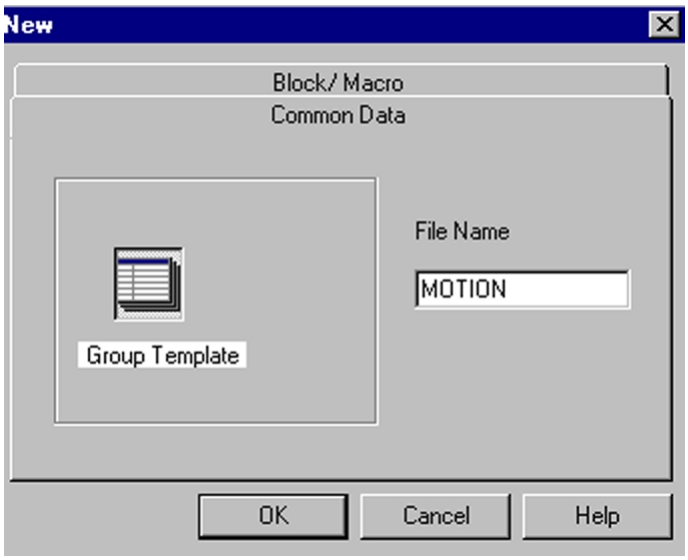
Group tag names consist of [Group Name. Member Names]. The Group Template Definition function defines the members of a group tag name and defines the part except the group name. When a group template is created, it is easy to attach group tag names when defining tag names for groups having the same configuration.

Group templates define only members except group names.

B4.4.1 Creating Group Templates

■ Creating new group templates

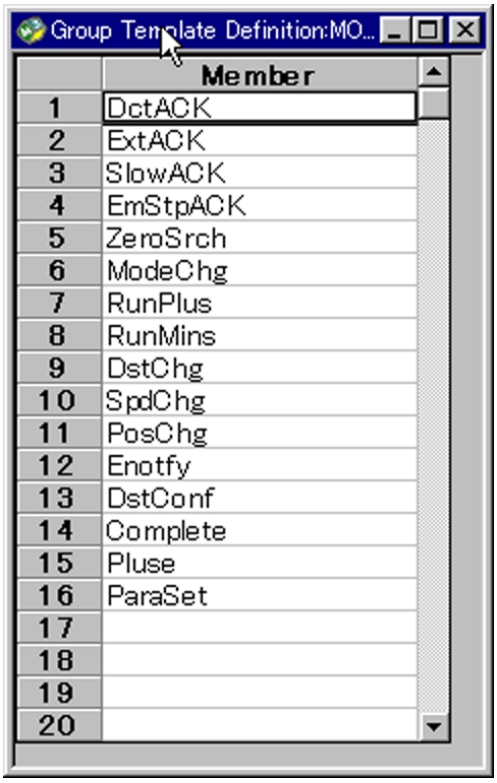
(1) Select [File] - [New]. Click on the [Common Data] tab in the following dialog box.



FB040401E.EPS

Figure B4.15 Dialog Box for Creating New Group Template

(2) Input the file name and select [OK].



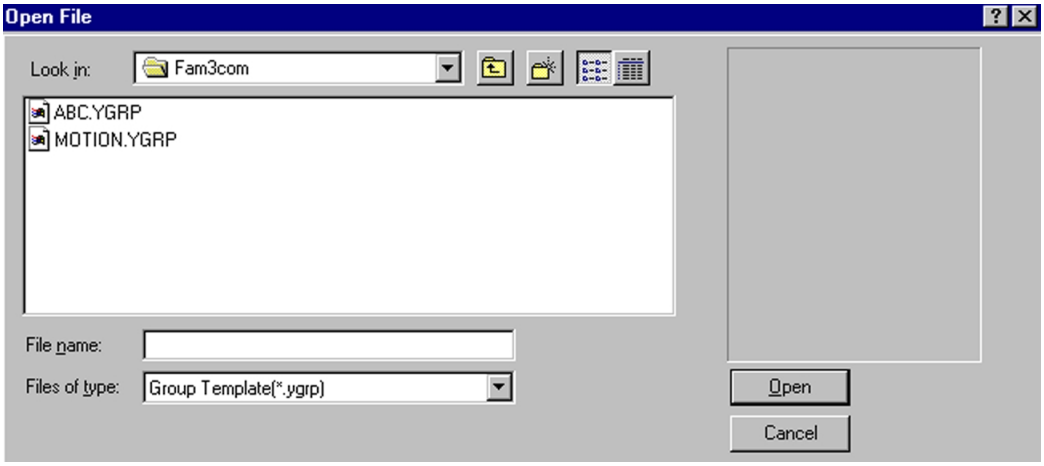
FB040402E.EPS

Figure B4.16 Group Template Edit window

The member name consists of up to 8 characters starting with a letter of the alphabet. Up to 64 members can be registered.

■ Opening Existing Group Template File

(1) Select [File] - [Open] - [Group Template].



FB040403E.EPS

Figure B4.17 Dialog Box for Opening Group Template

(2) Input the file name and select [Open].

■ Closing Group Template

(1) Select [File] - [Close].

B4.4.2 Deleting Group Template Files

Use Explorer or a similar program to delete group template files stored in files. Group template files are stored in the common folder set with the environment settings.

When pin groups of modules having multiple channels are registered as group templates, tags assigned to pins can be standardized.

B5. Building and Managing Projects

This chapter describes how to build and manage projects.

B5.1 Building Projects

B5.1.1 Configuration Definitions of Executable Programs

An executable program is the collection of data downloaded to the CPU. The executable program consists of the following components.

- **Configuration**

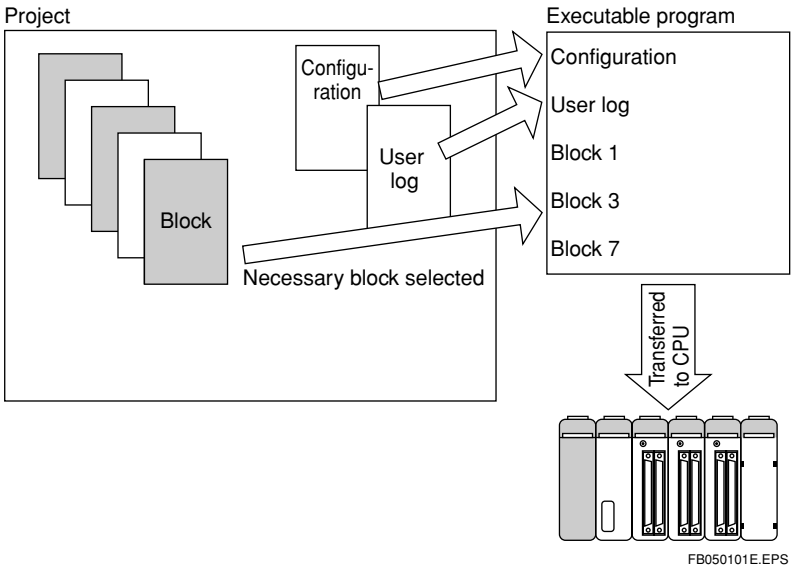
  This sets the CPU environment. When this is not set, the CPU runs with the default settings for the CPU type.

- **User Log Message**

  This is a message set when a user log is used.

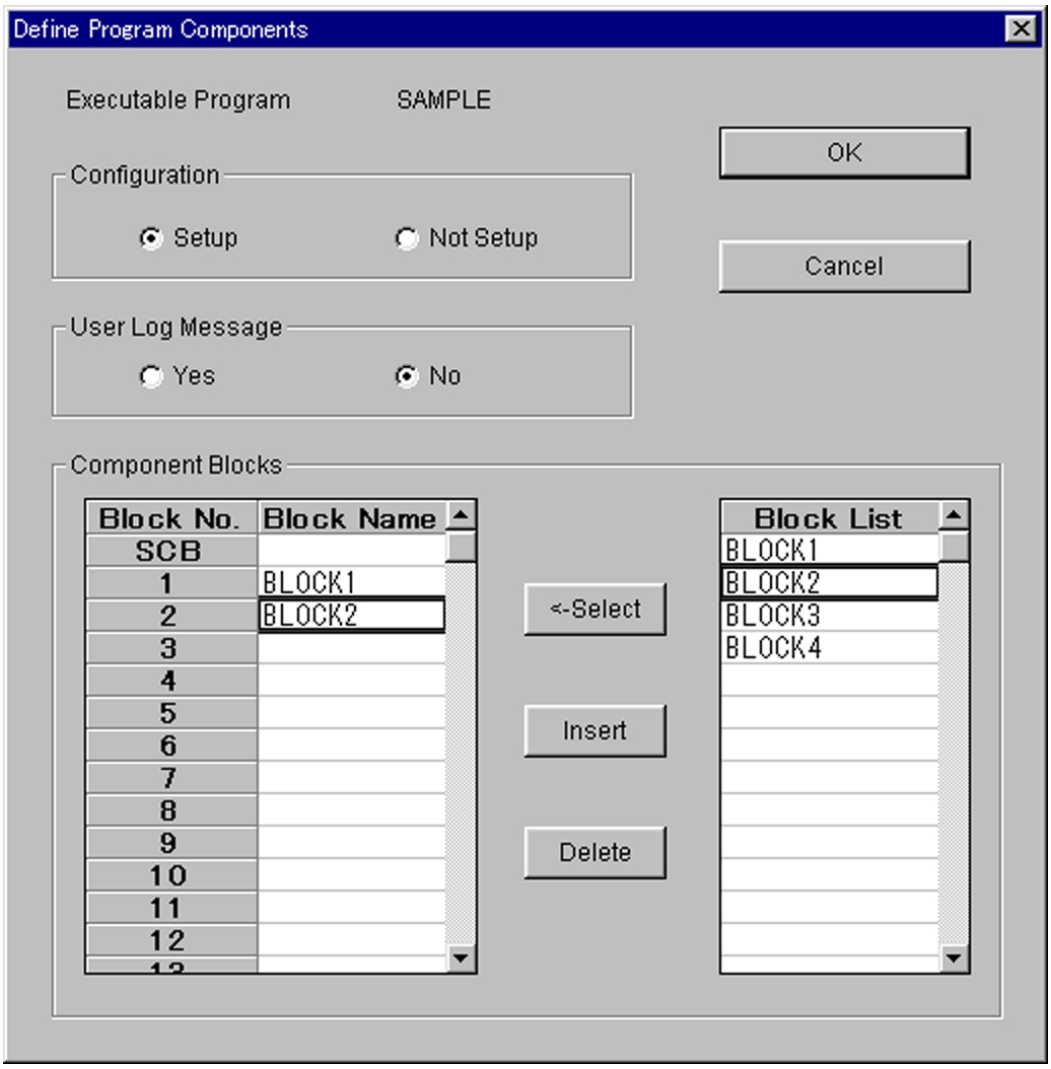
- **Block**

  This is a ladder program made up of 1 function.



■ Procedure for Defining Configuration of Executable Program

(1) Select [Project] - [Define Program Components].
The following screen appears.



FB050102E.EPS

Figure B5.1 Executable Program Configuration Definition

(2) Select whether to set the configuration or not.
Click on [Setup] or [Not setup].

(3) To attach a user log message, select [Yes]; otherwise, select [No].

(4) Input the sensor control block and the ordinary block.

(5) The block list shows all the blocks in the project.

(6) Blocks are selected, inserted and deleted as follows:

- **Select**

  Click on the position where the block component is to be set, and move the cursor.
  Click on the list's block name to be set.
  Click on [Select]. The block name is entered at the setting position.

- **Insert**

  Click on the position where the block is to be inserted, and move the cursor. Click on [Insert]. An empty line is inserted at that position, and blocks below move down.

- **Delete**

  Click on the position where the block is to be deleted, and move the cursor. When [Delete] is clicked, the block at that position is deleted and the blocks below move up. To keep the empty line, press the [Delete] key instead.

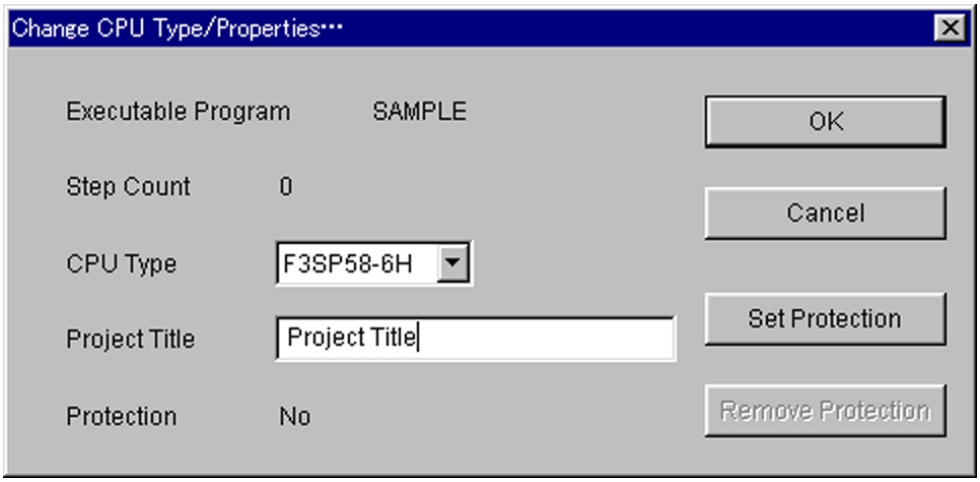
(7) Click on [OK] to update the setting. Click on [Cancel] to abandon the change.

B5.1.2 Changing CPU Type and Executable Program Properties

The CPU type can be changed, and protection can be set and cancelled.

■ Procedure for Changing CPU Type and Setting Properties

(1) Click on [Project] - [Change CPU Type/Properties]. The following window appears.



FB050103E.EPS

Figure B5.2 Change CPU Type/Properties

The items displayed are:

- **Step count**

  Shows the overall step count for the executable program. (This does not include the step count for the macros used in the block.)

- **CPU type**

  Shows the type of CPU. To change it, select from the drop-down list.

- **Project title**

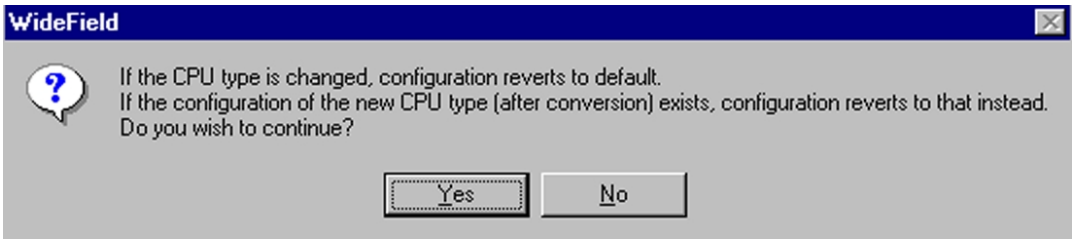
  This can be edited to change it.

- **Protection**

  Shows the protection status for the executable program.
  To set protection or change the password, click on [Set Protection]. To cancel, click on [Remove Protection].
  Operation method for [Set protection] and [Remove protection] is same as the block protection setting.

CAUTION

Configuration is a tuning element of each executable program. The CPU type is one of these components. Hence, if the type of CPU is changed, the configuration must be done again. After the type has been changed, the configuration setup changes to the previous configuration of the new type, or to the default. When the CPU type is changed, the dialog box below appears.



FB050104E.EPS

Figure B5.3 Dialog Box for Confirming Setup after CPU Type has been Changed

B5.1.3 Setting Configuration

This section explains how to set the configuration.

The contents of the configuration setup depend on the CPU type. Configuration setting items are as follows:

- Device Capacities
- Setup Data Lock-up Range at Power Failure/Local Devices
- Operation Control
- Setup Data Register Initial Data
- Setup DIO
- Setup FA Link
- Sampling Trace
- Setup Communication
- Setup ROM
- Setup Interrupt (only available for F3SP28, 38, 53 and 58)
- Setup Shared Refreshing (only available for F3SP28, 38, 53 and 58)

The tables on the following pages set out the setting values for each CPU type.

Table B5.1 List of Configuration Ranges (F3SP05, F3SP21, F3SP25, F3SP35, F3SP36) (1/4)

Item			F3SP21		F3SP25, F3SP35	
			Initial value	Setting range	Initial value	Setting range
Device Capacities	Shared Device (E, R) (Settings for usage range of shared relays/ shared registers)	Shared Relay (E)	0 points	Units of 32 points Total of 2,048 points maximum for all CPUs	0 points	Units of 32 points Total of 2,048 points maximum for all CPUs
		Extended Shared Relay (E)	0 points	Units of 32 points Total of 2,048 points maximum for all CPUs	0 points	Units of 32 points Total of 2,048 points maximum for all CPUs
		Shared Register (R)	0 points	Units of 32 points Total of 2,048 points maximum for all CPUs	0 points	Units of 32 points Total of 2,048 points maximum for all CPUs
		Extended Shared Register (R)	0 points	Units of 32 points Total of 2,048 points maximum for all CPUs	0 points	Units of 32 points Total of 2,048 points maximum for all CPUs
	Link Devices (L, W) (Settings for usage range of link relays/ link registers)	Link Relay	1,024 points per link	Units of 16 points (Note) Total of 2,048 points maximum for all links	1,024 points per link	Units of 16 points (Note) Total of 8,192 points maximum for all links
		Link Register	1,024 points per link	Units of 1 point (Note) Total of 2,048 points for all links	1,024 points per link	Units of 1 point (Note) Total of 8,192 points for all links
	Settings for timer/counter	1ms Timer	0 points	Units of 1 point Total of 2,048 points for timer/counter 1 ms timer 16 points maximum Each timer numbered consecutively	0 points	Units of 1 point Total of 3,072 points for timer/counter 1 ms timer 16 points maximum Each timer numbered consecutively
		10ms Timer	512 points		1,024 points	
		100ms Timer	448 points		896 points	
		100ms Continuous Timer	64 points		128 points	
		Counter	1,024 points	Units of 1 point Total of 2,048 points for timer/counter	1,024 points	Units of 1 point Total of 3,072 points for timer/counter

TB050101E.EPS

Table B5.1 List of Configuration Ranges (F3SP05, F3SP21, F3SP25, F3SP35, F3SP36) (2/4)

Item			F3SP21		F3SP25, F3SP35	
			Initial value	Setting range	Initial value	Setting range
Setup Device Extension	Setup Data Lock-up Range at Power Failure	Internal Relay (I)	I0001 to I1024	Can be set in 32-point units Continued from starting number	I0001 to I1024	Can be set in 32-point units Continued from starting number
		Shared Relay (E) Extended Shared Relay (E)	Not locked up		Not locked up	
		Link Relay (L)	Not locked up	Can be set in 16-point units (Note)	Not locked up	Can be set in 16-point units (Note)
		Timer (T)	Not locked up (except for continuous timer)	Can be set in 1-point units Continued from starting number	Not locked up (except for continuous timer)	Can be set in 1-point units Continued from starting number
		Counter (C)	All locked up (C0001 to C1024)		All locked up (C0001 to C1024)	
		Data register (D)	All locked up (D0001 to D16384)	Can be set in 2-point units (Note) Continued from starting number	All locked up (D0001 to D32768)	Can be set in 2-point units (Note) Continued from starting number
		Shared register (R) Extended Shared register	Not locked up		Not locked up	
		Link register (W)	Not locked up	Can be set in 16-point units (Note)	Not locked up	Can be set in 16-point units (Note)

TB050102E.EPS

Note: Settings for the power failure lock-up range for shared relays, extended shared relays, shared registers, and extended shared registers continue from the starting number. However, when a shared relay has 2,048 or fewer points, the end of the shared relay is followed by the beginning E2049 of the extended shared relay. Similarly, when a shared register has 1,024 or fewer points, the end of the shared register is followed by the beginning R1025 of the extended shared register.

EXAMPLE: When the shared relay is 1,024 points and the extended shared relay is 2,048 points, and the power failure lock-up range is set as 1,024 starting from starting number 513, then, in the event of a power failure,
the shared relay is locked up from E513 through E1024
and the extended relay is locked up from E2049 through E2560.

Note: Settings for the power failure lock-up range for link relays and extended link registers continue from the starting number. However:
L (W) 01024 is followed by L (W) 10001.
L (W) 11024 is followed by L (W) 20001.
L (W) 21024 is followed by L (W) 30001.
L (W) 31024 is followed by L (W) 40001.
L (W) 41024 is followed by L (W) 50001.
L (W) 51024 is followed by L (W) 60001.
L (W) 61024 is followed by L (W) 70001.
(The above examples are when 1,024 points have been set for the usage range of the link relays and link registers. If 2,048 points have been set, L (W) 02048 is followed by L (W) 10001.

EXAMPLE: When the setting is
Link Relay link 1 1,024 points
Link Relay link 2 1,024 points
Link Relay link 3 1,024 points
with the power failure lock-up range being starting number 10513 and 1,024 devices, then, in the event of a power failure,
Link Relay link 1 is locked up from L10513 through L11024, and
Link Relay link 2 is locked up from L20001 through L20512.

Table B5.1 List of configuration ranges (F3SP05, F3SP21, F3SP25, F3SP35, F3SP36) (3/4)

Item			F3SP21		F3SP25		F3SP35	
			Initial Value	Setting Range	Initial Value	Setting Range	Initial Value	Setting Range
Initial data settings		Data Register (D)	None	Up to 1,024 points consecutively from starting number	None	Up to 1,024 points consecutively from starting number	None	Up to 1,024 points consecutively from starting number
Operation control	Settings for scan time monitoring time		200 ms	10 to 200ms 10ms units can be set	200 ms	10 to 200ms 10ms units can be set	200 ms	10 to 200ms 10ms units can be set
	Settings for constant scan time		Not Used	1.0 to 190.0ms 0.1ms units can be set	Not Used	1.0 to 190.0ms 0.1ms units can be set	Not Used	1.0 to 190.0ms 0.1ms units can be set
	Settings for when error occurs	I/O module error	Stop	Stop/continue can be set	Stop	Stop/continue can be set	Stop	Stop/continue can be set
		I/O collation error	Stop		Stop		Stop	
		Instruction processing error	Stop		Stop		Stop	
		Scan timeout	Stop		Stop		Stop	
		Sub-routine error	Stop		Stop		Stop	
		Interrupt error	Stop		Stop		Stop	
		Sub-unit transfer route error	Continue		Continue		Continue	
	Program execution method		All blocks	All blocks executed Specified blocks executed	All blocks	All blocks executed Specified blocks executed	All blocks	All blocks executed Specified blocks executed
	Immediate detection mode	When using F3PU10-0N, F3PU20-0N, and F3PU26-0N power modules	Standard mode	Standard mode Immediate detection mode	Standard mode	Standard mode Immediate detection mode	Standard mode	Standard mode Immediate detection mode
DIO Settings	Settings for output when sequence stops		Reset	Module units Lock-up/ not lock-up can be set	Reset	Module units Lock-up/ not lock-up can be set	Reset	Module units Lock-up/ not lock-up can be set
	I/O module settings	Data code type	BIN	BIN/BCD Units of 16 points can be set	BIN	BIN/BCD Units of 16 points can be set	BIN	BIN/BCD Units of 16 points can be set
		Input sampling	16ms	16/1ms Module units	16ms	16/1ms Module units	16ms	16/1ms Module units
ROM Settings	Current value settings for device making ROM resident	Data Register (D) File Register (B)	None	Up to 5,120 points consecutively from starting number	None	Up to 32,768 points consecutively from starting number	None	Up to 32,768 points consecutively from starting number

TB050103E.EPS

SEE ALSO

For details about sub-unit transfer routing errors, refer to “Fiber-optic FA Bus Module, Optical FA Bus Type 2 Module Instructions” (IM34M-H45-01E).

Table B5.1 List of Configuration Ranges (F3SP05, F3SP21, F3SP25, F3SP35, F3SP36) (4/4)

Item			F3SP21		F3SP25		F3SP35	
			Initial Value	Setting Range	Initial Value	Setting Range	Initial Value	Setting Range
Communication settings	CPU communications port	Mode	Mode 0 9,600 bps Even parity	Mode 0: 9,600 bps Even parity Mode 1: 9,600 bps No parity Mode 2:	Mode 0 9,600 bps Even parity	Mode 0: 9,600 bps Even parity Mode 1: 9,600 bps No parity Mode 2:	Mode 0 9,600 bps Even parity	Mode 0: 9,600 bps Even parity Mode 1: 9,600 bps No parity Mode 2:
	Personal computer link function	Used/not used	Not used	Used/not used	Not used	Used/not used	Not used	Used/not used
		Checksum	None	Yes/No	None	Yes/No	None	Yes/No
		Specify last terminal letter	None	Yes/No	None	Yes/No	None	Yes/No
		Protection function	None	Yes/No	None	Yes/No	None	Yes/No
Correspondence between FA link numbers and slot numbers			None	Yes/No Each FA link number slot	None	Yes/No Each FA link number slot	None	Yes/No Each FA link number slot

TB050104E.EPS

CAUTION

With FA link H and fiber-optic FA link H modules (F3LP02/F3LP12), up to 2,048 points can be used with the link relays/link registers per module. The following cases, limitations apply to configuration settings.

1. When one CPU module uses both FA link modules (F3LP01) and 2,048-point FA link H or fiber-optic FA link H modules.
2. When one CPU module uses both high-speed settings of 1,024 points and ordinary settings of 2,048 points for FA link H or fiber-optic FA link H modules.

Limitations on configuration settings:

Be sure to set the number of link relay/register points of FA link 1 to 2,048 points. When the number is set to 1,024 points, an error will occur.

When the number of link relay/register points of FA link 1 is 0 points, be sure to set the first link relay/register points to 2,048 points from FA link 2 onwards.

Configurations that cannot be set

Example 1:	Link 1 [1024]	Link 2 [2048]	Link 3...
Example 2:	Link 1 [0]	Link 2 [1024]	Link 3 [2048]...
Example 3:	Link 1 [1024]	Link 2 [0]	Link 3 [2048]...

Configurations that can be set

Example 1:	Link 1 [2048]	Link 2...	
Example 2:	Link 1 [1024]	Link 2 [1024]	Link 3...
Example 3:	Link 1 [0]	Link 2 [1024]	Link 3 [1024]...
Example 4:	Link 1 [1024]	Link 2 [0]	Link 3 [1024]...
Example 5:	Link 1 [0]	Link 2 [2048]	Link 3...

■ List of Configuration Ranges

Table B5.2 List of Configuration Ranges (1/5)

Item			F3SP28, F3SP53		F3SP38, F3SP58	
			Initial value	Setting range	Initial value	Setting range
Device Capacities	Shared Device (E, R) (Settings for usage range of shared relays/ shared registers)	Shared Relay (E)	0 point	Units of 32 points Total of 2,048 points maximum for all CPUs	0 point	Units of 32 points Total of 2,048 points maximum for all CPUs
		Extended Shared Relay (E)	0 point	Units of 32 points Total of 2,048 points maximum for all CPUs	0 point	Units of 32 points Total of 2,048 points maximum for all CPUs
		Shared Register (R)	0 point	Units of 2 points Total of 1,024 points maximum for all CPUs	0 point	Units of 2 points Total of 1,024 points maximum for all CPUs
		Extended Shared Register (R)	0 point	Units of 2 points Total of 3,072 points maximum for all CPUs	0 point	Units of 2 points Total of 3,072 points maximum for all CPUs
	Link Devices (L, W) (Settings for usage range of link relays/ link registers)	Link Relay	FA links 1 to 4 2,048 points FA links 5 to 8 0 point	Units of 16 points (Note) Total of 8,192 points for all links	2,048 points per link	Units of 16 points (Note) Total of 16,384 points maximum for all links
		Link Register	FA links 1 to 4 2,048 points FA links 5 to 8 0 points	Units of 16 points (Note) Total of 8,192 points for all links	2,048 points per link	Units of 16 points (Note) Total of 16,384 points maximum for all links
	Settings for timer/counter	1μs Timer	0 point	Units of 1 point Total of 2,048 points for timer/counter 1μs timer 16 points maximum Each timer numbered consecutively	0 point	Units of 1 point Total of 3,072 points for timer/counter 1 ms timer 16 points maximum Each timer numbered consecutively
		1ms Timer	0 point		0 point	
		10ms Timer	512 points		1,024 points	
		100ms Timer	448 points		896 points	
		100ms Continuous Timer	64 points		128 points	
		Counter	1,024 points	Units of 1 point Total of 2,048 points for timer/counter	1,024 points	Units of 1 point Total of 3,072 points for timer/counter

TB050105E.EPS

Table B5.2 List of Configuration Ranges (2/5)

Item			F3SP28, F3SP53		F3SP38, F3SP58	
			Initial value	Setting range	Initial value	Setting range
Device extension settings	Power failure range settings	Internal Relay (I)	I0001 to I1024	Can be set in 32-point units Continued from starting number	I0001 to I1024	Can be set in 32-point units Continued from starting number
		Shared Relay (E) Extended Shared Relay (E)	Not locked up		Not locked up	
		Link Relay (L)	Not locked up	Can be set in 16-point units (Note)	Not locked up	Can be set in 16-point units (Note)
		Timer (T)	Not locked up (except for continuous timer)	Can be set in 1-point units Continued from starting number	Not locked up (except for continuous timer)	Can be set in 1-point units Continued from starting number
		Counter (C)	All locked up (C0001 to C1024)		All locked up (C0001 to C1024)	
		Data register (D)	All locked up (D0001 to D16384)	Can be set in 2-point units (Note) Continued from starting number	All locked up (D0001 to D32768)	Can be set in 2-point units (Note) Continued from starting number
		Shared register (R) Extended Shared register	Not locked up		Not locked up	
		Link register (W)	Not locked up	Can be set in 16-point units (Note)	Not locked up	Can be set in 16-point units (Note)

TB050106E.EPS

Note: Settings for the power failure lock-up range for shared relays, extended shared relays, shared registers, and extended shared registers continue from the starting number. However, when a shared relay has 2,048 or fewer points, the end of the shared relay is followed by the beginning E2049 of the extended shared relay. Similarly, when a shared register has 1,024 or fewer points, the end of the shared register is followed by the beginning R1025 of the extended shared register.

EXAMPLE: When the shared relay is 1,024 points and the extended shared relay is 2,048 points, and the power failure lock-up range is set as 1,024 starting from starting number 513, then, in the event of a power failure,
the shared relay is locked up from E513 through E1024
and the extended relay is locked up from E2049 through E2560.

Note: Settings for the power failure lock-up range for link relays and extended link registers continue from the starting number. However:
L (W) 01024 is followed by L (W) 10001.
L (W) 11024 is followed by L (W) 20001.
L (W) 21024 is followed by L (W) 30001.
L (W) 31024 is followed by L (W) 40001.
L (W) 41024 is followed by L (W) 50001.
L (W) 51024 is followed by L (W) 60001.
L (W) 61024 is followed by L (W) 70001.
(The above examples are when 1,024 points have been set for the usage range of the link relays and link registers. If 2,048 points have been set, L (W) 02048 is followed by L (W) 10001.

EXAMPLE: When the setting is
Link Relay link 1 1,024 points
Link Relay link 2 1,024 points
Link Relay link 3 1,024 points,
and the power failure lock-up range is set as 1,024 starting from starting number 10513, then, in the event of a power failure,
Link Relay link 1 is locked up from L10513 through L11024, and
Link Relay link 2 is locked up from L20001 through L20512.

Table B5.2 List of Configuration Ranges (3/5)

Item			F3SP28, F3SP53		F3SP38, F3SP58	
			Initial value	Setting range	Initial value	Setting range
Initial data settings		Data Register (D)	None	Up to 1,024 points consecutively from starting number Initial data can be set	None	Up to 1,024 points consecutively from starting number Initial data can be set
Operation control	Settings for scan time monitoring time		200ms	10 to 200 ms 10ms units can be set	200ms	10 to 200 ms 10ms units can be set
	Settings for constant scan time		Not used	1.0 to 190.0 ms 0.1ms units can be set	Not used	1.0 to 190.0 ms 0.1ms units can be set
	Settings for when error occurs	I/O module error	Stop	Stop/Continue can be set	Stop	Stop/Continue can be set
		I/O collation error Stop	Stop		Stop	
		Instruction processing error Stop	Stop		Stop	
		Scan timeout Stop	Stop		Stop	
		Sub-routine error Stop	Stop		Stop	
		Interrupt error Stop	Stop		Stop	
		Sub-unit transfer routing error	Continue		Continue	
		Sensor control scan timeout Stop	Stop		Stop	

TB050107E.EPS

SEE ALSO

“Fiber-optic FA Bus Module, Optical FA Bus Type 2 Module Instructions” (IM34M-H45-01E) for details about sub-unit transfer routing errors.

Table B5.2 List of Configuration Ranges (4/5)

Item			F3SP28, F3SP53		F3SP38, F3SP58	
			Initial value	Setting range	Initial value	Setting range
Operation control	Program execution mode		All blocks executed	All blocks executed/ Specified blocks	All blocks executed	All blocks executed/ Specified blocks
	Immediate detection mode	When using F3PU10-0N, F3PU20-0N, and F3PU26-0N power modules	Standard mode	Standard mode/ Immediate detection mode	Standard mode	Standard mode/ Immediate detection mode
	Peripheral management (minimum operation) time		Not setting	100µs to 190ms Units of 100µs	Not setting	100µs to 190ms Units of 100µs
Interrupt settings	Sensor control	Execution span	200µs	200µs to 25.0ms Units of 100µs	200µs	200µs to 25.0ms Units of 100µs
		Interrupt timing	Immediate (during instruction execution)	After instruction completes/immediate (during instruction execution)	Immediate (during instruction execution)	After instruction completes/immediate (during instruction execution)
	Input interrupt processing	Interrupt timing	After instruction completes	After instruction completes/immediate (during instruction execution)	After instruction completes	After instruction completes/immediate (during instruction execution)
	Interrupt priority for sensor control block and input interrupt processing		Sensor control block has priority	Sensor control block has priority/input interrupt processing has priority	Sensor control block has priority	Sensor control block has priority/input interrupt processing has priority
DIO settings	Module used/not used		Used	Unused/used/sensor control block used can be set in units of 16 points (Note)	Used	Unused/used/sensor control block used can be set in units of 16 points (Note)
	Data code type		BIN	BIN/BCD Units of 16 points can be set	BIN	BIN/BCD Units of 16 points can be set
	Input sampling period		16ms	16ms/1ms/250µs /62.5µs/always can be set in units of 16 points	16ms	16ms/1ms/250µs /62.5µs/always can be set in units of 16 points
	Settings for output when sequence stops		Reset	Reset/hold can be set in units of 16 points	Reset	Reset/hold can be set in units of 16 points
ROM settings	Current value settings for device making ROM resident	Data Register (D) File Register (B)	None	Up to 32,768 points consecutively from starting number	None	Up to 32,768 points consecutively from starting number

TB050108E.EPS

Note: Set in units of 32 points when using the simultaneous input module for sensor control blocks and ordinary blocks.

Table B5.2 List of Configuration Ranges (5/5)

Item			F3SP28, F3SP53		F3SP38, F3SP58	
			Initial value	Setting range	Initial value	Setting range
Setup Communication	CPU communication port	Mode	Mode 0: 9,600 bps Even parity	Mode 0: 9,600 bps Even parity Mode 1: 9,600 bps No parity Mode 2: 19,200 bps Even parity Mode 3: 19,200 bps No parity Mode 4: 38,400 bps No parity Mode 5: 38,400 bps No parity Mode 6: 57,600 bps Even parity Mode 7: 57,600 bps No parity Mode 8: 115,200 bps Even parity Mode 9: 115,200 bps No parity	Mode 0: 9,600 bps Even parity	Mode 0: 9,600 bps Even parity Mode 1: 9,600 bps No parity Mode 2: 19,200 bps Even parity Mode 3: 19,200 bps No parity Mode 4: 38,400 bps No parity Mode 5: 38,400 bps No parity Mode 6: 57,600 bps Even parity Mode 7: 57,600 bps No parity Mode 8: 115,200 bps Even parity Mode 9: 115,200 bps No parity
	Personal computer link function	Used/not used	Not used	Not used/Used	Not used	Not used/Used
		Checksum	None	Yes/No	None	Yes/No
		Specify end letter	None	Yes/No	None	Yes/No
		Protection function	None	Yes/No	None	Yes/No
Settings for FA link system (Correspondence between FA link (system) numbers and slot numbers)			None	Yes/No Each FA link (system) number Slot 1 to 16	None	Yes/No Each FA link (system) number Slot 1 to 16
Shared Refreshing (Data communication method between CPUs)		Shared Refreshing range (partial stop)	All executed	Can be set to Run/Stop, Shared Relay of Each CPU, Shared Register, Extended Shared Relay, or Extended Shared Register	All executed	Can be set to Run/Stop, Shared Relay of Each CPU, Shared Register, Extended Shared Relay, or Extended Shared Register
		Shared Refreshing data (simultaneous)	Simultaneous	Simultaneous/non-simultaneous	Simultaneous	Simultaneous/non-simultaneous
		Shared Refreshing Operation (control management)	Peripheral management	Peripheral management/control management	Peripheral management	Peripheral management/control management

TB050109E.EPS

■ Procedures for Configuration Startup and End

(1) Select [Project] - [Configuration]. The screen for setting the configuration appears.

(2) After completing settings, select [OK]. The configuration file is updated.
Select [Cancel] to cancel the settings.

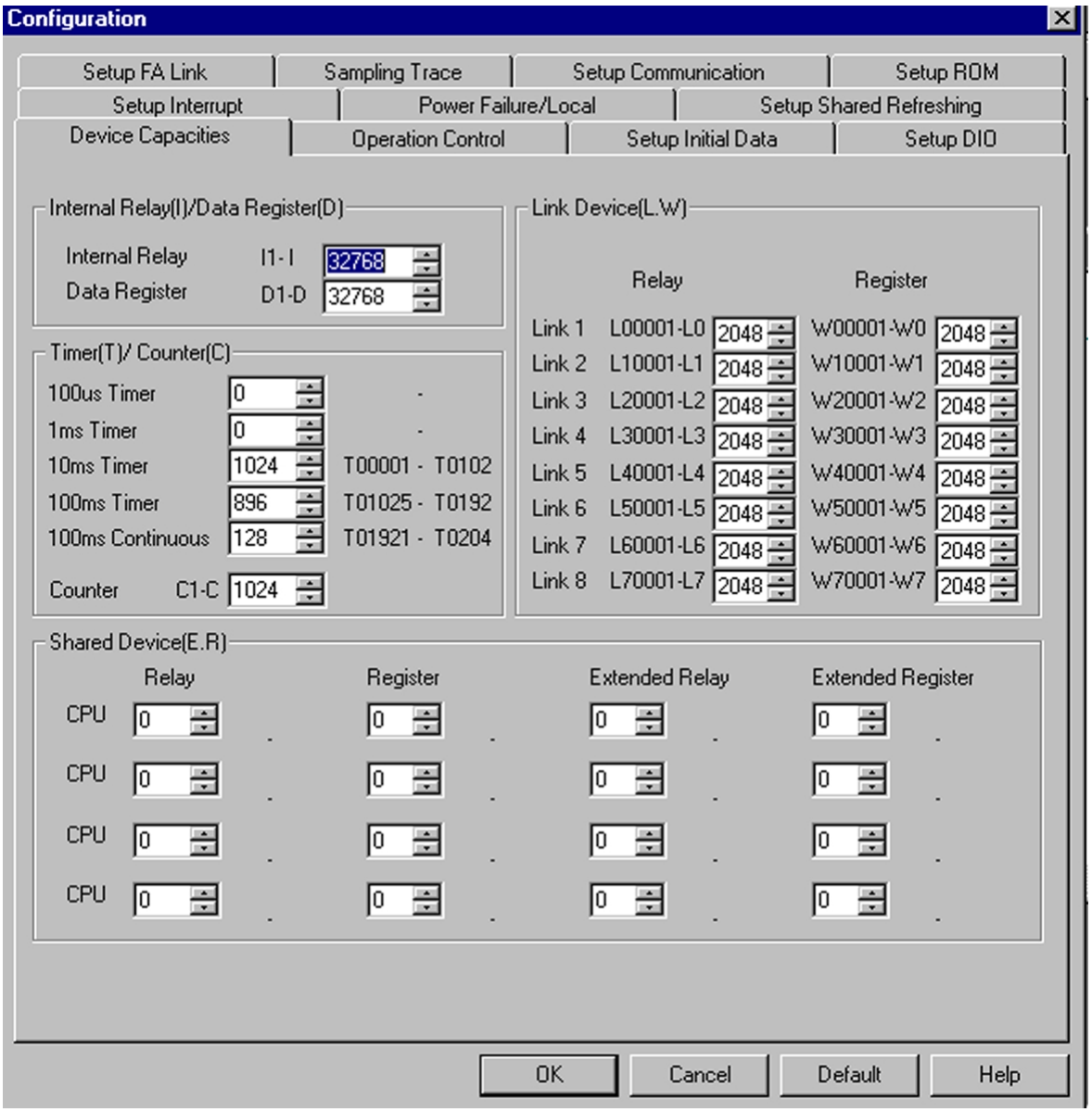
(3) Click on [Default] to bring up the confirmation message below; select [Yes] to return just the displayed window to the default settings.

FB050105E.EPS

Figure B5.4 Dialog Box for Default Settings

■ Settings for Device Capacities

The capacity for each type of device can be set.



FB050106E.EPS

Figure B5.5 Screen for Setting Device Capacities

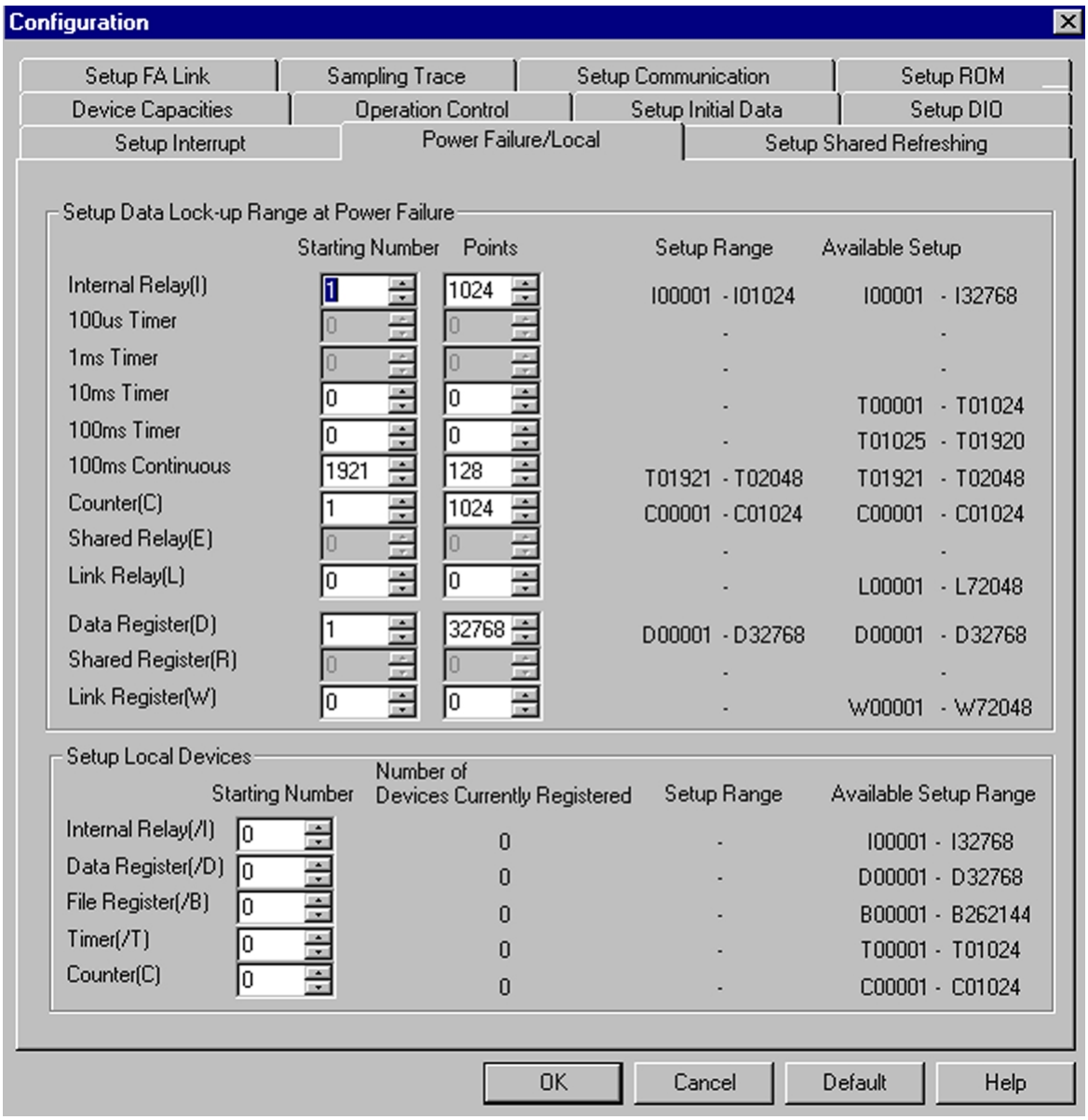
Table B5.3 Input Items for Device Settings

Setting Item	Setting Method	Comments
Capacities of Internal Relay (I) and Data Register (D)	Set using the keys or the spin buttons.	
Capacities of Timer (T) and Counter (C)	Set using the keys or the spin buttons.	The starting number and end number for each type of timer are shown.
Link Device (L) and (W)	Set each system number using the keys or the spin buttons.	
Shared Device (E, R)	Set each CPU using the keys or the spin buttons.	The starting number and end number for each CPU are shown.

TB050110E.EPS

■ Setting Data Lock-up Range at Power Failure and Local Device Range

The ranges can be set for data lock-up at power failure and for the local devices.



FB050107E.EPS

Figure B5.6 Screen for Setting Device Extensions

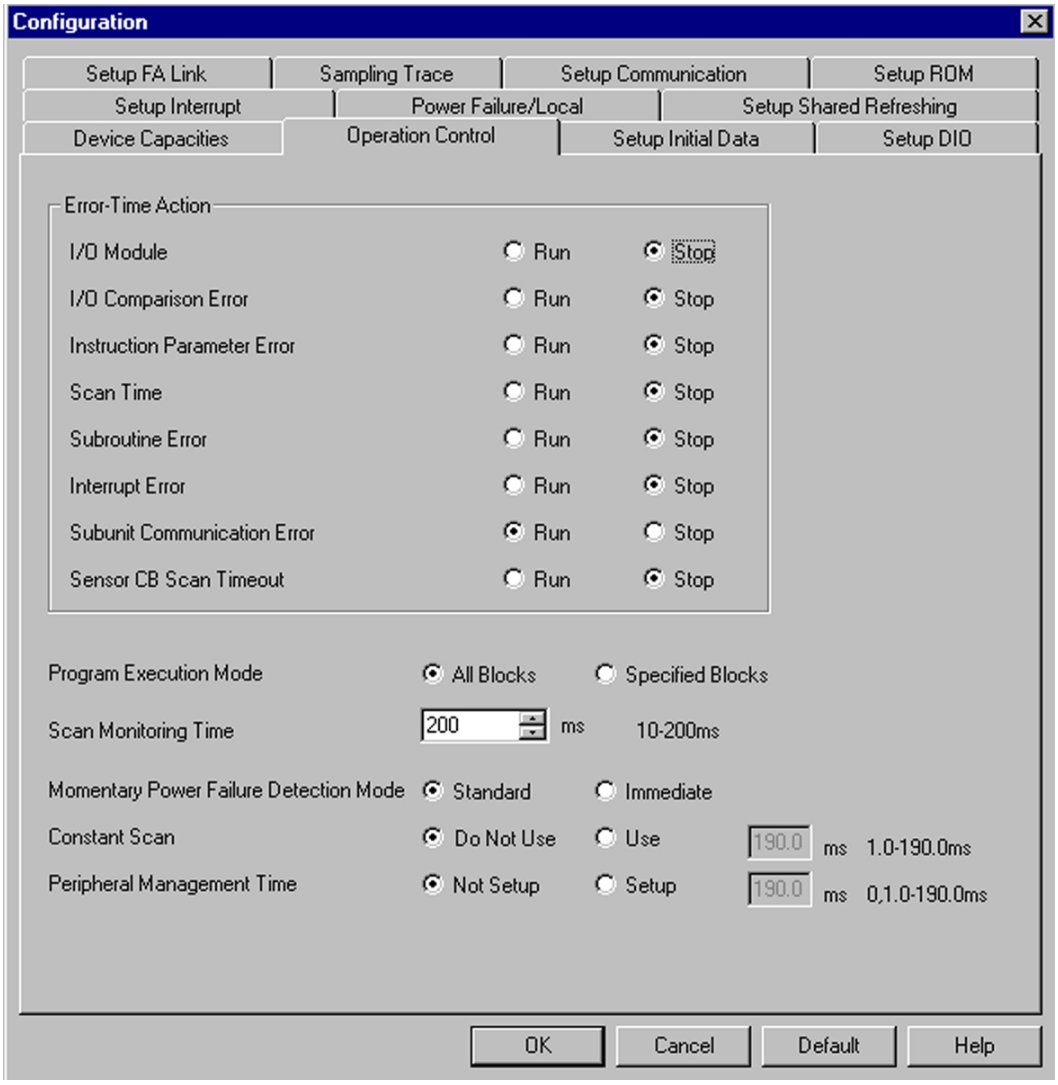
Table B5.4 Input Items for Device Extension Settings

Setting Item	Setting Method	Comments
Setup Data Lock-up Range at Power Failure	Set each device using the keys or the spin buttons.	Set within the range for the device capacities. The starting number and end number are shown.
Setup Local Devices	Set the starting number for each device using the keys or the spin buttons.	The total value is shown for the registered number of devices set for the block. Set within the range for the device capacities.

TB050111E.EPS

■ Setting Operation Control

The operation method can be set.



FB050108E.EPS

Figure B5.7 Setup Screen for Operation Control

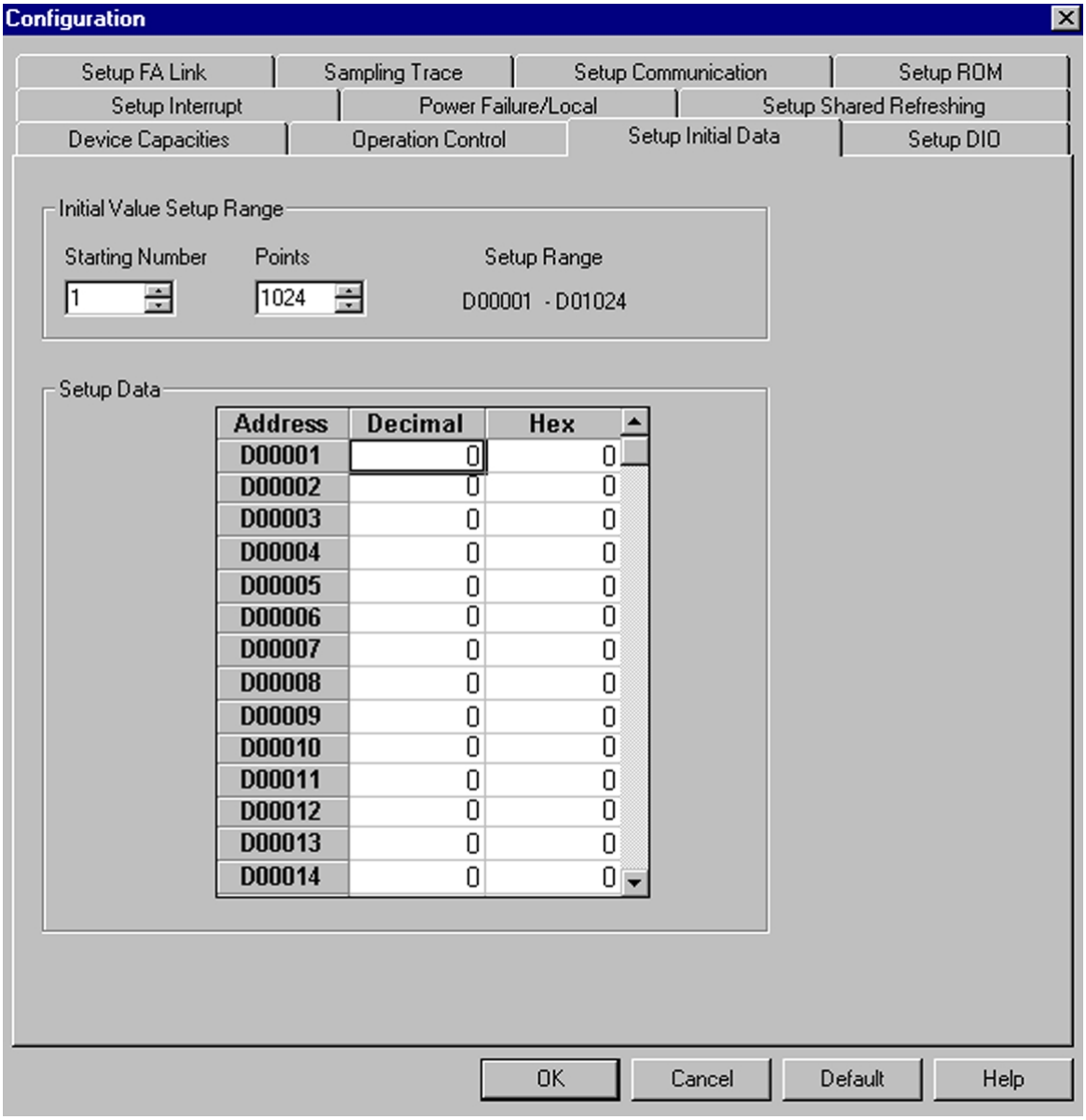
Table B5.5 Input Items for Setting Operation Control

Setting Item	Setting Method	Comments
Error-Time Action	Click on the [Run] or [Stop] radio button.	
Program Execution Mode	Click on the [All Blocks] or [Specified Blocks] radio button.	
Scan Monitoring Time	Set using key input.	
Momentary Power Failure Detection Mode	Click on the [Standard] or [Immediate] radio button.	
Constant Scan	Constant Scan Click on the [Use] or [Do Not Use] radio button, and if [Use] is clicked, set the time by key input.	
Peripheral Management Time	Click on the [Not Setup] or [Setup] radio button, and if [Setup] is clicked, set the time by key input.	

TB050112E.EPS

■ Setting Initial Values of Data Register

The initial values of the data register can be set.



FB050109E.EPS

Figure B5.8 Screen for Setting Initial Values of Data Register

Table B5.6 Input Items for Setting Initial Values of Data Register

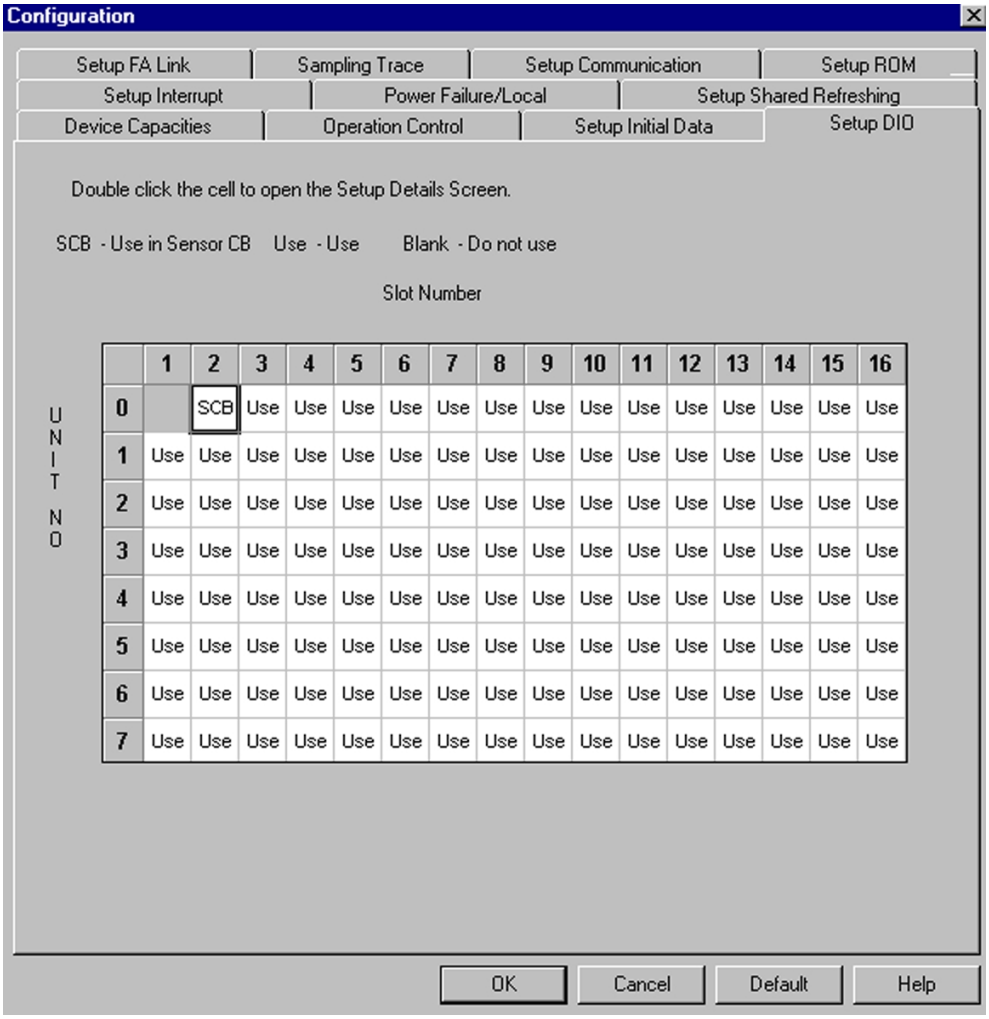
Setting Item	Setting Method	Comments
Starting Number and Points	Set using key input or the spin buttons.	Set within the range of the data register's capacity.
Initial value	Input in decimal or hex. Hex numbers can be prefixed by $.	Data is set according to the word range.

TB050113E.EPS

■ Setting DIO

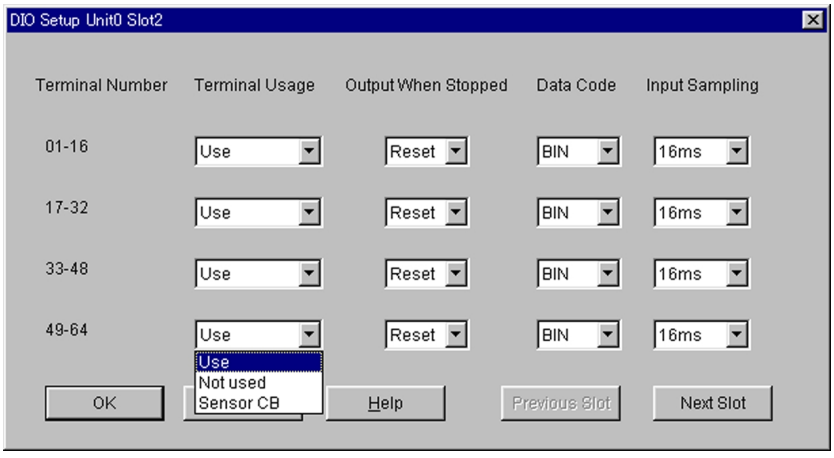
The initial setup screen has choices of use (Use), not use (blank), and use with sensor control block (SCB).

Right-click on the slot position to make detailed settings, or double-click (or press the [Enter] key) to display the setup details screen.



FB050110E.EPS

Figure B5.9 DIO Setup Screen



FB050111E.EPS

Figure B5.10 Window for DIO Setup Details

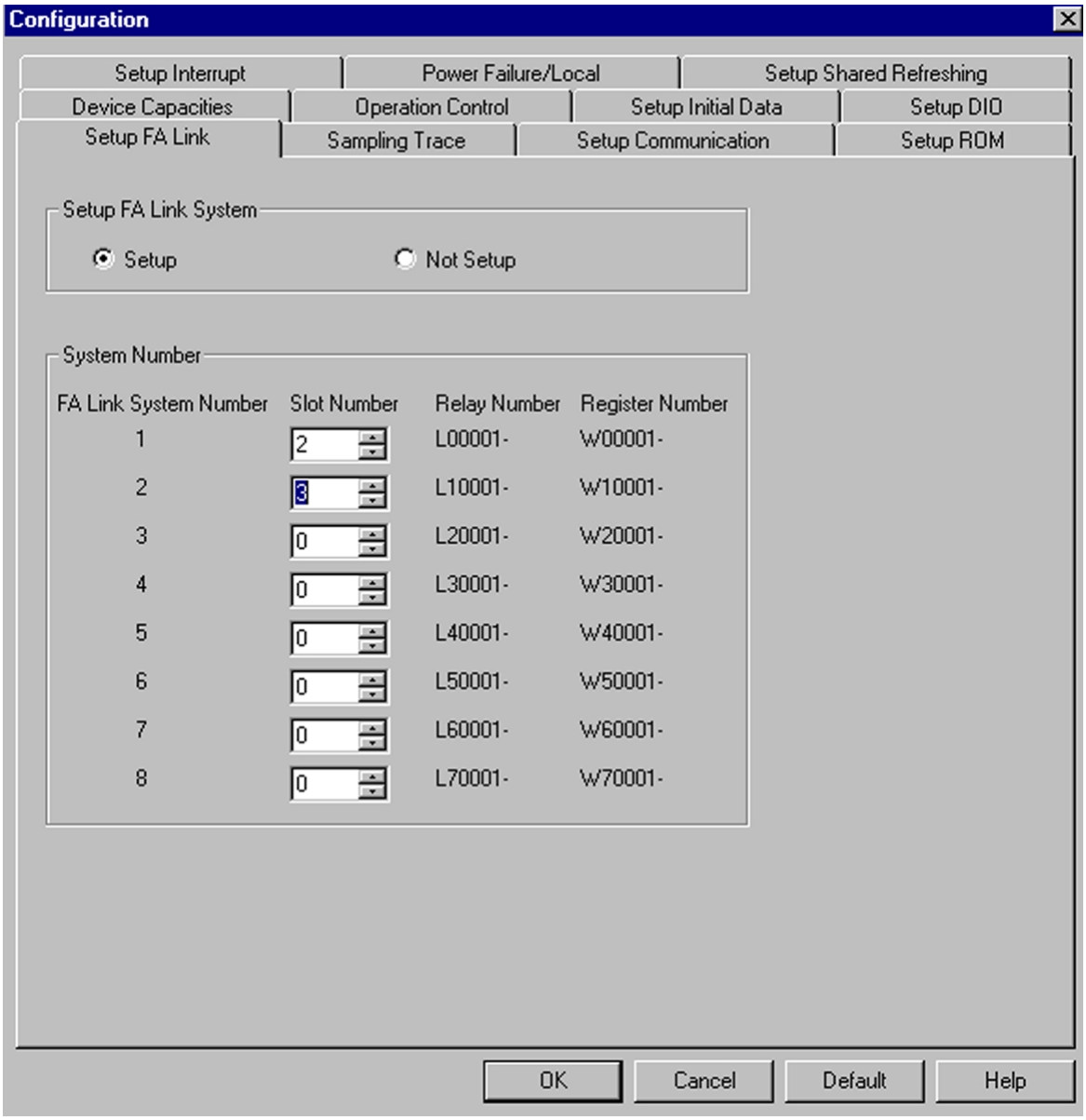
Table B5.7 Input Items for DIO Setup Details

Setting Item	Setting Method	Comments
Terminal usage	Select to use, to not use, or SCB from the list boxes.	When a CPU type is set by slot unit, other pins are also changed automatically. SCG can be set for F3SP28/38/53/58 only. When a single CPU is used, only I/O modules used by that CPU have to be set. (They do not have to be set to [Not use].) Similarly, for multi-CPU configuration, only I/O modules that are used have to be set.
Output when stopped	Select reset or hold from the list boxes.	When a CPU type is set by slot unit, other pins are also changed automatically.
Data code (BIN/BCD)	Select BIN or BCD from the list boxes.	
Input sampling	Select 16ms, 1ms, 250μs, 62.5μs, or always.	Settings of 250μs, 62.5μs, and always are available for F3SP28/38/53/58 only.

TB050114E.EPS

■ Setting FA Links

The correspondence of FA link system numbers and slot numbers can be set. When the system numbers are in order of the slot numbers, this setting is unnecessary.



FB050112E.EPS

Figure B5.11 Screen for Setting FA Links

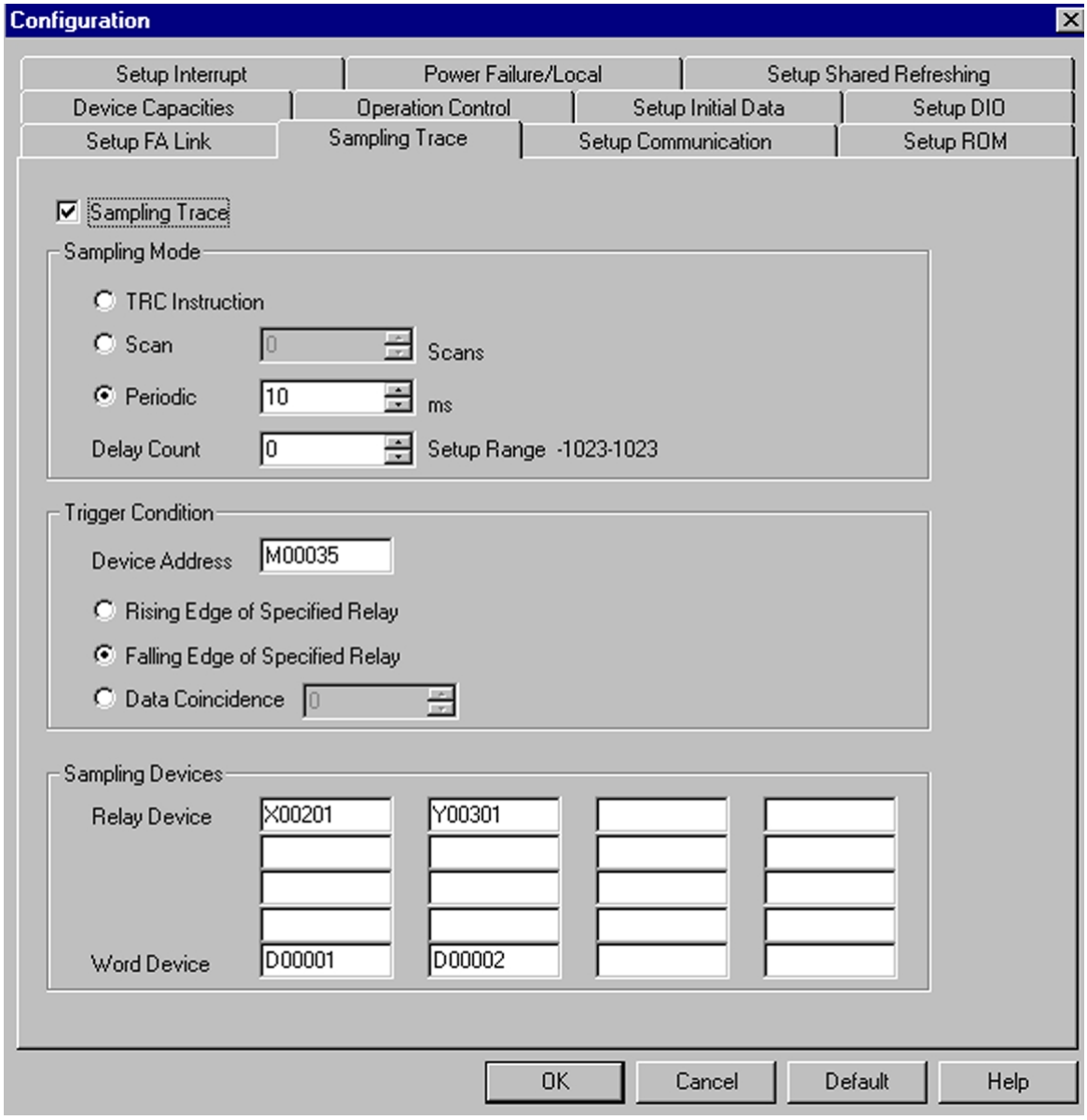
Table B5.8 Input Items for Setting FA Links

Setting Item	Setting Method	Comments
Setup FA Link System	Click on the [Setup] or [Not Setup] radio button. To do settings, input the slot numbers for the system numbers by using the keys, or assign them using the spin button.	Slot numbers cannot be duplicated. Slot numbers can be in the range from 2 through 16. Unset numbers are indicated by 0.

TB050115E.EPS

■ Setting Sampling Trace

The conditions and sampling devices can be set for the sampling trace.



FB050113E.EPS

Figure B5.12 Screen for Setting Sampling Trace

Table B5.9 Input Items for Setting Sampling Trace

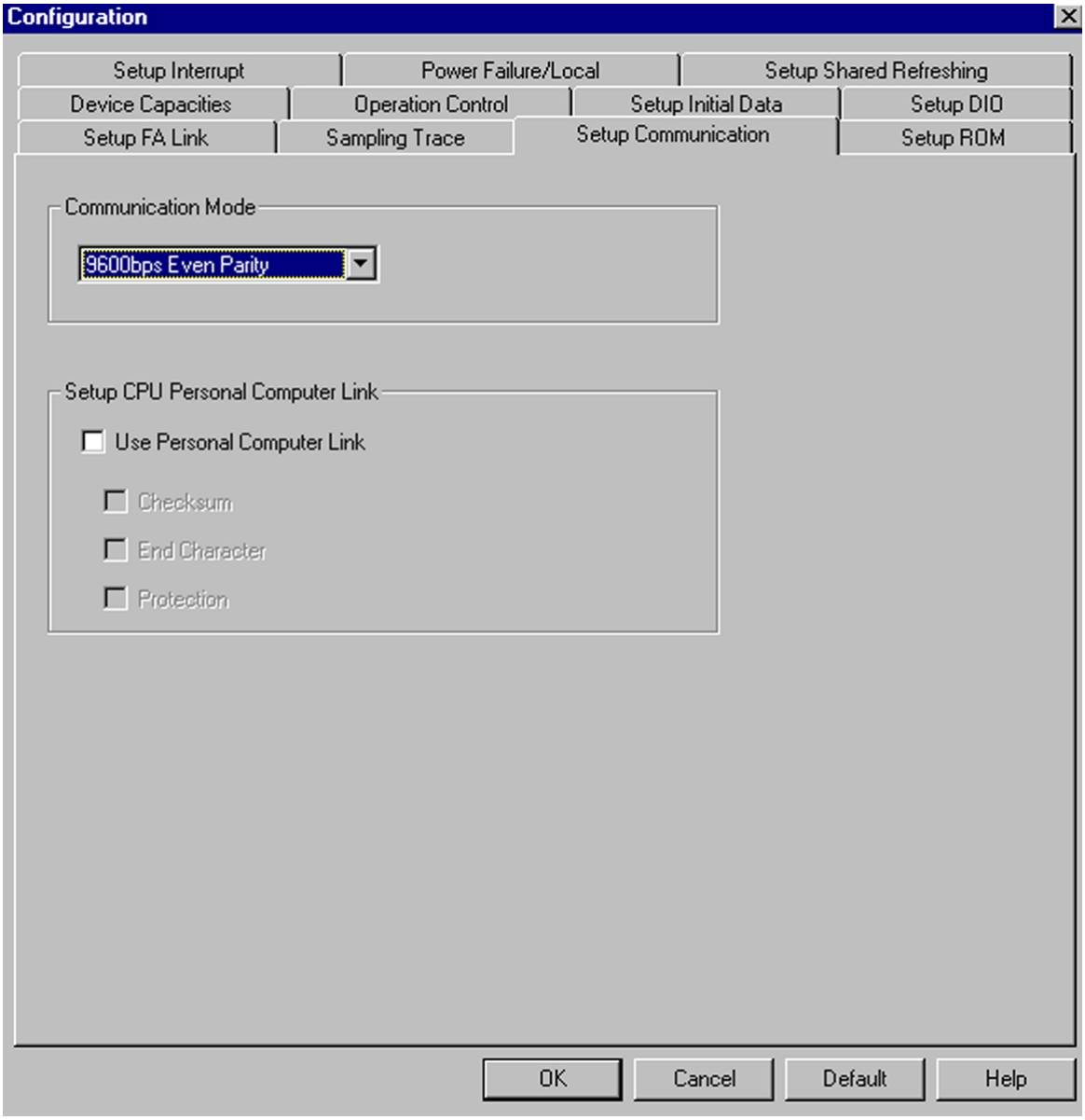
Setting Item	Setting Method	Comments
Sampling Trace	Click on the check button to do sampling trace.	
Sampling Method	Click on the [TRC Instruction], [Scan] or [Periodic] button. For scan, set the intervals, and for periodic, set the time, using the keys or the spin buttons.	
Delay Count	Set using the keys or the spin buttons.	The delay is from -1023 through 1023.
Trigger Condition	Use the keys to input the trigger address. Then, click on the radio button of [Rising Edge of Specified Relay], [Falling Edge of Specified Relay], or [Data Coincidence]. For data coincidence, input the data using the keys or the spin buttons.	The relay data coincidence is a 16-point value from that address.
Sampling Devices	Relays of up to 16 points and registers of up to 4 points can be input using the keys.	When a relay is input to the register field, it is a 16-point value from that address. When a timer/counter is input to the relay field, the timeout relay is traced, and when input to the register field, the current value is traced.

TB050116E.EPS

See Chapter B17 “Sampling Trace”.

■ Setting Communication Mode

The transmission speed and parity can be set for the CPU programming port.



FB050114E.EPS

Figure B5.13 Screen for Setting Communication

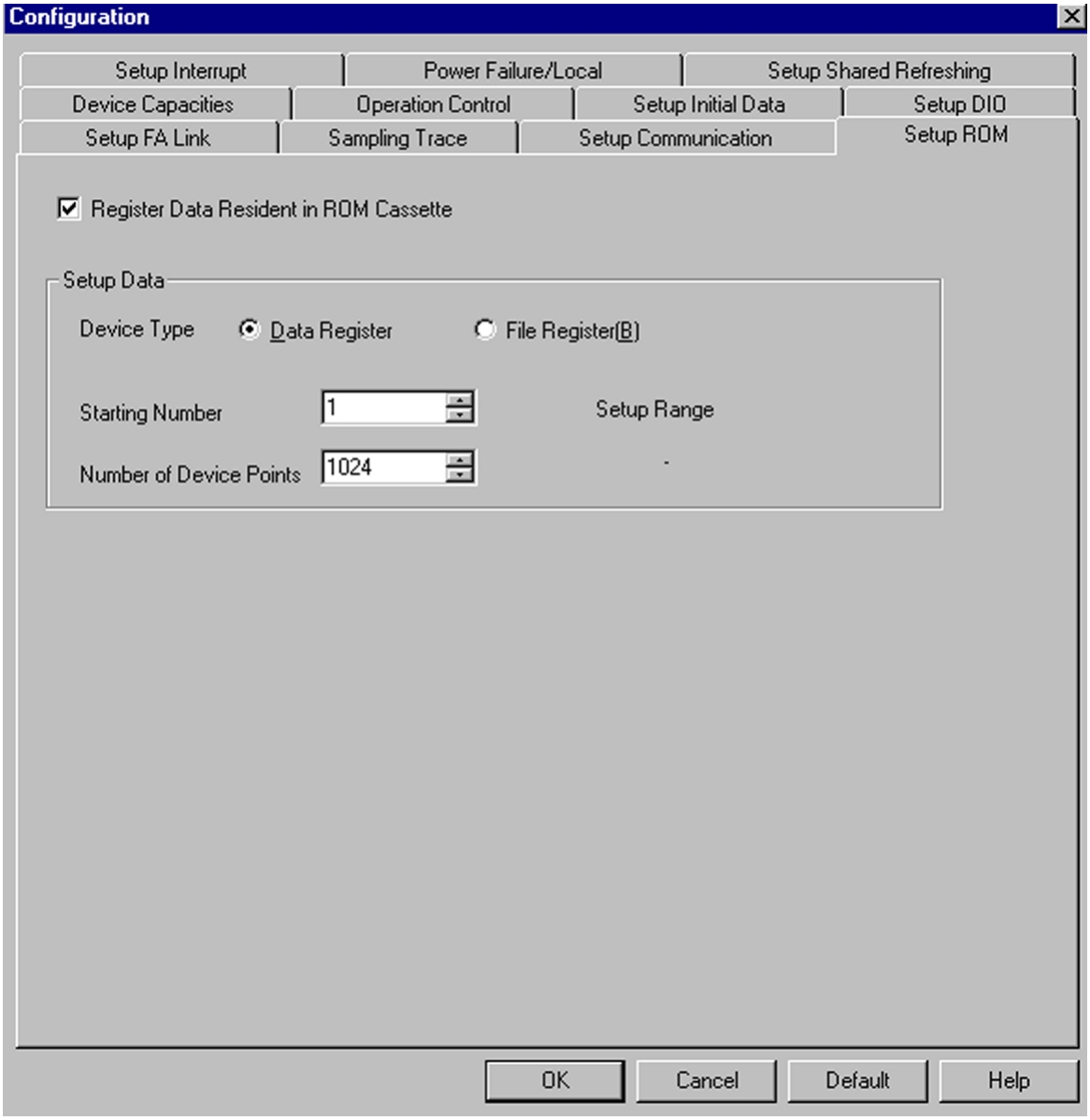
Table 5.10 Input Items for Setting Communication

Setting Item	Setting Method	Comments
Communication Mode	Set the communication mode from the drop-down window.	The modes that can be selected depend on the CPU type.
Setup CPU Personal Computer Link	Click on the [Use CPU Personal Computer Link] radio button if the link is to be used. If this item is checked, then click on [Checksum], [End Character], and [Protection] functions as necessary.	This function is required for using the CPU programming port for the Personal Computer Link function.

TB050117E.EPS

■ Setting ROM

The devices and device ranges can be set for when data is read to the ROM cassette.



FB050115E.EPS

Figure B5.14 Screen for Setting ROM

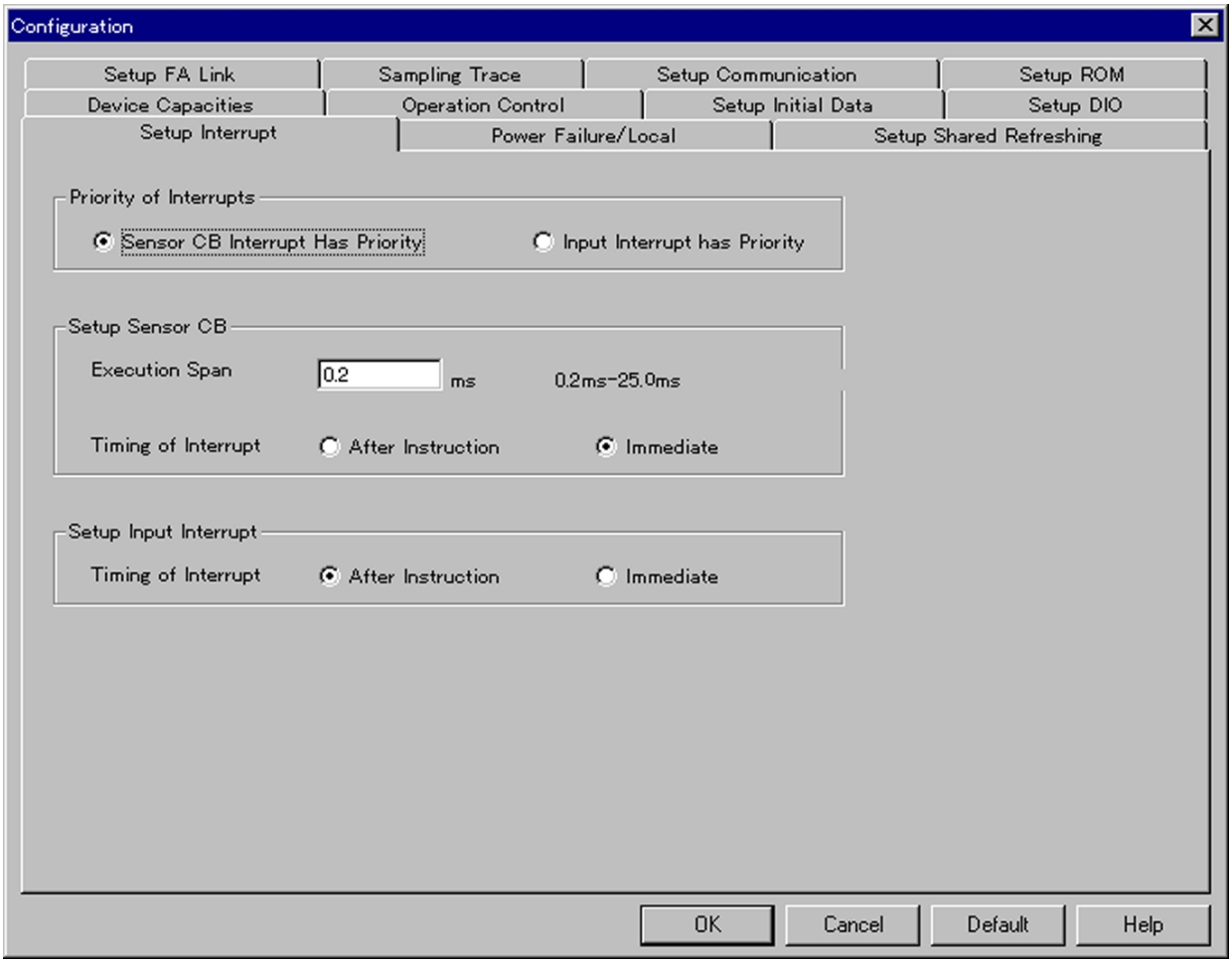
Table B5.11 Input Items for Setting ROM

Setting Item	Setting Method	Comments
Register Data	Resident in ROM Cassette Click on the check box to make the data resident.	
Setup Data	Click on either [Data Register] or [File Register] for the device type. Input the starting number and number of device points using the keys or the spin buttons.	Set the values within the range of the device capacities. However, the maximum number of device points is 32,768.

TB050118E.EPS

■ Setting Interrupt

The operating environment can be set for using the sensor control block.



FB050116E.EPS

Figure B5.15 Screen for Setting Interrupt

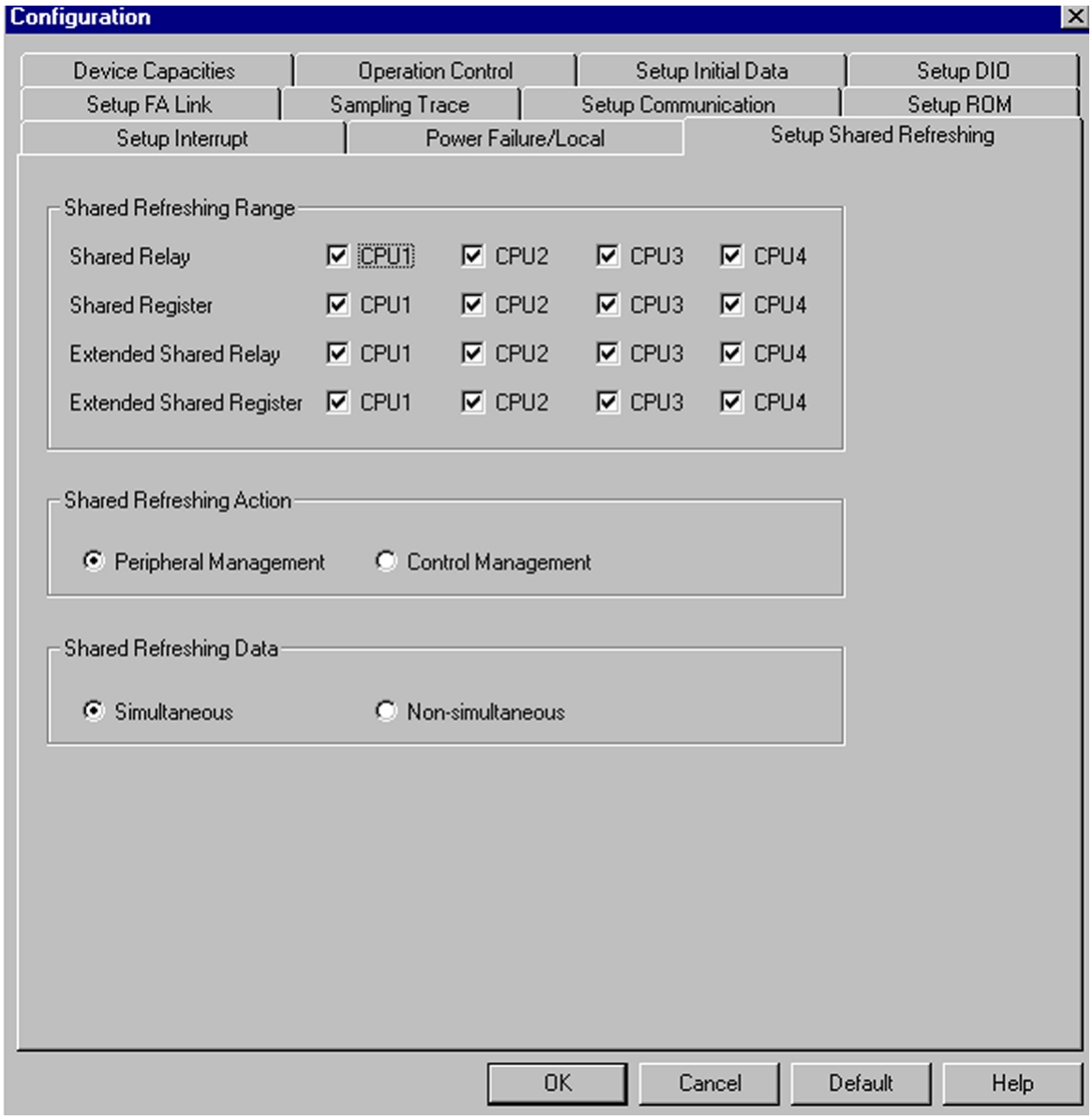
Table B5.12 Input Items for Setting Interrupt

Setting Item	Setting Method	Comments
Priority of Interrupts	Click on the radio button for [Sensor CB Interrupt Has Priority] or [Input Interrupt Has Priority].	
Setup Sensor CB	The execution span can be set by key input. To set the timing for the sensor CB interrupt, click on the radio button for [After Instruction] or [Immediate].	
Setup Input Interrupt	To set the timing for the input interrupt, click on the radio button for [After Instruction] or [Immediate].	

TB050119E.EPS

■ Setting Shared Refreshing

The range can be set for shared refreshing.



FB050117E.EPS

Figure B5.16 Screen for Setting Shared Refreshing

Table B5.13 Input Items for Setting Shared Refreshing

Setting Item	Setting Method	Comments
Shared Refreshing Range	Click on the read range (per CPU) for each device.	Can be set for F3SP28/38/53/58 only.
Shared Refreshing Action	Click on the radio button for [Peripheral Management] or [Control Management].	Can be set for F3SP28/38/53/58 only.
Shared Refreshing Data	Set for simultaneous or non-simultaneous refreshing.	Can be set for F3SP28/38/53/58 only.

TB050120E.EPS

SEE ALSO

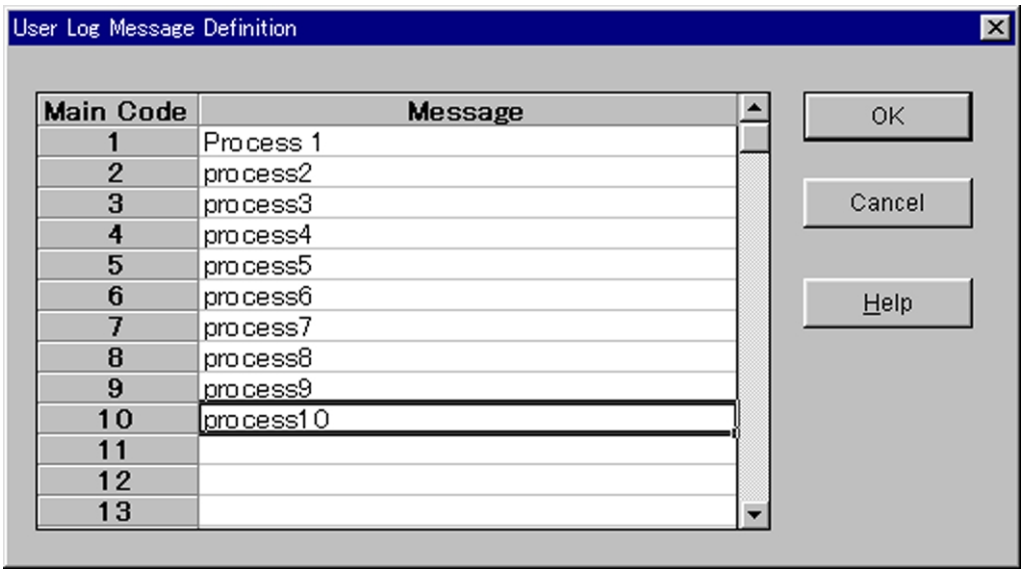
Refer to “Sequence CPU Instruction Manual-Functions (F3SP28/38/53/58)” (IM34M6Q13-01E) for details.

B5.1.4 Creating User Log Messages

This section explains how to create user log messages.

■ Procedure for Creating Messages

(1) Select [Project] - [User Log Message]. The following window appears.



FB050118E.EPS

(2) Input the message corresponding to the main code.
Up to 64 messages can be registered. Each message can contain up to 32 letters.
Blanks can be left midway through a message corresponding to the main code.

(3) Click on [OK]. The message is updated. Click on [Cancel] to abandon the input.

TIP

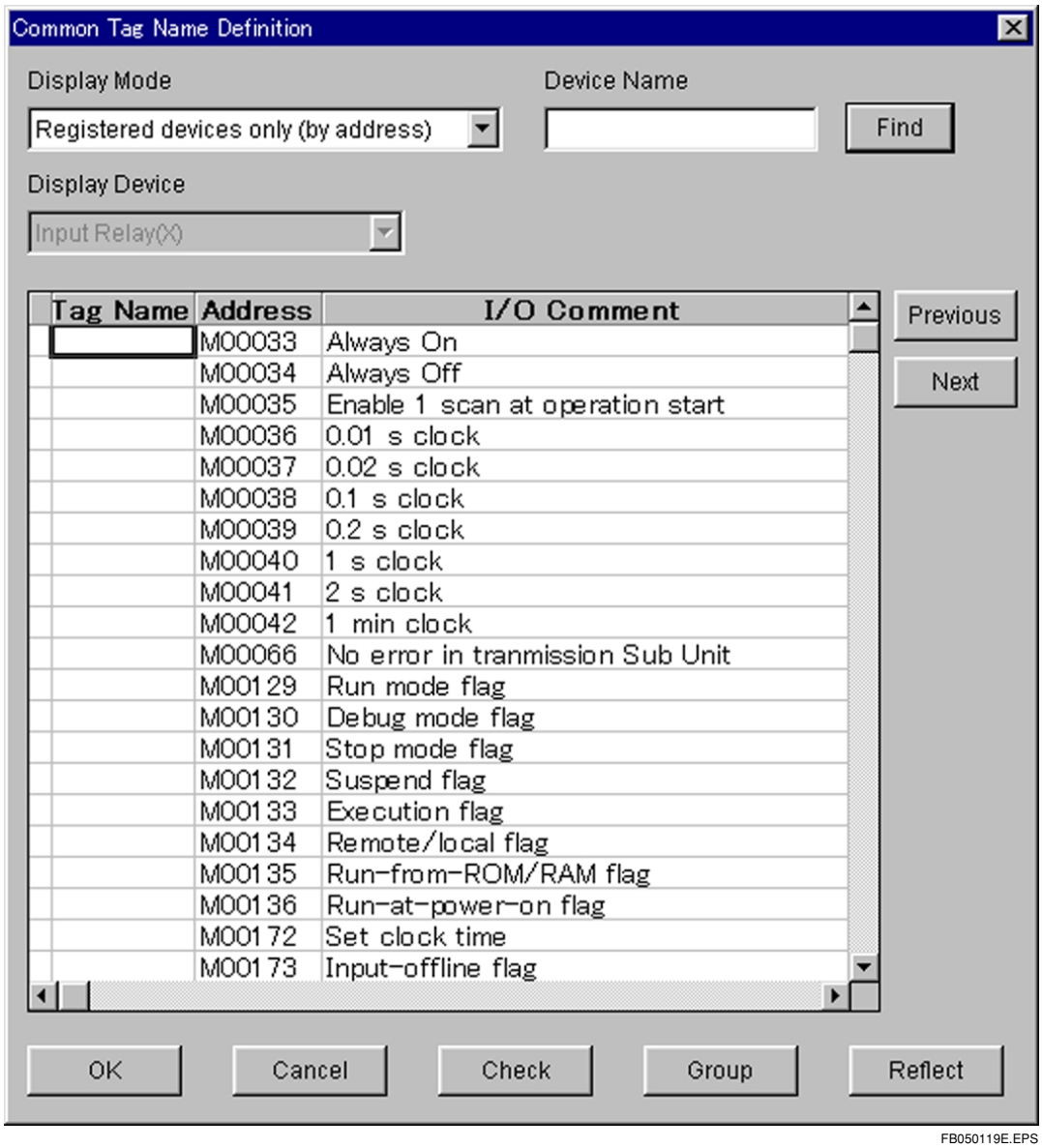
Copy and paste can be done by double-clicking on the message field to invoke input mode.

B5.1.5 Creating Common Tag Name Definitions

This section explains how to create common tag name definitions.

■ Procedure for using Common Tag Name Definition

(1) Select [Project] - [Common Tag Name Definition]. The screen below appears.
The operations are the same as for Block Tag Name Definition.
Click on [OK] to update the common tag name definition.
Click on [Cancel] to abandon the input.

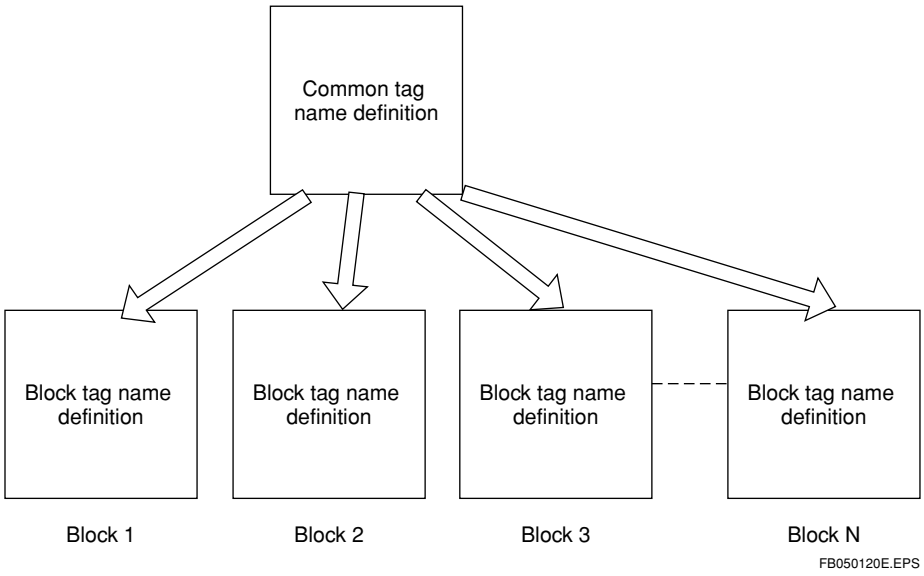


FB050119E.EPS

Figure B5.17 Common Tag Name Definition

■ Reflecting Common Tag Name Definition

The tag name definition actually looked up by the program is the tag name defined by the block tag name definition or the macro tag name definition. To use the contents defined by the common tag name definition, the operation must be done to reflect them in each block.



■ Procedure for Reflecting Common Tag Name Definition

(1) Select the tag name to reflect in the block. For multiple selections, hold the [Ctrl] key down while selecting the tag name and address.

(2) Select [Reflect] for the common tag name definition.

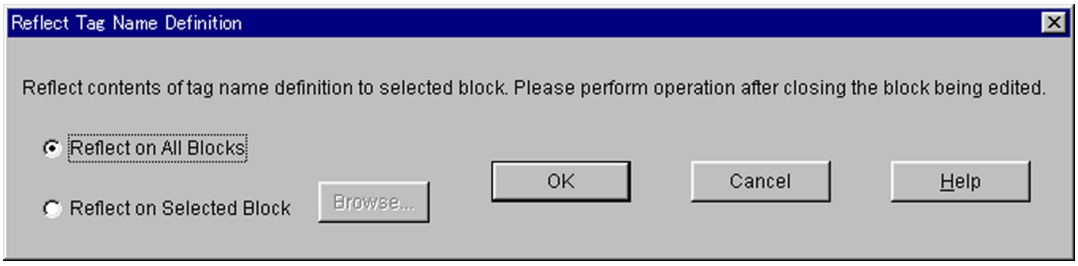
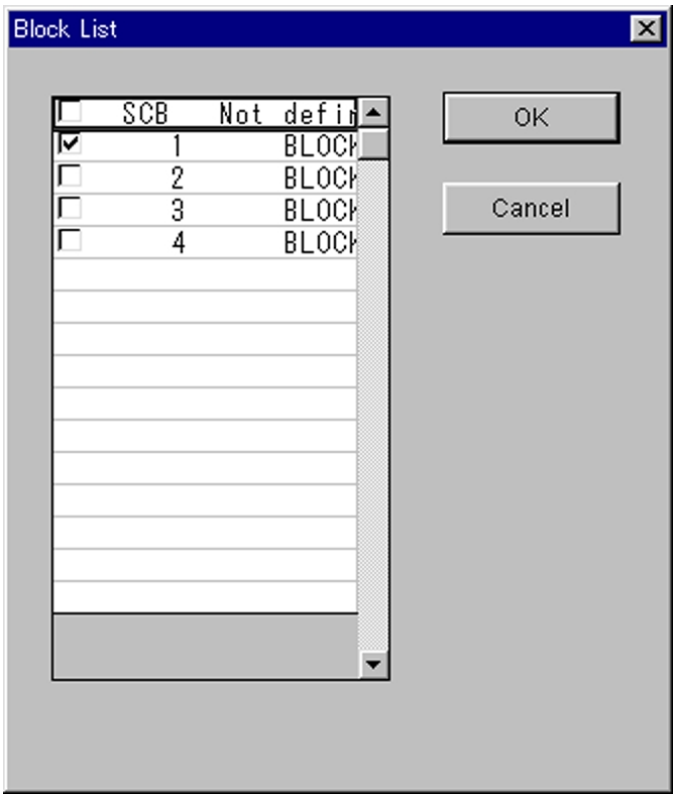


Figure B5.18 Reflect Tag Name Definition Window

(3) Selecting the method for reflecting
When [Reflect on All Blocks] is selected, the selected items are reflected in all blocks registered in the executable programs in the project. When [Reflect on Selected Block] is selected, the items are reflected in the block selected with [Browse..]. When [Browse...] is selected, the next dialog box appears.

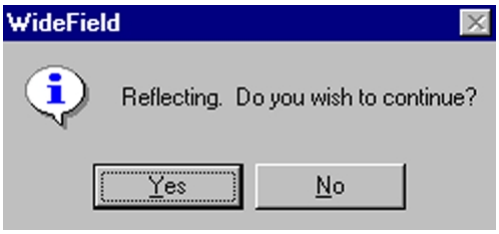


FB050122E.EPS

Figure B5.19 Dialog Box for Selecting Blocks

(3) Click on the checkboxes of blocks to be reflected. Once the blocks to reflect are all checked, select [OK].

(4) The following dialog box appears.



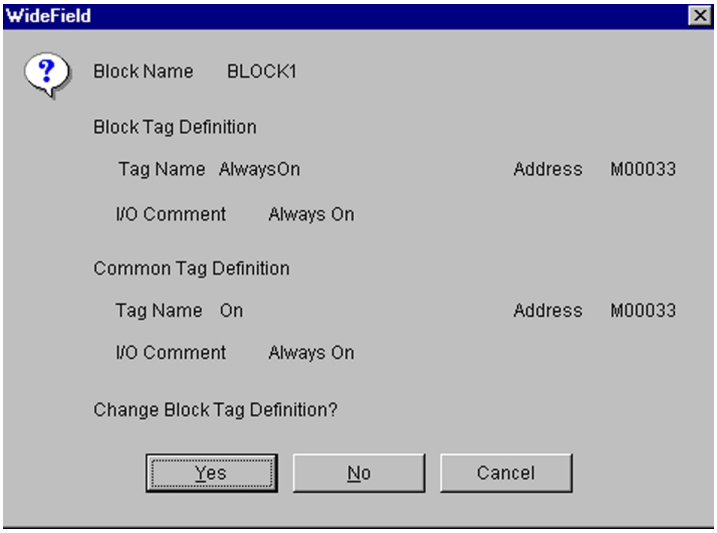
FB050123E.EPS

Select [Yes] to reflect the contents of the common tag name definition in each block. If [No] is selected, the contents of the common tag name definition are not reflected in the blocks.

CAUTION

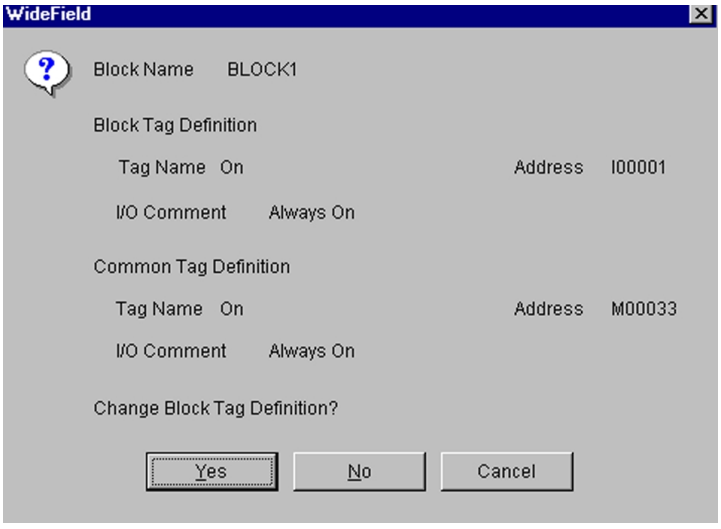
- The contents of the common tag name definition are not reflected while a block is being edited.
  Execute this function after closing the edited block.
- Check the items in the following order to reflect block tag names and device addresses that do not match.

(1) Check the address of the tag name defined by the common tag name definition.
If a duplicate address is found, the dialog box below appears.



FB050124E.EPS

(2) Check the duplicate registration of the tag name.
If a tag name registered in duplicate is found, the dialog box below appears.



FB050125E.EPS

Select [Yes] to reflect, [No] not to reflect, and [Cancel] to cancel the reflect processing.

● Reflecting Common Tag Name Definitions of Block Tag Name Definitions

Tag Names defined in blocks are valid tag names within blocks. To use these in other blocks, the same tag name definition must be done for those other blocks.

Reflection of the block tag name definition can be done using the Copy and Paste functions from the Tag Name Definition screen.

B5.2 Managing Project

This section explains project management.

The project management functions are as follows:

- **Program Check**
- **Find in Project function**
- **Find Instruction in Project function**
- **Replace Tag name in Project function**
- **Replace Address in Project function**
- **Display Device Usage Status function**

B5.2.1 Program Check function

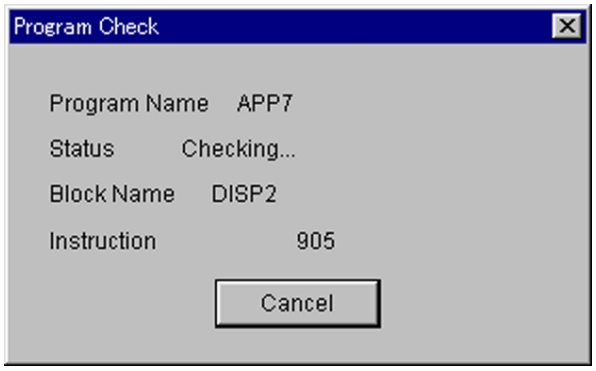
The Program Check function checks the following items and displays error locations.

- Connections between circuits
- Correspondence of circuits and configurations

■ Procedure for Syntax Check

(1) Select [Project] - [Check Program].

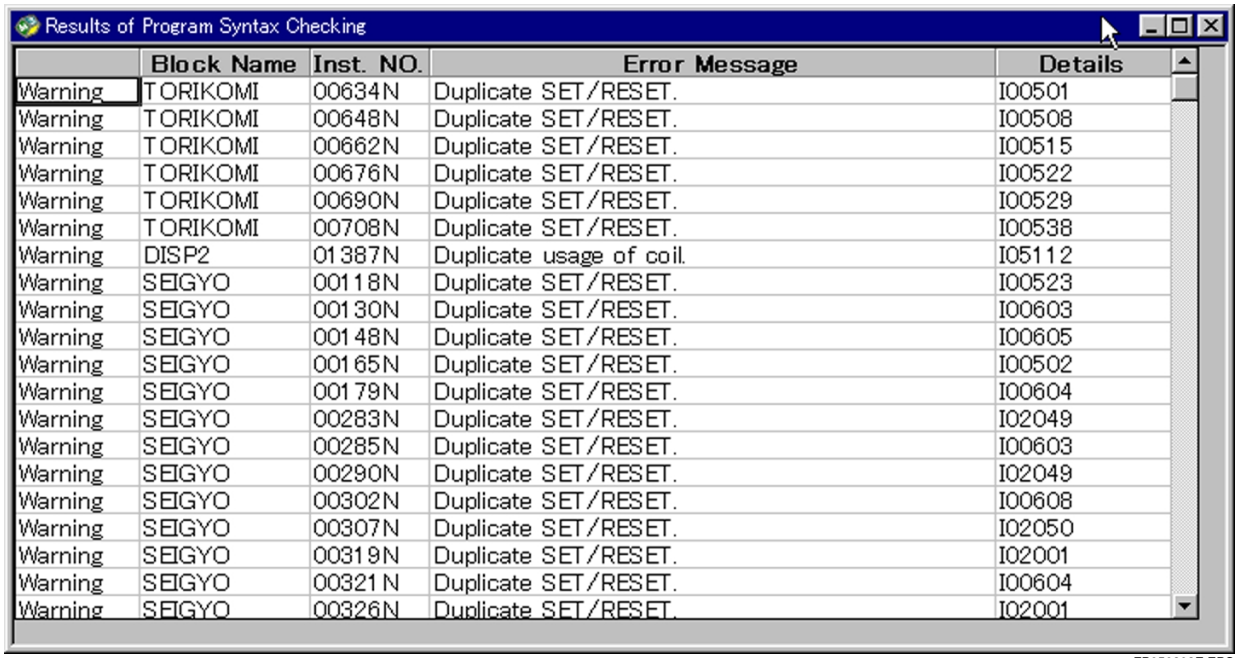
(2) The program check starts. To cancel, select [Cancel].



FB050201E.EPS

Figure B5.20 Window During Program Checking

(3) The Results of Program Checking window appears. The results are displayed in the order of error and warning. Up to 256 items can be displayed.



	Block Name	Inst. NO.	Error Message	Details
Warning	TORIKOMI	00634N	Duplicate SET/RESET.	I00501
Warning	TORIKOMI	00648N	Duplicate SET/RESET.	I00508
Warning	TORIKOMI	00662N	Duplicate SET/RESET.	I00515
Warning	TORIKOMI	00676N	Duplicate SET/RESET.	I00522
Warning	TORIKOMI	00690N	Duplicate SET/RESET.	I00529
Warning	TORIKOMI	00708N	Duplicate SET/RESET.	I00538
Warning	DISP2	01387N	Duplicate usage of coil.	I05112
Warning	SEIGYO	00118N	Duplicate SET/RESET.	I00523
Warning	SEIGYO	00130N	Duplicate SET/RESET.	I00603
Warning	SEIGYO	00148N	Duplicate SET/RESET.	I00605
Warning	SEIGYO	00165N	Duplicate SET/RESET.	I00502
Warning	SEIGYO	00179N	Duplicate SET/RESET.	I00604
Warning	SEIGYO	00283N	Duplicate SET/RESET.	I02049
Warning	SEIGYO	00285N	Duplicate SET/RESET.	I00603
Warning	SEIGYO	00290N	Duplicate SET/RESET.	I02049
Warning	SEIGYO	00302N	Duplicate SET/RESET.	I00608
Warning	SEIGYO	00307N	Duplicate SET/RESET.	I02050
Warning	SEIGYO	00319N	Duplicate SET/RESET.	I02001
Warning	SEIGYO	00321N	Duplicate SET/RESET.	I00604
Warning	SEIGYO	00326N	Duplicate SET/RESET.	I02001

FB050202E.EPS

Figure B5.21 Results of Syntax Check

To display an error or warning, bring the mouse cursor to that item and double-click, or select the item using the cursor keys and press the [Enter] key. The block with the error or warning opens and the display jumps to the first column of the corresponding circuit.

■ Circuits Returning Errors at Program Check

Errors returned as a result of the prgram check are divided into the 2 types below according to seriousness. This error categories can be altered using the environment settings.

● Error

Critical error. Download cannot be done.

● Warning

Non-critical error. Operation may not be according to the design.

The error types are set out in Table B5.14 on the following pages.

Table B5.14 Circuits Returning Error at Syntax Check (1/3)

Error Message	Contents	Other Information	Category
Block not found.	This block is not registered in the configuration definition of the executable program.	Block name	Error (not modifiable)
Macro not found.	The instruction macro called by the block does not exist.	Block name, instruction number, macro name	Error (not modifiable)
Conversion error in block.	Block saved with error. Program is not checked for saving with error.	Block name	Error (not modifiable)
Conversion error in macro.	Macro saved with error. Program is not checked for saving with error.	Macro name	Error (not modifiable)
Error in device capacity and power failure lock-up response.	The device capacity and the power failure lock-up range do not correspond correctly.		
Error in local device setting.	• The first address number of the local device is not correct. It exceeds the device range. • The first address of the local device is not set.		
Number of steps exceeds maximum.	The number of steps exceeds the maximum for the selected CPU type. The limitations on the step count are as follows: F3SP05 5K F3SP21 10K F3SP25 20K F3SP35 100K F3FP36 40K F3SP28 30K F3SP38 120K F3SP53 56K F3SP58 120K	None	Error (not modifiable)
Too many blocks for CPU type.	The number of blocks exceeds the maximum for the selected CPU type. The limitations on the block count are as follows: F3SP05/21 32 blocks F3SP25/28/53 128 blocks F3SP35/36/58, F3FP36 1,024 blocks	None	Error (not modifiable)
Circuit comments + subcomments exceed 3,000.	Circuit comments and subcomments combined exceed 3,000.	None	Error (not modifiable)
Too many labels for CPU type.	The number of labels exceeds the maximum for the selected CPU type. The limitations on the label count are as follows: F3SP05/21 64 labels F3SP25/35, F3FP36 256 labels F3SP28/38/53/58 1,024 labels	None	Error (not modifiable)
Inappropriate device or range exceeded.	The address exceeds the range. The following cases may apply: • The global address exceeds the range for the configuration's device capacity. • More local addresses than set are used.	Block name, instruction number, erroneous address	Error (not modifiable)

TB050201E.EPS

Table B5.14 Circuits Returning Error at Syntax Check (2/3)

Error Message	Contents	Other Information	Category
This instruction cannot be used with the selected CPU type. Exceeds the range of the timer/counter setting .	The entered instruction is not supported by the selected CPU type.	Block name, instruction number, incorrect instruction	Error (not modifiable)
Timer/counter setting exceeded.	The timer/counter setting is exceeded. The timer value is precision, and the precision range is exceeded.	Block name, instruction number, incorrect address	Error (not modifiable)
Instruction-device mismatch	Device can not be used for instruction is used.	Block name, instruction number, incorrect address	Error (not modifiable)
No block doing ACT/INACT.	A block that does ACT/INACT is not registered in the configuration definition of the executable program.	Block name, instruction number, unregistered block name	Error (not modifiable)
Number of macros exceeds maximum for CPU type.	The number of macros exceeds the maximum for the selected CPU type. The limitations on the number of macros are as follows: F3SP05, F3SP21 0 Other types 64	None	Error (not modifiable)
Duplicate usage of coil	The same address is used for OUT, OUTN, DIFU and DIFD instructions. The second and later instances are shown for the error location.	Block name, instruction number, duplicated address	Warning (Can be set)
Duplicate usage of SET/RST	The same address is used for the SET and RST instructions and the OUT, OUTN, DIFU and DIFD instructions. The second and later instances are shown for the error location.	Block name, instruction number, duplicated address	Warning (Can be set)
Duplicate usage of timer/counter	The same timer or counter is used in 2 or more places. The second and later instances are shown for the error location.	Block name, instruction number, duplicated address	Error (Can be set)
Duplicate usage of label used	The same label is used in 2 or more places. The second and later instances are shown for the error location.	Block name, instruction number, duplicated label	Error (Can be set)
Duplicate usage of interrupt I/O address	In an INTP instruction, the same address is used in 2 or more places. The second and later instances are shown for the error location.	Block name, instruction number, duplicated label	Error (Can be set)
IL-ILC mismatch	IL-ILCs do not have 1:1 correspondence. IL-ILCs in the same block must correspond 1:1.	Block name, instruction number,	Error (Can be set)
SUB-RET mismatch	SUB-RETs do not have 1:1 correspondence. SUB-RETs in the same block must correspond 1:1.	Block name, instruction number,	Error (Can be set)
INTP-IRET mismatch	INTP-IRETs do not have 1:1 correspondence. INTP-IRETs in the same block must correspond 1:1.	Block name, instruction number,	Error (Can be set)
FOR-NEXT mismatch	FOR-NEXTs do not have 1:1 correspondence. FOR-NEXTs in the same block must correspond 1:1.	Block name, instruction number,	Error (Can be set)
CALL-SUB mismatch	The CALL destination label (sub-routine) does not exist.	Block name, instruction number, label name	Error (Can be set)

TB050202E.EPS

Table B5.14 Circuits Returning Error at Syntax Check (3/3)

Error Message	Contents	Other Information	Category
Jump destination not found.	The jump destination does not have a label.	Block name, instruction number, label name	Error (Can be set)
HRD/HWR instruction exceeds maximum value for CPU type.	The number of high-speed READ/WRITE instructions exceeds the maximum for the selected CPU type. The limitations on the number of instructions are as follows: F3SP05/21 8 F3SP25/35, F3FP36 64 F3SP28/38/53/58 64	None	Error (Can be set)
Multiple blocks doing ACT/INACT are registered.	Two or more blocks that have done ACT/INACT have been registered.	Block name, instruction number, illegal block name	Error (not modifiable)
Global device duplicated in local device area	A global device is duplicated in a local device area.	Block name, instruction number, device	Error (not modifiable)

TB050203E.EPS

CAUTION

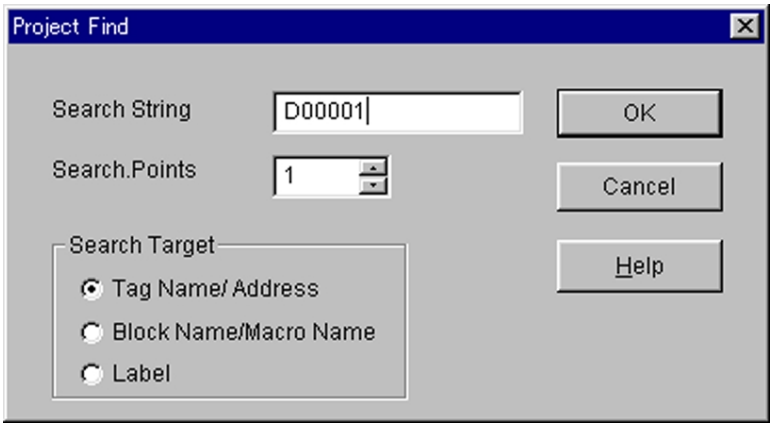
The targets for syntax checking are items that are registered in the executable program's configuration definition and that have been saved in a file.

B5.2.2 Find in Project function

The Project Find function is for searching and listing all blocks where a specified device is used. (This function does not find locations where blocks are used in macros.)

■ Procedure for Finding in Project

(1) Select [Project] - [Finding in Project]. The following dialog box appears.

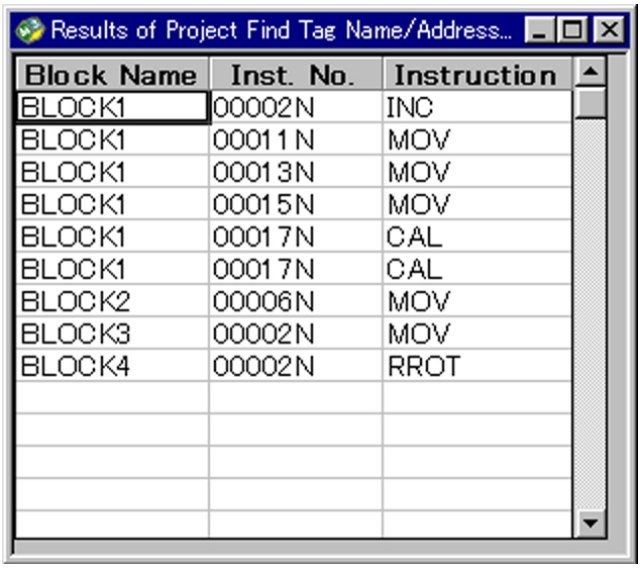


FB050203E.EPS

Figure B5.22 Project Find Settings

(2) Specify the search string, search points, and search target, and then select [OK]. To specify a range, specify the search points.

(3) The window showing the results appears. The block name, instruction number, and instruction for up to 1,024 locations can be displayed.



Block Name	Inst. No.	Instruction
BLOCK1	00002N	INC
BLOCK1	00011N	MOV
BLOCK1	00013N	MOV
BLOCK1	00015N	MOV
BLOCK1	00017N	CAL
BLOCK1	00017N	CAL
BLOCK2	00006N	MOV
BLOCK3	00002N	MOV
BLOCK4	00002N	RROT

FB050204E.EPS

Figure B5.23 Results of Project Find

Select an item in the results window by double-clicking on the mouse or using the cursor keys and then pressing the [Enter] key. The block opens and the cursor jumps to the first column of the corresponding circuit.

(4) To close the results window, select [File] - [Close].

CAUTION

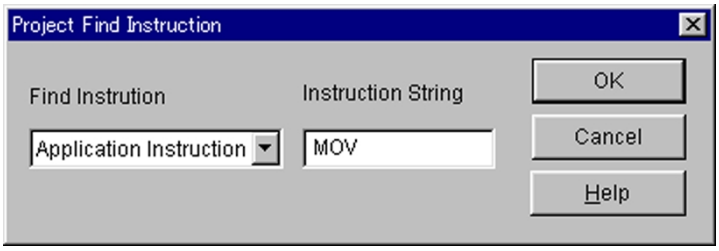
- The target blocks are those registered in the executable program's configuration definition and saved in a file. Also, when blocks have been saved with errors, the circuits where errors were found are not included as search targets.
- When labels are searched, the parameter section of the label instruction and the location of the label are displayed. For the location of the label definition, the instruction number displayed is the first instruction number of the circuit at the location of the label definition, and the instruction is displayed as a blank.

B5.2.3 Find Instruction in Project function

The Project Find Instruction function is for searching and listing all blocks where a specified instruction is used. (This function does not find locations used in macros.)

■ Procedure for Finding Instruction in Project

(1) Select [Project] - [Find Instruction in Project]. The following dialog box appears.

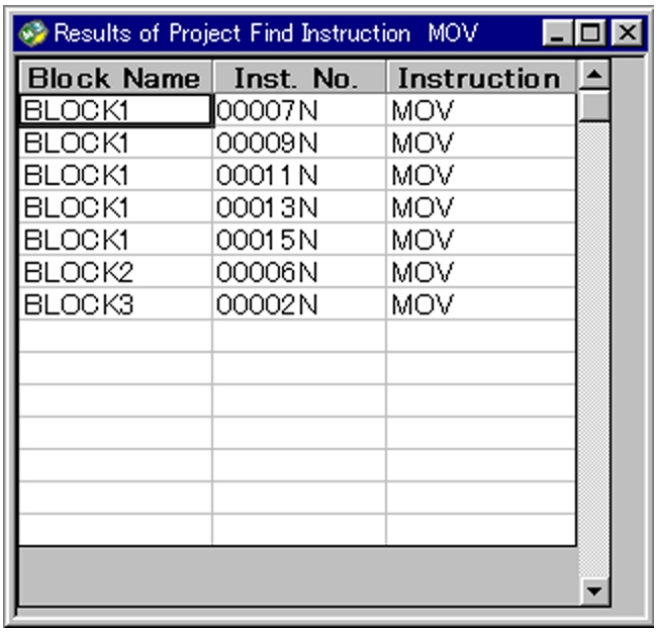


FB050205E.EPS

Figure B5.24 Project Find Instruction settings

(2) Specify the instruction and select [OK].

(3) The window showing the results appears.
The block name, instruction number, and instruction for up to 1,024 locations can be displayed.



FB050206E.EPS

Figure B5.25 Results of Project Find Instruction

Select an item in the results window by double-clicking on the mouse or using the cursor keys and then pressing the [Enter] key. The block opens and the cursor jumps to the first column of the corresponding circuit.

(4) To close the results window, select [File] - [Close].

CAUTION

The target blocks are those registered in the executable program's configuration definition and saved in a file. Also, when blocks have been saved with errors, the circuits where errors were found are not included as search targets.

B5.2.4 Replace in Project function

The Replace in Project function is for replacing the tag name and address registered in the project's executable program.

This function is of 2 types, the Replace Address function and the Replace Tag Name function.

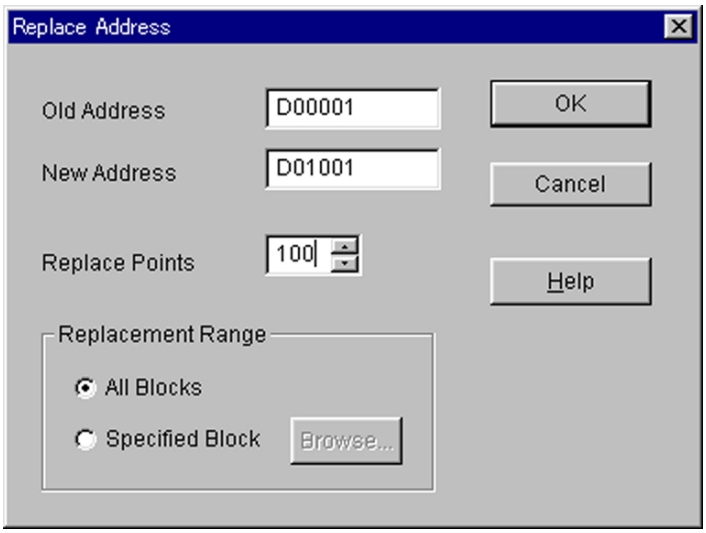
The Replace Address function replaces addresses and tag name definitions of all blocks registered in the project's executable program.

The Replace Tag Name function replaces names of tag names of all blocks registered in the project's executable program.

■ Procedure for using Replace in Project function (Replace Address)

(1) Close blocks being edited.

(2) Select [Project] - [Replace in Project] - [Replace Address]. The following window appears.



FB050207E.EPS

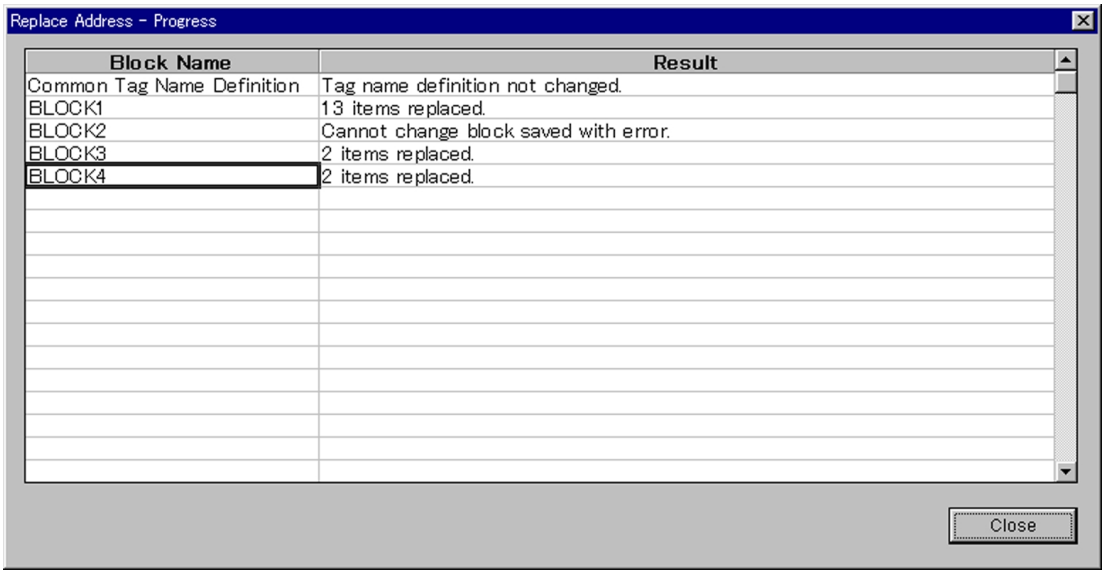
Figure B5.26 Dialog Box for Replace Project Function (Replace Address)

(3) Set the old address, new address, and replace points, and then select [OK].

(4) Replacement starts and a progress window appears. The results of the replacement are stored in a log file (Replace.log) so that they can be looked up after replace processing. This file is a text file that can be opened by any text editor.

TIP

Local devices and devices with index modifiers cannot be specified.



FB050208E.EPS

Figure B5.27 Replace Address - Progress Window

The following messages are displayed in the Replace Address - Progress window.

Table B5.15 Replace Results Messages

Message	Meaning
N items replaced.	N specified items have been replaced successfully.
Skipped because error occurred when modifying circuit.	An error occurred during replacement, so the processing was suspended.The block has not been replaced.
Skipped because error occurred when modifying tag name definition.	An error occurred during replacement of the tag name definition, so the processing was suspended. The block has not been replaced.
Replaced tag name definition only, because circuit not changed.	The specified device is not used in the circuit, so replacement has not been done. However, the tag name was defined so the tag name definition has been changed.
No modification in tag name definition.	A tag name had not been defined for the specified device so it has not been changed.
Replacement cancelled.	Replacement processing was stopped by selecting [Cancel].
File not found.	There is no block file defined with the configuration definition.
Cannot change block saved with error.	The Project Replace function does not work for blocks saved with errors.

TB050204E.EPS

To cancel processing midway, select [Cancel].

(5) When processing ends successfully, the addresses in the blocks are replaced, and if the tag names are assigned to the corresponding addresses, the tag names are re-assigned.
If an error occurs in even 1 location of a block, that block is left out of the replacement processing. (Replacement processing is done for the other blocks where no errors have occurred.)

(6) To replace specified blocks only, select [Specified Block] from the dialog box for the Replace Project function (Replace Address) shown in Figure B5.26. Select [Browse] to bring up the dialog box for selecting the next blocks to replace.

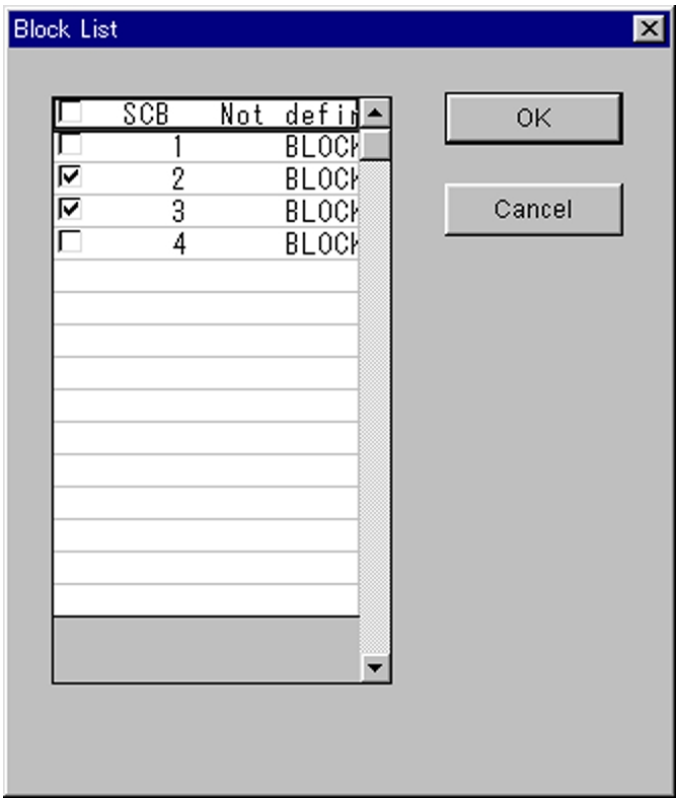
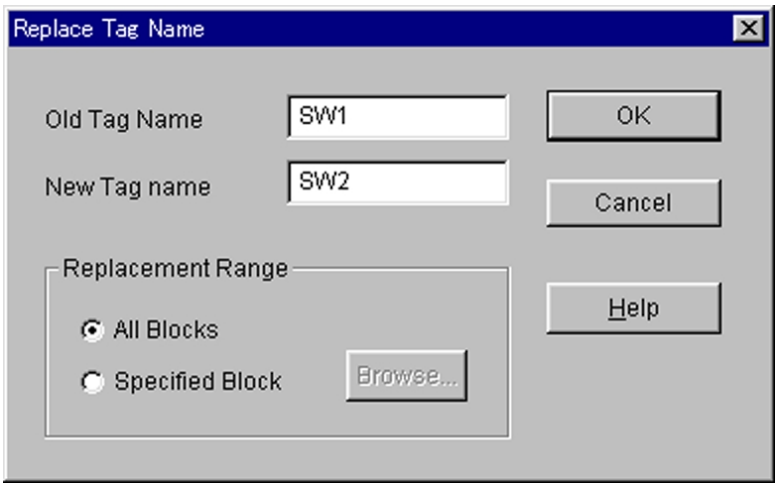


Figure B5.28 Dialog Box for Selecting Blocks

■ Procedure for Using Replace in Project Function (Replace Tag Name)

(1) Close blocks being edited.

(2) Select [Project] - [Replace Project] - [Replace Tag Name].
The following window appears.

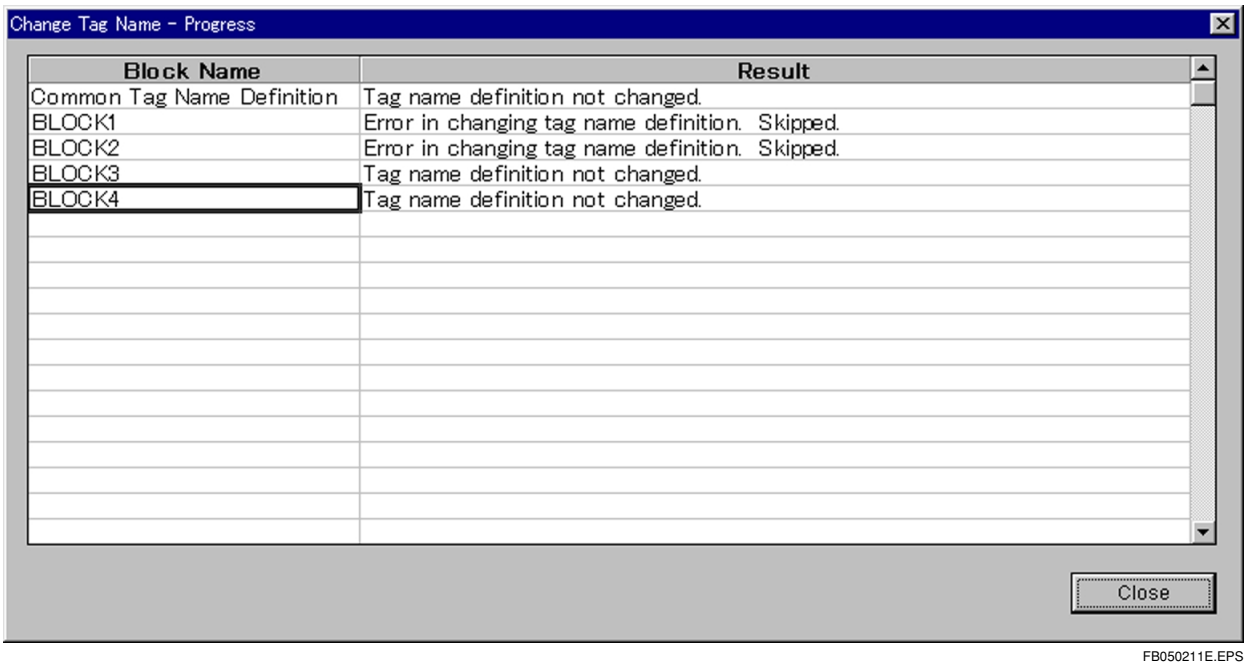


FB050210E.EPS

Figure B5.29 Dialog Box for Replace Project Function (Replace Tag Name)

(3) Set the old tag name and new tag name, and then select [OK].

(4) Replacement starts and a progress window appears. The results of the replacement are stored in a log file (Replace.log) so that they can be looked up after replace processing. This file is a text file that can be opened by any text editor..



FB050211E.EPS

Figure B5.30 Replace Tag Name - Progress Window

Table B5.16 Replace Results Messages

Message	Meaning
N items replaced.	N specified tag names have been replaced successfully.
Skipped because error occurred when modifying tag name definition.	An error occurred during replacement, so the processing was suspended. The block has not been replaced.
Replacement cancelled.	Replacement processing was stopped by selecting [Cancel].
File not found.	There is no block file defined with the configuration definition.

TB050205E.EPS

To cancel processing midway, select [Cancel].

(5) When processing ends successfully, the tag names in the blocks are re-assigned. If an error occurs in even 1 location of a block, that block is left out of the replacement processing. (Replacement processing is done for the other blocks where no errors have occurred.)

(6) To replace specified blocks only, select [Specified Block] from the dialog box for the Replace Project function (Replace Tag Name) shown in Figure B5.29. Select [Browse] to select the block.

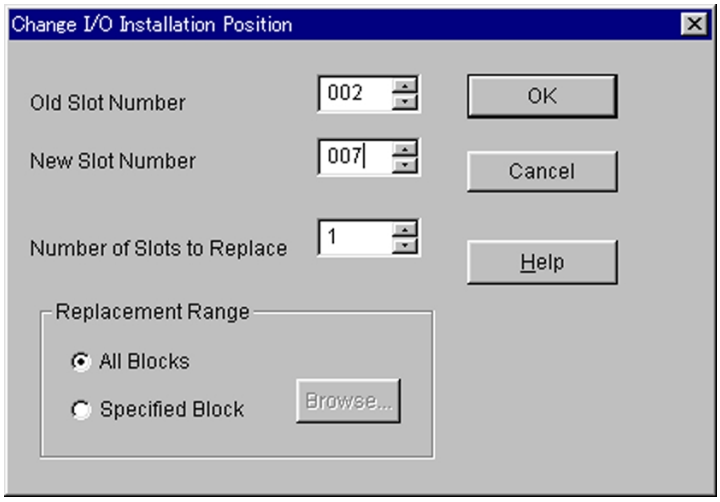
B5.2.5 Change I/O Installation Position function

The Change I/O Installation Position function is for changing positions where modules are installed. The slot number parameters for I/O devices and READ, WRITE, HRD and HWR instructions can be changed together. Simultaneously, the common tag name definitions and block tag name definitions can be re-assigned accordingly.

■ Procedure for Changing I/O Installation Positions

(1) Close all blocks being edited.

(2) Select [Project] - [Change I/O Installation Position]. The following dialog box appears.

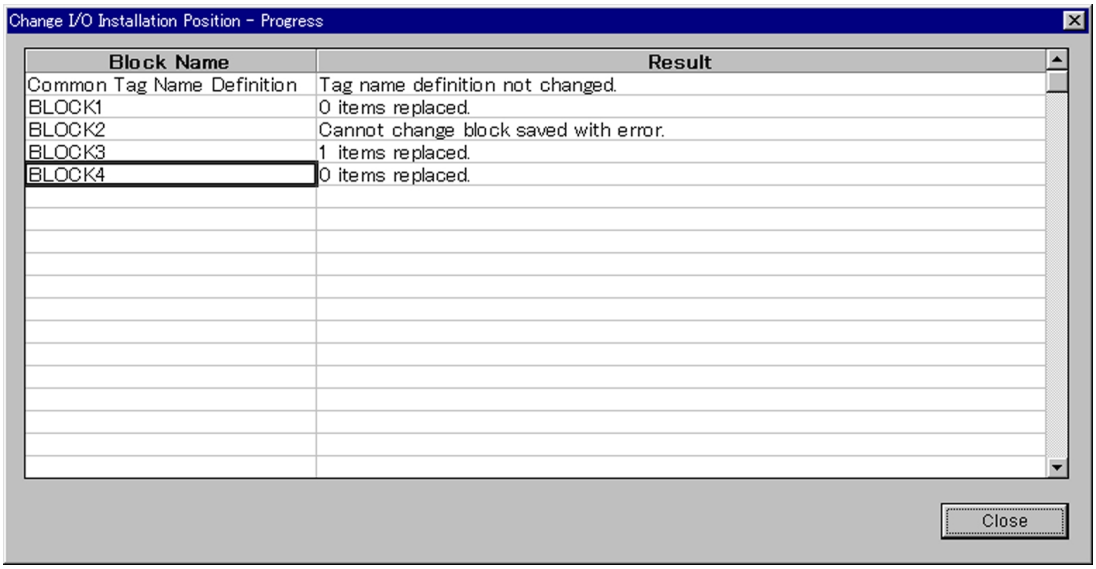


FB050212E.EPS

Figure B5.31 Dialog Box for Changing I/O Installation Positions

(3) Specify the old slot number, new slot number, and number of slots to replace.
The old slot number and new slot number can be specified in the range 002 - 716.
From 1 to 16 slots can be specified for replacement.
In the example above, the installation positions of the I/O module are to be changed from slot numbers 002 and 003 to slot numbers 007 and 008.

(4) Select [OK]. The processing starts for changing the installation position I/O slots.
During processing the following dialog box is displayed.



FB050213E.EPS

Figure B5.32 Change I/O Installation Position - Progress Window

Table B5.17 Change Results Messages

Message	Meaning
N items replaced.	N specified devices have been replaced successfully.
Skipped because error occurred when modifying tag name definition.	An error occurred during replacement, so the processing was suspended. The block has not been replaced.
No modification in tag name definition.	A tag name had not been defined for the specified slot so it has not been changed.
Replacement cancelled.	Replacement processing was stopped by selecting [Cancel].
File not found.	There is no block file defined with the configuration definition.
Cannot change block saved with error.	The Project Replace function does not work for blocks saved with errors.

TB050206E.EPS

(5) When processing ends successfully, the slot numbers of the target I/O relay and READ, WRITE, HRD and HWR instructions are replaced. If an error occurs in a block during proceeding, changing I/O installation positions is not performed.

(6) To do replacement for specified blocks only, select [Specified Block] from the dialog box for changing I/O installation positions, shown in Figure B5.31. Select [Browse] to select block.

CAUTION

- When the slot range are specified using the Change I/O installation position, the error [Mistake in entered setup item] will be returned if the slot position could not exist after the change.
  For instance, errors occur for the following specifications:
  Old slot number 002
  New slot number 016
  Number of slots to replace 4

  In this example, if the 4 slots 002-005 were specified to be changed to 016-019, slots 017, 018, and 019 are physically not possible. Thus an error results.
- When the slot positions are changed using the Change I/O Installation Position function, an error occurs if the tag name definition assigns already assigned tag names after the slots are changed.

B5.2.6 Displaying Device Usage Status

The Device Usage Status function displays the list of all devices in the blocks. (This function does not find locations used in macros.)

■ Procedure for Displaying Device Usage Status.

(1) Select [Project] - [Project Device Usage Status]. The following window appears.

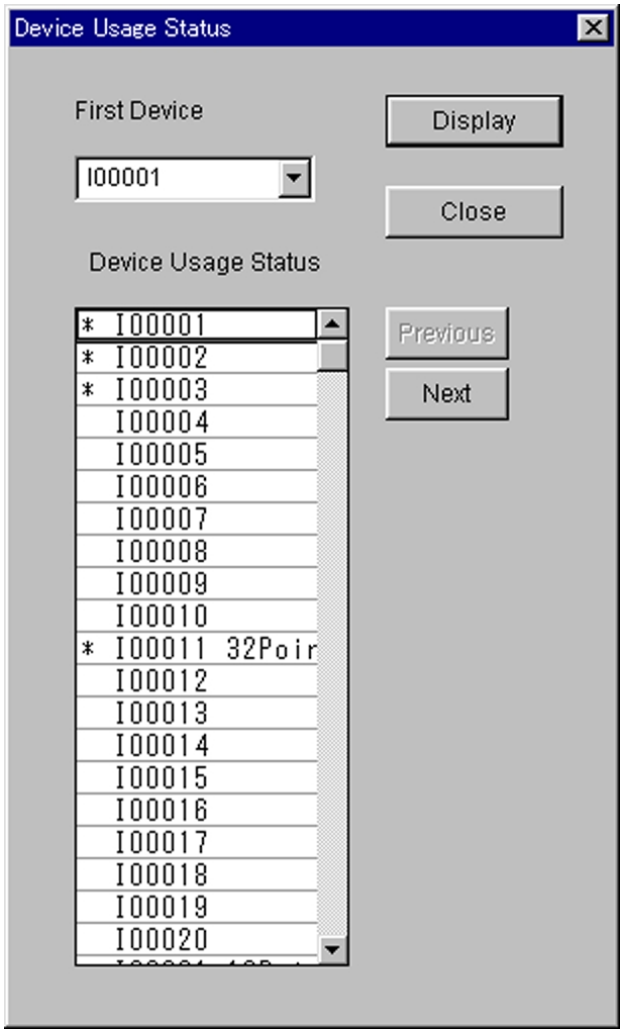


Figure B5.33 Device Usage Status Window

(2) Enter the address for the first device, and select [Display]. The display shows the selected device.

CAUTION

The target blocks are those registered in the executable program's configuration definition and saved in a file.
When blocks have been saved with errors, the circuits where errors were found are not included as display targets.
The range specified for the local devices is displayed in gray. Asterisks in the gray range indicate global devices that are used within the local device range. These return an error or warning, depending on the syntax checking settings for [Tool] - [Setup Environment].

B5.3 Managing Files

Project files can be added, renamed, and deleted.

Table B5.18 File Management

Function	Contents	Target
Insert	File Copies files of other projects and folders to the current project.	• Block files (circuit and tag name definition files) • Common tag name definition files
Rename	File Changes the names of files in the currently open project.	• Block files (circuit and tag name definition files) • Instruction macro files (circuit and tag name definition files)
Delete	File Deletes files in the currently open project.	• Block files (circuit and tag name definition files) • Instruction macro files (circuit and tag name definition files)

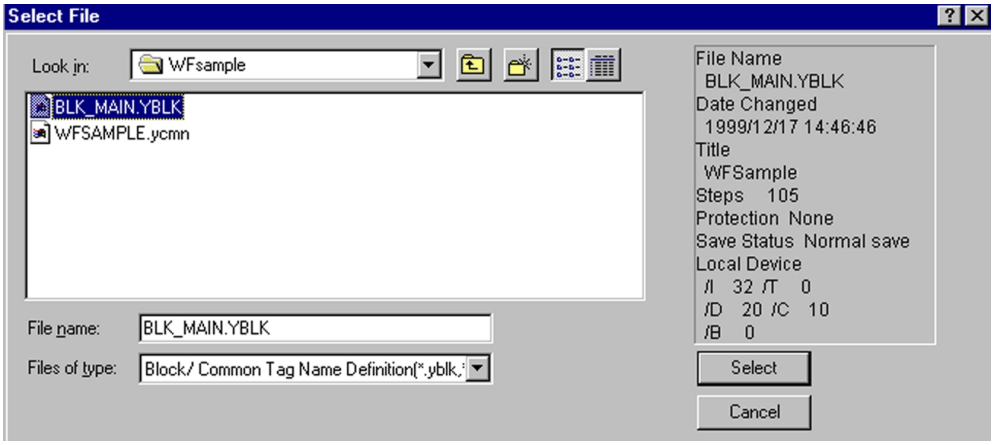
TB050301E.EPS

B5.3.1 Adding Files

The Insert File function is for adding block and common tag name definition files from other projects to the currently open project.

■ Procedure for Adding Files

(1) Select [Project] - [Insert File]. The following window appears.

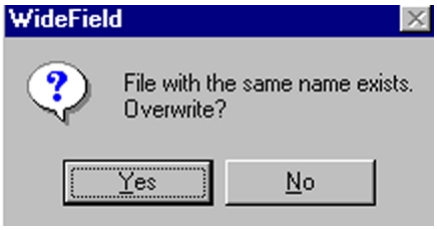


FB050301E.EPS

Figure B5.34 Insert File window

(2) Move the folder and then select the file to be added. The display can be switched between block and common tag name definition display. Select the file and click on [Select].

(3) If a file of the same name exists already, the following message appears to confirm the operation.



FB050302E.EPS

Figure B5.35 Confirmation Dialog Box

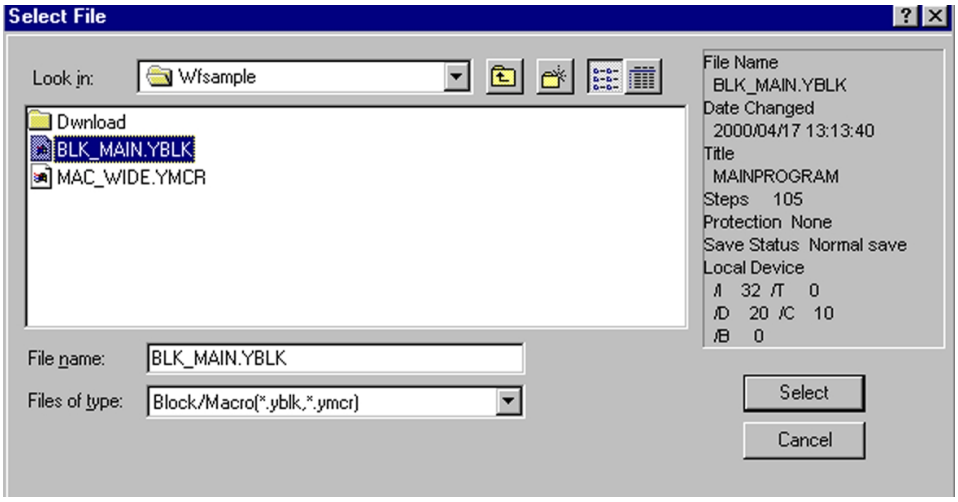
(4) Click on [Yes] to copy the file.

B5.3.2 Renaming Files

The Rename File function is for changing the names of blocks and macros in the project.

■ Procedure for Renaming Files

(1) Select [Project] - [Rename File]. The following window appears.

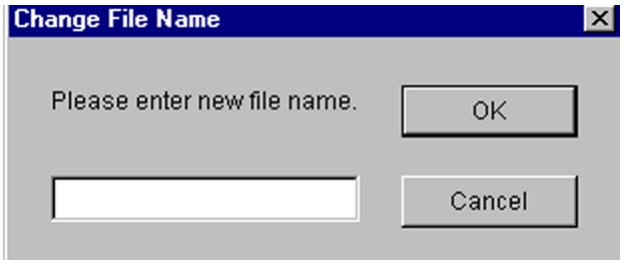


FB050303E.EPS

Figure B5.34 Rename File Window

(2) Select the file to be renamed, and then click on [Select].

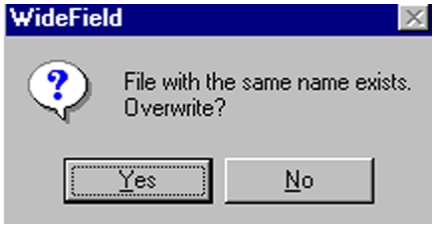
(3) Enter the new name.



FB050304E.EPS

Figure B5.35 Setting New Name

(4) If a file of the same name exists already, the following message appears to confirm the operation.



FB050305E .EPS

Figure B5.38 Confirmation Dialog Box

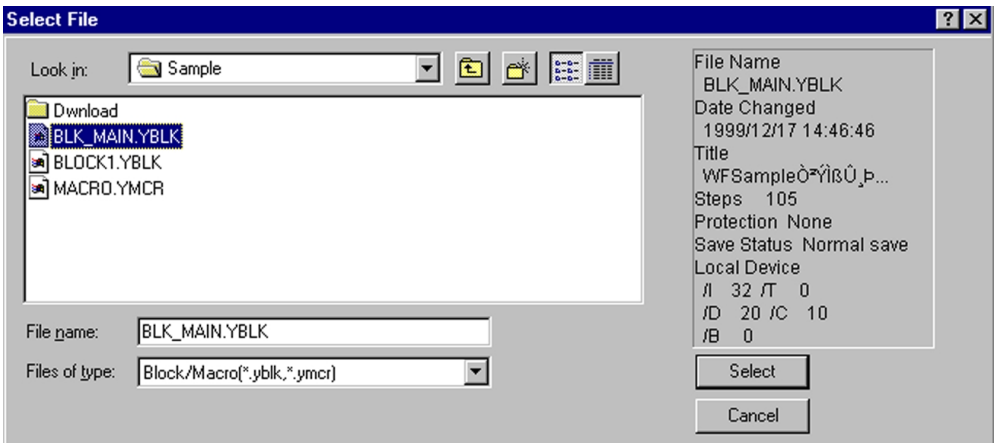
(5) Click on [Yes]. The file is renamed.

B5.3.3 Deleting Files

The Delete File function is for deleting blocks and macro files in the project.

■ Procedure for Deleting Files

(1) Select [Project] - [Delete File]. The following window appears.



FB050306E.EPS

Figure B5.39 Delete File Window

(2) Select the file to be deleted, and then click on [Select].
The following message appears to confirm the operation.

FB050307E.EPS

Figure B5.50 Confirmation Dialog Box

(3) Click on [Yes]. The file is deleted.

B6. PRINTOUT

This chapter describes how to print out the display information of the programs created with WideField, and how to print out the screens.

The Print function supports printout of screens currently displayed (Print Screen) and projects (Print Project).

● Print Screen

This function prints out the WideField screen displayed in front. The screens that can be printed are as follows:

- Block and macro edit screens
- System log and user log display screens
- Group template edit screens
- Circuit monitor screens
- Alarm monitor screens

● Print Project

All types of data (for program configuration, blocks, user logs, common tag name definitions, and so forth) making up the project can be batch-printed.

Before printing out from WideField, do the printer settings, printing layout settings and detailed printing settings as required.

● Printer Settings

Set the printer name, paper size, and paper orientation.

● Printing Layout Settings

Set the layout items such as margins.

● Detailed Printing Settings

Set the additional information (such as cross-references and tag name definitions) for when printing out circuits, and the cover font, header, and footer items.

B6.1 Setting Printer

This section describes how to do the printer settings (printer name, paper size and paper orientation).

■ Procedure for Setting up Printer

(1) Select [File] - [Print Setup]. The following screen appears.

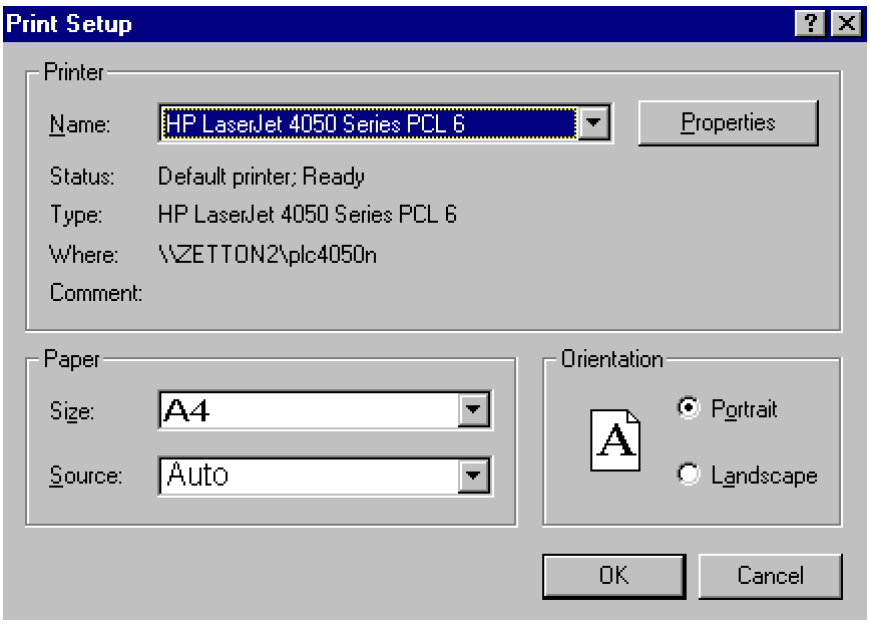


Figure B6.1 Printer settings

(2) Select the name of the printer from the list box. The printers connected to the personal computer are displayed in this list.

(3) Select the paper size and orientation from the list box.

(4) Select the page orientation (portrait or landscape).

(5) Select [Properties] and do the detailed settings.

(6) Select [OK]. The settings will go into effect.
Select [Cancel] to abandon these settings.

CAUTION

Printer settings cannot be done unless the printer is connected.

B6.2 Setting Printing Layout

The section describes how to set the printing layout (margin settings, page numbering settings and so forth).
The layout is printed according to the contents of [Page Setup].

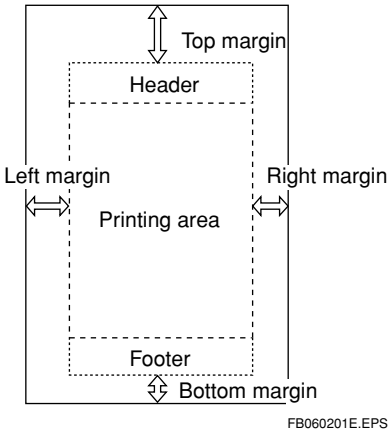


Figure B6.2 Printing Layout

■ Procedure for Setting Printing Layout

(1) Select [File] - [Print]. The following screen appears.

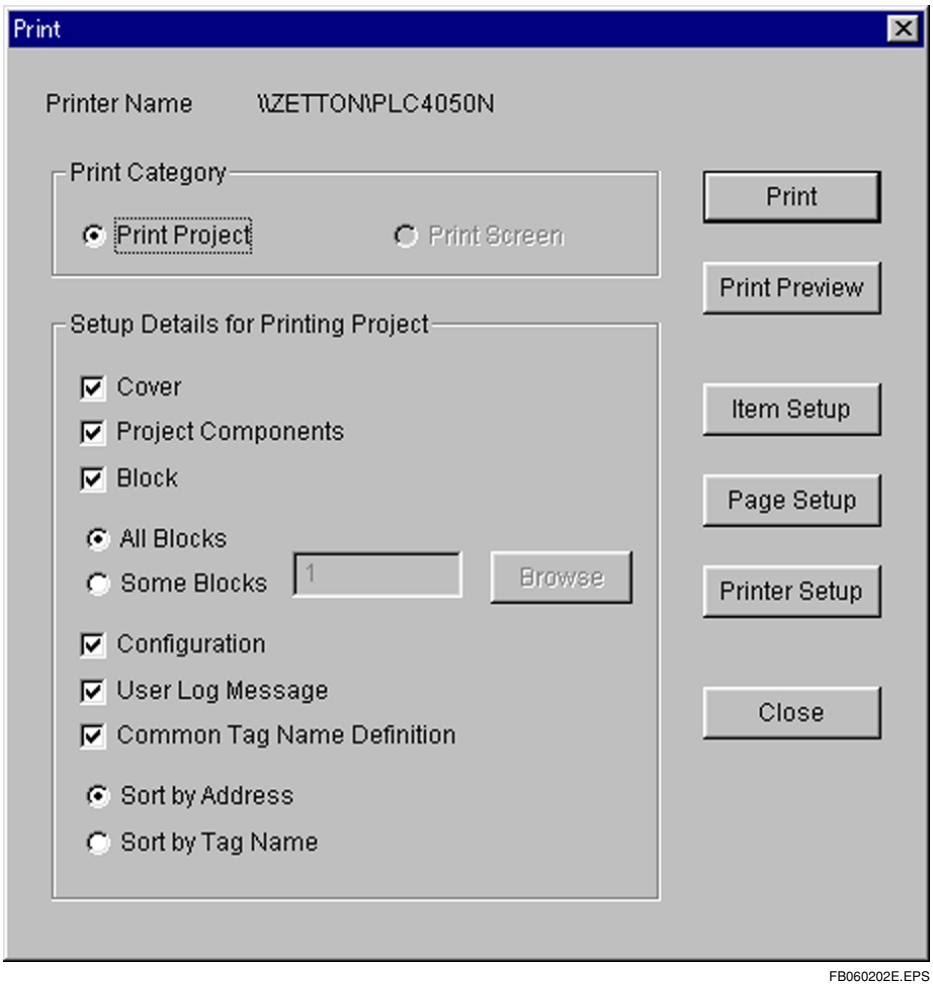
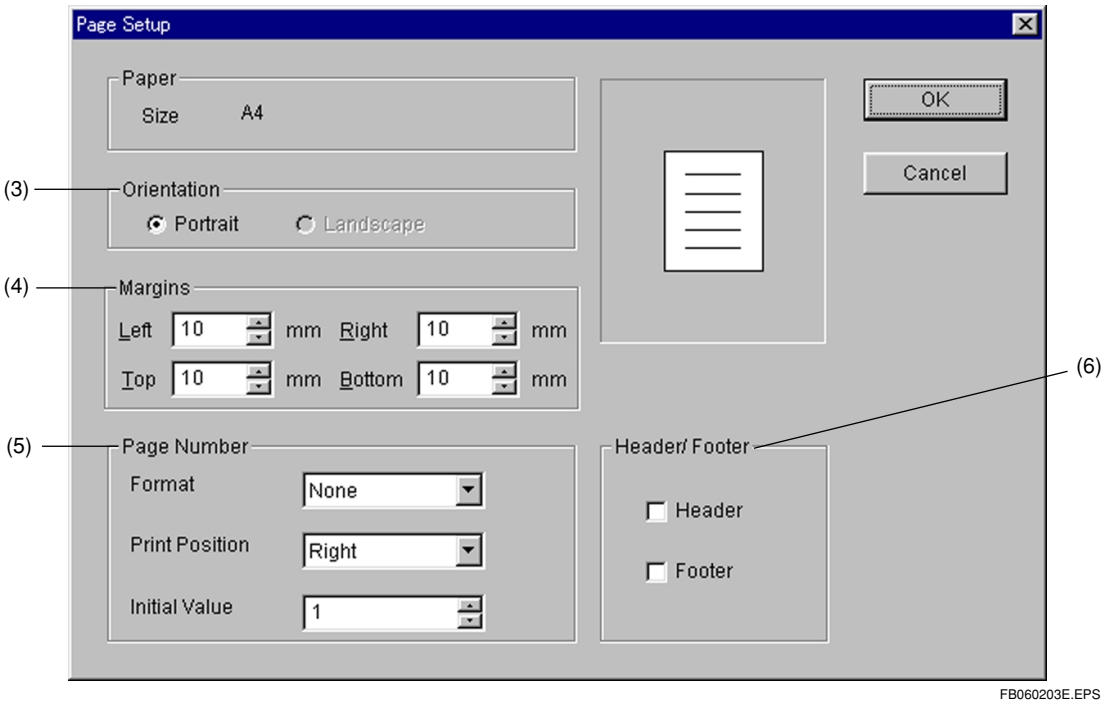


Figure B6.3 Initial screen for Printing Settings

(2) Select [Page Setup]. The following window appears.



FB060203E.EPS

Figure B6.4 Page Setup Window

(3) The settings for the paper size and paper orientation are displayed. (These cannot be changed. Use the printer settings to change them.)

(4) Set the margin sizes with the spin buttons.

(5) Set the page number. There are 3 setting items, as follows:

- **Format**

  Select [None], [Consecutive numbering], or [Categorized numbering].
  The initial setting is [None]. When [None] is set, no page numbers are printed.
  When [Consecutive numbering] is set, only numbers are printed for the page numbers, and these are printed consecutively on each page.
  When [Categorized numbering] is set, the page numbers are printed in the form of the chapter number and the page number of that chapter.
  [Categorized numbering] can be set only for Print Project.

- **Print Position**

  Select the left, center, or right position for printing the page number. The initial setting is [Right].

- **Initial Value**

  The page number to be printed on the first page is set here. When the format is consecutive numbering, enter the initial value for the page numbers. When the format is categorized numbering, enter the initial value for the categorized numbering. In initial status, this value is 1.

(6) Select whether to print a header and a footer.

(7) Select [OK]. The setting goes into effect.
Select [Cancel] to abandon these settings.

TIP

The items for the Print Project settings are as below. If the print specification is missing for any item, it is filled in with the succeeding numbers. The page numbers in the items always start with 1.

Table B6.1 Category Numbers

Print Item	Item Number
Project configuration	Initial value
Block (when number of blocks is N)	Initial value + 1 : Initial value + 1 + (N - 1)
Configuration	value + 2 + (N - 1)
User log message	Initial value + 3 + (N - 1)
Common tag name definition	Initial value + 4 + (N - 1)

TB060201E.EPS

B6.3 Setting Printout Details

This section describes how to do the detailed settings for the printing items. The following detailed items can be set.

● Block and Instruction Macros

This item includes whether or not to print the circuits and tag name definitions, and the range for printing the circuits.

● Configuration

This item includes settings for the device capacities and whether or not to print information such as the DIO setting.

● Header/Footer

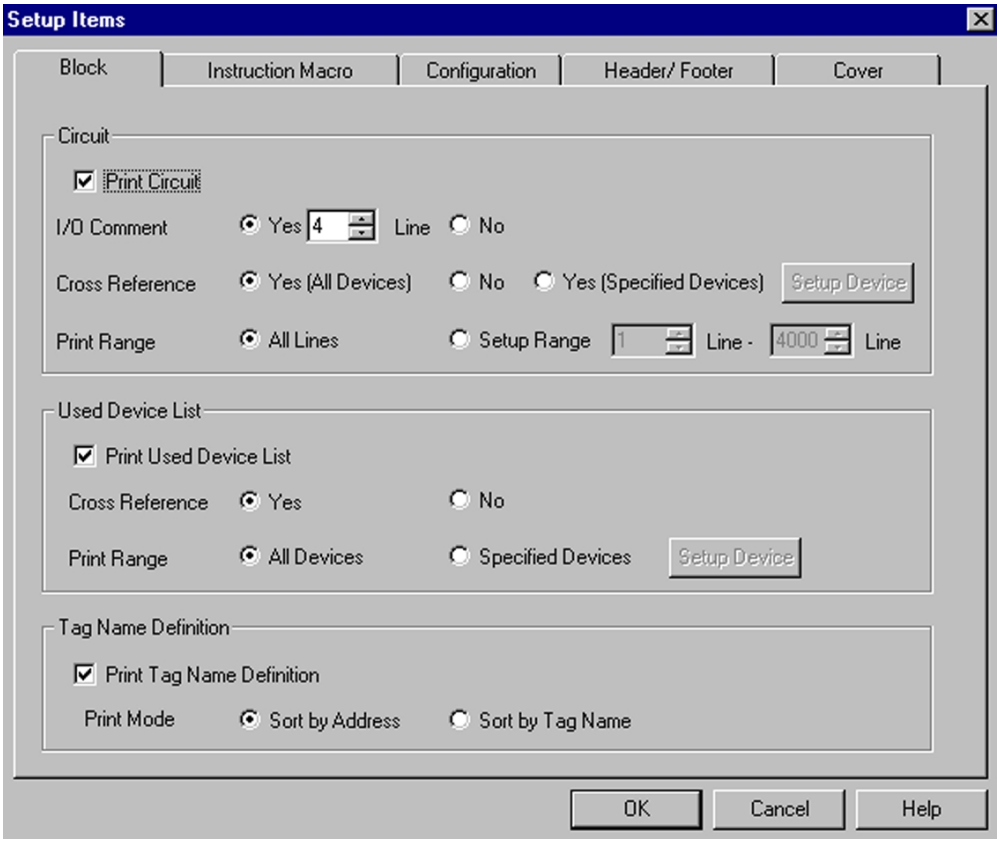
The contents of the headers and footers for each page can be edited.

● Cover

The contents of the cover when the project is printed can be edited.

■ Procedure for Setting Printout Items

(1) From the initial Print screen, select [Item Setup]. The following screen appears.
Switch the tabs for each item to set them.
Select [OK]. The new settings go into effect.
Select [Cancel] to abandon the entered settings.



FB060301E.EPS

Figure B6.5 Report settings

B6.3.1 Setting Details for Blocks and Instruction Macros

Detailed items can be set for the blocks and instruction macros.
These items are circuit print settings, settings for printing the list of devices used by the circuit, and settings for printing tag name definitions.

■ Procedure for Setting Details for Blocks and Instruction Macros

(1) To set blocks, click on the block tab.
To set instruction macros, click on the instruction macro tab.
The window shown in Figure 6.5 appears.

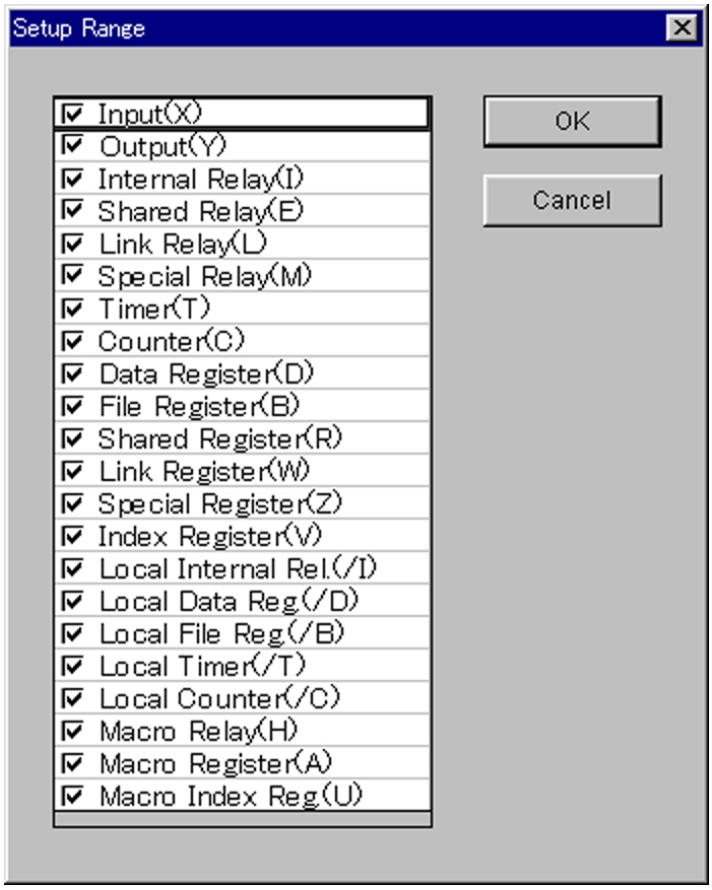
(2) To print a circuit, select [Print Circuit].
The detailed settings for circuits are as follows:

- **I/O Comment Settings**

  This item is for selecting whether or not to print the I/O comment under a device. For [Yes], the number of lines to be printed can be set in the range of 1 to 4.
  Initial status is [Yes] and 4 lines can be printed.

- **Cross-reference Settings**

  The cross-reference function shows the places in the program where the device used by the circuit is used.
  The places where it is used are printed out as a list (block name, instruction number and instruction).
  Select from [Yes (All Devices)], [No], and [Yes (Specified Devices)] for the cross-reference which is printed under the circuit.
  When [Yes (Specified Devices)] is selected click on [Setup Devices]. The following window appears for selecting the device type for printing the cross-reference.



FB060302E.EPS

Figure 6.6 Dialog Box for Device Settings

Click on the checkboxes of the devices to print out, and select [OK]. The settings are saved and the window in (1) returns. The initial status is [Yes (All devices)].

- **Printing range**

  Select from [All Lines] and [Setup Range].

  When [Setup Range] is selected, set the start line number and end line number.

  The initial status is [All Lines].

(3) To print out the list of devices, click on [Print Used Device List]. The list of devices used by the circuits is printed. The detailed settings for the device list are as follows:

- **Cross-reference**

  Select whether or not to print cross-references beside the device.

- **Printing Range**

  Select the printing range from [All Devices] and [Specified Devices].

  When [Specified Devices] is selected, click on [Setup Devices].

  The window in Figure 6.6 appears, just as for circuits.

(4) To print out the tag name definition, click on [Tag Name Definition].
Select [Sort by Address] or [Sort by Tag Name] for the printout order. The initial status is [Sort by Address].

CAUTION

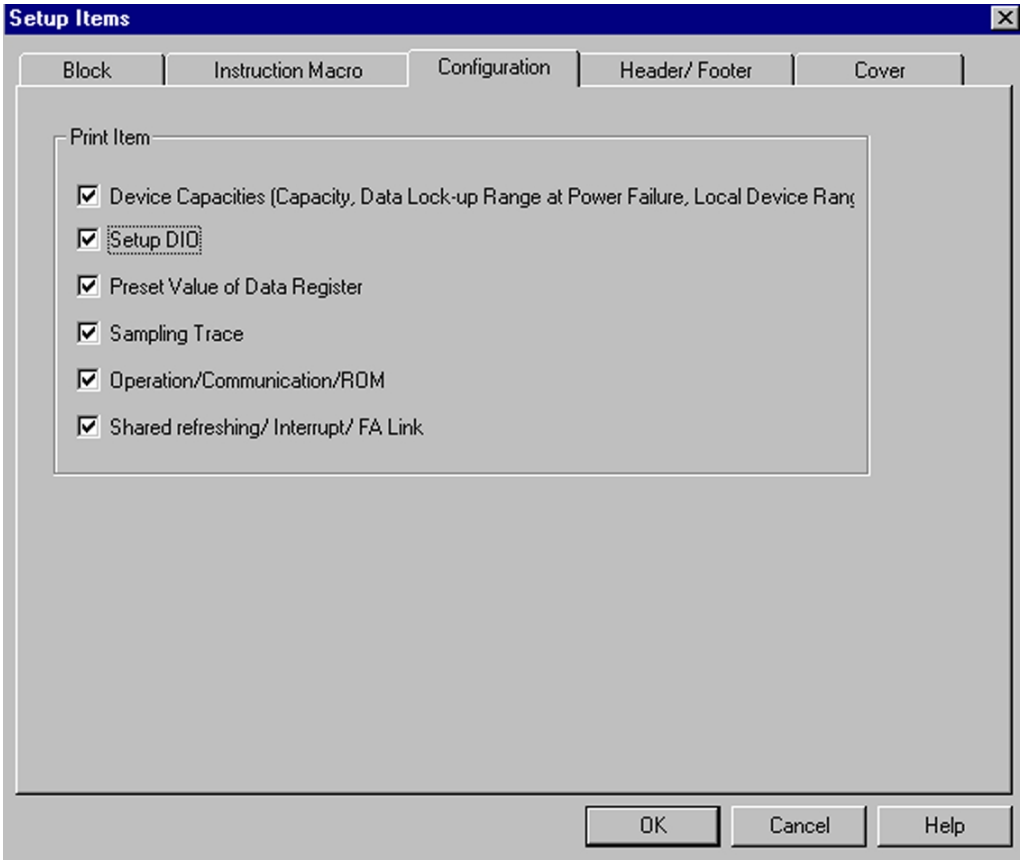
For Print Project, be sure to print all lines even when the circuit printout range has been set.

B6.3.2 Detailed Configuration Settings

The configuration printout settings can be done in detail.

■ Procedure for Setting Configuration Details

(1) Click on the [Configuration] tab. Click on the print items to set them.



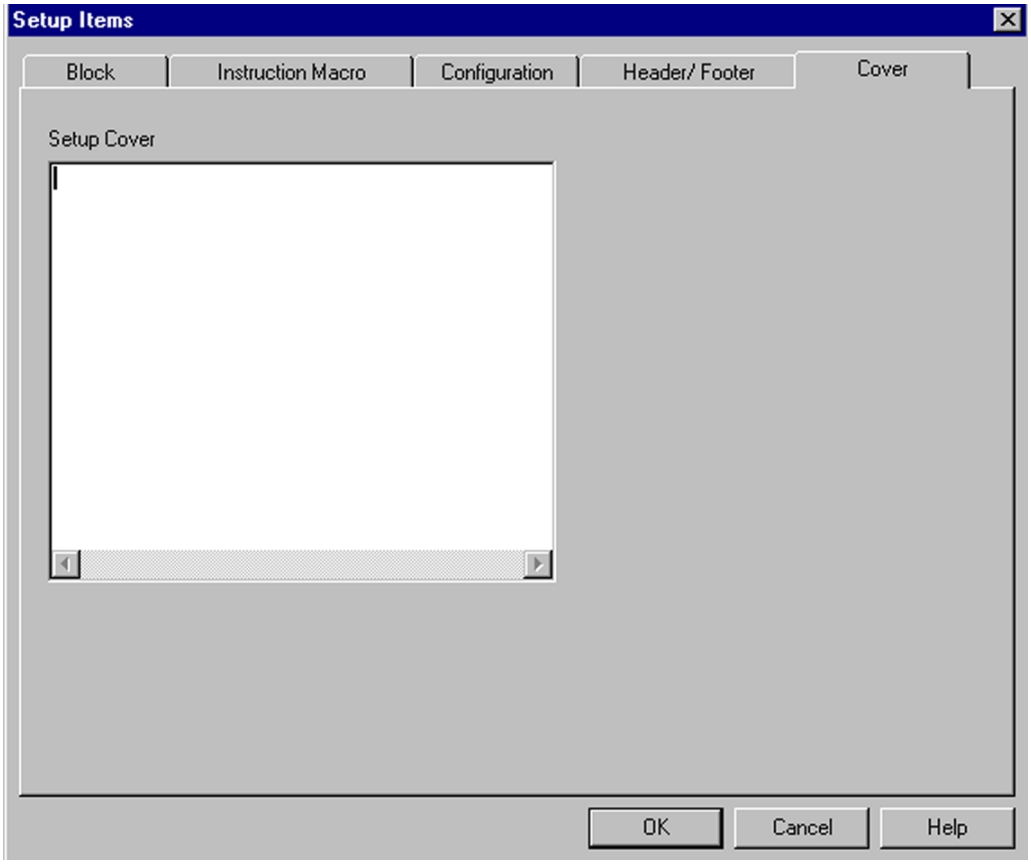
FB060303E.EPS

Figure B6.7 Configuration Settings

B6.3.3 Setting Cover and Header/Footer

■ Procedure for Setting Cover Printout

(1) Click on the [Cover] tab. The following screen appears.
The cover can be up to 64 letters horizontally and 16 lines vertically. For a new line, press [Enter]. Line and letter modifiers cannot be used in the cover.



FB060304E.EPS

Figure B6.8 Cover Settings

■ Procedure for Setting Header and Footer

(1) Click on [Header/Footer]. The following screen appears.
The header and footer can be up to 108 letters horizontally and 8 lines vertically. For a new line, press [Enter]. Line and letter modifiers cannot be used in the header and footer.

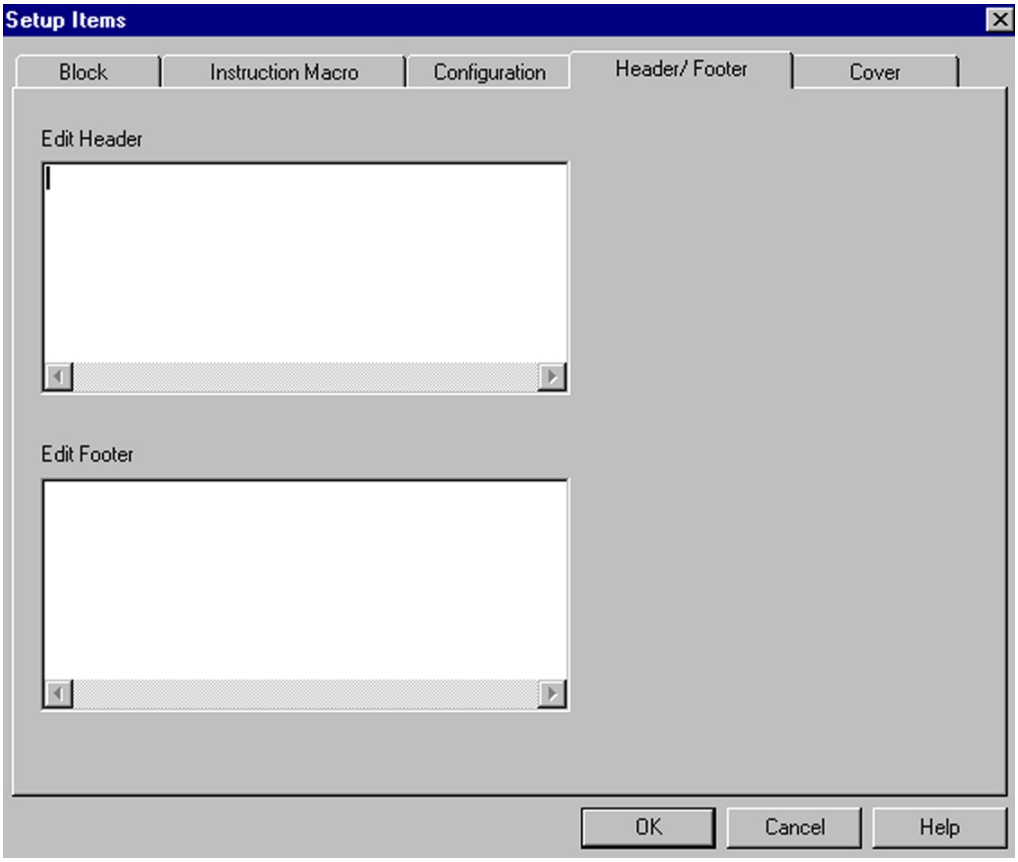


Figure B6.8 Header and Footer Settings

TIP

Write the following to the header and footer and they will be printed out accordingly. (Uppercase and lowercase are both valid.)

&DATE	Prints out the current date. Example: 07/21/1999
&TIME	Prints out the current time. Example: 15:30
&CPU	The name of the selected CPU is printed. This is valid for Print Project only. It is ignored for Print Screen. Example: F3SP21-0N

B6.4 Print and Print Preview

This section describes the Print and Print Preview functions. The Print function consists of the Print Project function and the Print Screen function.

B6.4.1 Print Screen

The Print Screen function prints out the following screens.

Table B6.2 Print Screen Function

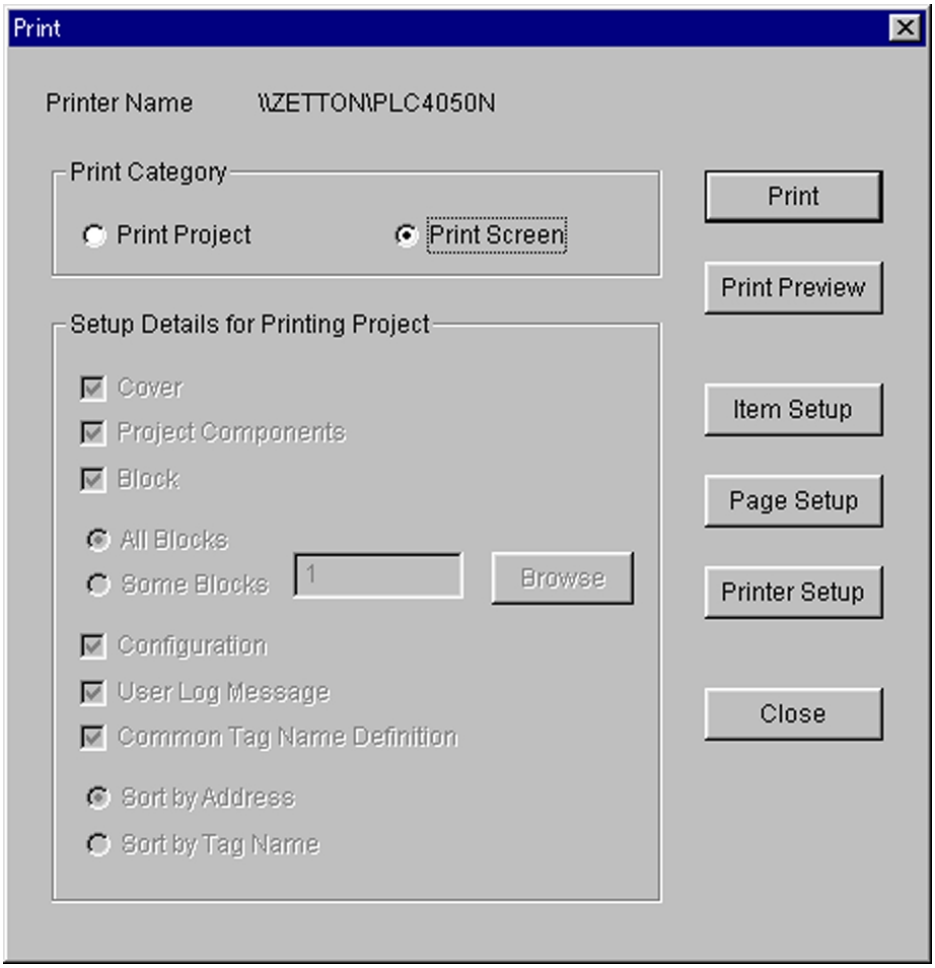
Screen	Details
Edit Block screen	Prints the circuits and tag name definitions of the block being edited. Items that have been converted are printed.
Edit Macro screen	Prints the circuits and tag name definitions of the instruction macro being edited. Items that have been converted are printed.
Display System Log screen	Prints the system log being displayed. The log can be read from the file or from the CPU.
Display User Log screen	Prints the user log being displayed. The log can be read from the file or from the CPU.
Edit Group	Template screen Prints the group template being edited.
Alarm Monitor screen	Prints the alarm monitor currently being displayed.
Circuit Monitor screen	Prints the circuits and tag name definitions of the monitor screen. Blocks and instruction macros can be printed.

TB060401E.EPS

■ Procedure for Printing Out Screens

(1) Click the screen to be print out to display in front.

(2) Select [File] - [Print].



FB060401E.EPS

Figure 6.10 Print Dialog Box (Example when Print Screen is selected)

(3) For the type of printout, select [Print Screen] and then [Print]. Printing starts. To display an image of the printout, select [Print Preview].

B6.4.2 Print Project

With the Print Project function, the project's configuration data can be selected , and can be printed out all at once. Select from the following printout items.

Table B6.3 Print Project

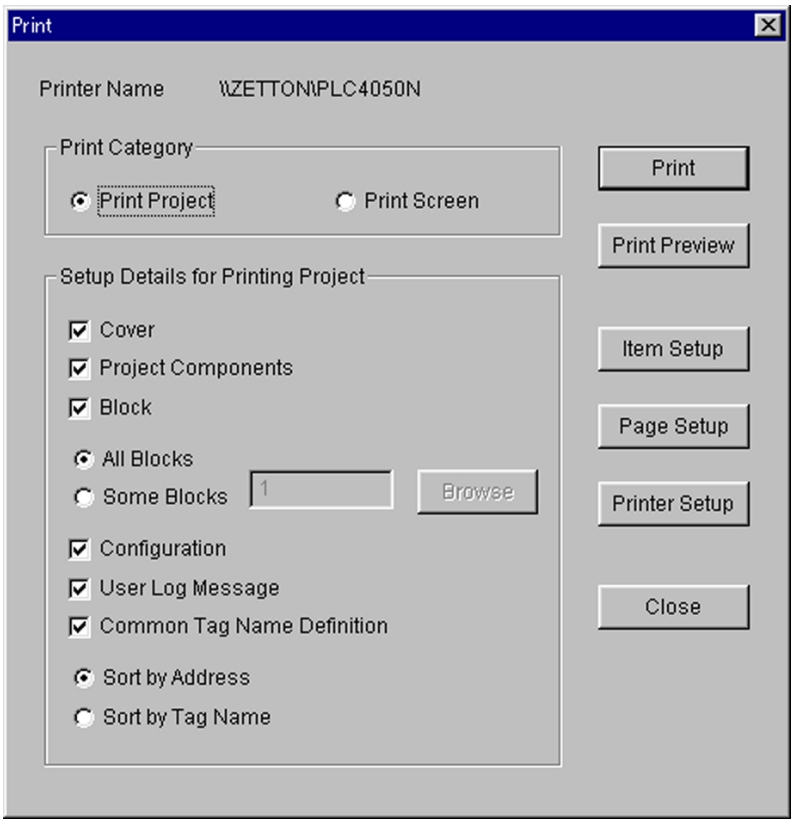
Target Item	Contents
Cover	Prints out the set cover with border.
Project Components	The blocks composing the executable program are printed out in tree structure.
Block	Prints out the circuits and tag name definitions. The target items are those that have been saved to a file.
Configuration	Prints out the configuration. The target items are those that have been saved to a file.
User Log Message	Prints out the user log messages. The target items are those that have been saved to a file.
Common tag name definition	Prints out the common tag name definitions. The target items are those that have been saved to a file.

TB060402E.EPS

■ Procedure for Using Print Project Function

(1) Open the project.

(2) Select [File] - [Print].



FB060402E.EPS

Figure B6.11 Print Dialog Box (Example when Print Project is Selected)

(3) For the type of printout, select [Print Project].

(4) Set the print item of the [Setup Details for Printing Project]. See B6.3 "Setting Printout Details" for how to set the details for print items.

● Cover

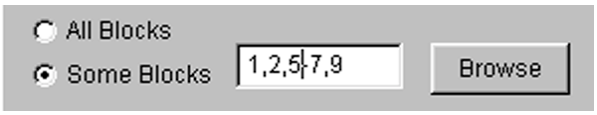
Click on [Cover] to print out a cover.

● Project Components

Click on [Project Components] to print out the project components.

● Block

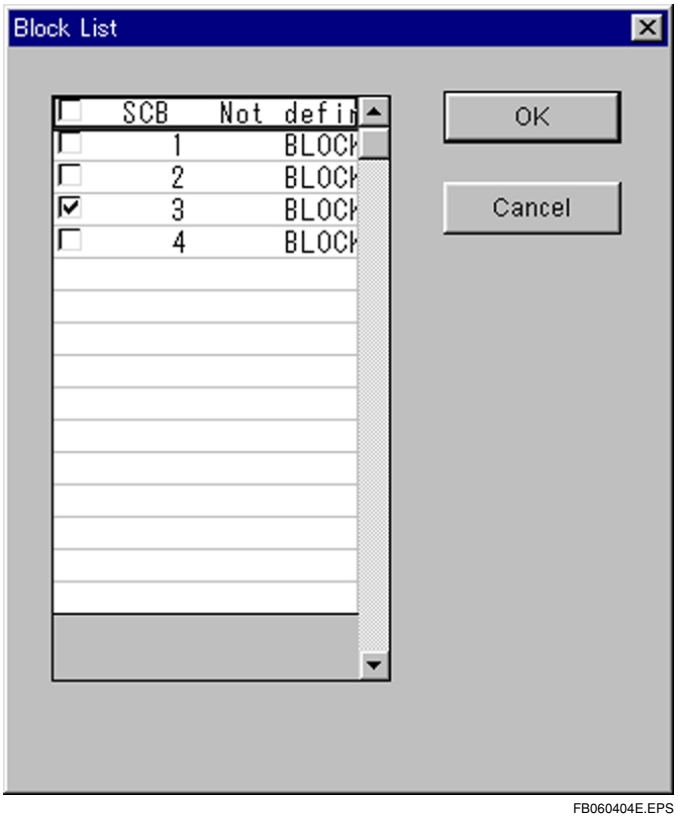
Click on [Block] to print out the blocks.
Select to print out all or some of the blocks.
To print out all of the blocks, click on [All Blocks].
To print out some of the blocks, click on [Some Blocks] and then select the blocks. Separate the block numbers with a comma.
Enter 0 for the Sensor CB.
For consecutive blocks, use a hyphen between the starting number and end number.



FB060403E.EPS

Figure B6.12 Block Number Settings

Clock on [Browse] to display the next screen. Click on the checkboxes of the blocks to print out, and click on [OK]. These are reflected in the block selection field as in Figure B6.12.



FB060404E.EPS

Figure B6.13 Block Settings

● Configuration

Click on [Configuration] to print out the configuration.

● User Log Message

Click on [User Log Message] to print out user log messages.

● Common Tag Name Definition

Click on [Common Tag Name Definition] to print out the common tag name definition. Select [Sort by Address] or [Sort by Tag Name] for the printout order.

(3) Select [Print] to start printing. To display an image of the printout, select [Print Preview].

CAUTION

When some blocks are protected, a list of protected blocks appears during Print Project. Start Printing by entering applicable passwords for those blocks and then clicking [OK].

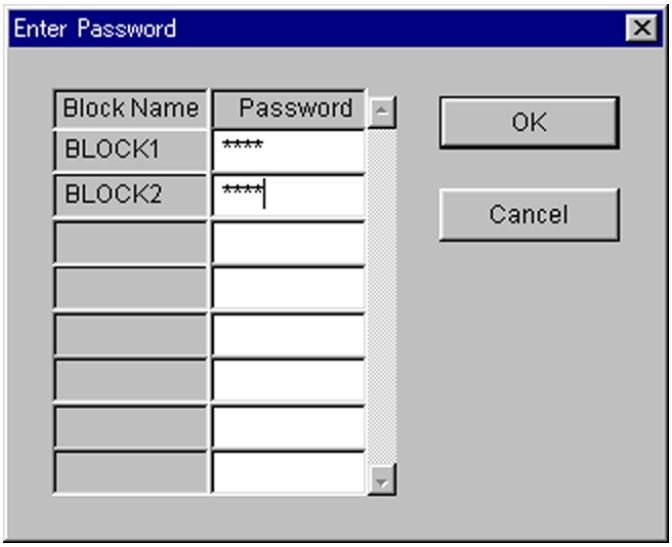
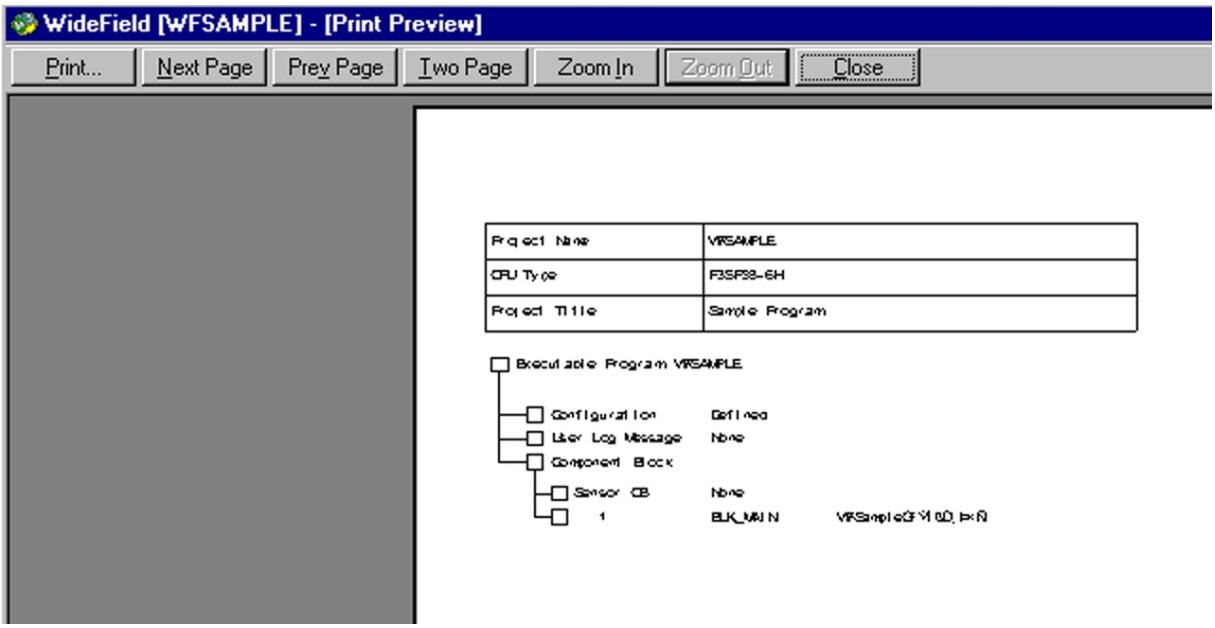


Figure B6.14 Confirming password

B6.4.3 Procedure for Previewing Printout

(1) When using the Print Project or Print Screen function, select [Print Preview] to display an image of the printout.



FB060406E.EPS

Figure B6.15 Print Preview

The functions of the Preview buttons are as below.

Table B6.4 Functions of Buttons on Preview Screen

Button	Function
Print	Prints out to the printer.
Next Page	Displays the image of the printout for the next page.
Previous Page	Displays the image of the printout for the previous page.
Two pages	Displays the image of the printout for two pages.
Zoom Up	Enlarges the image on the display.
Zoom Down	Reduces the image on the display.

TB060403E.EPS

CAUTION

- With the Preview of the Print Screen function, only the first page of the item is displayed in the preview.
- With the Preview of the Print Project function, only the first page of each printout item is displayed in the preview.

B6.5 Printing Layout

This section describes the main items for the printing layout.

B6.5.1 Printing Layout for Project Component

The project name, CPU type, project title and project component are printed out as shown below.

Project name	NC52
CPU type	F3SP58-6H
Project title	NC52 sample program

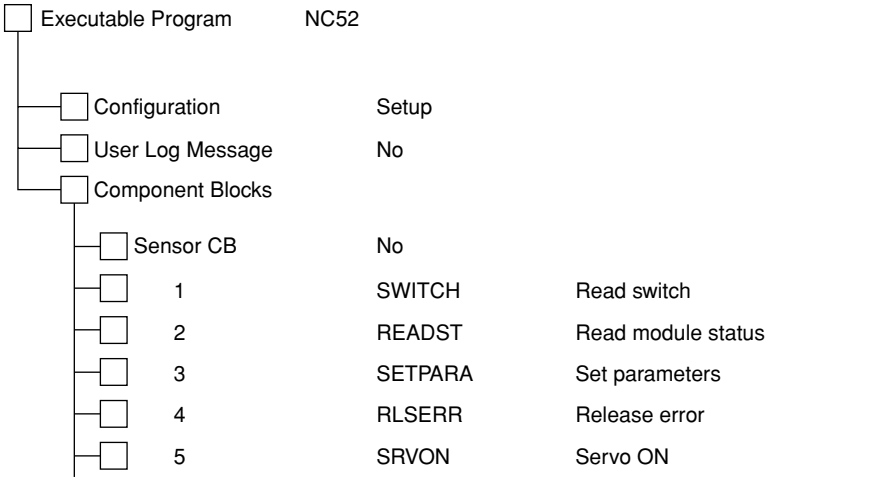


Figure B6.16 Layout for Printing Project Component

B6.5.2 Printing Layout for Circuits

The circuits and cross-references are printed out as shown below.

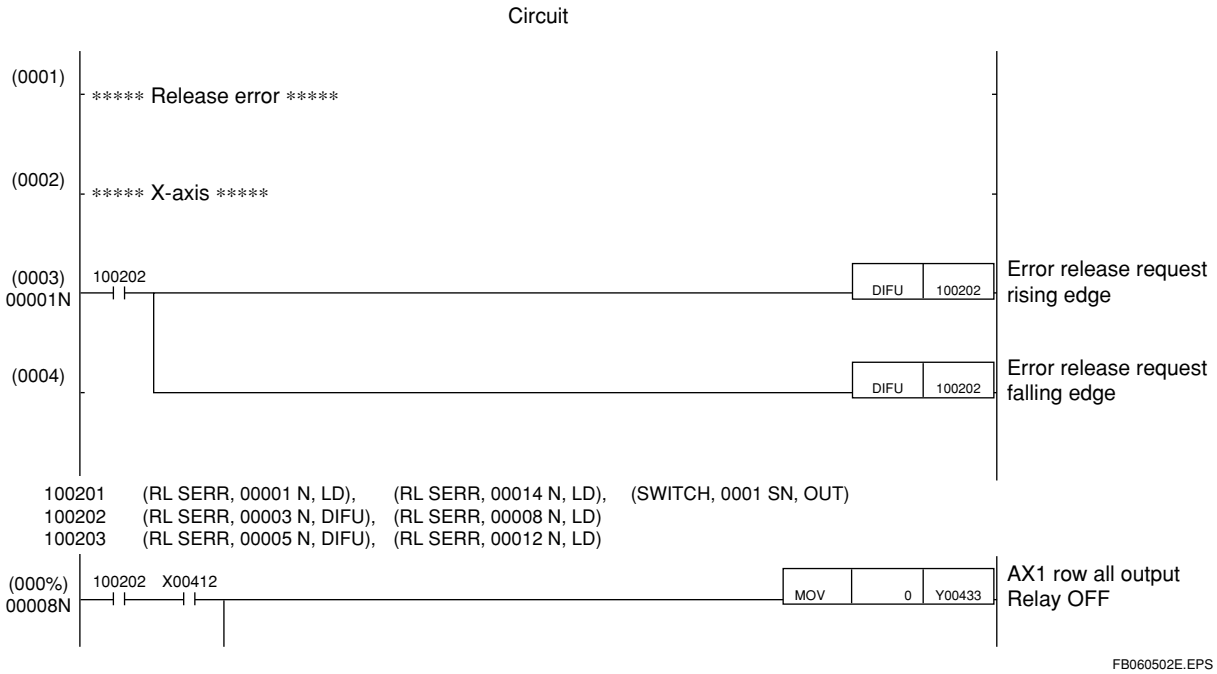


Figure B6.17 Layout for Printing Circuits

CAUTION

- Up to 200 lines of cross-references can be output per 1 circuit.
- Up to 10 lines of cross-references can be output per 1 device. Excess lines are not printed.

B6.5.3 Layout for Printing Tag Name Definitions

Tag name definitions, tag names, addresses and I/O comments are printed out as below.

Address	Tag name	I/O comment
M00033	On	Always On
M00034	Off	Always Off
M00035	scan	Enable 1 scan at operation start
M00036	Clock 10 ms	0.01 s clock
M00037	Clock 20 ms	0.02 s clock
M00038	Clock 100 ms	0.1 s clock
M00039	Clock 200 ms	0.2 s clock
M00040	Clock 1 s	1 s clock
M00041	Clock 2 s	2 s clock
M00042	Clock1 min	1 min clock
M00088	Sub Error	No error in transmission Sub Unit
M00120	Run	Run mode flag
M00130	Debug	Debug mode flag
M00131	Stop	Stop mode flag
M00132	Pause	Suspend flag

FB060503E.EPS

Figure B6.18 Layout for Printing Tag Name Definitions

B6.5.4 Layout for Printing Configuration

The configuration is printed out as shown below. (Settings for Device Capacities)

Device Capacities

Device	Code	Device Points	All	Local Range	Power Failure Range
Internal Relay	I	[32768]	[1] – [32768]	[ ] – [ ]	[1] – [1024]
Shared Relay	E	[0]			
Extended Shared Relay	E	[0]			
Link Relay	L	[16384]			
100 us Timer	T	[0]	[ ] – [ ]		[ ] – [ ]
1 ms Timer	T	[0]	[ ] – [ ]		[ ] – [ ]
10 ms Timer	T	[1024]	[1] – [1024]	[ ] – [ ]	[ ] – [ ]
100 ms Timer	T	[896]	[1025] – [1920]		[ ] – [ ]
100 ms Continuous Timer	T	[128]	[1921] – [2048]		[1921] – [2048]
Counter	C	[1024]	[1] – [1024]	[ ] – [ ]	[1] – [1024]
Data Register	D	[32768]	[1] – [32768]	[ ] – [ ]	[1] – [32768]
Shared Register	R	[0]			
Extended Shared Register	R	[0]			
Link Register	W	[16384]			
File Register	B	[262144]	[1] – [262144]	[ ] – [ ]	XXXXXXX

FB060504E.EPS

Figure B6.19 Layout for Printing Configuration

B6.5.5 Layout for Printing System Log

The system log is printed out as shown below.

System Log

Date	Time	Message	Code	Block Name	Instruction Number/Slot Number
1999/04/24	18:45:31	I/O collation error	24-01	ACT1	00010N
1999/04/24	18:45:30	I/O collation error	24-01	ACT1	00010N
1999/04/24	16:41:12	I/O collation error	24-01	ACT1	00010N
1999/04/24	16:41:12	I/O collation error	24-01	ACT1	00010N
1999/04/24	16:41:12	Startup completed	01-00		
1999/04/24	16:41:06	Power off	03-00		
1999/04/24	16:35:19	I/O collation error	24-01	ACT1	00010N
1999/04/24	16:35:19	I/O collation error	24-01	ACT1	00010N
1999/04/24	16:35:19	Startup completed	01-00		
1999/04/24	16:35:01	Power off	24-01	03-00	
1999/04/24	15:12:22	Startup completed	01-00		
1999/04/24	15:12:12	Power off	24-01	03-00	
1999/04/24	11:51:43	Startup completed	01-00		
1999/04/24	11:51:40	Power off	24-01	03-00	

FB060505E.EPS

Figure B6.20 Layout for Printing System Log

Blank Page

FA-M3
FA-M3 Programming Tool WideField Instruction Manual
PART-B Online Section

IM 34M6Q14-01E 1st Edition

CONTENTS

B7. Outline of Online Function

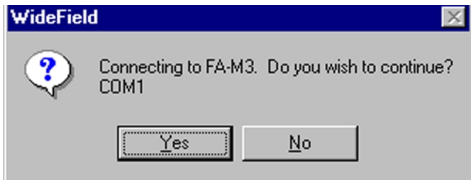
This chapter describes the outline of Online function for connecting a personal computer to the FA-M3. The Online function is for confirming the status of the sequence CPU, and includes functions for displaying data of the program monitor, device monitor data, system log, and user log. Connection must be done from the WideField side before this Online function can be used. This chapter describes procedures for connecting to the FA-M3, disconnecting from it, and the limitations of the Online function.

B7.1 Connecting and Disconnecting

The Online function can be used when the FA-M3 is connected. Setup at the connection destination is done with the environment settings. See Chapter B1 "Initial Settings of the WideField Tool"

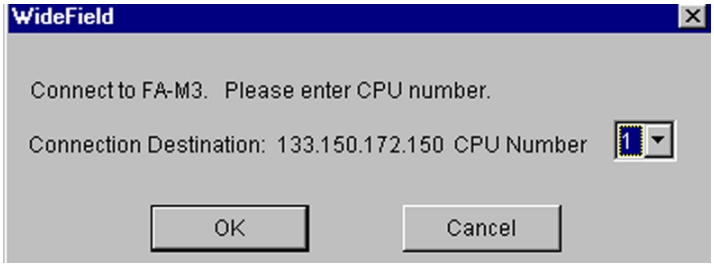
B7.1.1 Connecting

(1) Select [Online] - [Connect]. The dialog box below appears. Select [Yes].



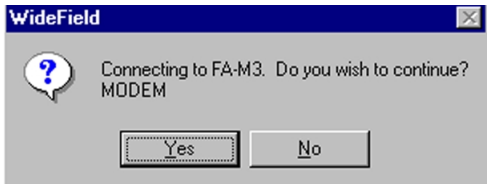
FB070101E.EPS

Figure B7.1 Confirming Connection (for RS-232C)



FB070102E.EPS

Figure B7.2 Confirming Connection (for Ethernet)



FB070103E.EPS

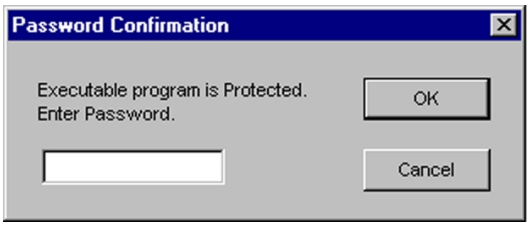
Figure B7.3 Confirming Connection (for RS-232C via modem)

For Ethernet, the connection destination CPU number can be specified at the time of connection. The initial value is set with the environment settings, and is the CPU number. The CPU number can be specified from 1 - 4.
For RS-232C via a modem, an public line is used to connect to the phone number set in the environment settings.

CAUTION

Set the modem from the Windows [Control Panel] - [Modem].

(2) If the executable program downloaded to the CPU is protected, the dialog box for confirming the password appears.



FB070104E.EPS

Figure B7.4 Dialog Box for Confirming Password

(3) The FA-M3 is connected. If the FA-M3 connects successfully, the LEDs and run status are displayed on the Operation Monitor. Also, information about the connection destination is displayed in the Status Bar.

FB070105E.EPS

Figure B7.5 Operation Monitor during Connection

FB070106E.EPS

Figure B7.6 Status Bar during Connection

CAUTION

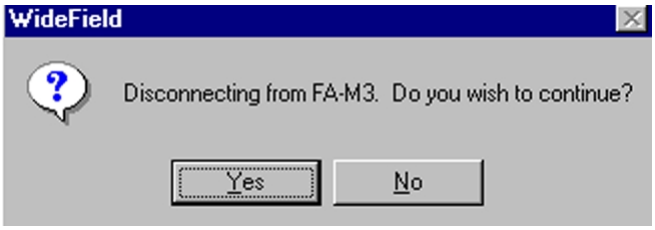
In the following cases it takes time to establish an RS-232C online communication:

- When automatic recognition is set in the environment settings for the connection method
  With automatic recognition, the possible transfer rate is searched from among approximately 10 types, and this takes time. From the second connection on, WideField remembers the transfer rate for the previous connection, so connection is quicker.
- When a local device is used with a CPU type other than F3SP28/38/53/58.
  Processing to read information of local devices takes time. The more blocks there are, the longer it takes to establish the connection.

B7.1.2 Disconnecting

(1) Select [Online] -[Disconnect].

(2) The dialog box appears for confirming this. Select [Yes].



FB070107E.EPS

Figure B7.7 Dialog Box for Confirming Disconnection

(3) When the line is disconnected, all operation online screens will close.

CAUTION

When the line is disconnected, all online operation screens that had been opened will close.
If a screen is being online edited, disconnection cannot be done. Finish online editing and then disconnect.

B7.2 Online Limitations

When the FA-M3 is connected, such functions as Monitor and Debug can be used, but the following limitations apply.

B7.2.1 Limitations Owing to Run Mode

The CPU has 3 operation modes, namely run mode, debug mode, and stop mode.

In run mode, Debug functions such as Forced Set/Reset and Online Edit are available.
For reading data to the ROM pack and deleting data from it, the ROM writer mode must be used.
However, in ROM writer mode, the run mode Change and Debug functions cannot be used. Also, the monitor stops.
See Chapter B15 for details about the ROM writer mode.

B7.2.2 Multi-Window Limitations

Monitors can be used with multi-windows, but the monitor stops temporarily during uploading, comparing and online editing.
When these operations end the monitor opens again automatically.
Further, for RS-232C communication, the monitor update period becomes slower as the number of windows increases. Preferably, display a maximum of 3 windows at a time.

B7.2.3 Limitations Owing to Project

The Online function can be used regardless of whether the project is open or not.
However, downloading (including sending from files to ROM) and comparing files and the CPU (including comparing files and ROM) are premised on the project being open. Also, the name of the CPU at the connection destination must match that of the CPU of the open project.
If the project being downloaded to the sequence CPU is not open, the tag names and the I/O comments are not displayed. Addresses are displayed instead.

B7.2.4 Limitations between Other Applications

Do not execute a MS-DOS program while the WideField Online function is being used. Otherwise, the WideField communication might result in an error.

B7.2.5 Limitations on Personal Computers

When WideField is being used with RS-232C communication, a communication error can occur midway because of a problem with the settings of the personal computer. If an error occurs, do the following settings:

(1) Select the Windows [Control Panel] - [Power Management].

(2) Select [Power Properties] and then click on the [Power Management] tab.

(3) Clock on [Details] displayed for the item [Battery Status].

(4) In the [Detailed Properties] dialog box, click on the [Troubleshooting] tab.

(5) Check [Do not poll power status]. End setup, and restart Windows.

B8. Transferring Programs

Executable programs are transferred between the personal computer and the FA-M3. Executable programs refer to the configuration information, user logs, and blocks defined with the executable program configuration definition for the project. Transfer includes downloading from the personal computer to the FA-M3 and uploading from the FA-M3 to the personal computer. Programs can be transferred in executable program units only. Programs cannot be transferred in units of blocks.

B8.1 Downloading Executable Programs

Executable programs are transferred from the personal computer to the FA-M3. In downloading, the configuration information, user log messages, and blocks defined with the project's executable program configuration definition are downloaded together. At downloading, the program's syntax check is done at the same time.

B8.1.1 Limitations on Downloading

Downloading cannot be done in the following cases.

- The project is not open; or, the project is open but the set CPU type does not match that at the connection destination.
- The program contains an error. (Errors are found by the syntax check.)
- A ROM pack is housed in the CPU; or, the CPU run mode is ROM writer mode.
- Another personal computer has captured the Exclusive Access Right.

B8.1.2 Procedure for Downloading

(1) With the FA-M3 connected and the project open, select [Online] - [Download]. The confirmation message below appears. Select [Yes] to continue. Select [No] to cancel.

FB080101E.EPS

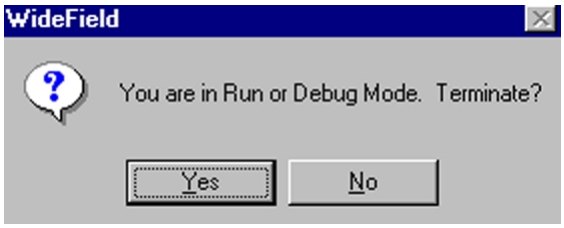
Figure B8.1 Dialog Box for Confirming Downloading

(2) If there is a block or instruction macro being edited, the confirmation message below appears. To save, select [Yes]; to not save, select [No]. The Download function transfers items that have been saved to a file. Hence, if [No] is selected, the block prior to editing is transferred.

FB080102E.EPS

Figure B8.2 Dialog Box for Confirming Saving

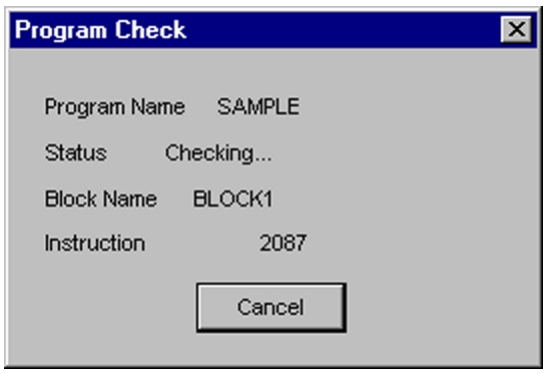
(3) If the CPU operation mode is run or debug, the following dialog box appears.



FB080103E.EPS

Figure B8.3 Dialog Box for Confirming CPU Mode

(4) When downloading starts, the dialog box below appears, showing the contents of the current processing. Downloading proceeds in the order of syntax check, download, and CPU optimization. Select [Cancel] to cancel downloading.



FB080104E.EPS

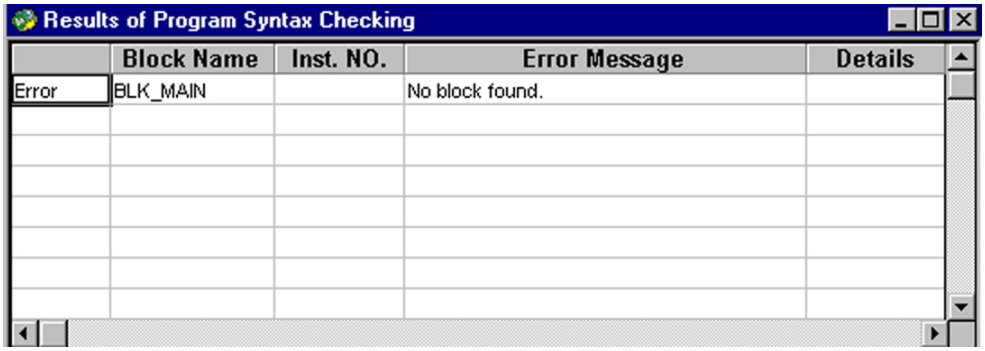
Figure B8.4 Download Screen

(5) When all processing is completed the following dialog box appears. To place the CPU run mode into run mode, click [OK].

FB080105E.EPS

Figure B8.5 Invoking run mode

(6) If the syntax check detects an error or a warning, the Syntax Check Results screen opens.



FB080106E.EPS

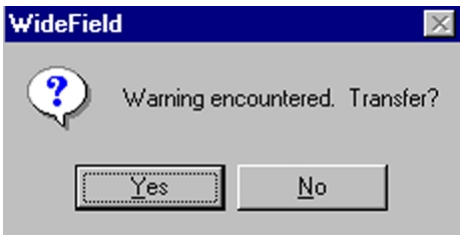
Figure B8.6 Syntax Check Results

(7) If an error has been detected, the following dialog box appears and downloading is cancelled.

FB080107E.EPS

Figure B8.7 Confirming Error

(8) If a warning has been detected, the following dialog box appears. To continue processing, select [OK].



FB080108E.EPS

Figure B8.7 Confirming Warning

CAUTION

- If downloading is cancelled by selecting [Cancel] during download processing, the program sent to the CPU is erased. If [Cancel] is selected during the syntax check or processing is cancelled after a warning is detected, the program sent to the CPU remains.
- The CPU optimization processing can take some time, depending on the size of the executable program.
- For downloading, screens of the Online function are all closed automatically.
- For downloading via an RS-232C, the communication mode may change when downloading ends. (It may change because the configuration communication settings before and after downloading are different.) If the communication mode is different after downloading, download end processing will take some time.

B8.2 Uploading Executable Programs

Executable programs are transferred from the FA-M3 personal computer to the personal computer. For uploading, the configuration information and user log messages are uploaded together, but the instruction macros and not uploaded. Uploading can be done even if the project is not open.
When the executable program is uploaded, a new project is created or an existing project is overwritten.

CAUTION

Instruction macros are not uploaded, but they can be saved to a file in the personal computer by the following procedure.

(1) Open the project.

(2) Open the macro monitor to upload.

(3) From the macro monitor screen, select [File] - [Reflect on File].

With this operation, the monitored macro file is created in the project.

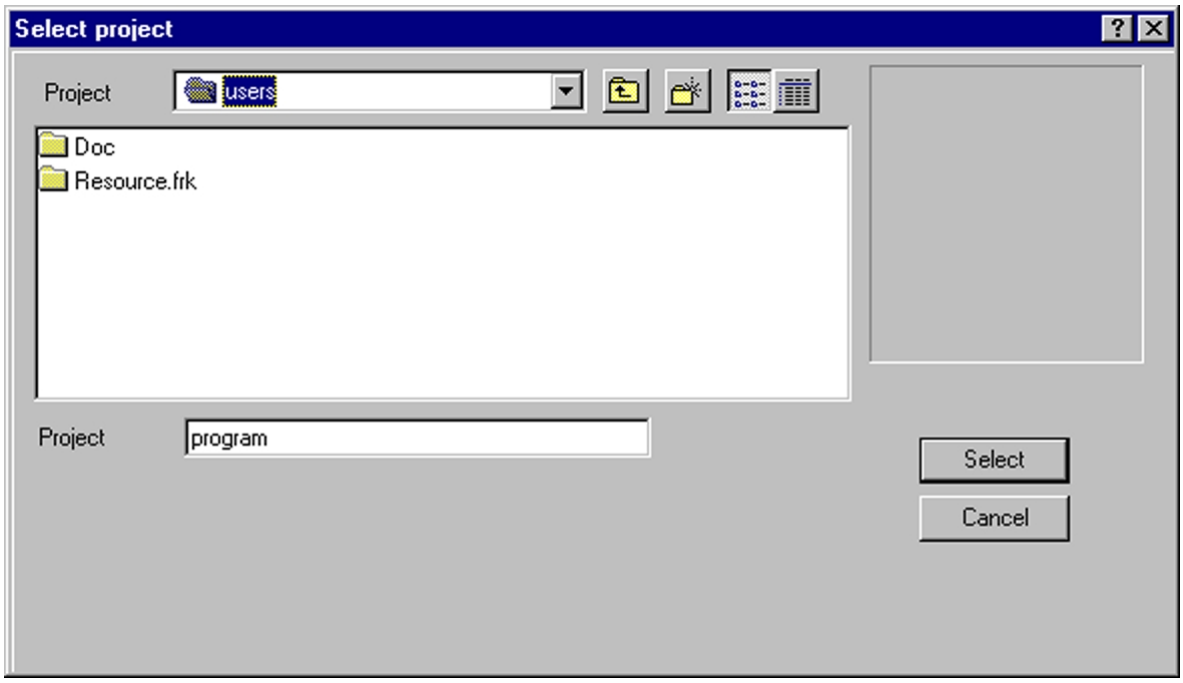
B8.2.1 Limitations on Uploading

Uploading cannot be done in the following case.

- The CPU operation mode is ROM writer mode.

B8.2.2 Procedure for Uploading

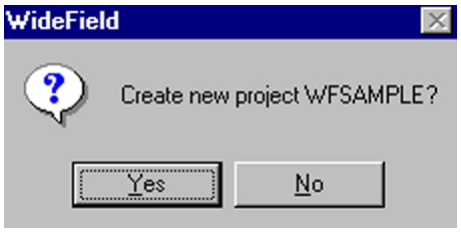
(1) With the FA-M3 connected, select [Online] - [Upload]. The confirmation message below appears. The name of the CPU's executable program is entered in the project name field.



FB080109E.EPS

Figure B8.9 Settings for Upload Destination

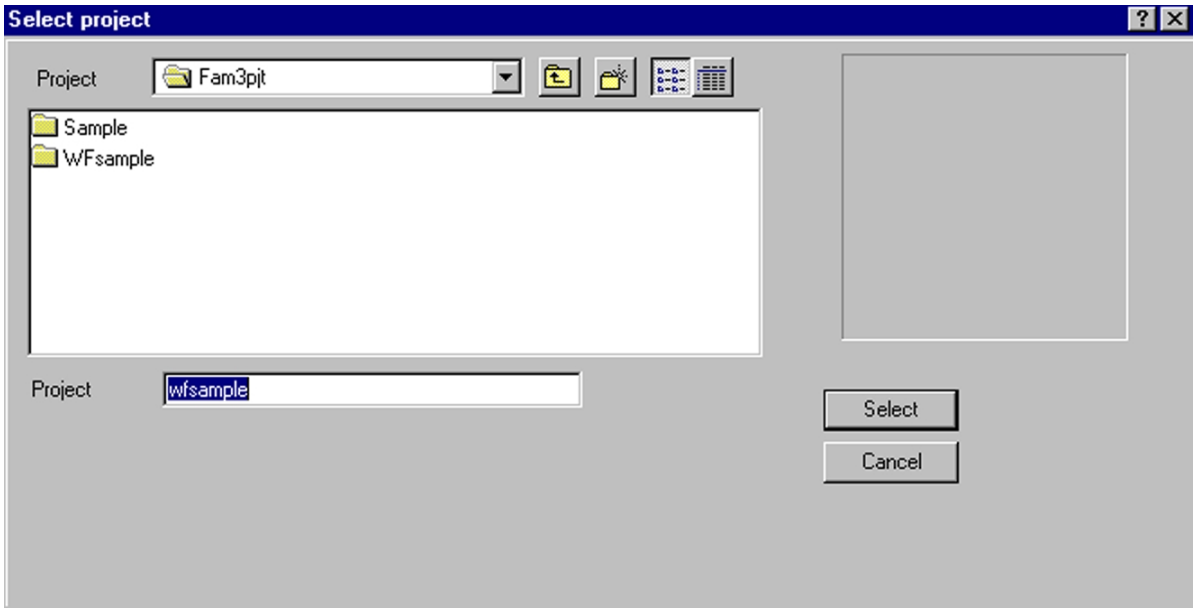
(2) To create a new project, specify the project's folder in the Project Position field, and enter the name of the new project in the Project Name field, and click on [Select]. The following dialog box appears.



FB080110E.EPS

Figure B8.10 Dialog Box for Confirming to Create a New Project

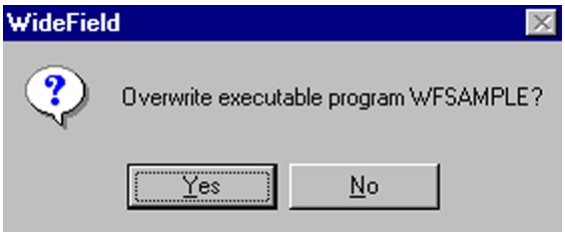
(3) To overwrite an existing project, select the project file containing the project and click on [Select].



FB080111E.EPS

Figure B8.11 Overwrite Upload

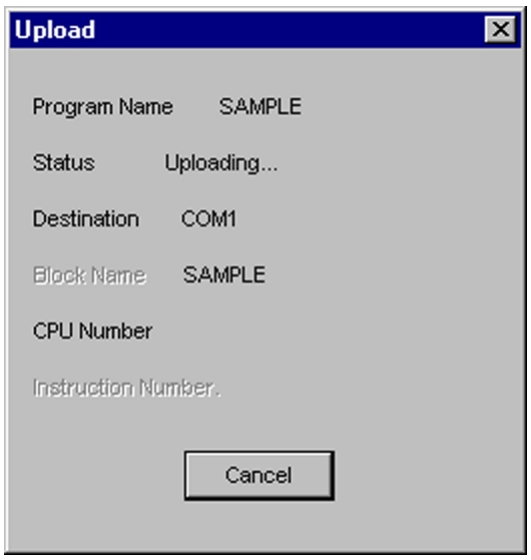
(4) The following dialog box appears.



FB080112E.EPS

Figure B8.12 Confirming Overwrite

(4) Select [Yes]. Uploading starts and the dialog box below appears, showing the contents of the current processing. Select [Cancel] to cancel uploading.



FB080113E.EPS

Figure B8.13 Upload Screen

(5) When uploading ends, the following dialog box appears.

FB080114E.EPS

Figure B8.14 Confirming Upload End

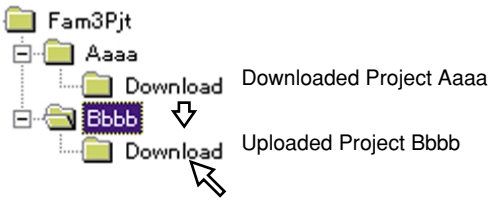
CAUTION

If uploading is cancelled by selecting [Cancel] during upload processing, the operation is as following:

- For new project
  The new project is not created.
- For overwrite
  The existing program remains the same, and is not overwritten.

CAUTION

When a downloaded project is uploaded to a different project destination, circuit comments and subcomments are not generated. To generate comments and subcomments, use Explorer to copy the blocks downloaded to the Download folder of the upload destination project, and then upload them.
To recover tag name definitions (tag name I/O comments), copy the project folder's tag name definition file (has extension .ysig) to the upload destination after uploading.



Copy the Download folder of the upload destination Bbbb to the file of Aaaa's Download folder. Copy the file of Aaaa's Download folder to the Download folder of the upload destination Bbbb.

FB080115E.EPS

Figure B8.15 Copying file to Upload Destination So As to Recover Comments

B9. Run Mode Settings and Run Status Monitor

The FA-M3's CPU operation modes are as below. This chapter describes how to monitor and set the CPU's run status.

● Run Mode (RUN LED lights)

This mode is active when the CPU is executing the program. The program run status can be checked on the CPU Operation Monitor, Program Monitor, and Device Monitor, but the Debug function cannot be used and online editing cannot be done.
When the mode is switched from stop mode to run mode, the program starts from the top, just as for booting. Except for the lock-up devices, the devices become 0. If the Debug function was being used, it is cancelled.

● Stop Mode (RUN LED off)

This is the mode when the CPU stops executing the program. The Debug function can be used and online editing can be done.

● Debug Mode

This mode is for debugging, and arranging. The manner of executing program is same as Run mode, but the debug function can be used and online editing can be done.

● ROM Writer Mode

This mode is for erasing the ROM pack and writing programs to it. See Chapter B15. "Managing the ROM" for details about how to set the ROM writer mode.

B9.1 Displaying Action Monitor

The operating status of the CPU can be checked on the Operation Monitor. As shown in Figure B9.1, the Operation Monitor is displayed as a bar. It is displayed automatically when the FA-M3 is connected. The Action Monitor can be switched to display or hide to select [View] - [Action Monitor].

Figure B9.1 Operation Monitor Bar

The display items are as follows:

(1) LED display status

Shows the LED display status for the CPU module.

(2) Name of executable program

Shows the name of the downloaded executable program.

(3) Executable program step count

Shows the number of steps in the executable program.

(4) Operation mode

Shows the CPU's operation mode (run/stop/debug/ROM).

(5) Scan time

Shows the CPU's scan time in units of 0.1 ms. (Display example: 0.4 ms)

(6) Refreshing stop status

Shows the refreshing stop status.

X: Input refreshing stopped

Y: Output refreshing stopped

E: Shared refreshing stopped

Y: Link refreshing stopped

(7) ROM pack install status

Displayed when a ROM pack is installed.

(8) Sensor control block scan time

With F3SP28/38/53/58, the SCB scan time is shown in addition to the above.
The scan time is displayed in units of 0.01 ms (10 μs). (Display example: 0.32 ms)

■ Embedding Action Monitor in Frame

The Operation Monitor Bar can be embedded under the application Title Bar, at the top or bottom of the application window. When the Operation Monitor Bar is dragged to the edge of the application window, the outline of the Operation Monitor Bar changes and is fitted along the side of the application window.

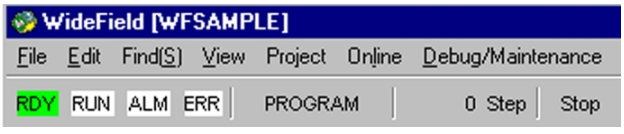


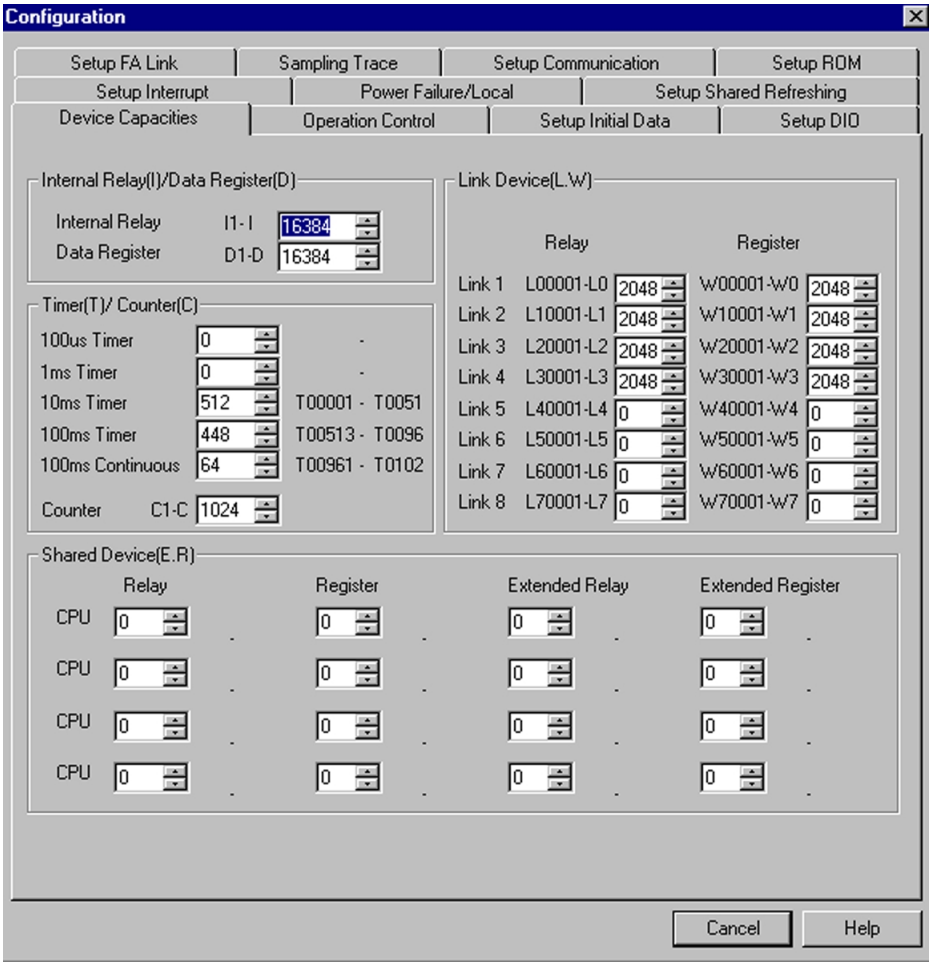
Figure B9.2 Example of Embedding Under Title Bar

B9.2 Configuration Display while Running a Program

**This section describes how to read and display the CPU's configuration.
The configuration can be looked up but cannot be changed.**

■ Procedure for Displaying Configuration

(1) Select [Online] - [Configuration].
The following screen appears. Only [Cancel] and [Help] can be selected.



FB090201E.EPS

Figure B9.3 Configuration Display

(2) Click on [Cancel] to end the configuration display.

B9.3 Procedure for Changing Each Mode

B9.3.1 Switching to Run Mode

With the FA-M3 connected, select [Online] - [Operation Mode] - [Run].
Select [Yes] to enter run mode.

FB090301E.EPS

Figure B9.4 Confirming Operation Mode

B9.3.2 Switching to Stop Mode

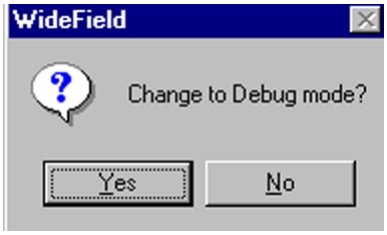
With the FA-M3 connected, select [Online] - [Operation Mode] - [Stop].
Select [Yes] to enter stop mode.

FB090302E.EPS

Figure B9.5 Confirming Stop Mode

B9.3.3 Switching to Debug Mode

With the FA-M3 connected, select [Online] - [Operation Mode] - [Debug].
Select [Yes] to enter debug mode.



FB090303E.EPS

Figure B9.6 Confirming Debug Mode

B9.4 Temporarily Changing Communication Speed

Change the CPU's RS-232C communication setting temporarily.
There are the following 9 types of communication mode.(Communication speed can be selected varies by the CPU types.)

- **9,600 bps, parity even**
- **9,600 bps, parity none**
- **19,200 bps, parity even**
- **19,200 bps, parity none**
- **38,400 bps, parity even**
- **38,400 bps, parity none**
- **57,600 bps, parity even**
- **57,600 bps, parity none**
- **115,200 bps, parity even**
- **115,200 bps, parity none**

All of the communication modes are character length is 8 bits, and stop bit exists. Communication mode temporarily changed is recovered by executing the following functions.

- **Change to run mode**
- **Power off/on**

Set with the communication mode in the configuration to change permanently.

■ Procedure for Temporarily Changing Communication Speed

(1) Select [Online] - [Extended Function] - [Communication Speed Temporarily Change]. The following dialog box appears.

FB090401E.EPS

Figure B9.7 Temporary Communication Speed Setting

(2) Select the communication mode from the drop-down list. The message appears to confirm this. Select [Yes].

FB090402E.EPS

Figure B9.8 Confirming Communication Change

(3) The communication mode changes.

FB090403E.EPS

Figure B9.9 End Message

TIP

The communication speed can be changed temporarily even when the project is not open.

When the communication speed has been changed temporarily, this communication mode is kept even after disconnecting from the FA-M3.

CAUTION

- The handy programming console cannot be used unless When the communication mode is set to 9,600 bps, and parity even.
- When the communication mode is set to a fast communication speed, communication cannot be done with personal computers that do not support high-speed transfer rates. The communication speed for the personal computer's serial port is set with [Control Panel] - [Serial Port]. Check the settings to make sure they are compatible.
- Temporary change of the communication speed can be used only when RS-232C communication is set in the environment settings.

B9.5 Setup Time

The date and time set for the CPU can be changed.

■ Procedure for Changing Time Settings

(1) Select [Online] - [Extended Functions] - [Setup Time].
The following dialog box appears, showing the current date, time, and correction value.

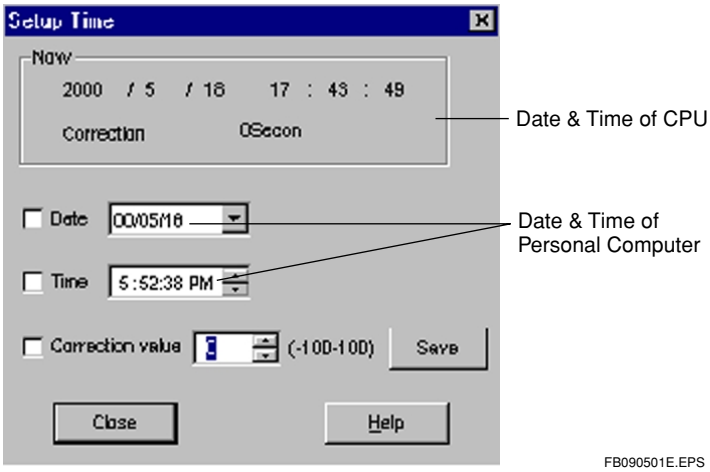


Figure B9.10 Setup Time

(2) Click on the checkboxes of the items to be changed.
For the date, click on the year, month or date and then enter the new value.
Select the drop-down list to display the calendar.
Input to the calendar can be done also.
For the time, click on the hour, minute or second and then enter the new value.
Enter the correction value either by direct input or by using the spin buttons.
Correction value are set between -100 and 100 seconds (set negative value for putting the clock on).

(3) When input is finished, select [Save].
When the data is saved to the CPU, the new values are displayed for the current time.

(4) Select [Close] to close the dialog box.

TIP

The time can be set even when the project is not open.

CAUTION

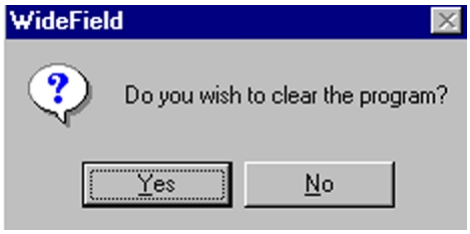
The change is reflected in the clock with the correction value when the machine is reset or at the next power-up.

B9.6 Clearing Programs

All the programs in the CPU can be cleared. This function cannot be used while a program is being executed.

■ Procedure for Clearing Program

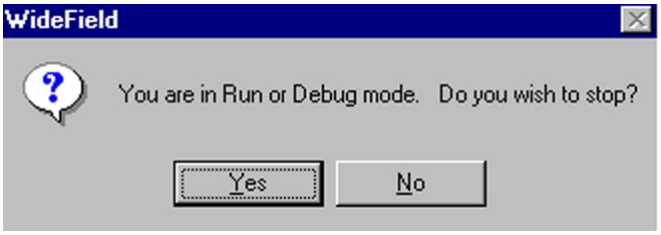
(1) Select [Online] - [Extended Function] - [Clear Program].
The following message appears to confirm this. Select [Yes] to continue. Select [No] to cancel.



FB090601E.EPS

Figure B9.11 Confirming Clearing Programs

(2) If a program is being executed, the following dialog box appears. Select [Yes] to continue. Select [No] to cancel.



FB090602E.EPS

Figure B9.12 Confirming Stop Program

FB090603E.EPS

Figure 9.13 End message

TIP

The Clear Programs function can be executed even when a project is not open.

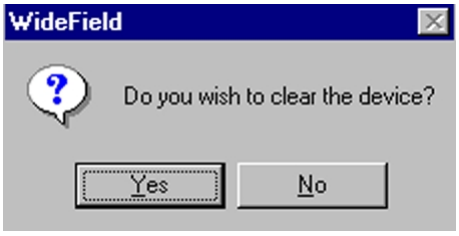
When the Clear Programs function is executed, disconnection is done automatically.

B9.7 Clear Device

All the devices in the CPU can be cleared. Lock-up devices can be cleared as well, but some devices such as file registers will not be cleared. This function cannot be used while a program is being executed.

■ Procedure for Clearing Devices

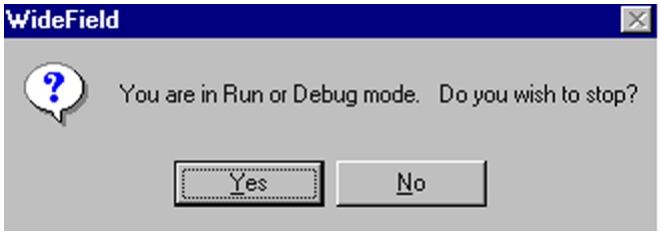
(1) Select [Online] - [Extended Function] - [Clear Device]
The following message appears to confirm this. Select [Yes] to continue. Select [No] to cancel.



FB090701E.EPS

Figure B9.14 Confirming Clearing Devices

(2) If a program is being executed, the following dialog box appears. Select [Yes] to continue. Select [No] to cancel.



FB090702E.EPS

Figure B9.15 Confirming Stop Program

FB090703E.EPS

Figure B9.16 End Message

TIP

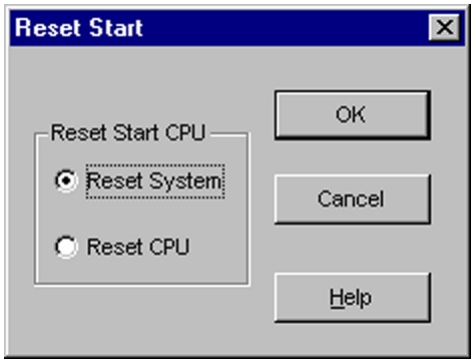
The Clear Devices function can be executed even when a project is not open.

B9.8 Reset Start

The FA-M3 can be reset by the Reset Start function. This function consists of two types, one Reset Start for the entire system and the other Reset Start for the connected CPU only.

■ Procedure for Using Reset Start Function

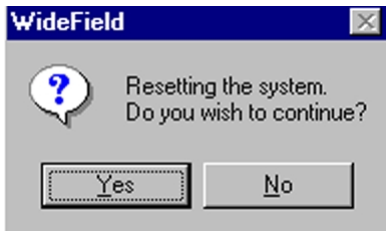
(1) Select [Online] - [Extended Function] - [Reset Start].
The following dialog box appears.



FB090801E.EPS

Figure B9.17 Selecting Reset

(2) Select the target for Reset Start (Reset System or Reset CPU), and then select [OK]. Select [Cancel] to cancel. The following dialog box appears for confirming this operation. Select [Yes.]. The system is restarted.



FB090802E.EPS

Figure B9.18 Confirming Reset

FB090803E.EPS

Figure B9.19 End Message

TIP

The Reset Start function can be executed even when a project is not open.

CAUTION

- When the Reset Start is done, the personal computer is disconnected from the FA-M3.
- System Reset is effective only for the main CPU (CPU mounted in slot 1). If System Reset is attempted for an add-on CPU, an error occurs and System Reset is not implemented.
- When Reset Start is done, devices that are not locked up are initialized.
- Reset Start cannot be done during online editing.
- Do not do CPU Reset for a particular CPU when the system is configured of multiple CPUs. Otherwise, an error will occur when CPUs are communicating and when the same module is being accessed. When the system consists of multiple CPUs, do System Reset for the main CPU (CPU mounted in slot 1).

B9.9 Capturing and Releasing Exclusive Access Control

The Exclusive Access Control for the FA-M3 can be captured and released. When the Exclusive Access Control is captured, the following functions are unavailable from other machines:

- **Changing operation mode (run, debug, stop)**
- **Changing forced set/reset and device values**
- **Stopping and canceling refreshing**
- **Downloading**
- **Online editing**

There are three types of control for the Exclusive Access Control, as follows:

● Capturing Exclusive Access Control

Captures the Exclusive Access Control. When it is captured, the functions listed above are unavailable. If another machine has already captured the Exclusive Access Control, then it cannot be captured. Capture it after doing a forced release.

● Releasing Exclusive Access Control

Releases the Exclusive Access Control captured itself. When it is released, the functions listed above can be used from other machines.

● Forcibly Releasing Exclusive Access Control

When a different machine has captured the Exclusive Access Control, it can be released forcibly. When it is forcibly released, the functions listed above can be used from all machines.

■ Procedure for Capturing Exclusive Access Control

(1) Select [Online] - [Extended Function] - [Exclusive Access Control] - [Get]. The Exclusive Access Right is captured.

FB090901E.EPS

Figure B9.20 End Message

■ Procedure for Releasing Exclusive Access Control

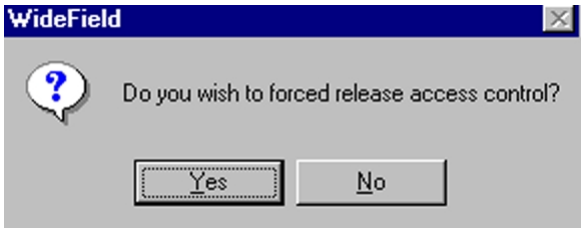
(1) Select [Online] - [Extended Function] - [Exclusive Access Control] - [Release]. The Exclusive Access Control is released.

FB090902E.EPS

Figure B9.21 End Message

■ Procedure for Forcibly Releasing Exclusive Access Control

(1) Select [Online] - [Extended Function] - [Exclusive Access Control] - [Forced Release]. The dialog box below appears to confirm the release. Select [Yes]. The Exclusive Access Control is forcibly released.



FB090903E.EPS

Figure B9.22 Confirming Forced Release

FB090904E.EPS

Figure B9.23 End message

TIP

The Exclusive Access Control can be captured and released even when a project is not open.

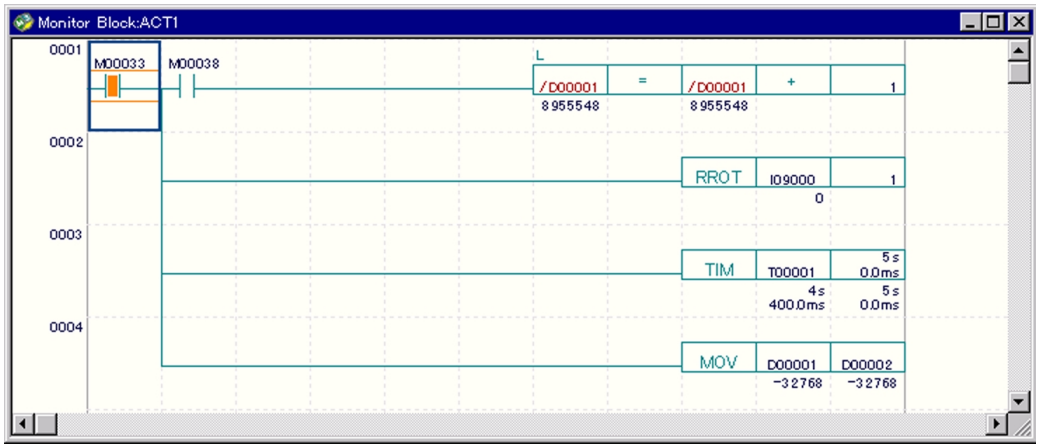
Blank Page

B10. Program Monitor

The Program Monitor displays the contents of blocks in the form of a ladder diagram. It can be used for confirming the ON/OFF status of relays and the current values of data in the program.

B10.1 Configuration of Program Monitor Screen

Figure B10.1 shows an example of the Program Monitor Screen.



FB100101E.EPS

Figure B10.1 Program Monitor Screen

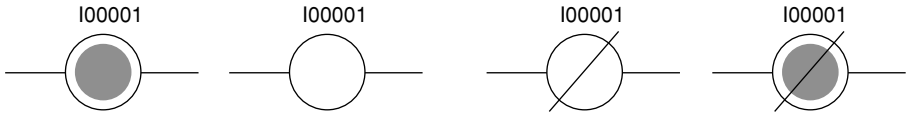
B10.1.1 Relay ON/OFF Display

The Program Monitor screen shows the following relay ON/OFF statuses.

(1) Conduction state of contact a and contact b

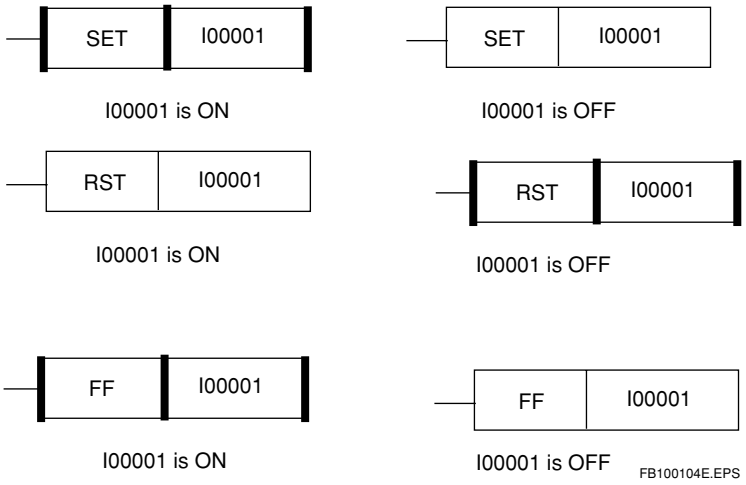
FB100102E.EPS

(2) Conduction state of coil

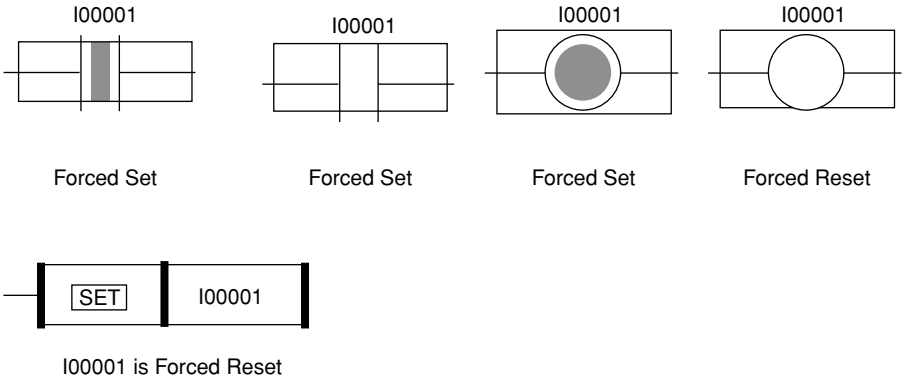


FB100103E.EPS

(3) SET, RST, and FF instructions



(4) Displaying Forced Set/Reset



Normal open contact and normal close contact and coil are shown enclosed in a rectangle. SET, RST, and FF instructions are shown instructions are enclosed in a rectangle.

CAUTION

The monitor for indexed devices displays the device value with the index register value is 0.

B10.1.2 Displaying Application Instructions

If detailed display is selected for the contents of the devices of the application instructions and the current value of the timer/counter, these are displayed. The usual monitor screen has the same display as for offline.

CAUTION

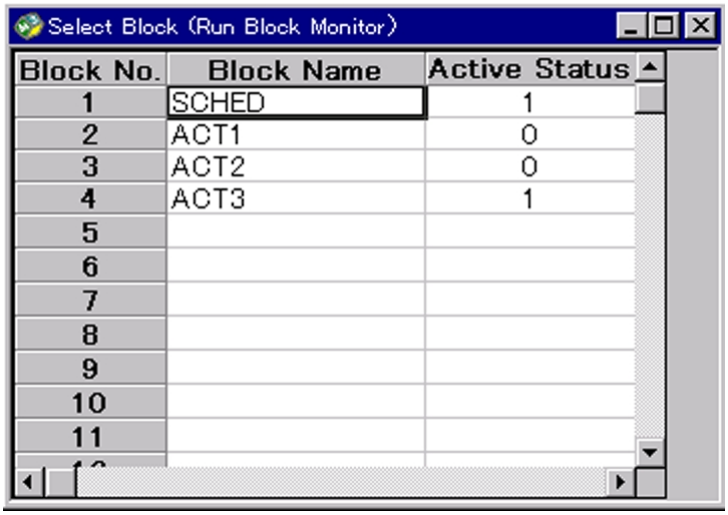
The monitor for indexed devices displays the device value with the index register value is 0.

B10.2 Activating and Ending Program Monitor

B10.2.1 Procedure for Activating Program Monitor

(1) Open the target project. (Not mandatory.)

(2) With the FA-M3 connected, select [Online] - [Program Monitor].
The Select Block (Run Block Monitor) screen appears.



FB100201E.EPS

1: Indicates Activated. 0: Indicates Stopped.

Figure B10.2 Run Block Monitor

(3) In the Select Block screen, double-click on the block for monitor display, or move the cursor and press [Enter] to select the block.

(4) The target block is displayed as a ladder diagram.

TIP

The Program Monitor can activate multiple program monitors for different blocks.

CAUTION

The following limitations apply for when the project is not open, and when the project is open but is different to the executable program being downloaded:

- When project not open
  - The tag names and comments are not displayed.
  - The contents of online editing cannot be saved to a file.
- When the opening project is different to the executable program being downloaded
  - The tag names and comments are not displayed correctly.

B10.2.2 Saving the Monitoring Program

The block being program monitored can be saved to a file.
Select [File] - [Reflect on File]. The block is saved by overwriting the file with the same block name in the project.
Select [File] - [Reflect on Different File] to save it with a different name.

B10.2.3 Procedure for Ending Program Monitor

Select [File] - [Close].
If the contents of the CPU's program have been changed by online editing, the following dialog box appears, for selecting whether or not to reflect the changes in the project's file.

FB100202E.EPS

Figure B10.3 Dialog Box for Confirming to Reflect File

When [Yes] is selected, the changes are saved to the block with the same name as the open project, and the circuit monitor screen closes. When [No] is selected, the changes are not reflected in a file, and the circuit monitor screen closes. When [Cancel] is selected, the changes are not reflected in a file, and the circuit monitor screen returns.

TIP

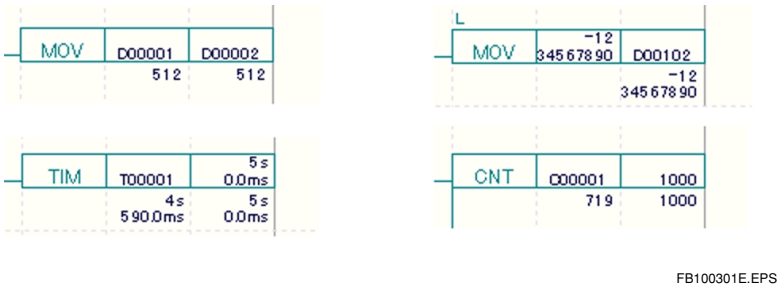
Even when the block's Program Monitor ends, the Run Block screen remains displayed. To end this screen, select [File] - [Close] for this Run Block Monitor screen.

B10.3 Displaying Details of Application Instructions

The contents of the devices of the application instructions and the current value of the timer/counter can be displayed.

B10.3.1 Procedure for Displaying Details

Select [View] - [Detail]. As shown in the example in Figure B10.4, the details of the devices are displayed.



FB100301E.EPS

Figure B10.4 Example of Details Display

CAUTION

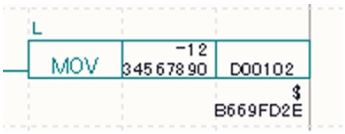
For the timer and counter, the current value and set value are displayed under the instruction. If the set value has been changed online, the changed value is displayed.

B10.3.2 Changing Display Format

When the contents of devices in application instructions are displayed, the word data or long word data can be changed from decimal display to hexadecimal, character string, or floating point display.

(1) Hexadecimal display

Select [View] - [Display Format] - [Hexadecimal]. The contents of the devices are displayed in hexadecimals. (See Figure B10.5.)

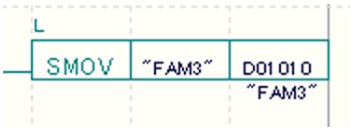


FB100302E.EPS

Figure B10.5 Hexadecimal Display

(2) Character string display

Select [View] - [Display Format] - [Character String]. The contents of the devices are displayed in text strings. (See Figure B10.6.)

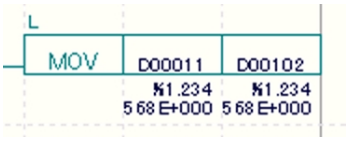


FB100303E.EPS

Figure B10.6 Text String Display

(3) Floating point display (long words only)

Select [View] - [Display Format] - [Floating Point]. The contents of the devices are displayed as shown in the example below. (See Figure B10.7.)



FB100304E.EPS

Figure B10.7 Floating Point Display

To return to decimal display, select [View] - [Display Format] - [Decimal].

CAUTION

Even if the display format is changed, timer current values and constants of instruction parameters are displayed in the same data format as when they were entered.

B10.4 Switching Display

B10.4.1 Switching Display of Tag Names and Addresses

The device display in the Program Monitor screen can be switched from tag name display to address display.

■ Procedure for Switching Display

(1) Select [View] - [Display Address]. As shown in Figure B10.8, the display changes from device display to address display. During address display, the [Display Address] item is checked.

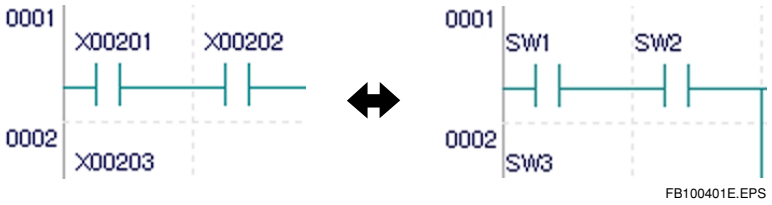


Figure B10.8 Displaying Address or Tag Name

(2) Select [View] - [Display Address] again to switch to tag name display. The [Display Address] item is no longer checked.

CAUTION

If the project is not open, tag names cannot be displayed, so only address display is available.

B10.4.2 Displaying I/O Comments

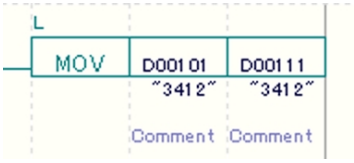
I/O comments can be displayed in the Program Monitor screen.

■ Procedure for Displaying I/O Comments

(1) Select [View] - [Display I/O Comments]. As shown in Figure B10.9, the I/O comments are displayed. While the I/O comments are displayed, the [I/O Comments] item is checked.

FB100402E.EPS

Figure B10.9 Displaying I/O Comments



FB100403E.EPS

Figure B10.10 Displaying I/O Comments in Details

(2) Select [View] - [Display I/O Comments] again to clear the I/O comments. The [I/O Comments] item is no longer checked.

CAUTION

If the project is not open, I/O comments cannot be displayed, so only address display is available.

B10.4.3 Displaying Instruction Numbers

Instruction numbers can be displayed in the Program Monitor screen.

■ Procedure for Displaying Instruction Numbers

(1) Select [View] - [Display Instruction Number]. As shown in Figure B10.11, the instruction numbers are displayed. While the instruction numbers are displayed, the [Instruction Numbers] item is checked.

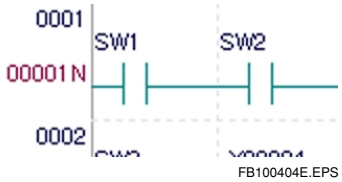


Figure B10.11 Displaying Instruction Numbers

(2) Select [View] - [Display Instruction Number] again to clear the instruction numbers. The [Instruction Numbers] item is no longer checked.

■ Displaying Folded Circuits

The Fold function is a method of displaying ladder diagrams with circuit comments as headers. The operation method is the same as for editing ladder diagrams. See the chapter on editing programs.

B10.5 Browsing Tag Names

Select [Edit] - [Block Tag Definition] to look up tag name definitions defined by blocks. Tag name definitions cannot be changed online.

B10.6 Searching with Program Monitor

Devices and instructions can be searched from the Program Monitor screen. Devices can be searched by a standard search and by a specified range search.

B10.6.1 Find Device and Find Instruction functions

Blocks being monitored can be searched for devices and instructions. The operation method is the same as for editing ladder diagrams. See the chapter on editing programs.

B10.6.2 Jump Function

The Jump function can be used for the block being monitored. The operation method is the same as for editing ladder diagrams. See the chapter on editing programs.

B10.6.3 Displaying Device Usage Status

The device usage statuses can be displayed for the block being edited. The operation method is the same as for editing ladder diagrams. See the chapter on editing programs.

B10.7 Suspending and Resuming Program Monitor

The Program Monitor can be paused. When it is paused, the device statuses displayed in the Program Monitor screen are not updated.

B10.7.1 Procedure for Suspending Monitor

(1) Select [View] - [Suspend Monitor].

B10.7.2 Procedure for Resuming Monitor

(1) Select [Display] - [Resume Monitor].

TIP

This Pause Monitor function affects all Program Monitor and Device Monitor screens.

Blank Page

B11. Device Monitor

The Device Monitor function displays a monitor screen for each type of device that has been specified. This function is used for confirming the relay ON/OFF statuses, current data values, and the current values and settings for the timer/counter.

B11.1 Configuration of Device Monitor Screens

The device monitor screens can be roughly divided into four types, for relays, registers, timers and counters.

B11.1.1 Configuration of Relay Monitor Screen

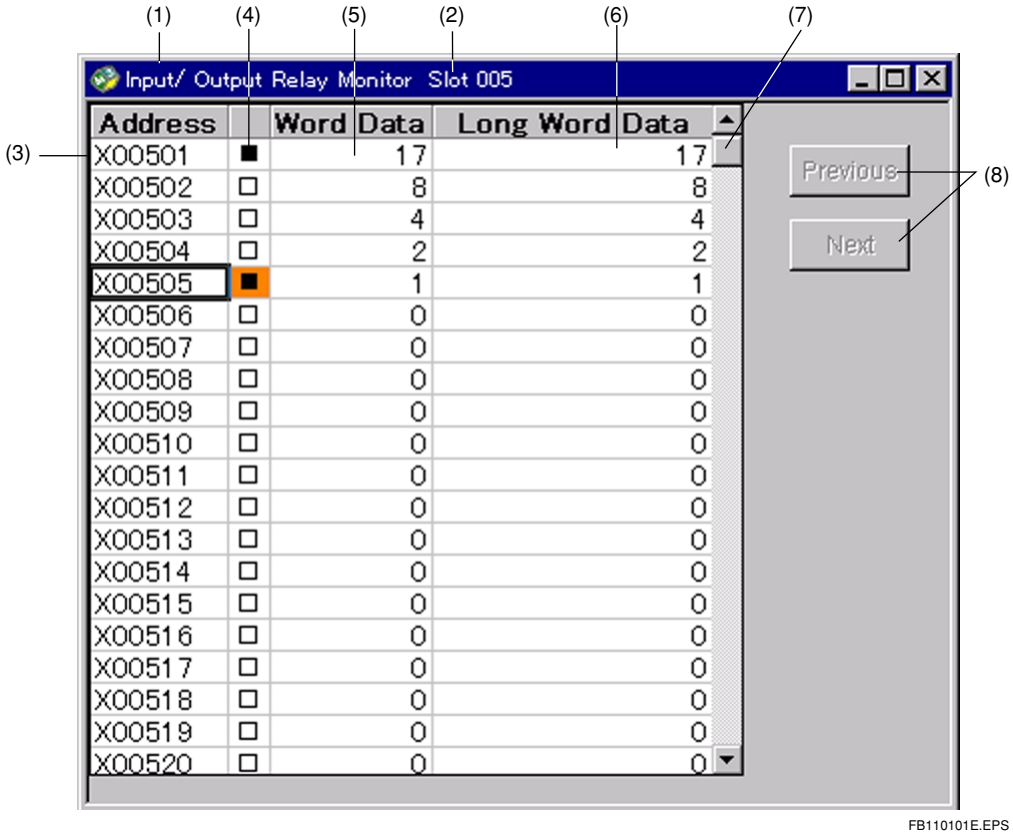


Figure B11.1 Device Monitor for Relays

(1) Monitor title
Displays the device type and monitor.

(2) Additional information
Displays the slot number (when I/O relay) and block name (when local device).

(3) Device address
Displays the names of devices monitored, in order of their addresses.

(4) ON/OFF display
Displays the ON/OFF statuses of relays. (■ : ON, □ : OFF)
The ON/OFF fields for addresses that have undergone forced set/reset are displayed with a different background color.

(5) Word data display
Displays 16-bit data from the target device.

(6) Long word data display
Displays 16-bit data from the target device.

(7) Scroll bar
Moves the displayed devices up and down. Scrolls through 256 data items.

(8) [Previous] and [Next]
When there are 257 or more data items, these buttons are used for displaying the previous 256 items or the next 256 items.

B11.1.2 Configuration of Register Monitor Screen

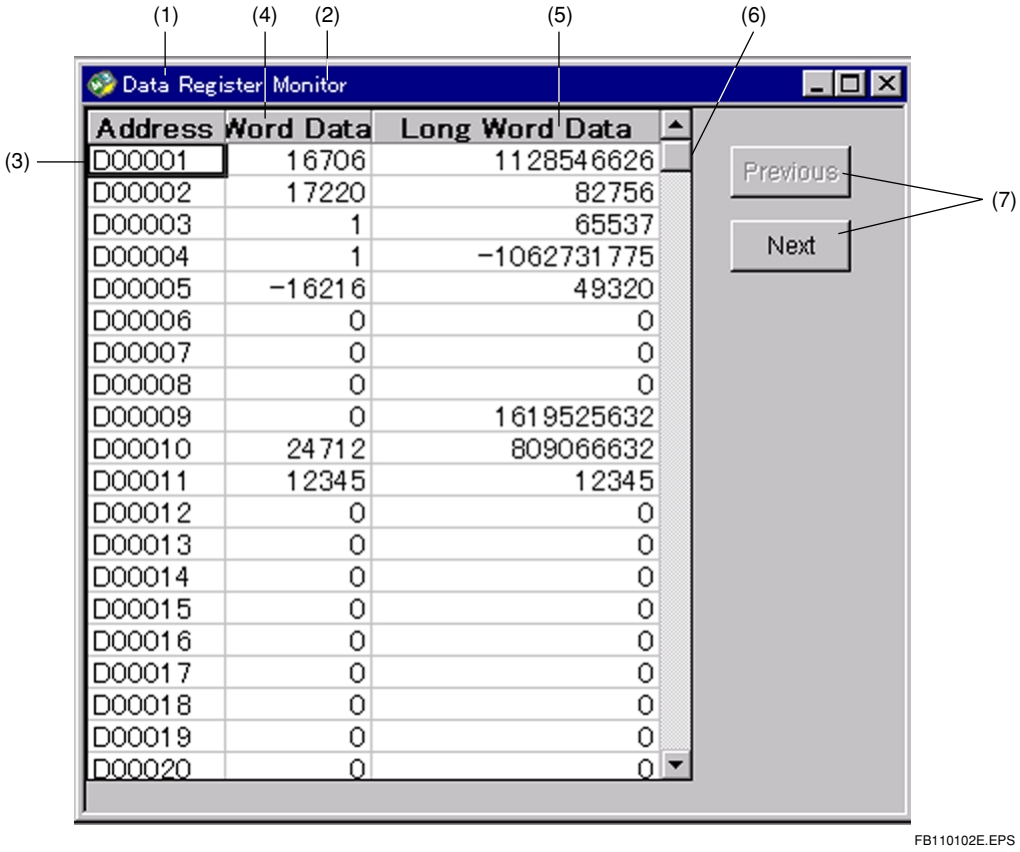


Figure B11.2 Device Monitor for Registers

(1) Monitor title
Displays the device type and monitor.

(2) Additional information
Displays the block name (when local device).

(3) Device address
Displays the names of devices monitored, in order of their addresses.

(4) Word data display
Displays the current value for the target device.

(5) Long word data display
Displays 2-word data from the target device.

(6) Scroll bar
Moves the displayed devices up and down. Scrolls through 256 data items.

(7) [Previous] and [Next]
When there are 257 or more data items, these buttons are used for displaying the previous 256 items or the next 256 items.

B11.1.3 Configuration of Timer Monitor Screen

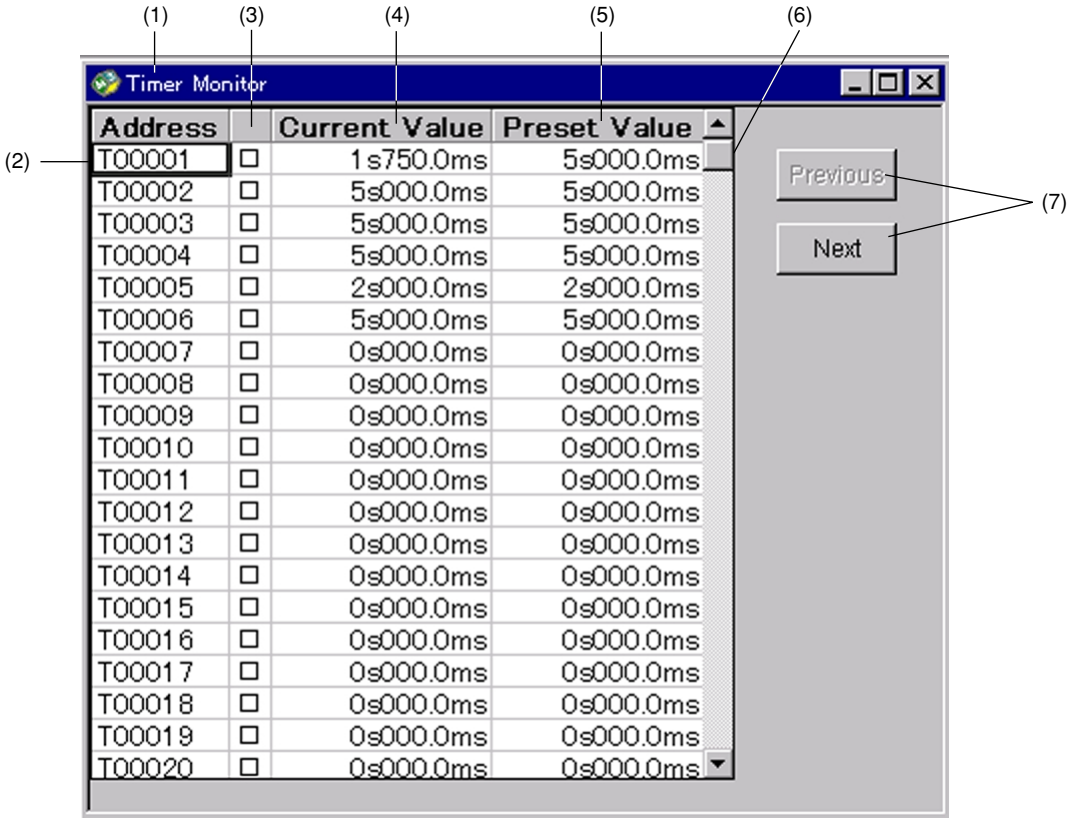


Figure B11.3 Device Monitor for Timers

(1) Monitor title
Displays the device type and monitor.

(2) Device address
Displays the names of devices monitored, in order of their addresses.

(3) ON/OFF display
Displays the timeout statuses of relays.
(■ : Timeout relay ON, □ : Timeout relay OFF)

(4) Current value display
Displays the current values of the timers.

(5) Current settings display
Displays the current settings of the timers.

(6) Scroll bar
Moves the displayed devices up and down. Scrolls through 256 data items.

(7) [Previous] and [Next]
When there are 257 or more data items, these buttons are used for displaying the previous 256 items or the next 256 items.

B11.1.4 Configuration of Counter Monitor Screen

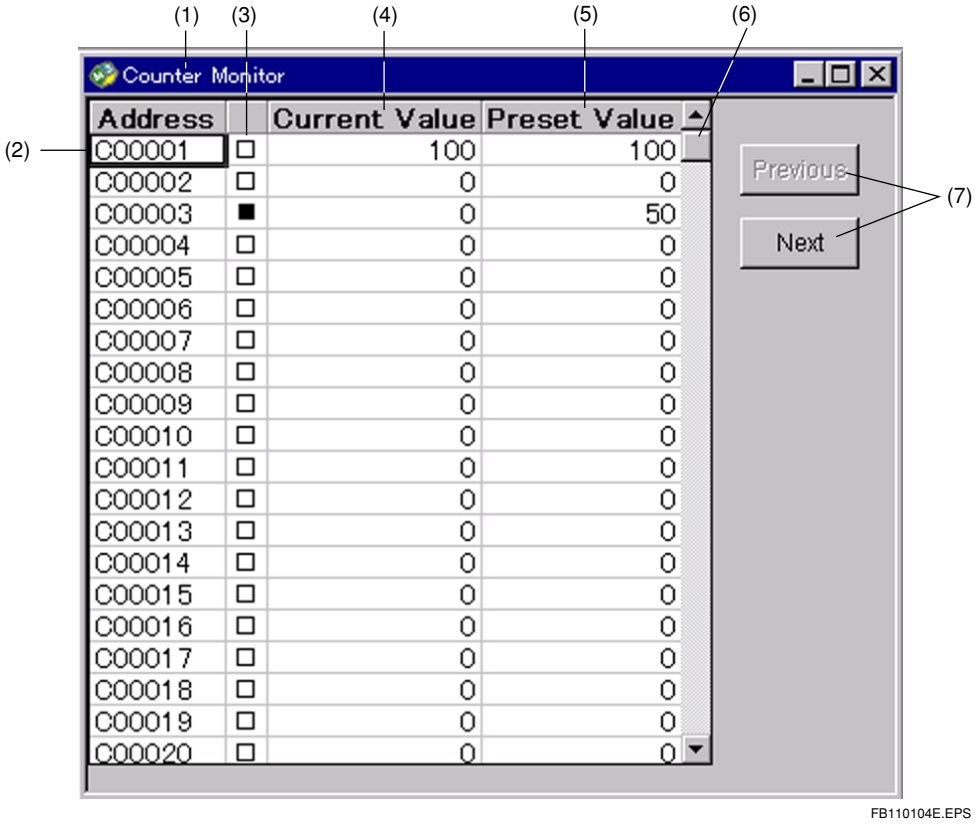


Figure B11.4 Device Monitor for Counters

(1) Monitor title
Displays the device type and monitor.

(2) Device address
Displays the names of devices monitored, in order of their addresses.

(3) ON/OFF display
Displays the count-up statuses of relays.
(■ : Count-up relay ON, □ : Count-up relay OFF)

(4) Current value display
Displays the current values of the counters.

(5) Current settings display
Displays the current settings of the counters.

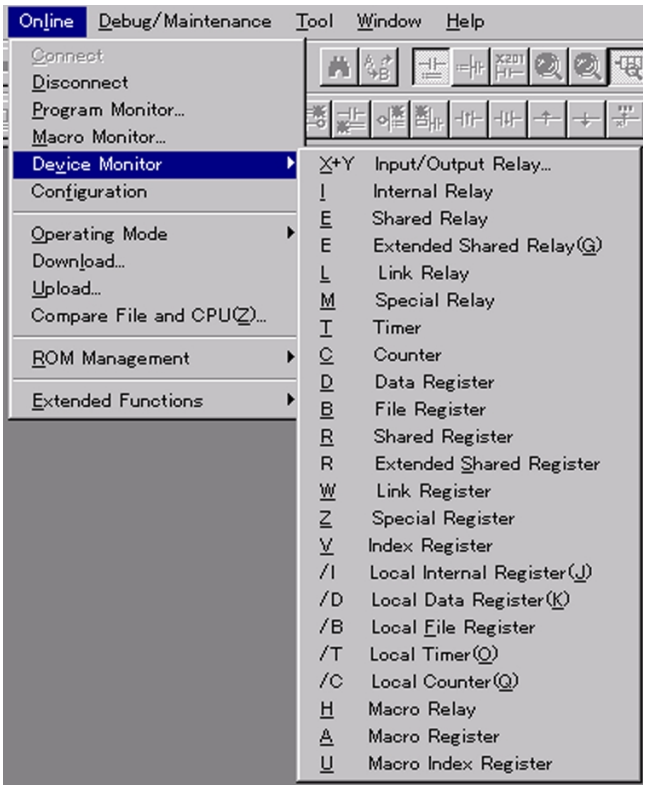
(6) Scroll bar
Moves the displayed devices up and down. Scrolls through 256 data items.

(7) [Previous] and [Next]
When there are 257 or more data items, these buttons are used for displaying the previous 256 items or the next 256 items.

B11.2 Activating and Ending Device Monitor

B11.2.1 Procedure for activating Device Monitor

(1) With the FA-M3 connected, select [Online] - [Device Monitor]. The Device Type sub-menu appears.



FB110201E.EPS

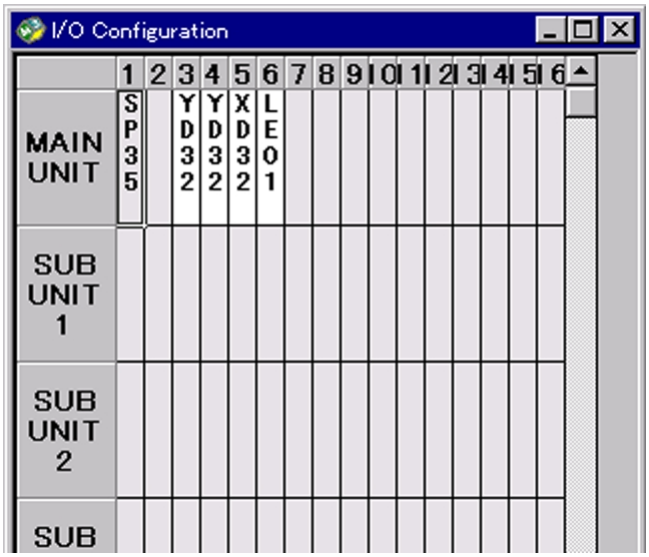
Figure B11.5 Device Type Sub-menu

(2) From the Device Type sub-menu, select the device for monitor display. The target device's monitor screen appears. (I/O relays and local devices are not included.)

(3) If I/O Relay is selected, the I/O Configuration screen shown in Figure B11.6 appears. Select the slot for monitor display.

TIP

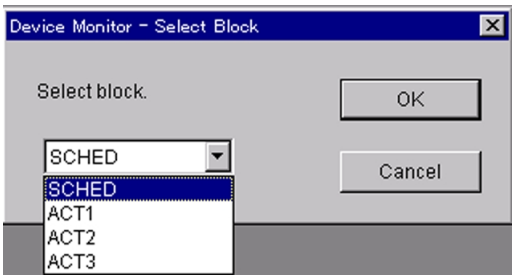
- If the I/O device does not have an I/O relay, this will be displayed as inactive and cannot be selected.
- The color of the module name indicates whether the I/O device is used or not used by the program.



FB110202E.EPS

Figure B11.6 I/O Configuration Screen

(4) If Local Device is selected, the following dialog box appears. Select the block or macro of the local device to be displayed.



FB110203E.EPS

Figure B11.7 Dialog Box for Selecting Block

TIP

The Device Monitor can display with Multiple screens even for identical devices or identical I/O devices.

B11.2.2 Procedure for Ending Device Monitor

Select [File] - [Close].

TIP

The I/O Configuration screen remains displayed even when the I/O relay's Device Monitor is ended. To close the I/O Configuration screen, select [File] - [Close] for the I/O Configuration screen.

B11.3 Changing Display Format

The word data or long word data in the Device Monitor screen can be changed from decimal display to hexadecimal, text string, floating point or binary display. However, binary display can be done only for register devices, not for timers, counters, and relay devices.

(1) Hexadecimal display
Select [View] - [Display Format] - [Hexadecimal].

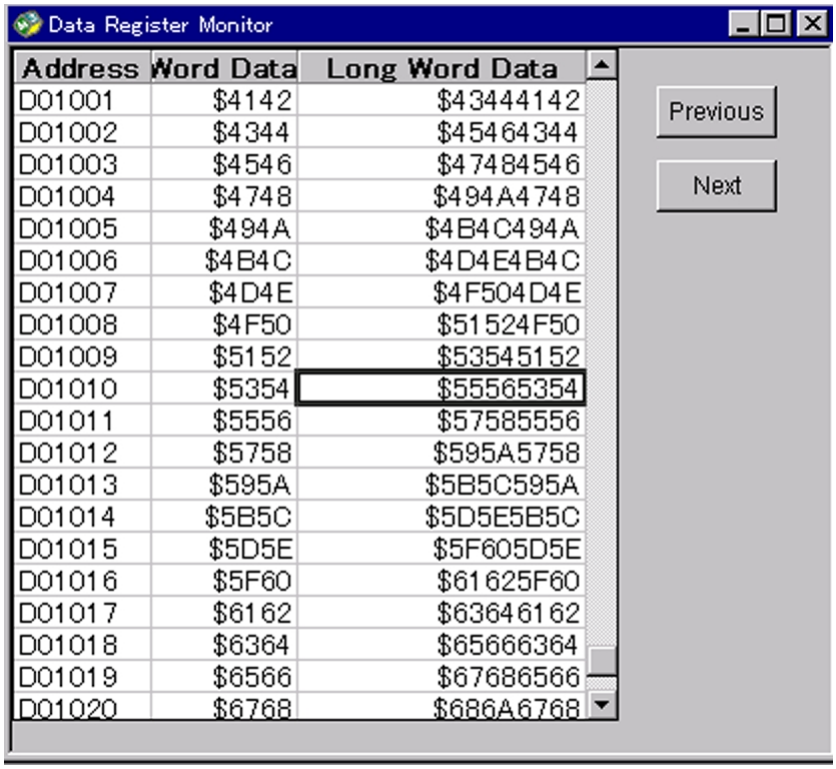
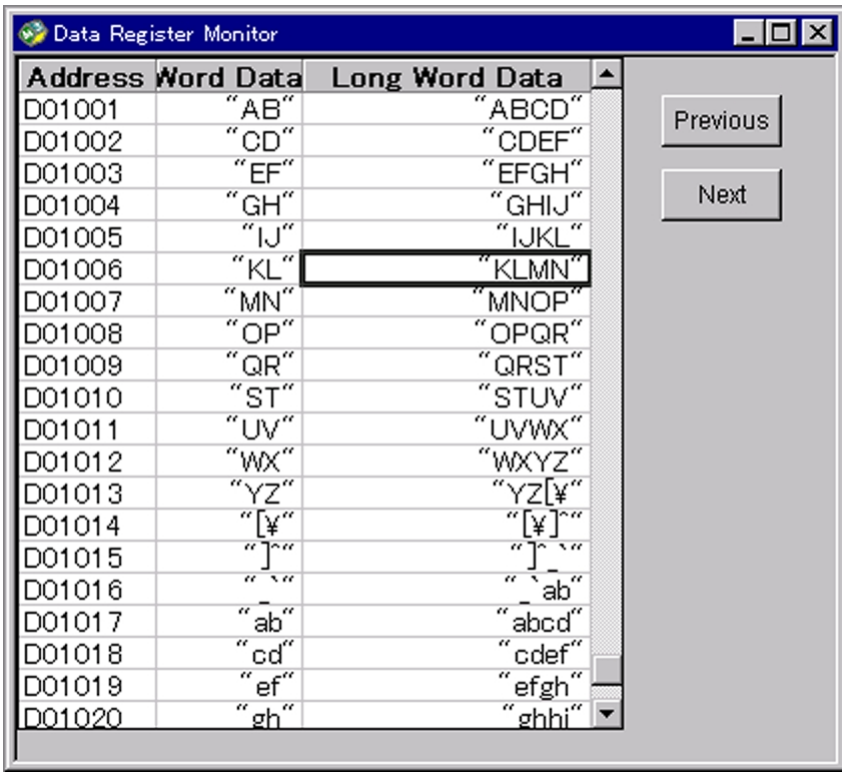


Figure B11.8 Hexadecimal Display

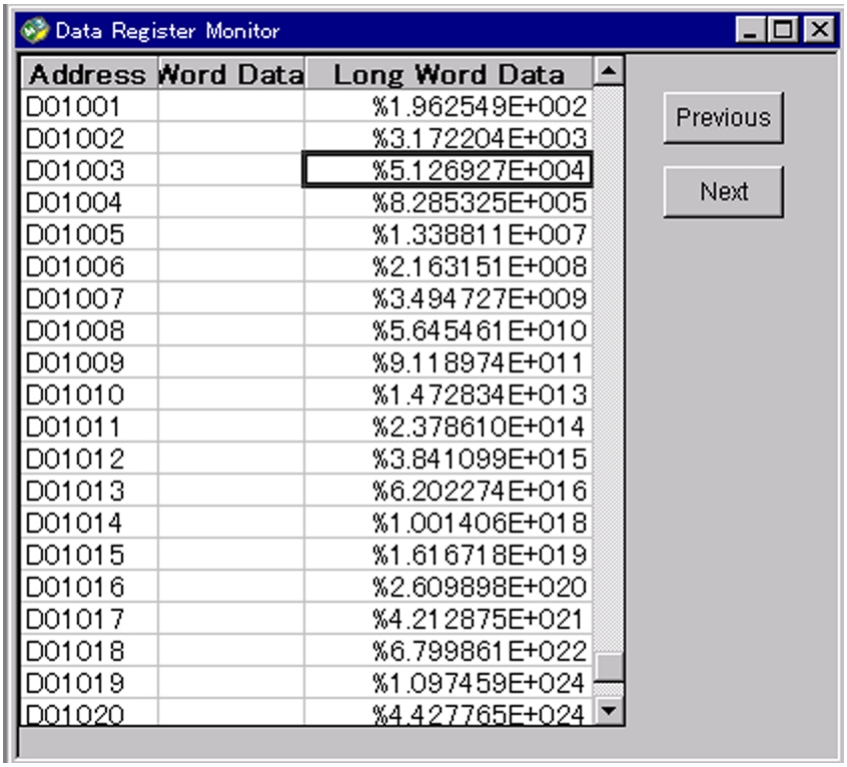
(2) Character string display
Select [View] - [Display Format] - [Character String].



FB110302E.EPS

Figure B11.9 Character string display

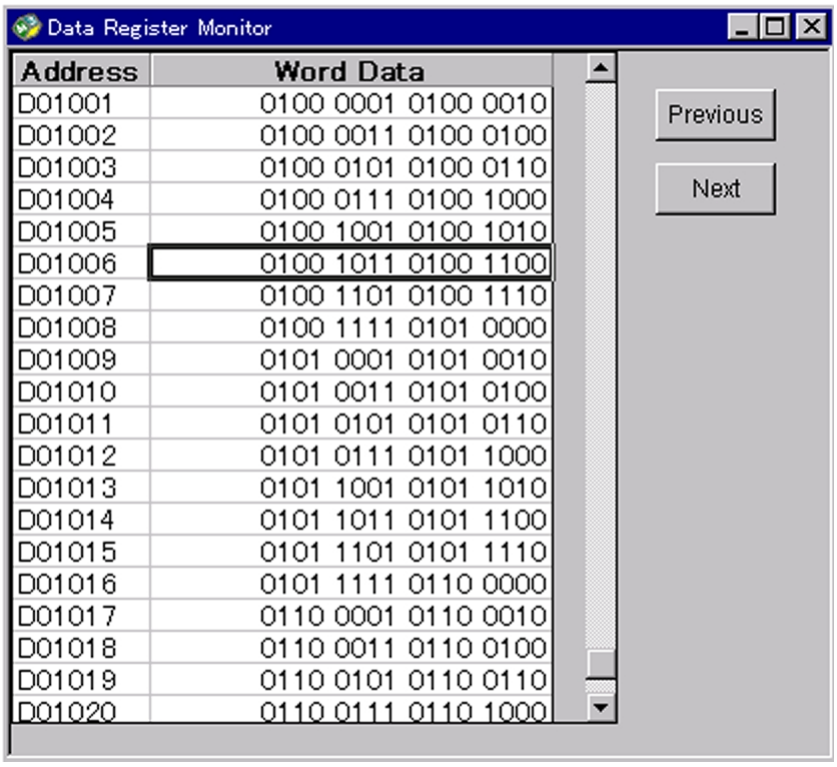
(3) Floating point display (long words only)
Select [View] - [Display Format] - [Floating Point].



FB110303E.EPS

Figure B11.10 Floating Point Display

(4) Binary display (register devices only)



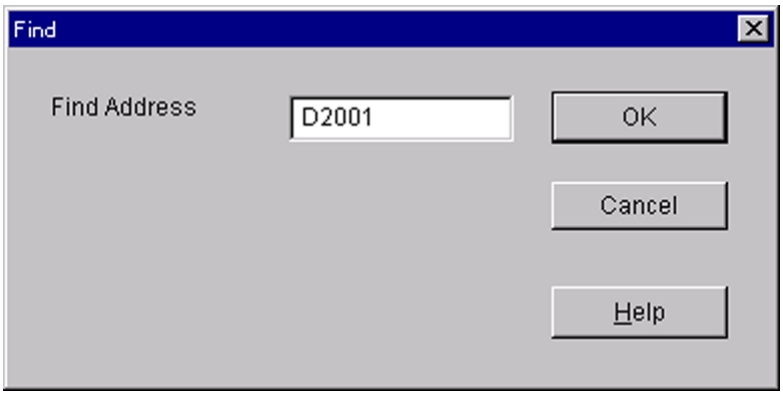
FB110304E.EPS

Figure B11.11 Binary Display

B11.4 Searching Device Monitor

The Find function from the Device Monitor screen targets addresses only. Devices other then the selected device type cannot be targeted.

(1) Select [Find] - [Find] from the menu. The following dialog box appears.



FB110401E.EPS

Figure B11.12 Device Search Setting

(2) Enter the address of the target device and select [OK]. The search starts.

B11.5 Suspending Device Monitor

The Monitor can be paused. When it is paused, the device statuses displayed in the Monitor screen are not updated.

B11.5.1 Procedure for Suspending Monitor

(1) Select [View] - [Suspend Monitor].

B11.5.2 Procedure for Resuming Monitor

(1) Select [View] - [Resume Monitor].

TIP

This Pause Monitor function affects all Monitor screens.

Blank Page

B12. Use of the Debugging Function

The debugging function has the following features.

- **Forced set/reset of the relay**
- **Data change in word/long word units for registers and relays**
- **Change current value for timer/counter**
- **Change set value for timer/counter**
- **Stop refresh**
- **Start/stop block**

The debugging function can be used when the CPU module's operation mode is in debug mode or stop mode.

B12.1 Forced Set/Reset of the Relay

Forced set/reset forces the specified relay device on or off. A total of up to 32 relay devices can be forced set/reset. The forced set/reset can be carried out with either the program monitor or the device monitor.

B12.1.1 Devices with which Forced Set/Reset is Available

Devices with which forced set/reset is available are as follows.

- Input relay X
- Output relay Y
- Internal relay I, /I
- Shared relay and extension shared relay E
- Link relay L
- Special relay M (enable writing ones)
- Timer (time-up relay) T, /T
- Counter (count-up relay) C, /C

CAUTION

- Do not attempt to carry out a forced set/reset on any special relays that are not designated to enable writing. If this should happen, the CPU's operation may stop. See the "Sequence CPU Instruction Manual-Functions (IM34M6P12-03E)" for a more detailed discussion.
- Only up to 32 devices are available for forced set/reset. Any forced set/reset beyond that will be ignored.
- It is not available for devices with index modification.

B12.1.2 Operation and Expiration of Forced Set/Reset

- The forced set/reset takes precedence over the program itself. Any relays that are set to off in the program will be turned on if a forced set/reset is carried out on them.
- The forced set/reset takes precedence over input of input refresh, shared refresh, and link refresh, so even any externally-connected inputs that are off will be turned on if a forced set/reset is carried out on them.
- Devices that a forced set/reset is carried out on will be protected until one of the following operations is carried out.
  - Release forced set/reset.
  - Change the CPU's operation mode to run mode.
  - Turn off the CPU's power.

B12.1.3 Procedure for Forced Set/Reset

(1) Select the relay device to undergo the forced set/reset from the program monitor screen or the device monitor screen.

(2) Select [Debug/Maintenance] - [Forced Set] (or [Forced Reset]) from the menu.

(3) The selected relay device will go on (or off).

B12.1.4 Procedure for Canceling Forced Set/Reset

(1) Select the relay device to have the forced set/reset undone from the program monitor screen or the device monitor screen.

(2) Select [Debug/Maintenance] - [Cancel Forced Set] from the menu.

(3) The selected relay device will have the forced set/reset released.

B12.1.5 Procedure for Canceling All Forced Set/Reset

All devices with a forced set/reset carried out on them will have it undone.

(1) Select [Debug/Maintenance] - [Cancel All Forced].

(2) All devices with a forced set/reset carried out on them will have it release.

B12.2 Changing Word/Long Word Data

This changes data in either word units or in long word units for the register and relays. There is no limitation on the number of devices that can be changed. Data change can be done either from the program monitor or the device monitor.

B12.2.1 Devices with which Data Change is Available

All devices can have their current value changed except for those listed below.

- Timer and counter
- Special relays or special registers which are not designated to enable write.

CAUTION

- The current value cannot be changed for special relays and special registers which are not designated to enable writing. If this should happen, the CPU's operation may stop. See the "Sequence CPU Manual-Functions Section" for a more detailed discussion.
- It is not available for devices with index modification.

B12.2.2 Operation of Devices that have been Changed

- Program execution takes precedence over changes in data. If there is a write to a device by the program, the written value will take precedence over any changes that are carried out.
- Input refresh, shared refresh, and link refresh take precedence over changes in data, so if there are any externally-connected inputs, the input value will be re-read.

B12.2.3 Procedure for Data Change

(1) Select the device to undergo data change from the program monitor screen or the device monitor screen.

(2) Select [Debug/Maintenance] - [Word Data Change (Long Word Data Change)] from the menu.

(3) The dialog shown in figure B12.1 will be displayed.

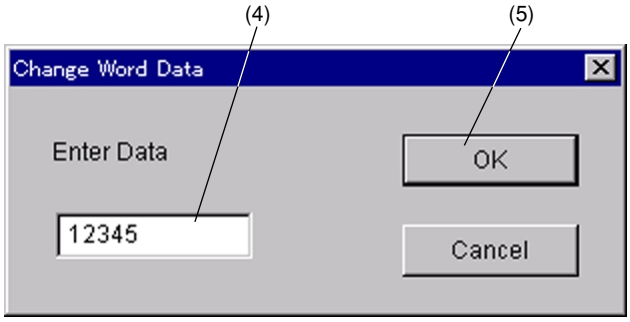


Figure B12.1 Data Change Dialog

(4) Enter the data to be changed. The following formats are possible for data input.

- Decimal (±) decimal value
- Hexadecimal $hexadecimal value (word: 4 digits, long word: 8 digits)
- String character string surrounded by quotation marks (word: up to 2 bytes, long word: up to 4 bytes)
- Floating point ±?.??????±E??? (Only for long words)

However, binary input is not possible.

(5) Select the “OK” button.

TIP

- The data displayed in the dialog is displayed in the display format on the monitor screen.
- If the detailed display for the program monitor has not been carried out, the display will be in the format of however it was the last time it was displayed.
- Strings should be input from the upper byte. For cases when a string smaller than the data size is input, the last byte will be a NULL (0).

B12.3 Changing the Current Value of the Timer/ Counter

This changes the current value of the timer and counter. There are no restrictions on the number of devices that may be changed. Current value change can be done either from the program monitor or the device monitor.

B12.3.1 Devices with which Current Value Change is Available

- The timer and the counter.

B12.3.2 Operation of Devices that have been Changed

- The timer/counter will continue operation with the changed value as the current value.
- If the program writes data to the timer/counter, then execution of the program will take precedence. If there is a write to a device by the program, the written value will take precedence over any changes that are carried out.

B12.3.3 Procedure for Changing Current Value

(1) Select the timer or counter device to undergo current value change from the program monitor screen or the device monitor screen.

(2) Select [Debug/Maintenance] - [Change Current Value of Timer/Counter] from the menu.

(3) The following dialog will be displayed.

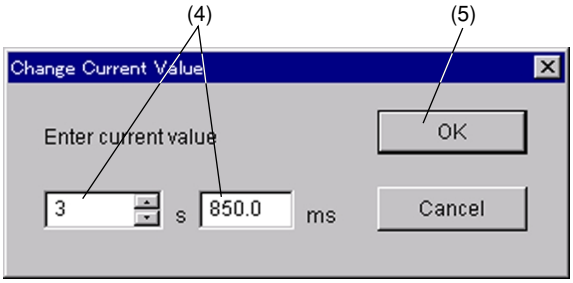


Figure B12.2 Timer Current Value Change Dialog

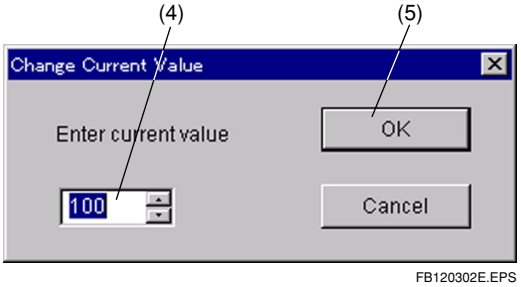


Figure B12.3 Counter Current Value Change Dialog

(4) Enter the data to be changed. Add or subtract seconds to the timer or to the counter with the spin button.

(5) Select the [OK] button.

B12.4 Changing the Timer/Counter Set Value

This changes the set value of the timer and counter. There are no restrictions on the number of devices that may be changed. Set value change can be done either from the program monitor or the device monitor.

B12.4.1 Devices with which Current Value Change is Available

- The timer and the counter.

CAUTION

This is not available for devices with index modification.

B12.4.2 Operation of Devices that have been Changed

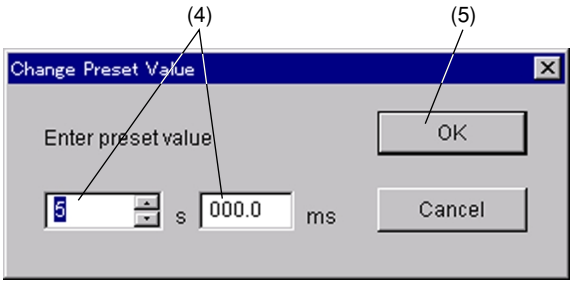
The changed set value will take effect after starting, and will not take effect until that next time even if the change is carried while the timer/counter is running.

B12.4.3 Procedure for Changing Set Value

(1) Select the timer or counter device to undergo set value change from the program monitor screen or the device monitor screen.

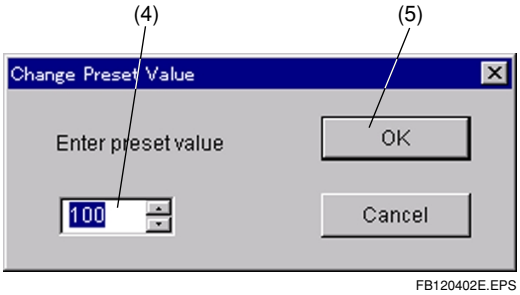
(2) Select [Debug/Maintenance] - [Change Set Value of Timer/Counter] from the menu.

(3) The following dialog will be displayed.



FB120401E.EPS

Figure B12.4 Timer Set Value Change Dialog



FB120402E.EPS

Figure B12.5 Counter Set Value Change Dialog

(4) Enter the data to be changed. Add or subtract seconds to the timer or to the counter with the spin button.

(5) Select the [OK] button.

CAUTION

The changes to the set value will not be reflected to the file even if file reflection is carried out. In order implemented the reflection, do the timer/counter set value change with the online edit.

B12.5 Stop Refreshing

This stops and undoes a variety of refreshes.

The following refresh stops are available.

- Stop Input Refresh
  This stops the refresh of the input relay [X]
- Stop Output Refresh
  This stops the refresh of the output relay [Y]
- Stop Shared Refresh
  This stops the refresh of the shared relay and the extension shared relay [E], as well as the refresh of the shared register and the extension shared register [R].
- Stop Link Refresh
  This stops the refresh of the link relay L and the link register [W].

B12.5.1 Procedure for Stopping a Refresh

(1) Select [Debug/Maintenance] - [Stop Refreshing].

(2) If the operation monitor is displayed, the devices which are in the middle of a refresh stop will be displayed.

B12.5.2 Restart Refreshing

This restarts a stopped refreshing.

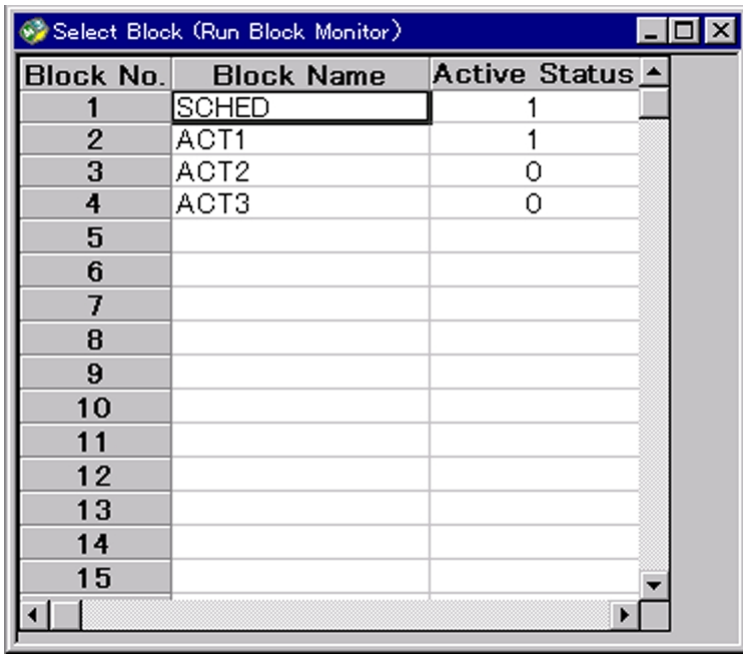
(1) Select [Debug/Maintenance] - [Restart Refreshing].
All stopped refreshing will be restarted.

B12.6 Block Start and Stop

The block Start and stop is done from the block start monitor screen. If a block is already started, the start status is "1" and if it is stopped a "0" will be displayed. Block start/stop is effective if the program execution method in the configuration is set to specified block execution. If all blocks are executed, block start/stop is not possible.

B12.6.1 Procedure for Block Launch

(1) Select [Online] - [Program Monitor].
The following screen will be displayed.



FB120601E.EPS

Figure B12.6 Block Start Monitor Screen

(2) Select the block name to be started from the block start monitor screen. Select [Debug/Maintenance] - [Start Block] from the menu. The selected block will be Started, and the status display in the block start monitor screen will change.

B12.6.2 Procedure for Block Stop

(1) Select the block to be stopped from the block start monitor screen.

(2) Select [Debug/Maintenance] - [Stop Block] from the menu. The selected block will be stopped, and the status display in the block start monitor screen will change.

B13. Online Edit

The online edit is a function that modifies CPU program while a program is running. The online edit can be used when the CPU is in debug mode or stopped. The online edit can be used for blocks and macros.

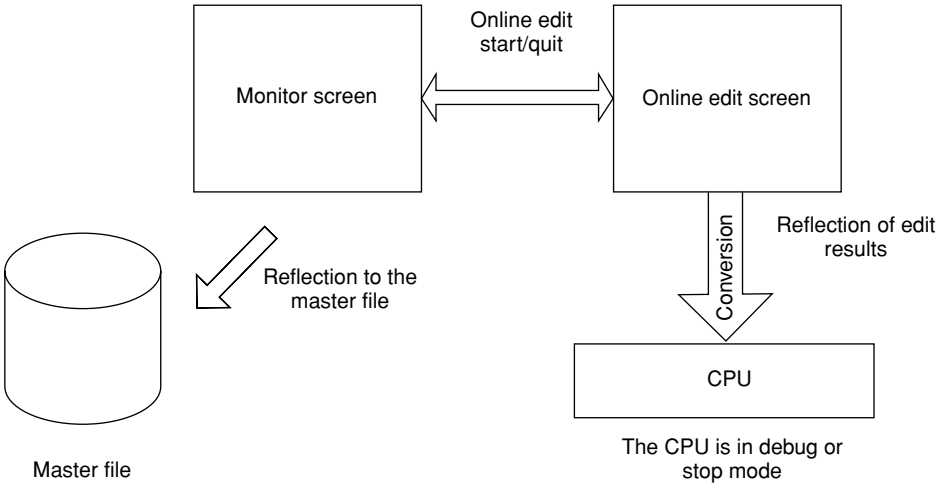


Figure B13.1 Online Edit Operation Diagram

CAUTION

- Screens that the online edit can be used on are only for 1 block per screen. It is not possible to online edit several blocks simultaneously.
- Online edit is not possible if it is already being done from another computer.
- The online edit screen will be inaccessible if the contents of the monitor screen for a block differ because that block is being online edited from another computer. If this happens, quit the monitor screen and then open again, after which you will be able to online edit.

Figure B13.2 Dialog if Online Edit is Being Done from Another Computer

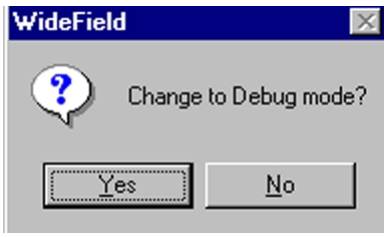
B13.1 Starting and Quitting Online Edit

■ Starting Online Edit

Open a window with the circuit monitor for the block or macro to be online edited.

(1) Select [Debug/Maintenance] - [Start Online Editing].

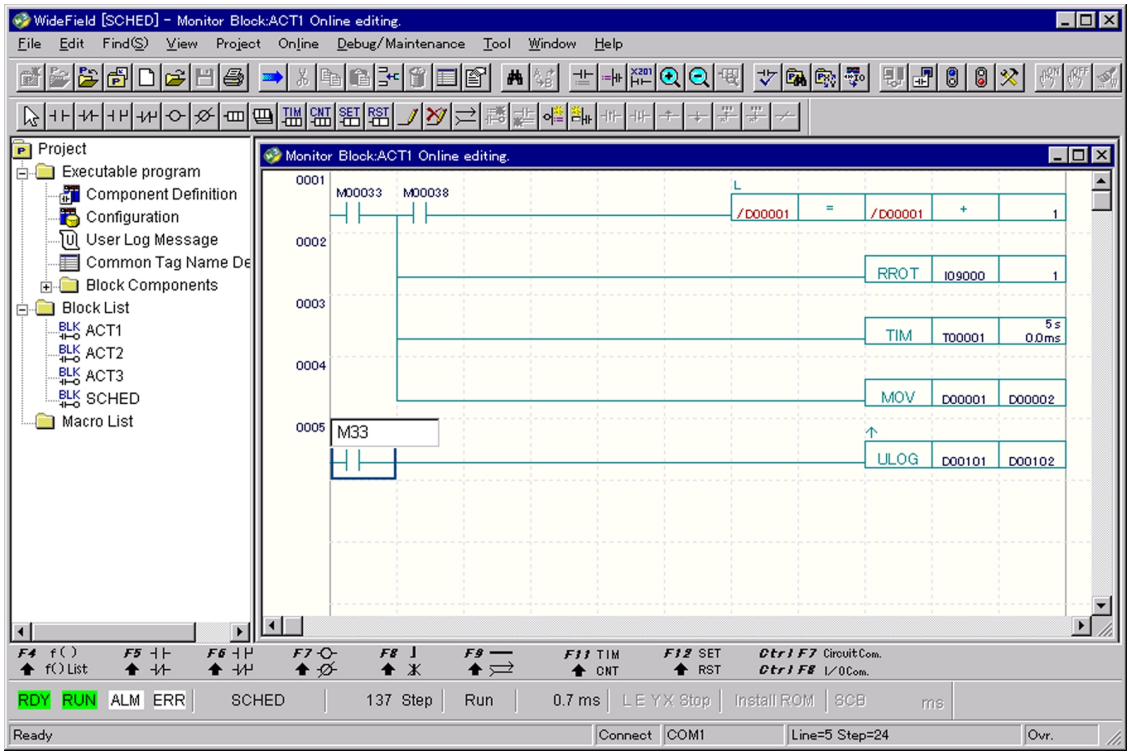
(2) If the CPU is in run mode, the following dialog box will be displayed.



FB130101E.EPS

Figure B13.3 Transfer to Debug Mode Confirmation Dialog

(3) Selecting [Yes] will make the circuit monitor screen change to the online edit screen. If you select [No], online edit will not start. The online edit screen will be as follows. Editing in the online edit screen is done as normal.



FB130102E.EPS

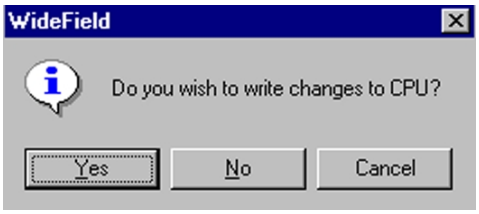
Figure B13.4 Online Edit Screen

The screen being online edited can be printed by selecting [File] - [Print]. However, a converted version of the online edit screen will be printed.

CAUTION

The results of the online edit will not be reflected to the CPU during online edit. They will be reflected if you select [Convert] or when you quit the online edit screen. Line deletion is not possible while editing. If you want to delete a line, use the temporary delete. The line will not disappear from the screen but the background color will change. When you then convert the circuit, it will disappear.

(2) Quitting Online Edit
Select [Debug/Maintenance] - [Quit Online Editing] in order to quit online edit. If there are circuits that have not been converted, you will have to select whether or not to reflect the results of the online edit to the CPU. If you choose not to have them reflected, they will be lost.



FB130103E.EPS

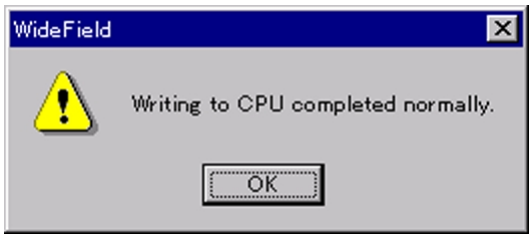
Figure B13.5 Message when Quitting Online Edit.

CAUTION

If there is a conversion error, the information about the error all the way to the location the error was generated will be reflected to the CPU. Modify the conversion error if you update when you quit. You can also simply quit without have the information reflected to the CPU.

B13.2 Reflecting the Online Edit to the CPU

In order to reflect circuits that have been modified with the online edit to the CPU, select [Edit] - [Convert]. The modified circuits will be converted and sent to the CPU.



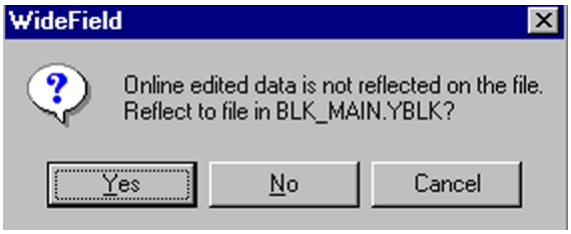
FB130201E.EPS

Figure B13.6 Message when Conversion is Completed Correctly

You can also send the information when you quit the online edit. If there is a conversion error, the information about the error all the way to the location the error was generated will be reflected to the CPU.

B13.3 Reflecting the Online Edit to a File

You can reflect blocks edited by the online edit to a file. Select [File] - [Reflect to File] with the program monitor screen activated. If you want to reflect information to a file with a different name or to a new file, select [Reflect to Another File]. You can reflect to a file in your computer if you want. The following warning will appear when you close the program monitor for a block that has been online edited for you to choose whether or not to reflect to the project.



FB130301E.EPS

SEE ALSO

Refer to “Chapter B10 Program Monitor” for further details.

B13.4 Precautions concerning the Online Edit

You can correct programs with the online edit just as with block edit using a ladder diagram. However, some functions are not available with the online edit, and some circuits can not be modified.

WARNING

- Do not do an online edit while the machine is running.
  Background:
  During conversion, the message [CPU Being Optimized] will be displayed. The time this is being displayed is equivalent to the length of one scan time, and will take longer. Accordingly, while this is proceeding, refresh and communication with external devices will not be possible. When the conversion is finished, the message [Conversion Complete] will be displayed.

(1)Unavailable Functions

- Cut, copy, paste
- Line deletion. However, temporary line deletion is available.
- Page break
- Editing and browsing for tag definition and local device setup and properties are available. You cannot change the number of local devices. However, you can add a new device if it is within the range local devices that are set.
- Replace
- Auto block monitor
- Addition of macro call instructions that have not been sent to the CPU.

(2)Circuits that Cannot be Corrected in the Online Edit

Some circuits are forbidden from having their program modified with the online edit. The are called “modification prohibited circuits” and cannot be modified, added, or deleted. In order to modification correction prohibited circuits, you must do this offline.

- SUB/RET instructions or circuits that contain these instructions
- INTP/RET instructions or circuits that contain these instructions
- Circuits that cannot be displayed in a ladder diagram
- Label modification/addition

● Modification Prohibited Comments

The following comments cannot be either modified or added.

- Modification or addition of circuit comment (deletion is possible)
- Modification or addition of sub-comment (deletion is possible)
- I/O comments cannot be modified, added, or deleted.

TIP

- To delete label and sub-comments, open the label or sub-comment edit dialog box and delete the character string.
- Erase circuit comments temporarily using the temporary delete for lines. You will not be able to select the normal delete and line delete. Once you convert the circuit, the comment will be deleted.

CAUTION

● Prohibitions during Online Edit - 1

Do not under any circumstances unplug cables, etc. during online edit. If for some reason communication becomes impossible, restore by following these steps.

(1) Close the WideField online edit screen by selecting [Debug/Maintenance] - [Close Online Edit]. If there are changes, select [No], and close without reflecting to the CPU.

(2) Select [Online] - [Disconnect] to disconnect from the FA-M3.

(3) Turn the FA-M3 power off and then back on.

(4) Select [Online] - [Connect] and reconnect to the FA-M3.

(5) Select [Online] - [Download] to download the program.

(6) Select [Debug/Maintenance] - [Start Online Editing] and re-enter the corrections.

● Prohibitions during Online Edit - 2

Quit the online edit only after having deleted the circuits between circuit comments, or if there are over 5 continuous circuit comments, after having reduced them to 4. If there are 5 or more circuit comments in a row in the online edit results, a conversion error will be generated, and written to the CPU. However, this will not affect the operation of the CPU. The CPU will ignore this conversion error.

B14. Protective Functions

These are functions to monitor the FA-M3's operation status and trouble. The following functions are available.

● Alarm display

This displays any error and alarm status being currently generated.

● System log display

The FA-M3 stores events such as errors and power on along with time information. The information is displayed, saved to file, and printed.

● User log display

By executing a user log instruction, the history of errors, etc. in the user system can be stored to the CPU. The information is displayed, saved to file, and printed.

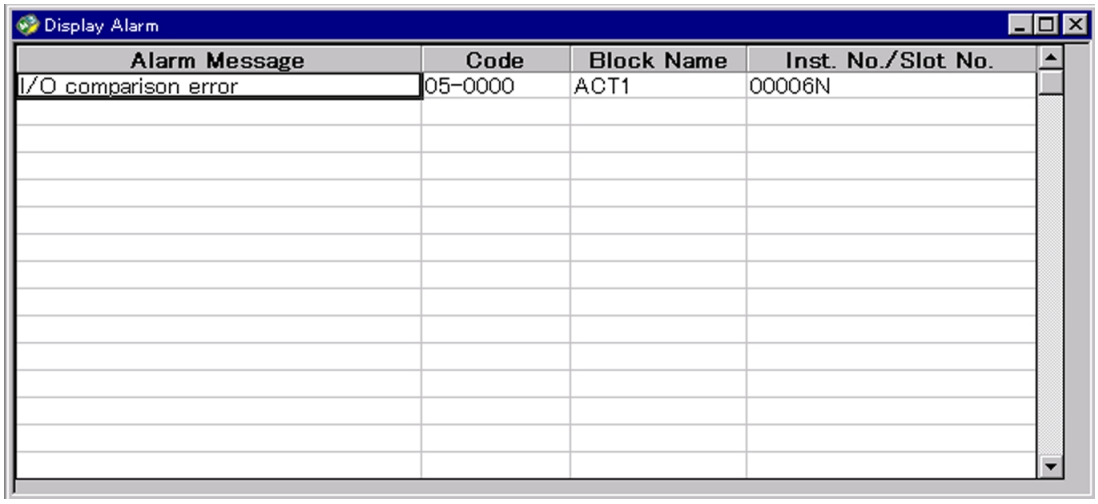
● Compare

This compares the executable program in a project with the executable program downloaded to the CPU.

B14.1 Alarm Display

This displays the status of alarms and errors currently being generated in the connected FA-M3.

B14.1.1 Layout of the Alarm Display Screen



FB140101E.EPS

Figure B14.1 Alarm Display Window

- Alarm message:
  The contents of the alarms will be displayed. Up to 128 can be displayed.
- Code: The alarm code
- Block name: The block where the alarm was generated
- Instruction number/slot number:
  Instruction number where the alarm was generated or the module slot number where the trouble occurred

SEE ALSO

Refer to “B14.2 Error Messages Displayed in the Alarm Monitor” for details about alarm messages and codes.

B14.1.2 Displaying the Alarm Display Screen

(1) While connected to the FA-M3, select [Debug/Maintenance] - [Display Alarm]. The alarm display screen will be displayed. [Display Alarm] in the menu will change to [Redisplay Alarm].

(2) Select [Debug/Maintenance] - [Redisplay Alarm] and the current alarm status will be read from the CPU and redisplayed.

B14.1.3 Canceling the Alarm

This cancels the alarm status (slight malfunction cancel). Alarms that were generated in the past and are not now being generated will be cancelled.

(1) Select [Debug/Maintenance] - [Cancel Alarm].

SEE ALSO

Refer to “Chapter B6 Printout” for further details about printing out the alarm status.

B14.1.4 Error Messages Displayed in the Alarm Monitor

This displays the error status output by the sequence CPU module. See the self-diagnosis in the “Sequence CPU Instruction Manual-Function” for further details.

Table B14.1 Alarm Messages

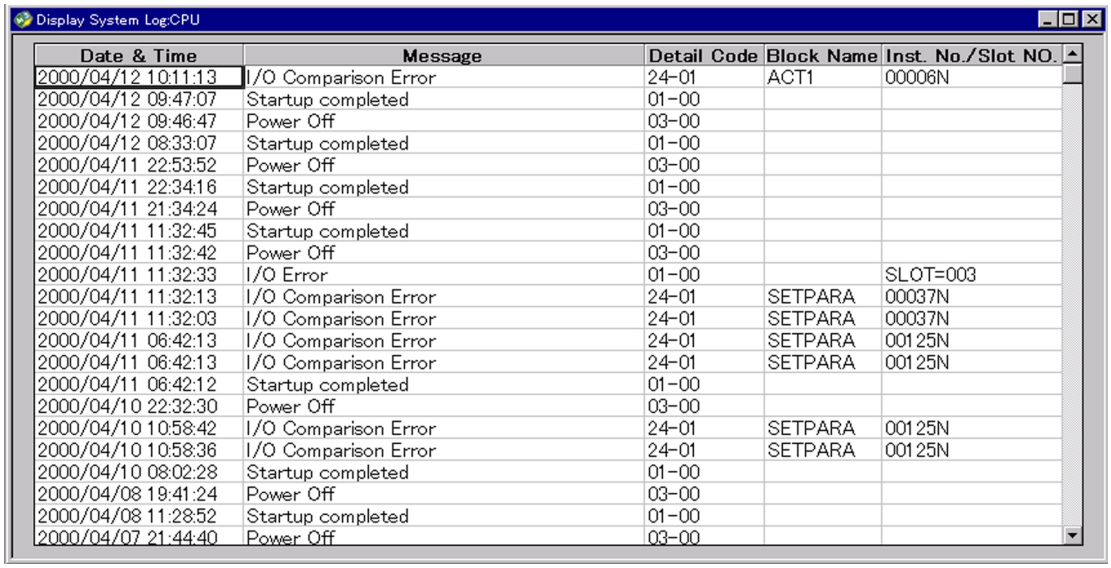
Message	Code	Description	Fix
Self-diagnosis error	01-1002	The number of modules is exceeding the CPU capacity.	Check the modules being used.
	01-1003	Module mapping malfunction	Replace the hardware.
	01-1004	Module access malfunction	
	01-1005	System malfunction	
	01-11XX	SPU malfunction	
	01-1201	Program memory malfunction	
	01-1202	Device memory malfunction	
	01-1203	System memory malfunction	
	01-1701	Incorrect instruction detected	
	01-1702	No END instruction	
	01-2001	Incorrect label parity	Modify the program.
	01-2002	I/O points exceeding highest value	
	01-8203	ROM pack error (Incorrect type parity)	Use the ROM correctly.
	01-8204	ROM pack error (Cannot read or write)	Either there is a protect or the hardware is faulty.
Instantaneous power failure	02-0000	Instantaneous power failure	
CPU communication malfunction	03-0000	Hardware failure	Replace the hardware.
Instruction processing error	04-2101	Incorrect instruction parameter range	Modify the program
	04-2102	Operation calculation is incorrect	
	04-2103	BIN/BCD conversion is incorrect	
	04-2104	FIFO table pointer failure	
	04-2105	Device boundary value exceeded	
	04-2106	FOR-NEXT parity is incorrect	
	04-2201	Non-existent subroutine return location	
	04-2202	More than 8 levels in subroutine nest	
	04-2301	Non-existent interrupt instruction return location	
	04-2302	More than 8 interrupt instruction waits	
	04-2501	No macro instruction return location	
I/O compare malfunction	05-0000	The I/O module mounting and the program are not in conformation with each other.	
I/O malfunction	06-0000	Cannot read or write to or from I/O module	Replace hardware.
Scan time over	07-0000	Scan time monitoring time exceeded	Modify the program
FA link (1-8) malfunction Incorrect	09-0000 0A-0000 0B-0000 0C-0000 0D-0000 0E-0000 0F-0000 10-0000	FA link settings	Reset the FA link settings
Battery malfunction	11-0000	Battery malfunction	Replace the CPU.
Sub-unit line error	12-0000	Cannot read or write to or from the module attached to the sub-unit	• Turn the sub-unit on. • Check the optical FA bus or optical FA bus 2 cable.
Sub-unit line switch generated	13-0000	One of the lines is cut in the remote I/O system connected in a loop	• Check the optical FA bus or optical FA bus 2 cable.
Sensor control block scan time over	14-0000	Sensor control block scan time monitoring time exceeded	Modify the program.
**********	XX-XXXX	Undefined alarm generated	

TB140101E.EPS

B14.2 System Log Display

This displays, saves to file, and prints log data such as errors or power status stored in the CPU. It can retain up to between 70 and 150 pieces of data in memory, although the exact number varies according to the kind of information. As soon as it reaches capacity it erases old data and puts new data into memory.

B14.2.1 System Log Display Screen Layout



Date & Time	Message	Detail Code	Block Name	Inst. No./Slot NO.
2000/04/12 10:11:13	I/O Comparison Error	24-01	ACT1	00006N
2000/04/12 09:47:07	Startup completed	01-00		
2000/04/12 09:46:47	Power Off	03-00		
2000/04/12 08:33:07	Startup completed	01-00		
2000/04/11 22:53:52	Power Off	03-00		
2000/04/11 22:34:16	Startup completed	01-00		
2000/04/11 21:34:24	Power Off	03-00		
2000/04/11 11:32:45	Startup completed	01-00		
2000/04/11 11:32:42	Power Off	03-00		
2000/04/11 11:32:33	I/O Error	01-00		SLOT=003
2000/04/11 11:32:13	I/O Comparison Error	24-01	SETPARA	00037N
2000/04/11 11:32:03	I/O Comparison Error	24-01	SETPARA	00037N
2000/04/11 06:42:13	I/O Comparison Error	24-01	SETPARA	00125N
2000/04/11 06:42:13	I/O Comparison Error	24-01	SETPARA	00125N
2000/04/11 06:42:12	Startup completed	01-00		
2000/04/10 22:32:30	Power Off	03-00		
2000/04/10 10:58:42	I/O Comparison Error	24-01	SETPARA	00125N
2000/04/10 10:58:36	I/O Comparison Error	24-01	SETPARA	00125N
2000/04/10 08:02:28	Startup completed	01-00		
2000/04/08 19:41:24	Power Off	03-00		
2000/04/08 11:28:52	Startup completed	01-00		
2000/04/07 21:44:40	Power Off	03-00		

FB140201E.EPS

Figure B14.2 System Log Display Screen

- Date, time:
  The date and time of logging on is displayed as yyyy/mm/dd hh:mm:ss
- Message:
  Log messages. The messages are displayed with the newest data first.
- Detail code: Error codes.
- Block name: The name of the block where the error was generated is displayed.
- Instruction/Slot number:
  XXXXN is displayed for instruction numbers, and SLOT=XXXX for slot numbers.

SEE ALSO

See “B14.2.6 Messages Displayed in the System Log” for a more detailed discussion of messages and codes in the system log.

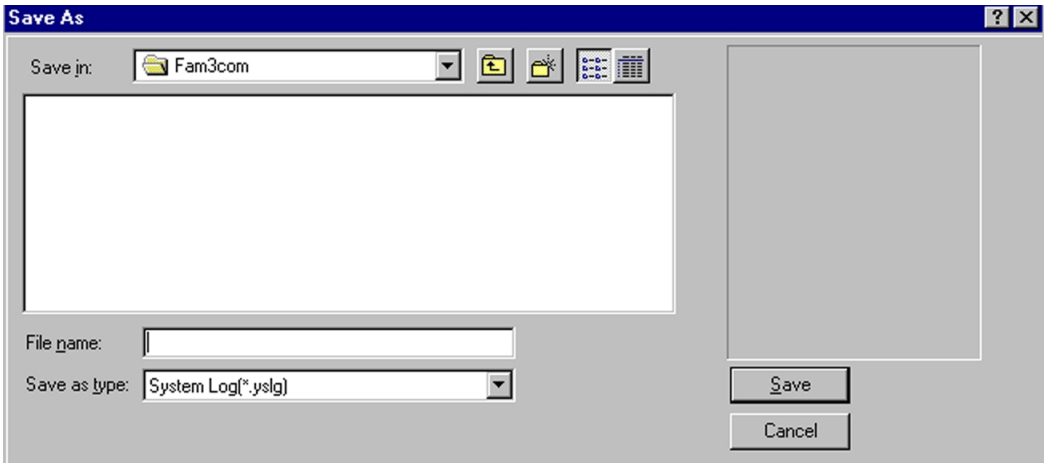
B14.2.2 Displaying the System Log

(1) Select [Debug/Maintenance] - [Display System Log] while connected to the FA-M3. The system log display screen will be displayed. The [Display System Log] menu will change to [Redisplay System Log].

(2) Selecting [Debug/Maintenance] - [Redisplay System Log] will read the newest system log from the CPU and redisplay it.

B14.2.3 Saving the System Log File

(1) With the system log display screen up, select [File] - [Save As]. The following dialog box will be displayed.



FB140202E.EPS

Figure B14.3 System Log Save Dialog Box

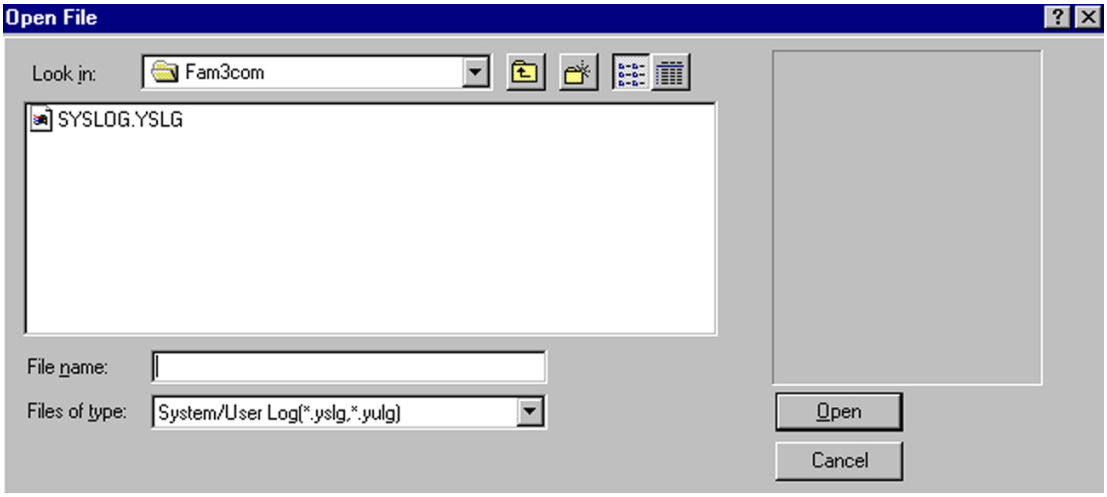
(2) Enter the [File Name] in the file name blank, and select the [Save] button.

(3) The system log will be saved with the extension .yslg.

B14.2.4 Reading From the System Log File

This reads the system log saved to a file.

(1) Select [File] - [Open] - [Log File]. The following dialog box will be displayed.



FB140203E.EPS

Figure B14.4 Dialog Box for Opening a Log File

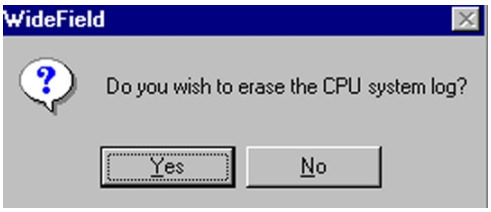
(2) Select the file to be read from the displayed list of log files and then select the [Open] button.

(3) The contents of the specified log file will be displayed.

B14.2.5 Clearing the System Log

This clears the system log stored in the CPU.

(1) With the CPU's system log display screen up, select [Debug/Maintenance] - [Clear Log].



FB140204E.EPS

Figure B14.5 System Log Clear Confirmation Dialog

(2) Selecting [Yes] will clear the system log stored in the CPU, and the contents of the system log display screen will be redisplayed.

SEE ALSO

See "Chapter B6 Printout" for details about printing the system log.

B14.2.6 Log Messages Displayed in the System Log

This displays the log contents of the sequence CPU module. For further details see the section on self-diagnosis “Sequence CPU Instruction Manual-Functions.”

Table B14.2 System Log Message

Message	Description	Fix
Start up complete	Initializing process after booting up is complete	None
Instantaneous power failure	Instantaneous power failure	None
Power off	Power turned off	None
Start up error	Error generated at initializing process after booting up	Replace hardware.
SPU malfunction	Sequence CPU malfunction	Replace hardware.
Memory malfunction	Memory malfunction	Replace hardware.
Battery malfunction	Back-up battery malfunction	Replace hardware.
Scan time over	Scan time monitoring time exceeded	Modify the program
Incorrect instruction detected	An incorrect instruction word detected	Modify the program
FA link malfunction	FA link settings are incorrect	Reset the FA link settings.
Program malfunction	Program is incorrect	Replace hardware.
Instruction error	Error generated at execution of instruction	Replace hardware.
Subroutine error	Incorrect subroutine parity	Modify the program
Interrupt error	• Non-existent interrupt instruction return location • More than 8 interrupt instruction waits	Modify the program
I/O collation malfunction	• The I/O module mounting and the program are not in conformation with each other. • A READ/WRITE instruction is being used for a DIO. • A HRD/HWR instruction is being used for a DIO.	Modify the program
Macro instruction error	No macro instruction return location	Modify the program
CPU communication malfunction	Hardware failure	Replace hardware.
ROM pack malfunction	ROM pack malfunction	Replace the ROM pack.
I/O malfunction	Cannot read or write to or from I/O module	Replace hardware.
Sub-unit line error	Cannot read or write to or from the module attached to the sub-unit	• Turn the sub-unit power on. • Check the optical FA bus or optical FA bus 2 cable.
Sub-unit line switch generated	One of the lines is cut in the remote I/O system connected in a loop	• Check the optical FA bus or optical FA bus 2 cable.

TB140202E.EPS

B14.3 User Log Display

B14.3.1 User Log

The user log function, just as the system log function, records data that is generated such as user system errors or operation status. The user log function records data generated by the user's programs. The recorded data can be read by the user log and read using an instruction or programming tools.

- The user log data is recorded by executing a user log instruction in a program. Up to 64 pieces of user log data can be recorded per CPU.
- The date and time of generation, the main code (1 word), and the sub-code (1 word) are recorded as user log data.
- You can store up to 64 messages corresponding to the main code (32 characters, 16 characters in 2-byte code) in the CPU.
  You can also attach these messages to the main code and sub-code when you read the user log data.
- If the recorded user log data exceeds 64 pieces, it will be erased starting from the oldest data, and any new data will be added after.
- The recorded user log data can be read by the programming tools or a user log read instruction.
- The number of pieces of recorded user log data is stored in the Z105 special register.

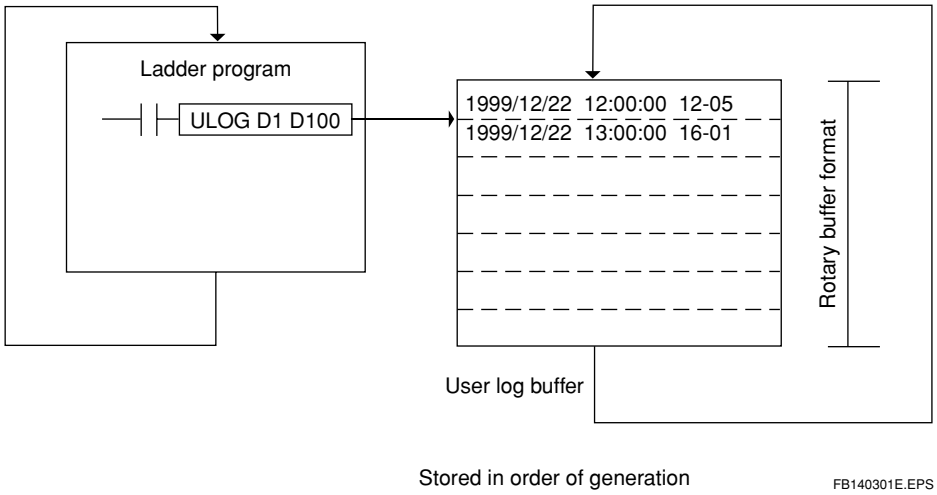


Figure B14.6 User Log Function

B14.3.2 User Log Display Screen Layout

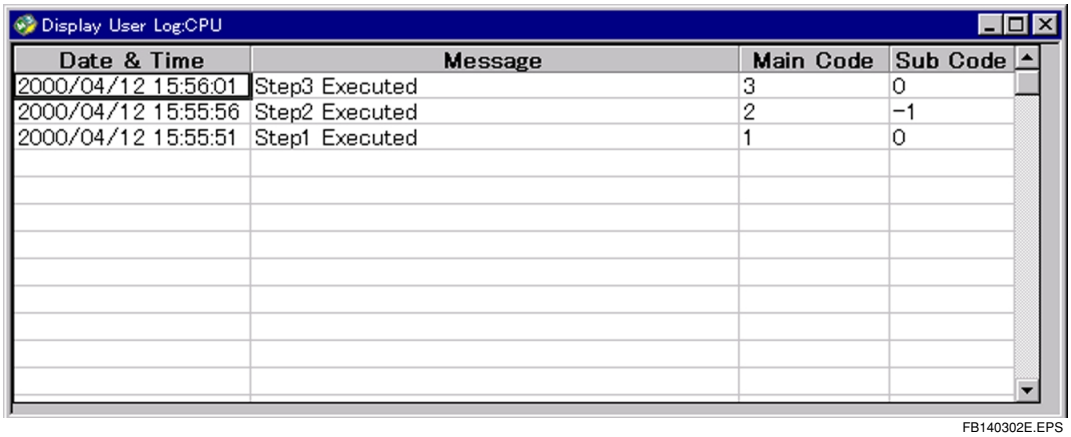


Figure B14.7 User Log Message Display Screen

- Date, time: The date and time logged on will be displayed as yyyy/mm/dd hh:mm:ss.
- Message: User-defined messages. Up to 64 will be displayed.
- Main code: User-defined main codes
- Sub-code: User-defined sub-codes

B14.3.3 Displaying the User Log Display Screen

(1) Select [Debug/Maintenance] - [Display User Log] while connecting to the FA-M3. The system log display screen will be displayed. The [Display User Log] menu will change to [Redisplay User Log].

(2) Selecting [Debug/Maintenance] - [Redisplay User Log] will read the newest system log from the CPU and redisplay it.

B14.3.4 Saving the User Log File

(1) With the user log display screen up, select [File] - [Save As]. The following dialog box will be displayed.

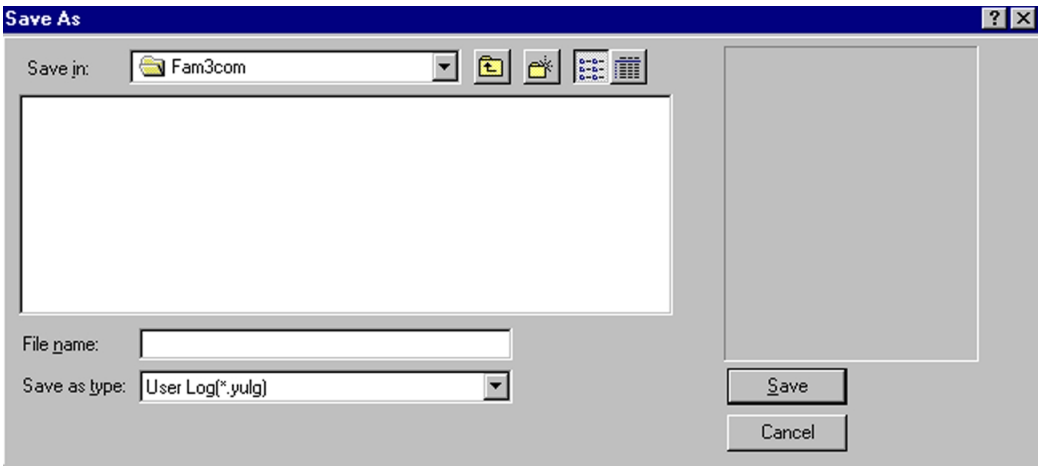


Figure B14.8 User Log Save Dialog Box

(2) Enter the [File Name] in the file name blank, and select the [Save] button.

(3) The user log will be saved with the extension .yulg.

B14.3.5 Reading From the User Log File

This reads the user log saved to a file.

(1) Select [File] - [Open] - [Log File]. The following dialog box will be displayed.

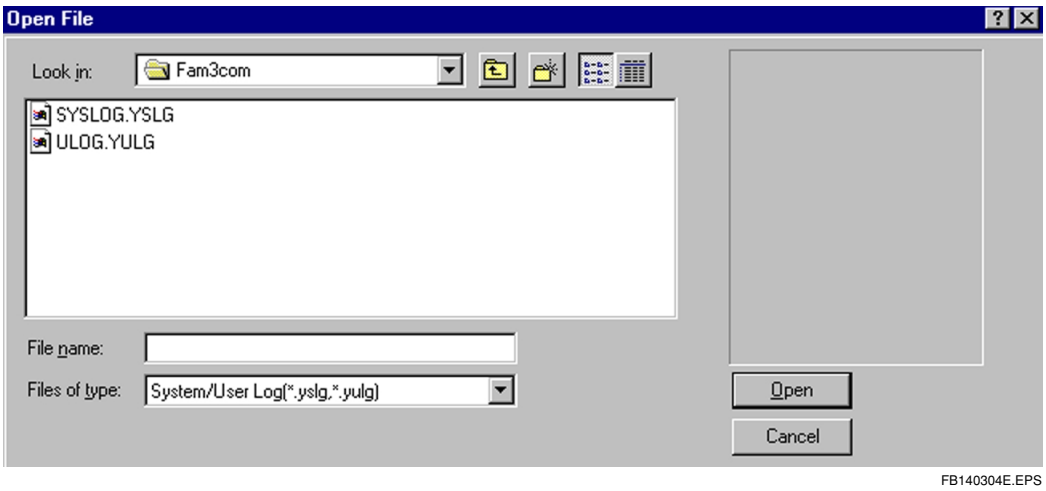


Figure B14.9 Dialog Box for Opening a Log File

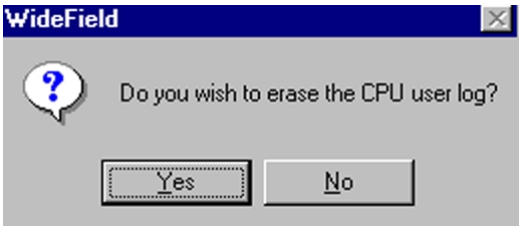
(2) Select the file to be read from the displayed list of log files and then select the [Open] button.

(3) The contents of the specified log file will be displayed.

B14.3.6 Clearing the User Log

This clears the user log stored in the CPU.

(1) With the CPU's user log display screen up, select [Debug/Maintenance] - [Clear Log].



FB140305E.EPS

Figure B14.10 User Log Clear Confirmation Dialog

(2) Selecting [Yes] will clear the user log stored in the CPU, and the contents of the user log display screen will be redisplayed.

SEE ALSO

See "Chapter B6 Printout" for details about printing the user log.

B14.4 Comparing Executable Program

This compares executable programs downloaded to the FA-M3 and executable programs in the computer. The compare function compares executable program files managed in a project, as well as configuration and user log messages.

B14.4.1 Contents of the compare

The following items are compared in the executable program compare.

- Executable program configuration
  Number and names of blocks, etc.
- Configuration data
  Settings set in the configuration
- Contents of programs in each block
  Compares instructions, devices, and labels in 1-circuit units.
- User log messages
  Number of registered user log messages and their contents
- Position of circuit comments and sub-comments
  Compares whether a circuit comment and a sub-comment occupy the same position.

B14.4.2 Limitation on the Compare Function

The compare function cannot be used when the system is in the following statuses.

- A project is not opened.
- No CPU is attached, or the attached CPU is not a sequence CPU.
- The CPU type set in the open project is different from the connected CPU.
- A ROM pack is attached to the CPU.
- The CPU's operation mode is set to ROM writer mode.
- The CPU is being executed process by another computer.

B14.4.3 Procedure for Comparing

(1) Select [Online] - [Compare File and CPU] with a project open and while connecting to the FA-M3.

(2) The following dialog box will be displayed, along with all data being currently processed. The comparison first uploads a program, then compares it. Selecting the [Cancel] button will stop the compare.

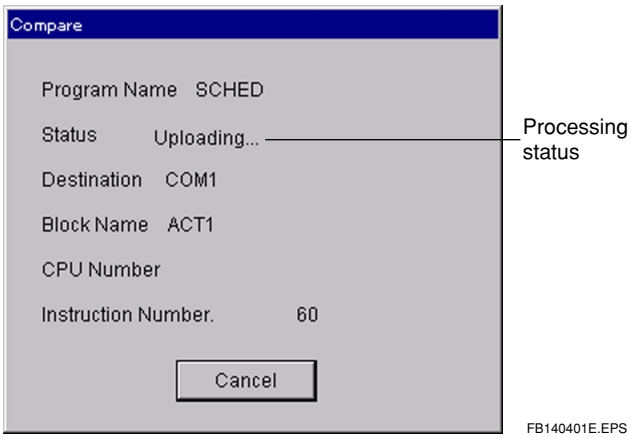
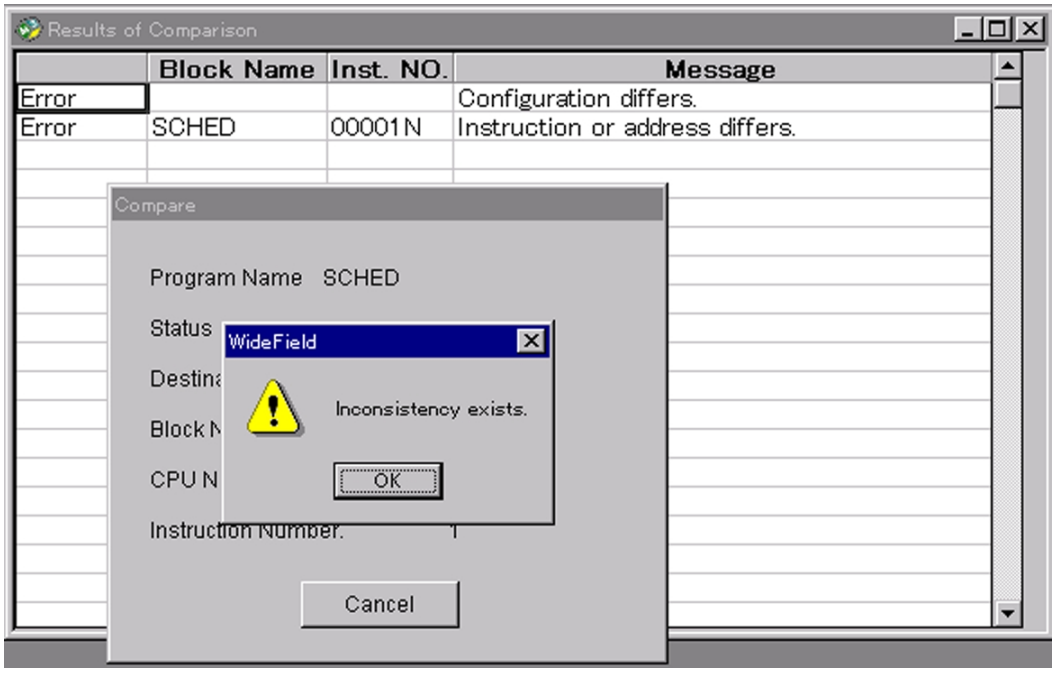


Figure B14.11 Compare Dialog Box

(3) If no discrepancies were found as a result of the comparison, the following dialog box will be displayed.

Figure B14.12 Compare Complete Confirmation Dialog Box

(4) If a discrepancy was found as a result of the comparison, the following compare results list screen will be displayed.



FB140403E.EPS

Figure B14.13 Comparison Results Window

Errors and warnings are classified as follows.

● Errors

- Executable program configuration different.
  The executable program configuration are different.
- Configuration different.
  The configurations are different.
- Instruction or address mismatch
  The contents of a block (instructions, devices, labels) are different.

● Warnings

- User log message different.
  The contents of the user log messages are different.
- Different number of user log messages.
  The number of registered user log messages is different.
- Sub-comment present/absent.
  There are more/fewer sub-comments.
- Circuit comment present/absent.
  There are more/fewer circuit comments.

CAUTION

- The comparison results display the top instruction number in a circuit (or project) with a mismatch. Only one result per circuit is displayed.
- Program comparison is done in circuit units. Accordingly, if a circuit (not including circuit comments) is inserted, all the circuits after that will mismatch.
- The contents of comments are not compared when comparing sub-comments and circuit comments.
- Up to 256 mismatches will be displayed.
- If the executable program configuration is different, the contents of the block will not be compared.

B15. Operating the ROM

You can attach a ROM pack to the CPU which will store part of any program and device data. To make the part of that program or data ROM resident will make it so that the CPU will read such program and device data from the ROM when the power is switched on, and program execution will begin.

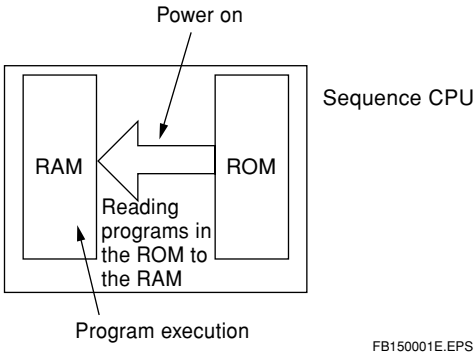


Figure B15.1 Regular ROM operation (in cases other than ROM writer mode)

The CPU has what is called “ROM writer mode” in order to write to and delete from the ROM. “ROM writer mode” is not the same as the CPU’s regular operation mode in that none of the sequence functions work, and that it is maintained regardless of whether the power is on or off.

The following ROM management functions are available.

- Switching from ROM writer mode to CPU mode.
- Sending programs in the computer to the ROM.
- Comparing the contents of programs in the computer and in the ROM.
- Sending programs from the CPU’s ROM to the ROM.
- Deleting the contents of the ROM.

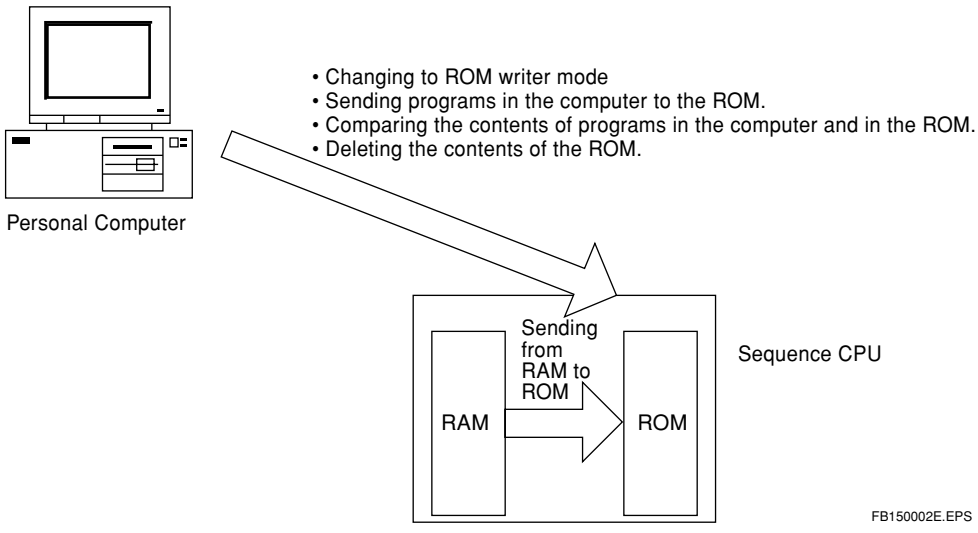


Figure B15.2 ROM Management Functions

The ROM management functions are unavailable in the following situations.

● Not ROM writer mode

The CPU is not in ROM writer mode. Switch to ROM writer mode.

● Exclusive access acquired

A different terminal has acquired exclusive access. Use the forced liberation on the exclusive access.

B15.1 ROM Writer Mode/Canceling ROM Writer Mode

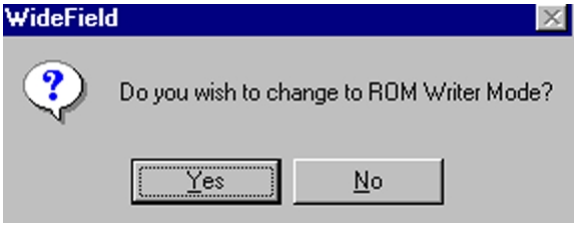
This changes the CPU to ROM writer mode and cancels it. The ROM management functions (ROM sending, ROM copy, ROM delete, ROM compare) can only be used in ROM writer mode. Also, program execution, download, and compare cannot be carried out in ROM writer mode. After executing the ROM management functions, cancel ROM writer mode.

B15.1.1 Switching to ROM writer mode

Putting the CPU in ROM writer mode makes the ROM management functions available for use.

■ Switching to ROM writer mode.

Select [Online] - [ROM Management] - [ROM Writer Mode ON]. The following dialog box will be displayed.



FB150101E.EPS

Figure B15.3 ROM Writer Mode Change Dialog Box

(1) Selecting [Yes] will display the following dialog box and switch the CPU to ROM writer mode. Selecting [No] will cancel the process.

FB150102E.EPS

Figure B15.4 ROM Writer Mode Confirmation Dialog Box

TIP

When attempting to use the ROM management functions (ROM copy, compare, sending, delete), the CPU is not in ROM writer mode will cause a dialog box to appear confirming whether or not to switch to ROM writer mode.

B15.1.2 Canceling ROM Writer Mode

This cancel ROM writer mode in the CPU.

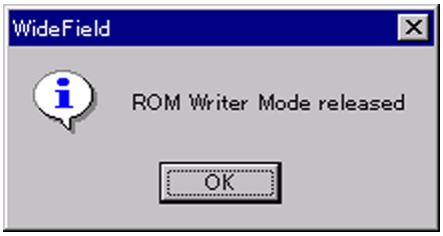
■ Canceling ROM Writer Mode

Select [Online] - [ROM Management] - [ROM Writer Mode OFF]. The following dialog box will be displayed.

FB150103E.EPS

Figure B15.5 ROM Writer Mode Cancel Dialog Box

(1) Selecting [Yes] will display the following dialog box and cancel ROM writer mode. Selecting [No] will cancel the process.



FB150104E.EPS

Figure B15.6 ROM Writer Mode Cancel Confirmation Dialog Box

B15.2 ROM Sending (Computer to ROM)

This sends executable programs in currently open projects to the ROM.

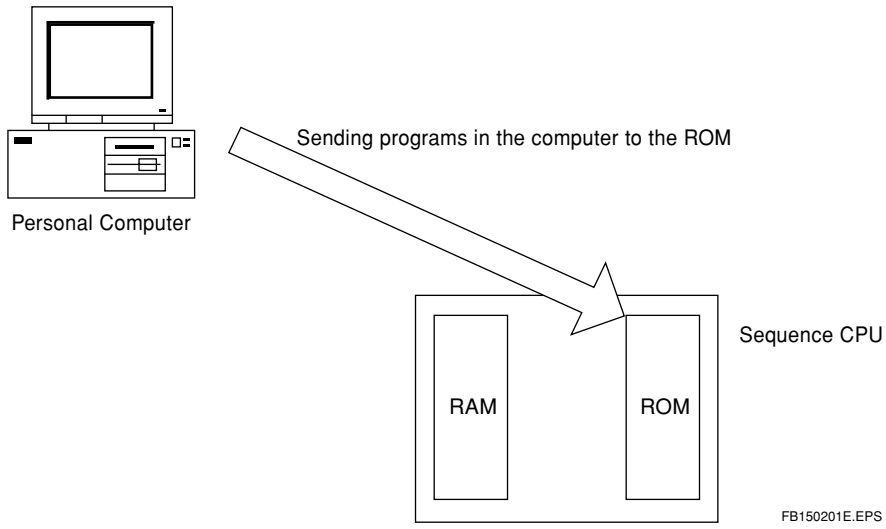


Figure B15.7 File to ROM Sending

■ Sending from the Computer to the ROM

Switch the CPU to ROM writer mode, and select [Online] - [ROM Management] - [File to ROM Transfer].

(1) The following dialog box will be displayed. Select the method for writing, and then [OK].
If you chose [Program], then a program registered in a project will be sent.
If you chose [Program and Device], then the program and the current values of devices in the range specified in the “ROM Settings” in the configuration will be sent to the ROM.

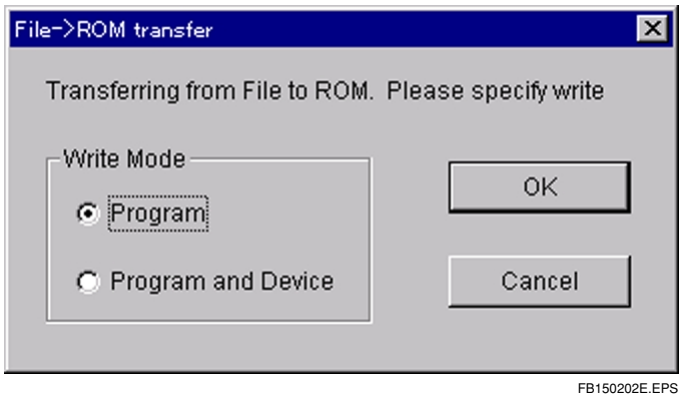


Figure B15.8 File to ROM Transfer Confirmation Dialog

(2) Before sending to the ROM, run a syntax check on the executable program to be sent to the ROM, and if they are enable to send, continue with the sending. The following dialog box will be displayed, and the status of the sending will also be displayed.

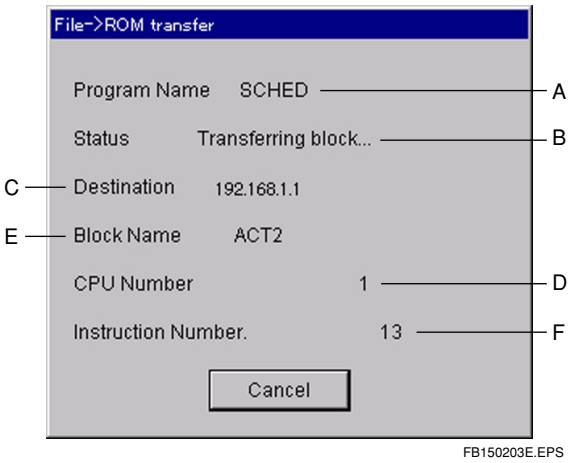


Figure B15.9 Sending Dialog Box

A- Executable Program Name

B- Various statuses will be displayed here, such as execution status, syntax check, sending etc.

C- The destination host or IP address will be displayed here for Ethernet communications. For RS-232C communications, the COM port number (COM1, COM2, etc.) will be displayed.

D- CPU number: the number of the CPU sending.

E- Name of block being sent or having its syntax checked.

F- Instruction number syntax check, send instruction number.

(3) If any errors or warnings are generated during the syntax check, the syntax check results message screen and error dialog box will be displayed, and the process will be halted. Select [File] - [Close] from the syntax check screen and close it.

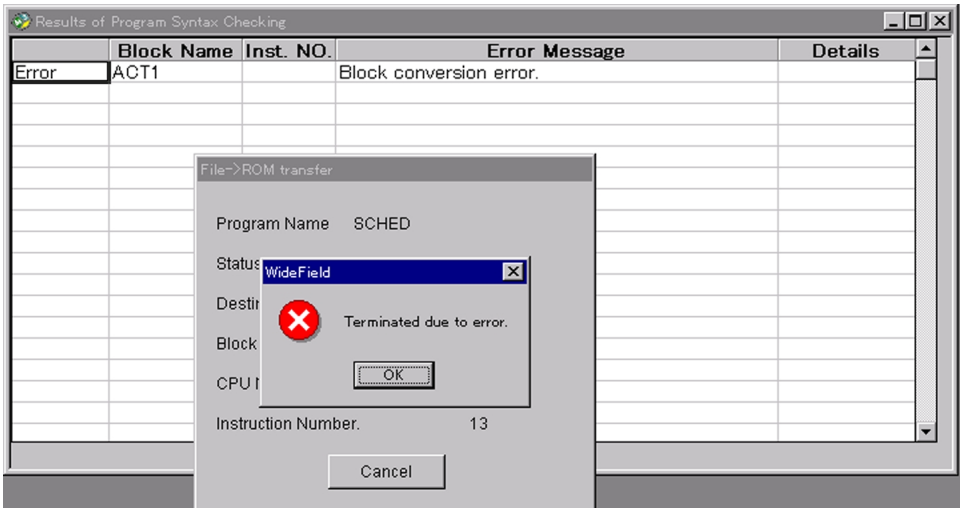
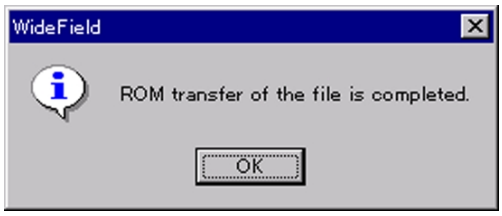


Figure B15.10 Syntax Check Screen

CAUTION

Writing to the ROM cannot be cancelled part way through.

(4) The following dialog box will be displayed when sending is complete.



FB150205E.EPS

Figure B15.11 Transfer Completed Dialog

B15.3 ROM Comparison (Between Computer and ROM)

This compares the contents of executable programs in currently open projects and the ROM. The compare is done by first uploading the program to the CPU, then conducting the compare. The ROM compare is executed when the CPU is in ROM writer mode.

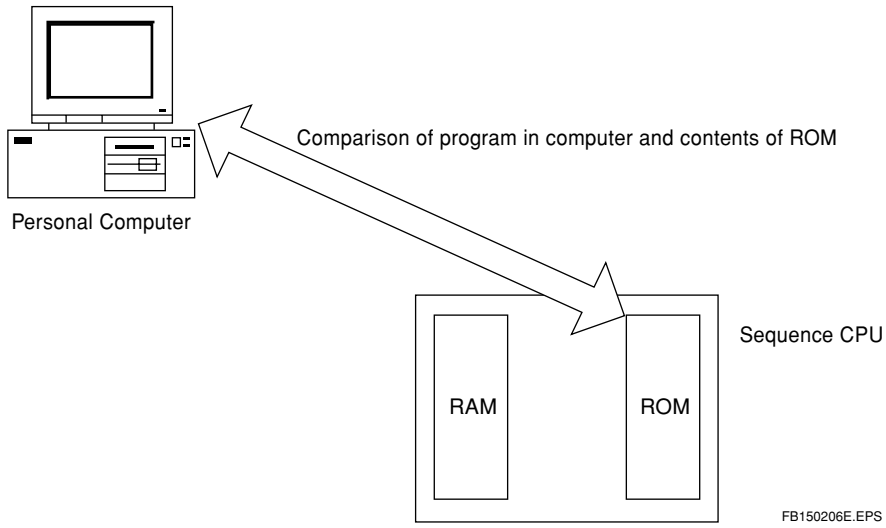


Figure B15.12 Comparison of File and ROM

■ Procedure for ROM Comparison

Switch the CPU to ROM writer mode, and select [Online] - [ROM Management] - [Compare File and ROM].

(1) The following dialog box will be displayed during compare, with the status of the ROM compare displayed.

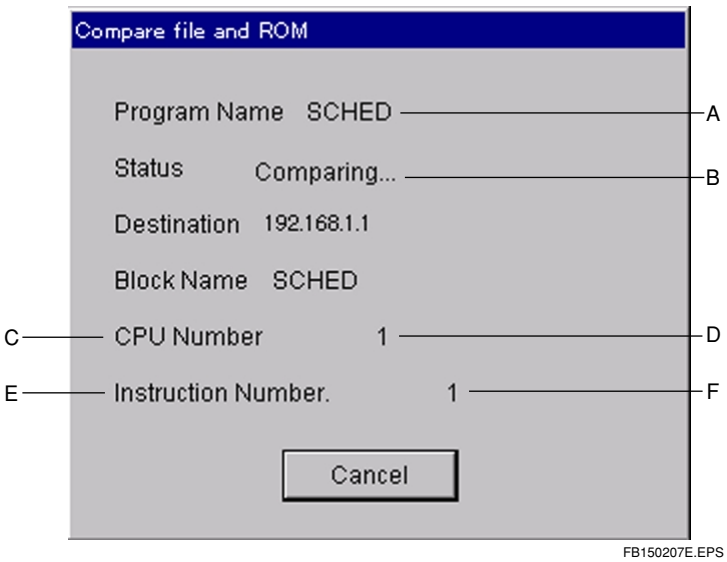


Figure B15.13 Dialog Box During Comparison between File and ROM

A- Executable Program Name

B- Execution status

C- The destination host or IP address will be displayed here for Ethernet communications. For RS-232C communications, the COM port number (COM1, COM2, etc.) will be displayed.

D- CPU number: the number of the CPU sending.

E- Block name

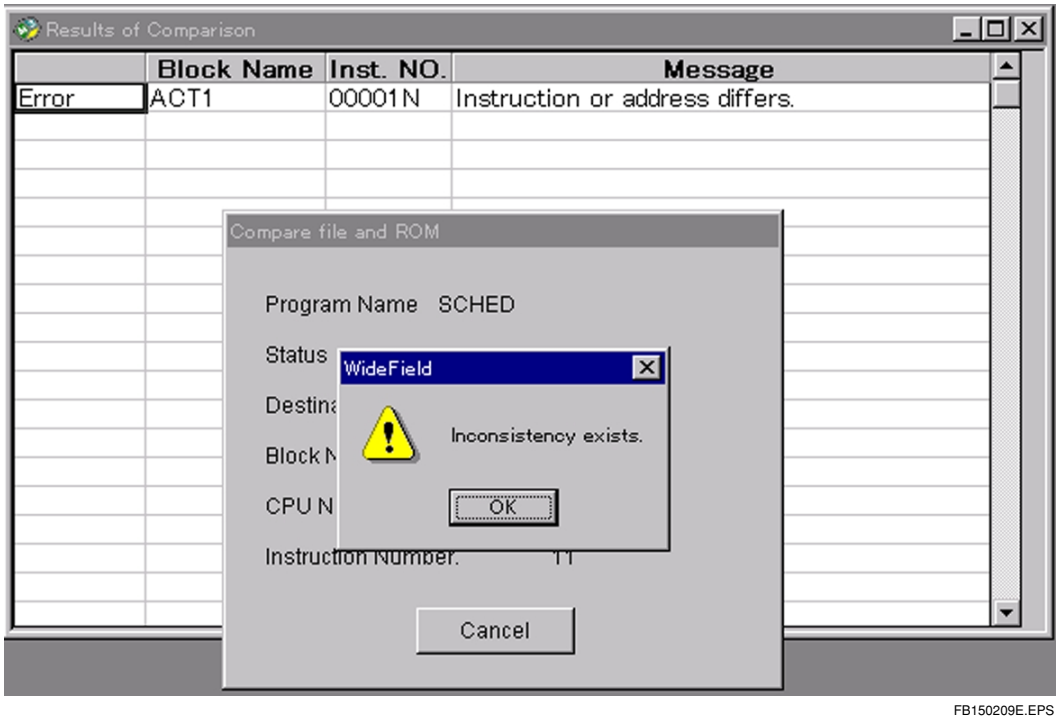
F- Instruction number: upload, location of compare

(2) If there were no problems during comparison, the following dialog box will be displayed.

FB150208E.EPS

Figure B15.14 Comparison Results Confirmation Dialog

If any errors are generated during the compare, the comparison results window and error dialog box will be displayed. Select [File] - [Close] from the comparison results screen and close it.



FB150209E.EPS

Figure B15.15 Comparison Error Display

Errors and warnings are classified as follows.

● Errors

(1) Executable program configuration different.
- The executable program configurations are different.

(2) Configuration different.
- The configurations are different.

(3) Instruction or address mismatch
- The contents of a block (instructions, devices, labels) are different.

● Warnings

(1) User log message different.
- The contents of the user log messages are different.

(2) Different number of user log messages.
- The number of registered user log messages is different.

(3) Sub-comment present/absent.
- There are more/fewer sub-comments.

(4) Circuit comment present/absent.
- There are more/fewer circuit comments.

CAUTION

- The comparison results display the top instruction number in a circuit with a mismatch.
- If a circuit (not including circuit comments) is inserted, all the circuits after that will mismatch.
- The contents of comments are not compared when comparing sub-comments and circuit comments. (Only the presence or absence of comments will be compared.)
- Up to 256 mismatches will be displayed.

B15.4 ROM Copy

This copies the contents of the RAM (program memory) in the CPU to the ROM. This function is used when creating multiple ROMs from the same executable program. When sending to the ROM, the executable program being sent from the program memory is re-written to the ROM. There is no need to send the executable program between the computer and the CPU. You can write the executable program to ROM by simply replacing the ROM pack. ROM copy can be carried out once ROM sending has been done one time. ROM copy is only available in ROM writer mode. Switch to ROM writer mode before using this function.

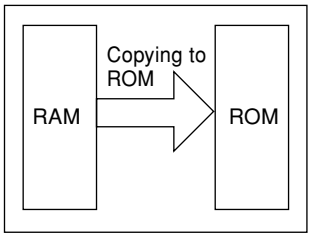


Figure B15.16 Sending from the CPU to ROM

■ Procedure for ROM Copy

(1) Send the executable program from the computer to the CPU using ROM sending, and write the executable program to the first ROM pack.
Next, while still in ROM writer mode, turn off the FA-M3's power, and replace the ROM pack. After replacing the ROM pack, turn the FA-M3 back on. This is all done while still in ROM writer mode.

(2) Select [Online] - [ROM Management] - [Transfer CPU to ROM Sending]. The following dialog box will be displayed.

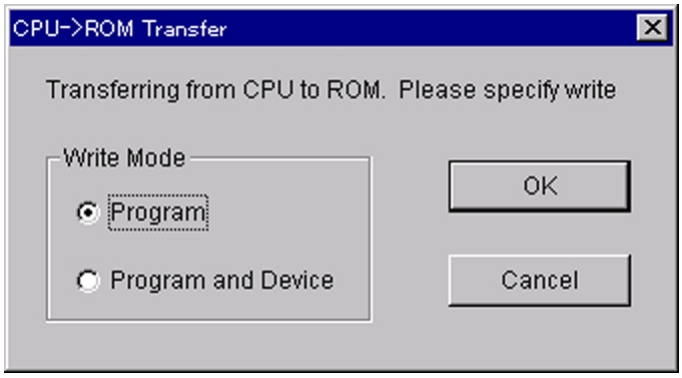
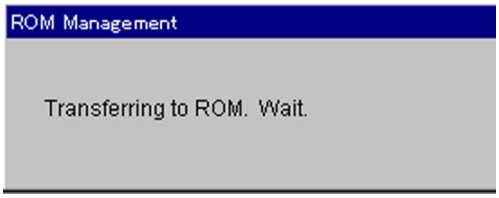


Figure B15.17 CPU to ROM Sending Dialog Box

(3) Select the writing method, and select [OK]. If you selected [Program], a program stored in the CPU will be sent to the ROM. If you selected [Program and Device], then the program stored in the CPU and data in the range specified in the [ROM Settings] in the configuration downloaded to the CPU will be sent to the ROM.

(4) During execution, the following dialog box will be displayed. Canceling part way through is impossible.



FB150403E.EPS

Figure B15.18 Dialog during ROM Sending

(5) If it is completed with no problem, the following dialog box will be displayed.

FB150404E.EPS

Figure B15.19 Completion Confirmation Dialog

(6) When creating multiple ROMs, turn off the FA-M3, replace the ROM pack, and repeat step (2) through (6).

B15.5 ROM Deletion

This deletes programs from the ROM. This can be done with a project opened or closed.

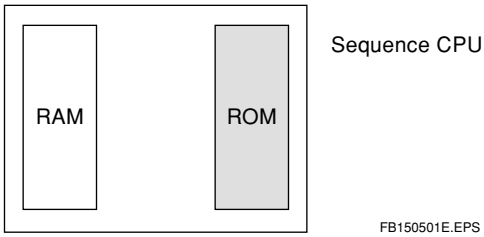


Figure B15.20 ROM Deletion

■ Procedure for Deleting ROM

Switch the CPU to ROM writer mode, and select [Online] - [ROM Management] - [Erase ROM Delete]. The following dialog box will be displayed.

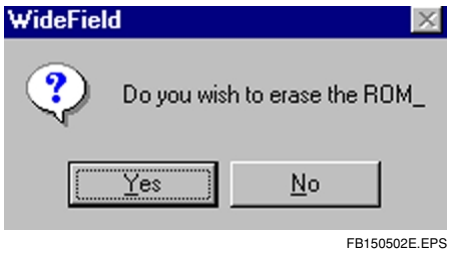


Figure B15.21 ROM Delete Dialog Box

(1) Selecting [Yes] will delete the contents of the ROM. Selecting [No] will stop the process.

(2) The following dialog box will be displayed during execution of the delete. Canceling part way through is impossible.

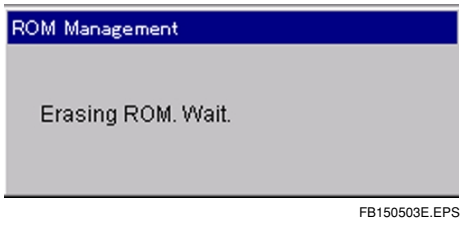


Figure B15.22 ROM Delete Dialog

(3) If it is completed with no problems, the following dialog box will be displayed.

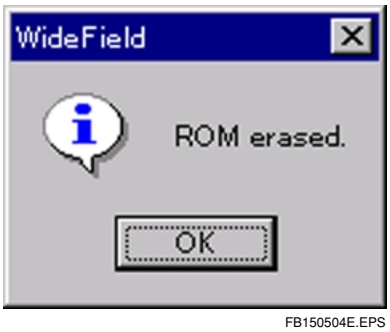


Figure B15.23 ROM Delete Completion Confirmation Dialog

Blank Page

B16. I/O Module Settings

This chapter describes how to set the high-level functions in the I/O module.

B16.1 Station Assignment of the FA Link and the Monitor

This section describes the settings FA link functions using the FA link module, the FA link H module, or the optical FA link H module, as well as how to monitor the FA link module's status.

CAUTION

In this manual, FA link will be used to refer to the FA link, the FA link H, and the fiber-optic FA link H in general, unless otherwise specified. For a more detailed discussion of the functions on the FA link, the FA link H, and the fiber-optic FA link H modules, see "FA link, the FA link H, and the fiber-optic FA link H module Instruction Manual" (IM34M6H43-01E).

The FA link functions include station assignment of FA link and FA link module status read.

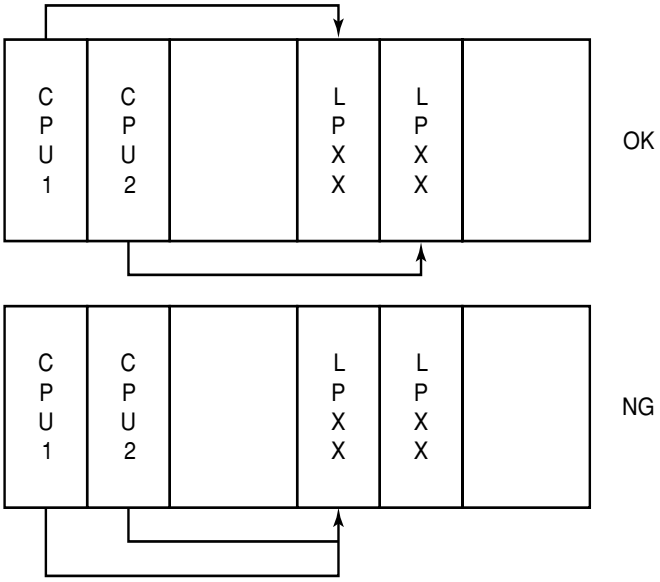
- **Local assignment of FA link**
  - Assigns link relays
  - Assigns link registers
- **FA link module status**
  - Confirms the status of one's own station location.
  - Confirms the status of another station's location.

    Both of these are done with the "FA Link Tool."

CAUTION

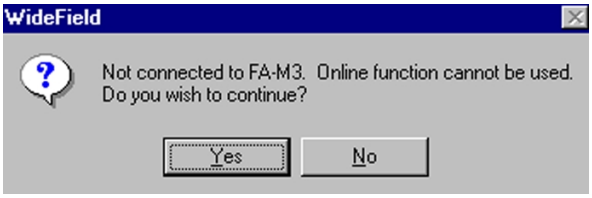
● **Reading and registering link data**

Carrying out and reading or registering of FA link module link data from the CPU using that FA link module.
If you do this from many CPUs, reading and registering for that FA link module may become impossible.
If this should accidentally happen, turn the power on the FA-M3 off and then back on.



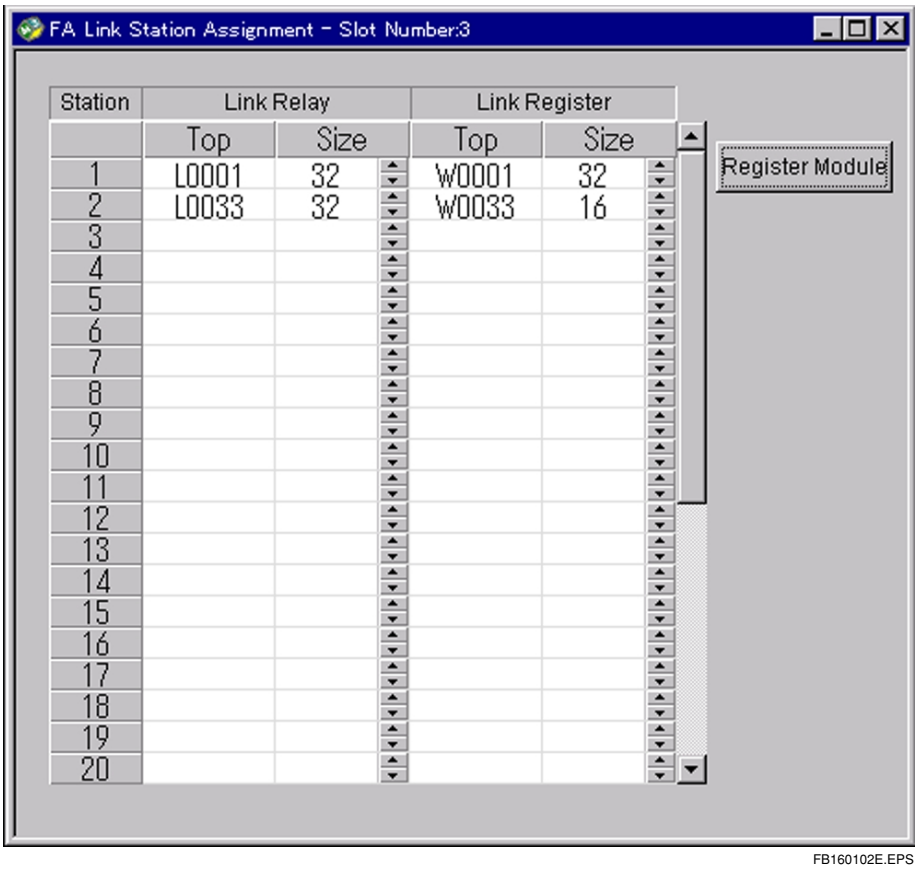
B16.1.1 Starting the FA Link Tool

The “FA Link Tool” is used to operate the station assignment and the monitor.
Select [Tool] - [Setup I/O Module] - [FA Link] from WideField, and start the [FA Link Tool]. If you want to write to, read from, or check the status of the FA link module, you will need to select [Online] - [Connect] ahead of time in WideField.
If you are not connected, you will only be able to the settings file for the FA link module.
If you are not connected, the following dialog box will be displayed. Selecting [Yes] will launch the FA link tool.



FB160101E.EPS

Figure B16.1 Not Hooked-Up Warning Dialog in WideField



FB160102E.EPS

Figure 16.2 FA Link Setup Screen

CAUTION

- Connecting WideField after the FA link tool has been started will not make link data readable.
- If you start the FA link tool while connected with WideField, online functions will nevertheless become inoperable if the connection is cut with WideField while the FA link tool is started. Shut down the FA link tool, reconnect with WideField, and relaunch the FA link tool.

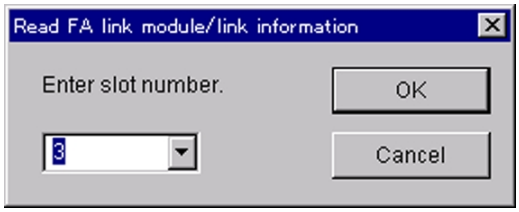
B16.1.2 Setting the FA link station assignment

To set the FA link station assignment, first open the FA link station assignment setup screen. You can either read from the FA link module, or from a file. The file is created by reading the setup data from the FA link module.

■ Reading link data from the module

Connect WideField to the CPU, and start the FA link tool.

(1) Select [Online] - [Read Link Information].

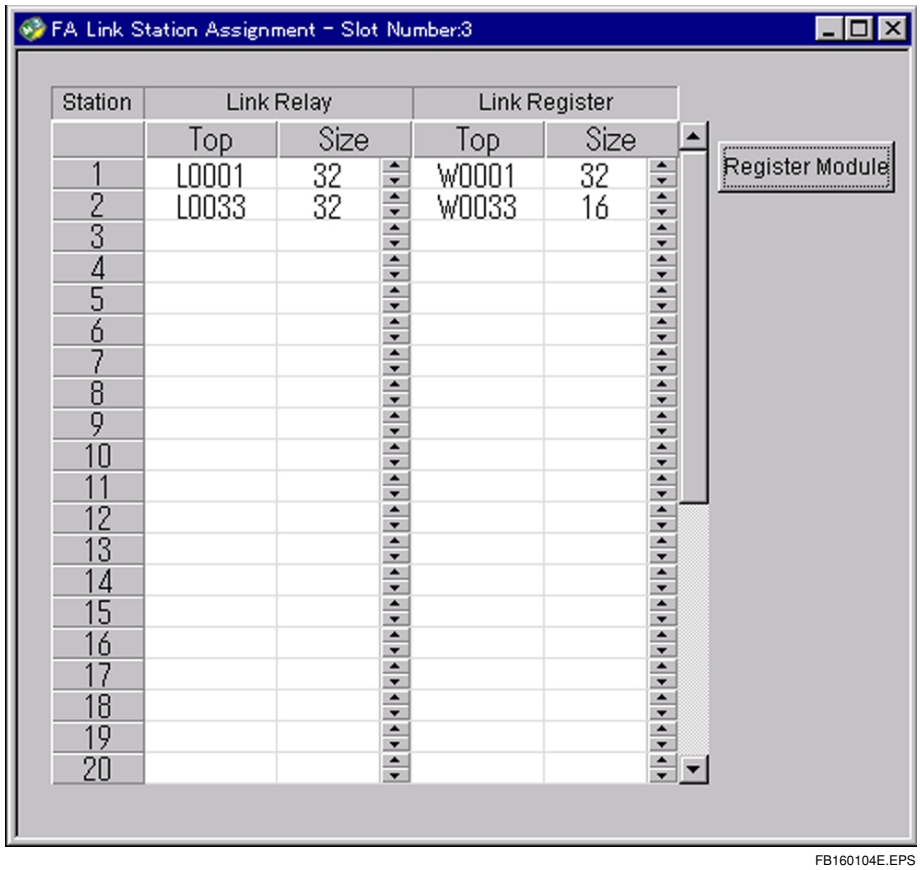


FB160103E.EPS

Figure B16.3 FA link Data Read Dialog Box

(2) Select or enter the slot number. A list of all the slot numbers with FA link modules mounted on them is displayed in the drop down list.

(3) Selecting [OK] will cause the setup data to be read from the FA link module, after which the following screen will be displayed.



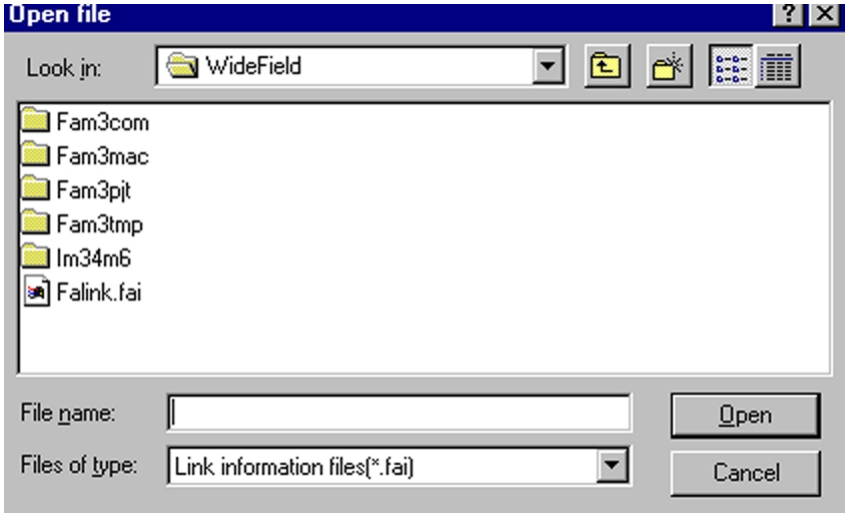
FB160104E.EPS

Figure B16.4 FA Link Station Assignment Setup Screen

■ Reading from the link data file

Follow the steps below to read the FA link station assignment data from the file saved with the FA link tool.

(1) Select [File] - [Open]. The following dialog box will be displayed.

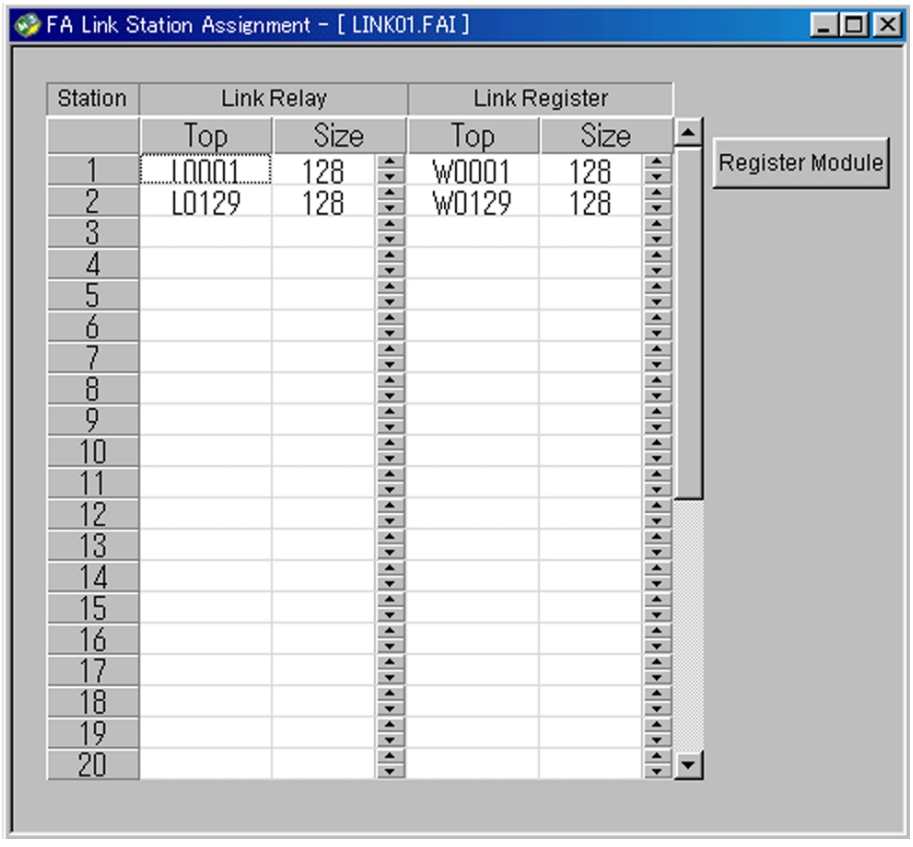


FB160105E.EPS

Figure B16.5 File Open Dialog Box

(2) Select the FA link data file, and select the [Open] button.

(3) The FA link station assignment setup screen will appear.



FB160106E.EPS

Figure B16.6 Station Assignment Setup Screen

■ Editing the station assignment

Enter information as a chart. Set the top address and size. The settings should be in 16-point units for link relays and 1-point units for link registers.

■ Saving the Link Data File

To save the contents of the edit to a file, either select [File] - [Save As], or [File] - [Save].
If you selected [File] - [Save As], then the following dialog box will be displayed. Enter the file name, and then press the [Save] button to save.
If you selected [File] - [Save], the existing file will be overwritten.

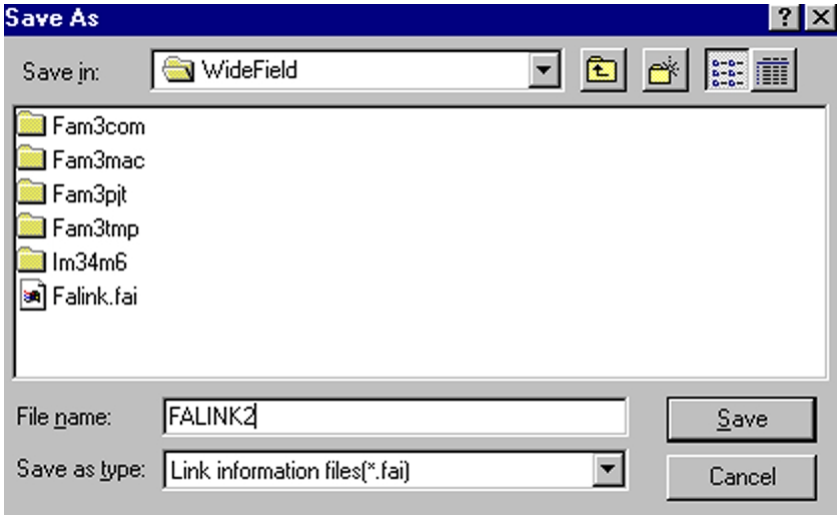


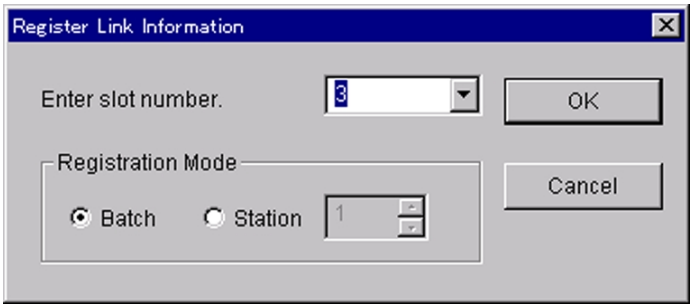
Figure B16.7 Save As Dialog Box

CAUTION

When you select [Save] after reading from the FA link module, the [Save As] dialog box will always be displayed.

B16.1.3 Registering to the FA link Module

There are two ways of registering to the FA link module, either comprehensively, or locally. Comprehensive registry means registering to all FA link modules in the FA link network. Local registry will register only to each particular location.
When you are finished editing the FA link divisions, select the [Register Link Information] button.
The following dialog box will be displayed.



FB160108E.EPS

Figure B16.8 FA link module Registry Dialog Box

(1) Select the slot number of the module for the FA link data to be registered to from the drop down list, or enter it.

(2) Select comprehensive or local registry. For local registry, you will have to specify the location number to be registered to.

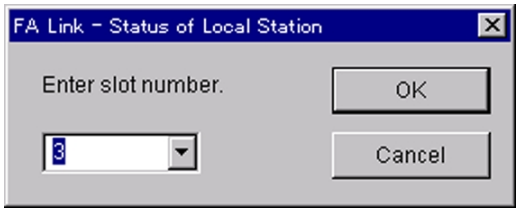
(3) Select [OK].

B16.1.4 Confirmation of the FA Link Module Status

Do the following in order to check the status of the FA link module. There are two statuses: local station (the status of the FA link module itself) and other station (for the locations that it is connected to.) You have to be hooked up with WideField in order to check status. You cannot check status unless you are connected.

■ Local Status Display

To display the local station status, select [Online] - [Status Monitor] - [Status of Local Station].

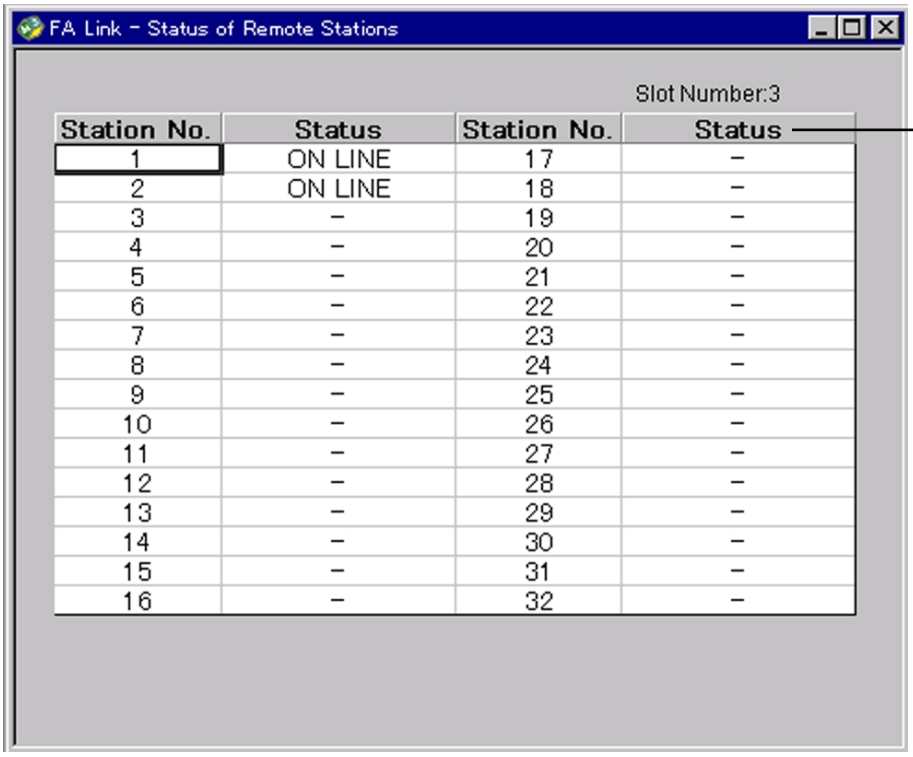


FB160109E.EPS

Figure B16.9 Local Status Module Select Dialog

(1) Select or enter the slot number. A list of all the slot numbers with FA link modules mounted on them is displayed in the drop down list.

(2) Selecting [OK] will display the following dialog box, where you can check local station status.



FB160110E.EPS

The descriptions of each item are as follows. A "●" will be displayed only for items generating malfunctions, other than module operation status and refresh period.

Table B16.1 Items and Description

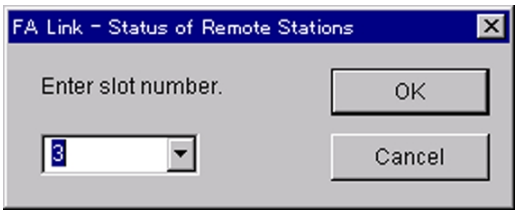
Item		Description
Module Operation Status	ON LINE	Communication is normal.
	OFF LINE	No communication.
Refresh Period(ms)		The FA link refresh period.
Station number malfunction		Station number is incorrect. (Overlapping, etc.)
Station division data not set		The station division data has not been set.
Overlapping assignment of device		The assignment of link relays and link registers is overlapping with other stations.
Communication I/F malfunctions		A communication I/F malfunction has been detected.
ROM error		A ROM check sum error has been detected.
RAM error		A RAM check sum error has been detected.

TB160101.EPS

Refresh period indicates the cyclic sending period of FA link.

■ Other Station Status Display

This displays the FA link module status of a different station on the network (32 stations) that includes the specified FA link module.
To display other station status, select [Online] - [Status Monitor] - [Status of Remote Stations].

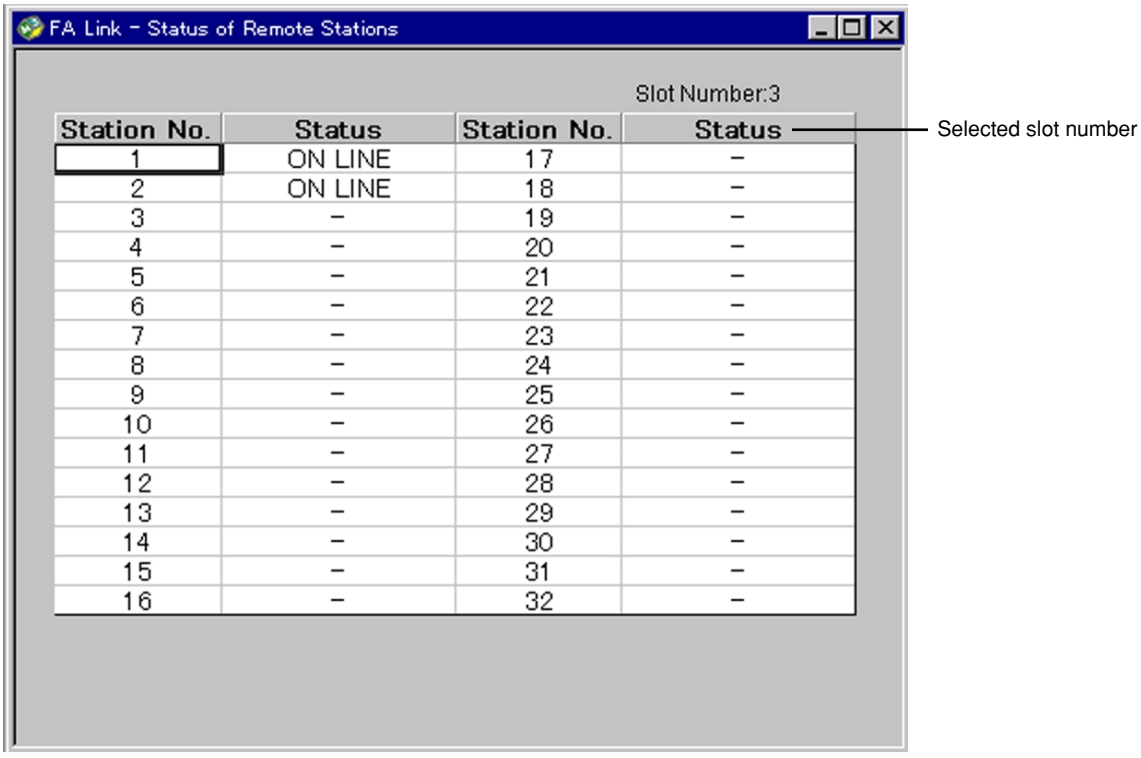


FB160111E.EPS

Figure B16.10 Other Station Status Module Select Dialog

(1) Select or enter the slot number. A list of all the slot numbers with FA link modules mounted on them is displayed in the drop down list.

(2) Selecting [OK] will display the following dialog box, where you can check other station status.



FB160112E.EPS

Figure B16.11 Other Station Status Screen

The descriptions of the different statuses are as follows.

Table B16.2 Statuses and Descriptions

Status	Descriptions
ON LINE	Communication is normal.
SEQ STOP	The sequence program has either malfunctioned or stopped, or is not operating.
CPU NOT READY	CPU is not operating normally.
-	Not set. Communication is not taking place normally, due to a disconnection or setup error, etc.

TB160102.EPS

B16.1.5 List of FA Link Tool Error Messages

The following shows a list error messages in the FA link tool and their causes and fixes.

■ List of Error Messages

Table B16.3 List of Error Messages

Error Code	Cause	Fix
Link data read error	An error has occurred in communicating with the CPU.	• Replace the computer's cable. • Replace the computer. • Attach the CPU module.
Device is not ready	The floppy disk is not inserted. The wrong device was specified.	• Specify the correct device. • Insert the floppy disk.
File cannot be created	There is not enough memory left in the disk.	• Increase the open memory space. • Replace the disk. (Write error.)
No FA module on the connected unit	The FA link module is not attached.	Attach the FA link module, and redo the operation.
Specified range error	The specification was made outside the link relay and link register range.	Specify within the correct range.
Data size over	The number of pieces of data has exceeded the total range.	Specify within the correct range.
Data overlap	Link relay specification and link register specification are overlapping.	Reset so that there is no overlap.
The module specification is incorrect	The FA link module slot number is incorrect.	Specify the correct slot number.
Access error Error code = XXXX-XX	An error has been generated upon access to the FA link module.	See the access error codes below for details.

TB160103E.EPS

■ Error Codes for Access Errors

Table B16.4 Error Codes for Access Errors

Error Code	Cause	Fix
26	Offline error: An assignment was made to a station that is offline, or the local station is offline.	• Assign to a station that is online. • Rewire correctly.
83	Parameter error: Either the assigned address or size is incorrect.	• Assign a correct address or size.
E2 D5 C1 BF	Communication error: Noise or hardware malfunction, etc.	• Remove the noise. • Replace the module.

TB160104.EPS

FA-M3

FA-M3 Programming Tool WideField Instruction Manual PART-B Supplementary Functions Section

IM 34M6Q14-01E 1st Edition

CONTENTS

Blank Page

B17. Sampling Trace Tool

The sampling trace tool is a function that stores the status and contents of devices specified for sampling in the sampling trace memory. (It may be used with F3SP25 models and up.) It can be run as one of WideField's support tools.

The results of a sampling trace can be displayed from this tool in time chart format.

Up to 16 relay devices and 4 register devices can have a sampling trace run on them.

CAUTION

- The sampling trace tool is separate from WideField and uses the same communication port as WideField. Therefore, when running WideField's online functions, the sampling trace function cannot be used. Be sure to disconnect WideField before running it.
- RS-232C communication via modem cannot be used.
- The range of file registers that can use the sampling trace is B000001 through B32768. File registers outside this range cannot be traced.
- Tag names are not supported. Be sure to set the address.

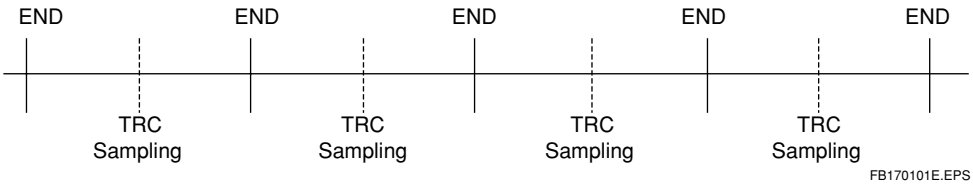
B17.1 How to Sample

There are 3 ways to sample, as shown below. You can collect up to 1024 pieces of data. Data can be stored either from in front or from behind depending on the trigger conditions and the delay designation.

● TRC Instruction Execute

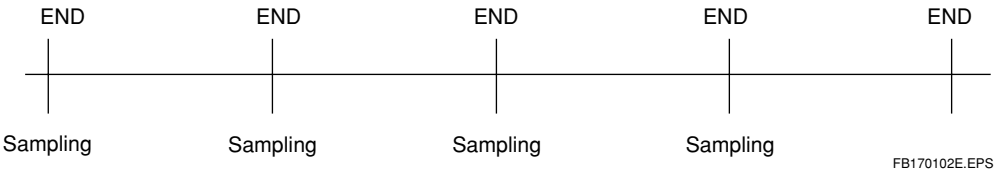
By using a TRC instruction in a program, specified contact/data can be sampled at any point in time during scan.

When executing a TRC instruction several times during a scan, data will be stored in the order of the execution for up to 4 times. Any data after that will be lost.



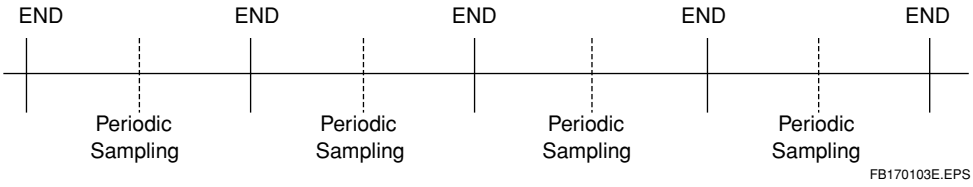
● END Instruction Execute

The specified contact/data will be traced by the END instruction, which is always executed at the end of a scan.



● Designation of Periodic

This samples the specified contact/data at a specified regular interval, unconnected to the scan.



● Operation of the Delay Designation

When designating the delay, set the trigger condition to 0. If the delay is set at - (minus), the sampling data for the specified number of times before the trigger condition will be stored in the trace buffer, if the delay is set at + (plus), the sampling data for the specified number of times after the trigger condition will be stored in the trace buffer.

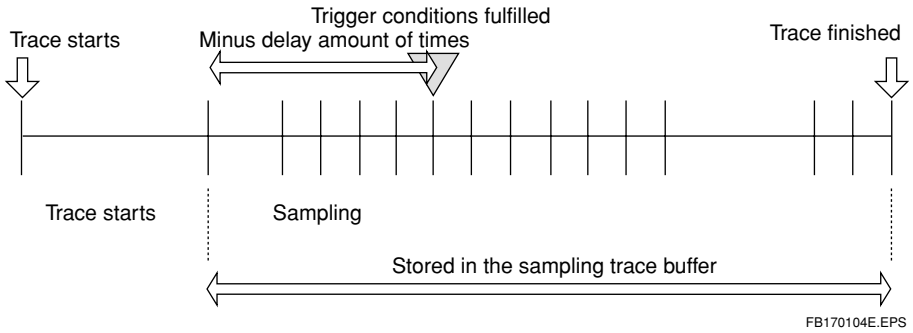


Figure B17.1 Operation During a - (Minus) Delay Designation

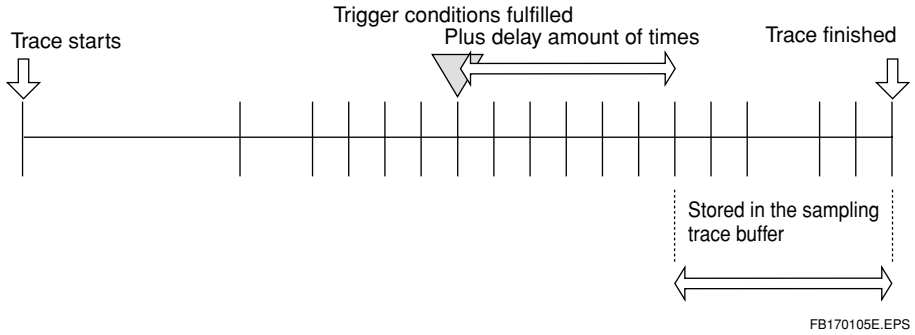


Figure B17.2 Operation During a + (Plus) Delay Designation

B17.2 Sampling Trace Setup

You can either carry out the sampling trace settings by using the configuration settings or by using the online setup.

If you use the configuration, the sampling trace will be stored in memory regardless of whether the power is on or off. If you set it to sample when an error occurs in the user system, the device status before and after the error is saved.

Online setup is for when you want to temporarily sample data, such as when you are debugging, etc. When the power is turned off and then back on, the sampling trace settings set in the configuration take effect.

B17.2.1 Setup Configuration

Carry out the WideField configuration setup.

Start WideField, select [Project] - [Configuration], and the configuration screen will appear. The set sampling trace settings will go into effect when the program is downloaded.

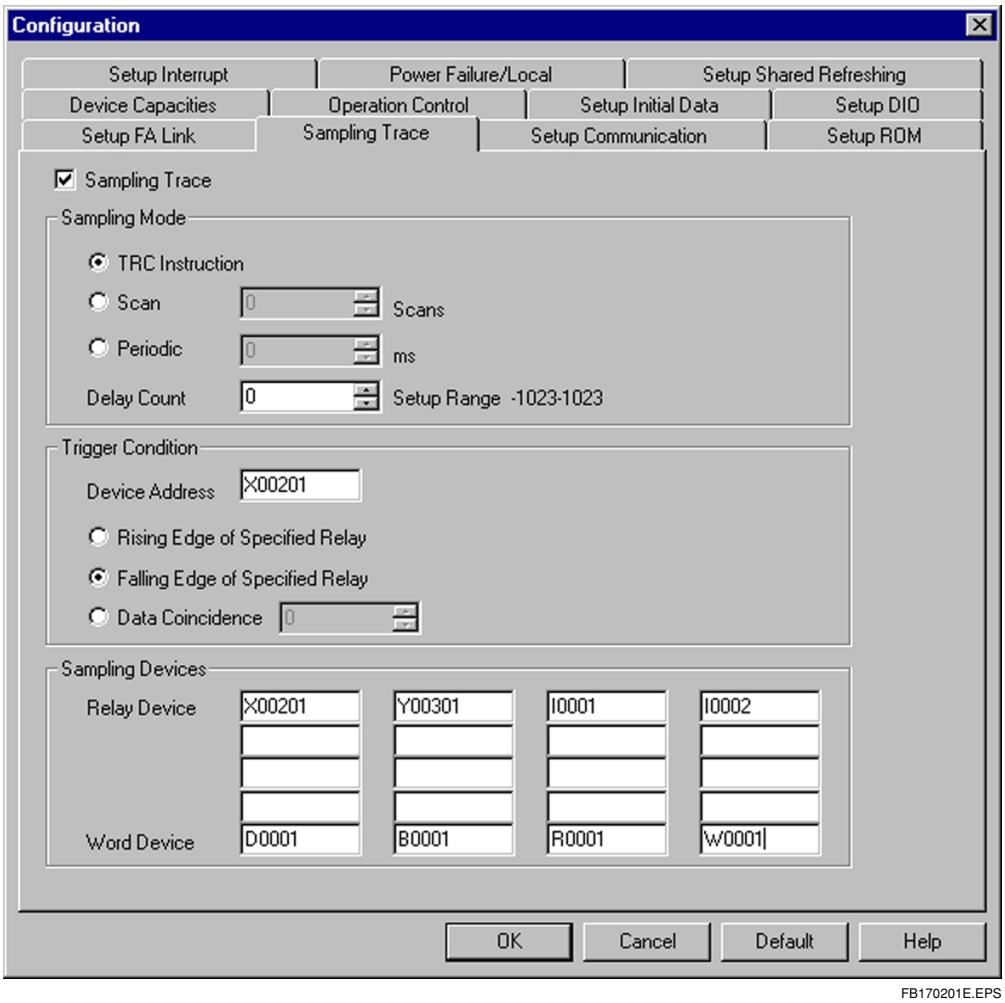
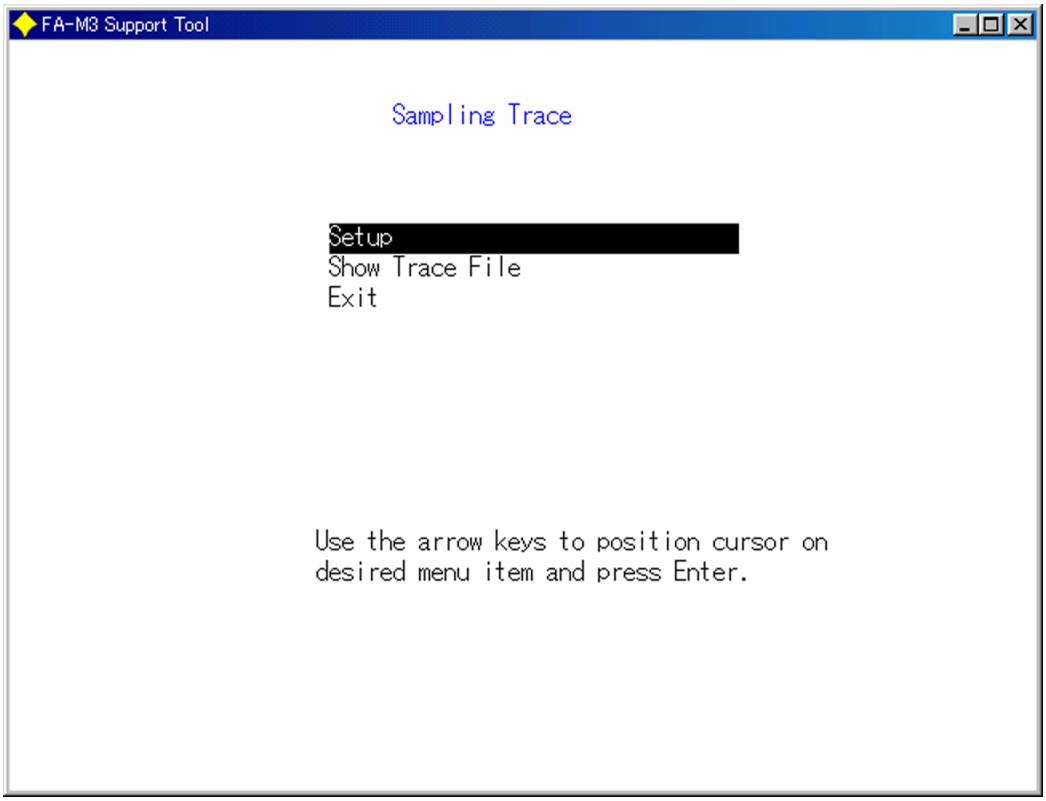


Figure B17.3 Setup Configuration Screen

B17.2.2 Online Setup and Sampling Trace Start

This sets up the sampling trace in the CPU using the sampling trace tool.

(1) Select [Start] - [Program] - [WideField] - [FA-M3 Support Tool] - [Sampling Trace] from the start menu.



FB170202E.EPS

Figure B17.4 Sampling Trace First Screen

(2) Select [Setup Sampling Trace] and press the [Enter] key.
When this is done, connect to the CPU by following the communication settings set at the WideField environment settings. Once you are connected, the following sampling trace setup screen will be displayed. If you are using an Ethernet connection, enter the IP address and the CPU number to connect. (The initial value is the IP address set in the WideField environment settings.)

CAUTION

When using an Ethernet, you will not be able to connect using the host name with the sampling trace tool. Be sure to specify the IP address. If you do not know the IP address, use a ping command to look it up.

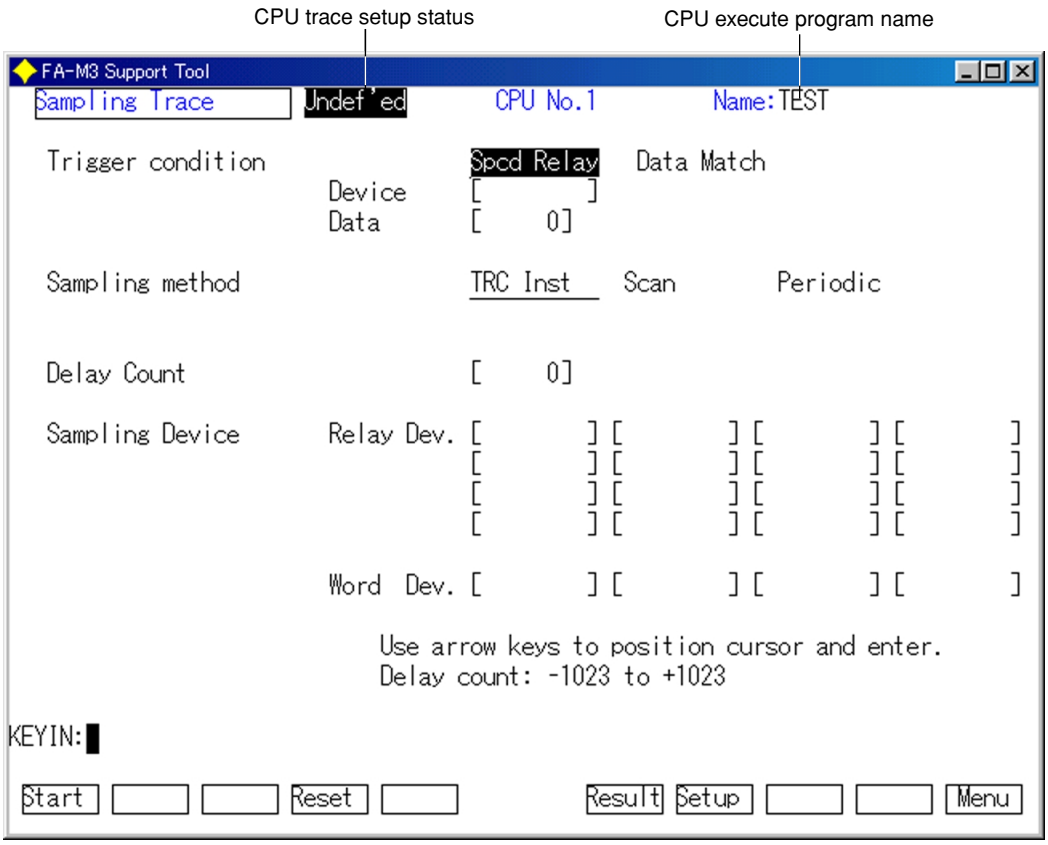
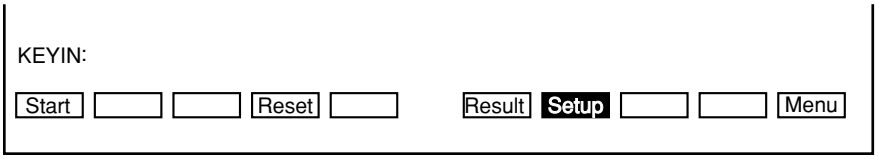


Figure B17.5 Sampling Trace Setup Screen

TIP

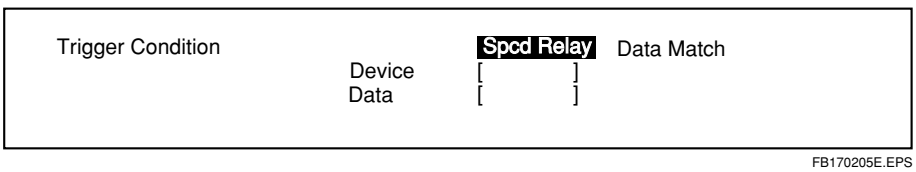
The CPU trace setup status shows the sampling trace status, and changes as follows: Undefined - Waiting for Trigger - Tracing - Trace Finished

(3) When you want to read the previous settings from the CPU, press the [F7] key (Previous settings). The results will be displayed on the screen.

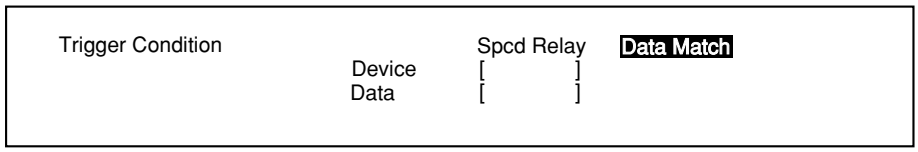


● Setting the Trigger Conditions

(1) Use the arrow keys to move the cursor up and down the trigger conditions.

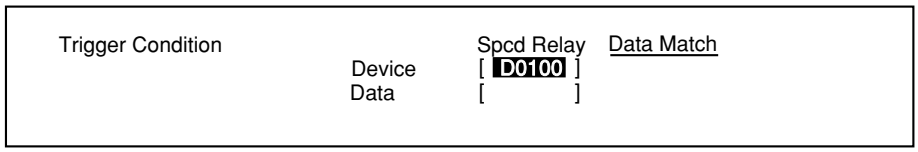


(2) Use the arrow keys to switch between “Specified Relay” and “Data Match.” Use the [→] key to select “Data Match.” “Data Match” will be selected.



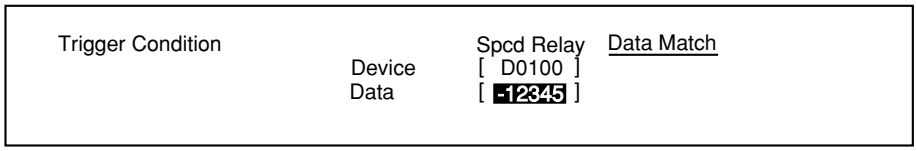
FB170206E.EPS

(3) Use [↓] key to move the cursor down and enter the device name.



FB170207E.EPS

(4) Use [↓] key to move the cursor down and enter the data. If you selected specified relay in step (2), enter either “0” or “1” as the data.

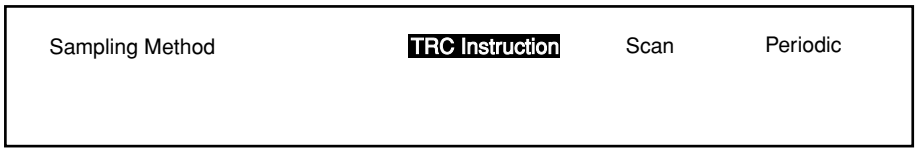


FB170208E.EPS

(5) Use [↑] key to return the cursor to the trigger conditions.

● Specifying the Sampling Method

(1) Use the arrow keys to move the cursor up and down the sampling condition.

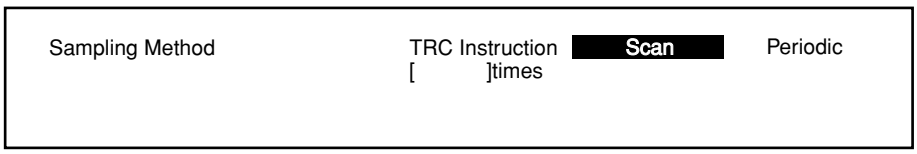


FB170209E.EPS

(2) Use the arrow keys to switch between “TRC Inst,” “Scan,” and “Periodic.”

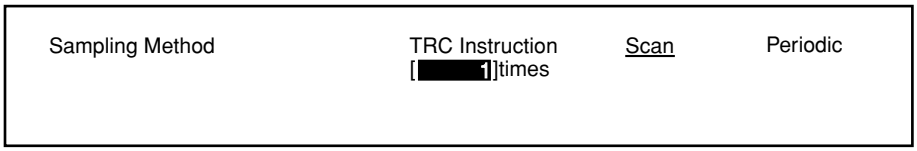
- **Choosing “Scan”**

1. Press the [→] key once in step (1).
   “Scan” will be selected.



FB170210E.EPS

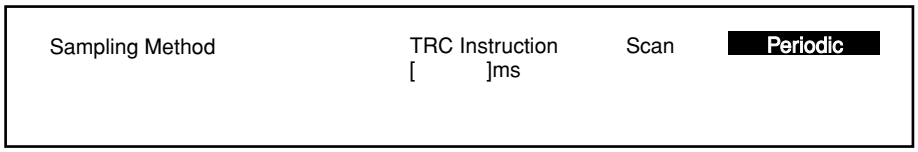
2. Use the [↓] key to move the cursor and enter the number of times.
   Sampling will take place the specified number of times.
   In order to have it sample each time, enter [1.]



FB170211E.EPS

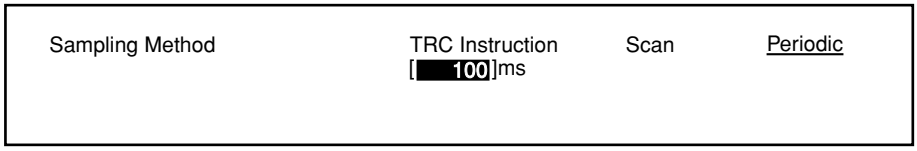
- **Choosing "Periodic"**

1. Press the [→] key twice in step (1).
   "Periodic" will be selected.



FB170212E.EPS

2. Use the [↓] key to move the cursor and enter the period.
   Sampling will take place once every specified period.
   You can set the period between 10ms and 2000ms in 10ms steps.
   A disparity as large as for one scan will occur for the set value.

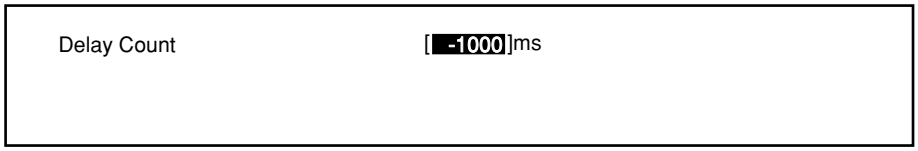


FB170213E.EPS

(3) Use the [↑] key to return the cursor to the sampling method.

● Specifying the Delay Count

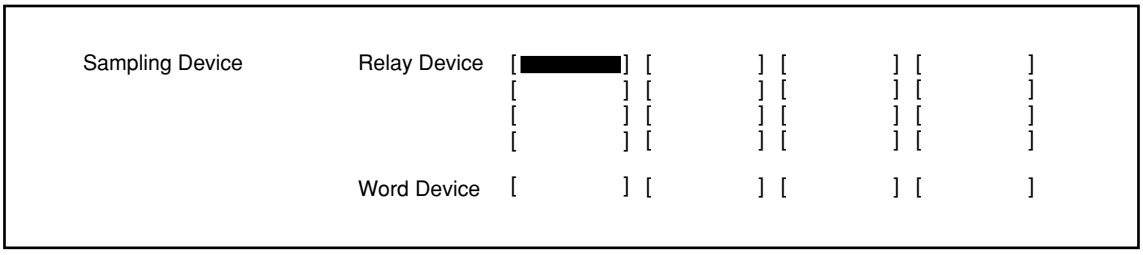
Use the arrow keys to move the cursor to the delay count, and enter the delay count.



FB170214E.EPS

● Specifying the Sampling Device

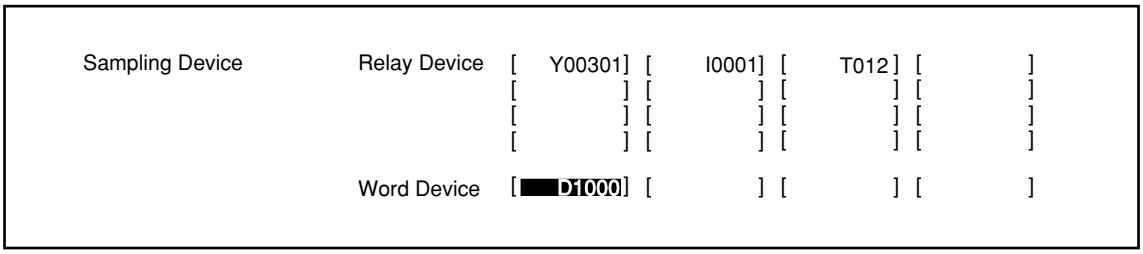
(1) Use the arrow keys to move the cursor to the sampling device.



FB170215E.EPS

(2) Use the arrow keys to move the cursor and enter the sampling devices.

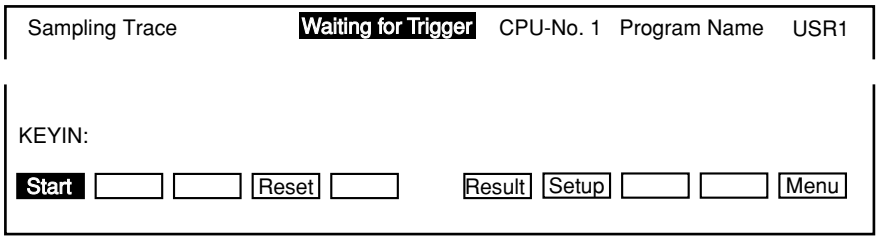
- You can specify up to 16 devices, including input-output/ internal/ shared/ special/ link/ timer/ counter relays.
- You can specify up to 4 word devices from either data/ shared/ link/ special registers, current timer/counter value, or the specified relay devices.
- Use the [Delete] key to cancel a device.



FB170216E.EPS

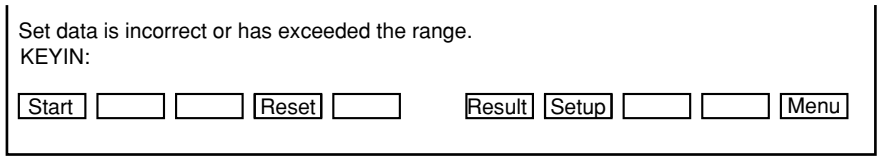
● Starting a Sampling Trace

(1) Press the [F1] (Start) key.
The sampling trace will begin.



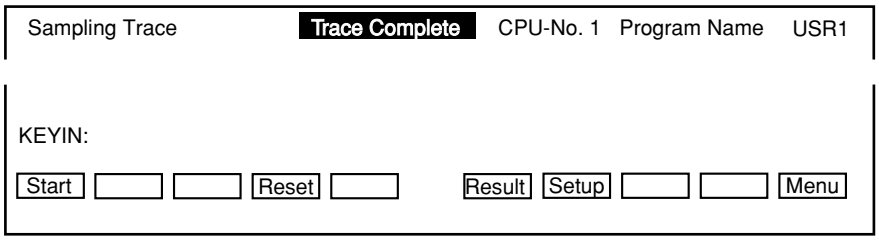
FB170217E.EPS

- The following will be displayed if the set value is incorrect.



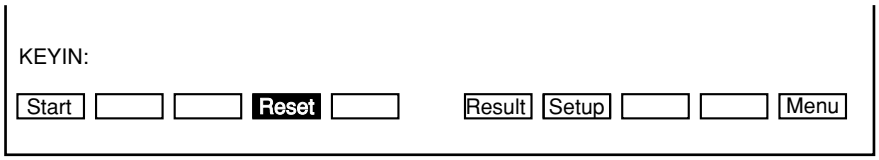
FB170218E.EPS

(2) When the sampling trace is finished, the following will be displayed.



FB170219E.EPS

(3) Press the F4 (Reset) key to finish the CPU sampling trace operation.



FB170220E.EPS

CAUTION

Simply returning to the menu screen by pressing F10 (Menu) will not finish the sampling trace operation.

Once a sampling trace has been started, operation continues until it is reset.

You must press the F4 (Reset) key to finish the sampling trace operation.

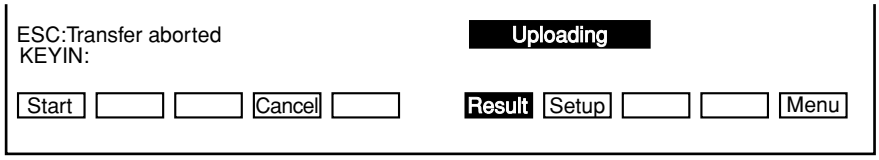
TIP

A few tips on the sampling trace setup screen.

- The program name of setup screen will be displayed after a reading out of CPU's program name first.
- The status of the CPU trace settings in the setup screen is always displayed by continuously monitoring the CPU.
- A range check takes place for all settings when the [Start] key is pressed.
- The sampling trace operation will not finish even if you close down the setup screen with the [Menu] key.

B17.3 Reading Sampling Trace Results

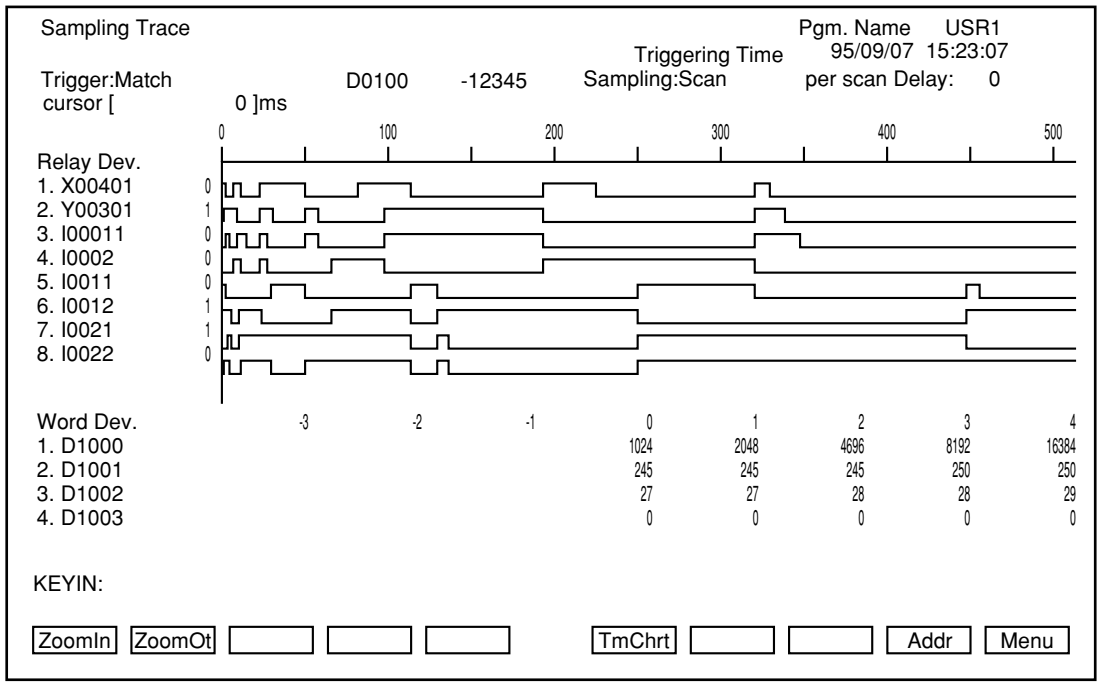
(1) Press the [F6] (Results) key at the setup screen.
The trace results will be read from the CPU module.



FB170401E.EPS

(2) The results will be displayed.

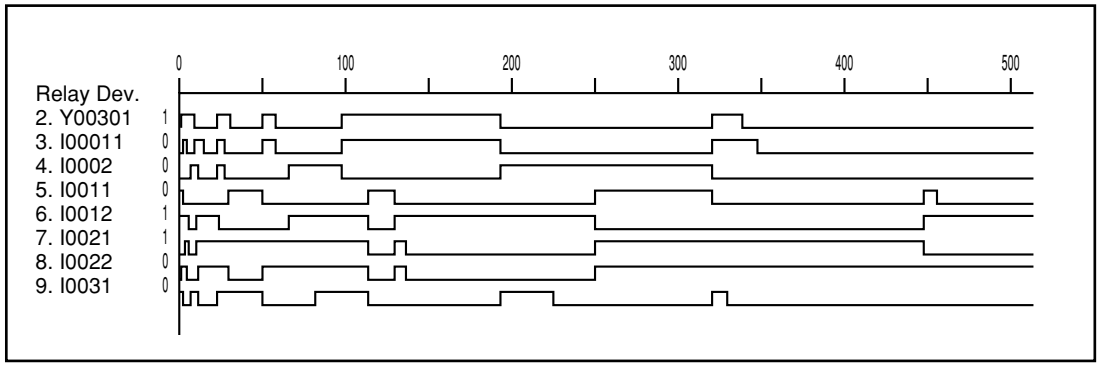
- The value of the where the cursor is positioned will be displayed next to the relay device.
- The word device data for the previous 3 times and the following 4 times will be displayed.
- A “0” for the word device corresponds to the cursor position.



FB170402E.EPS

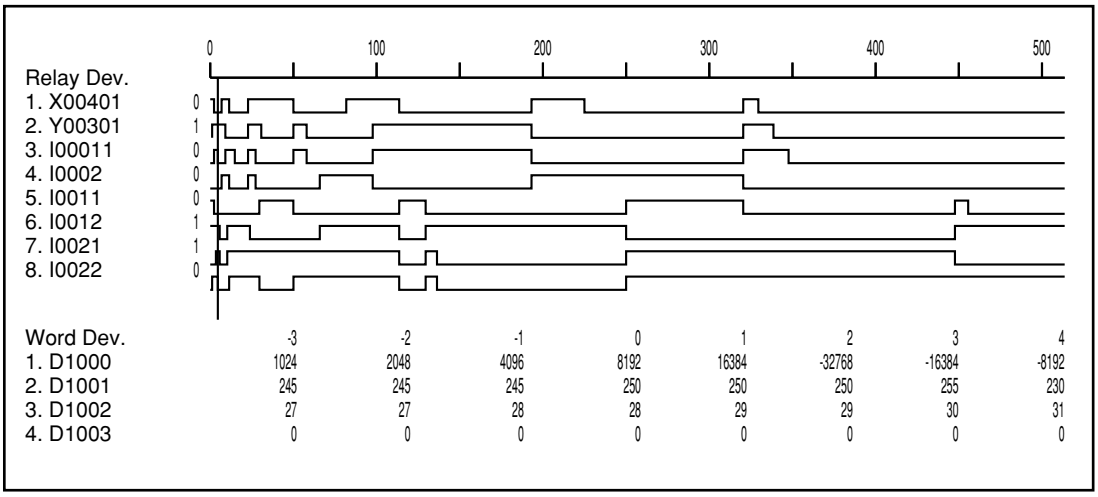
Figure B17.6 Sampling Trace Screen

(3) Use the arrow keys to scroll the display to show the relay device for the 9th scan and after.



FB170403E.EPS

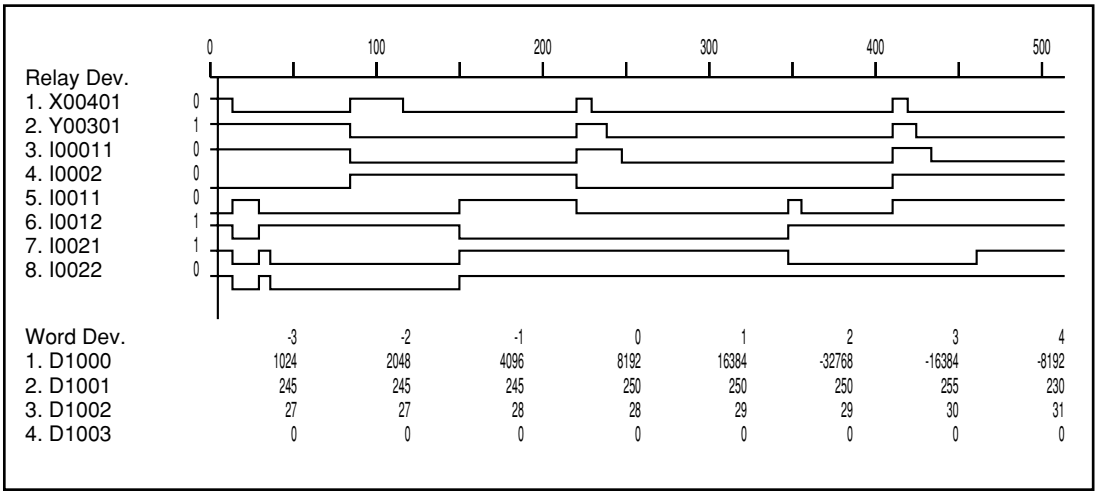
(4) Move the cursor using the [←] and [→] keys.
Using the [Shift] + [→] and [Shift] + [←] keys will make the cursor skip.



FB170404E.EPS

When using the [Shift] + [→] key, the cursor will skip sideways along the horizontal axis in the units displayed.

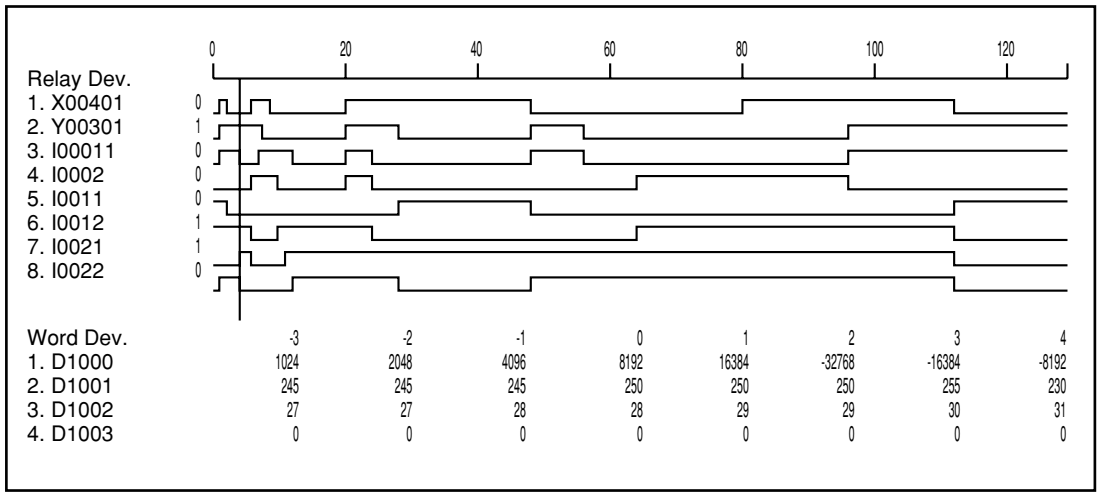
When the cursor reaches the right edge, it will scroll sideways.



FB170405E.EPS

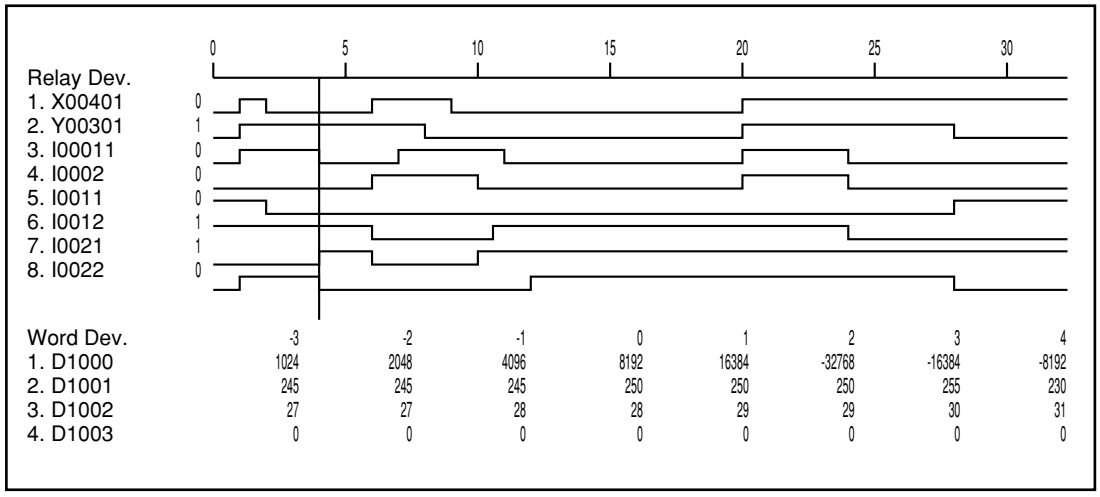
- One scroll sideways is in the displayed unit value. (50 units at normal scale, 20 units at 4 times scale, 1 unit at 64 times scale.)
- The further right edge is 1024. (The left edge will be 500 at normal scale, and 896 at 4 times scale.)

(5) You can zoom in or zoom out the relay device time axis direction to 4 times larger or 1/4 times smaller with the [F1] (Zoom in) and [F2] (Zoom out) keys.



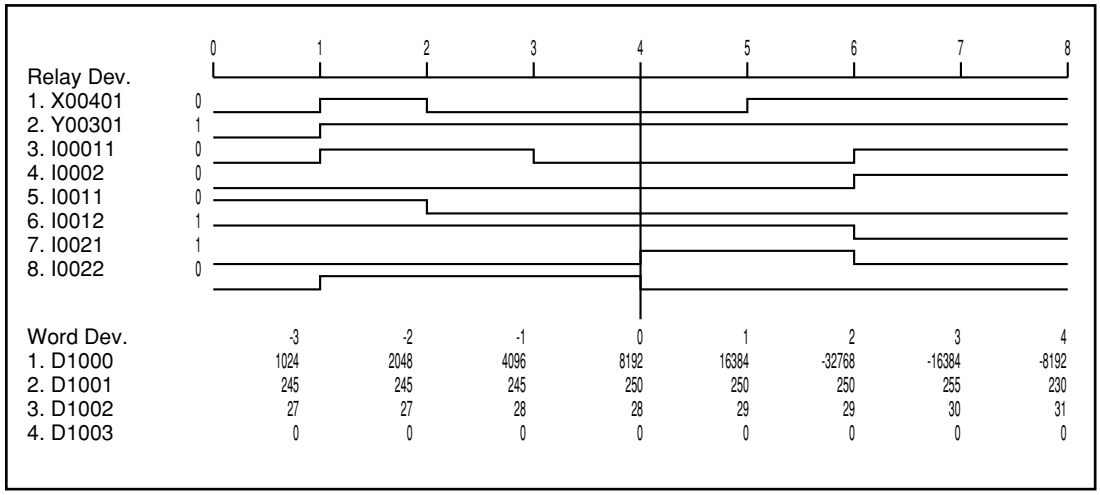
FB170406E.EPS

(4 times scale)



FB170407E.EPS

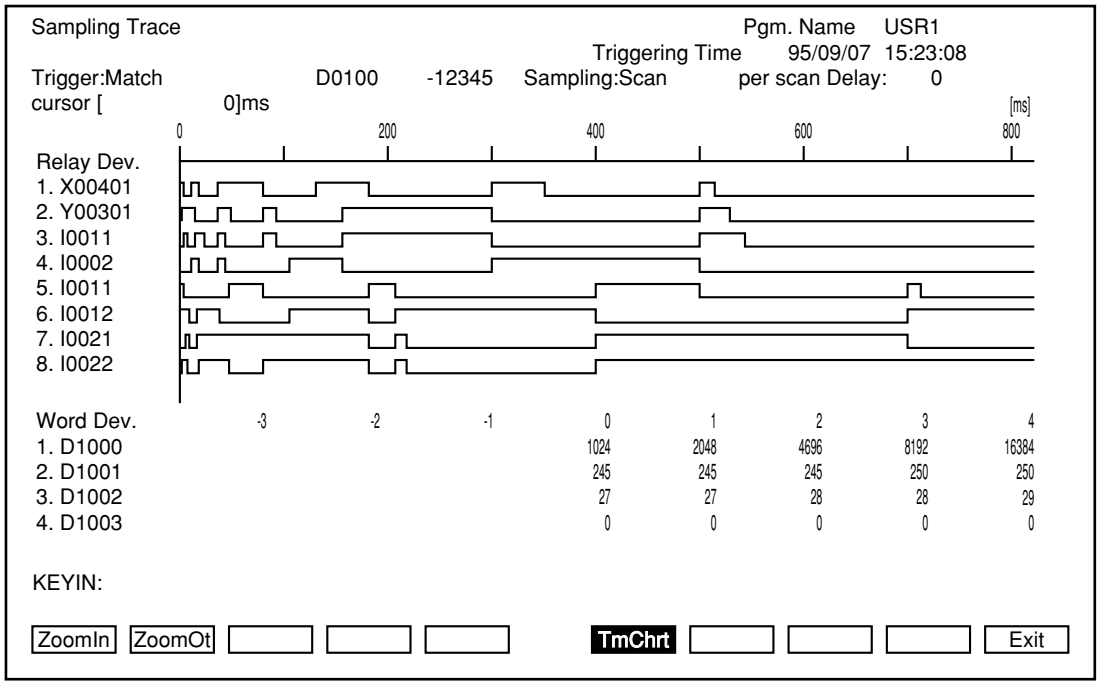
(16 times scale)



FB170408E.EPS

(64 times scale)

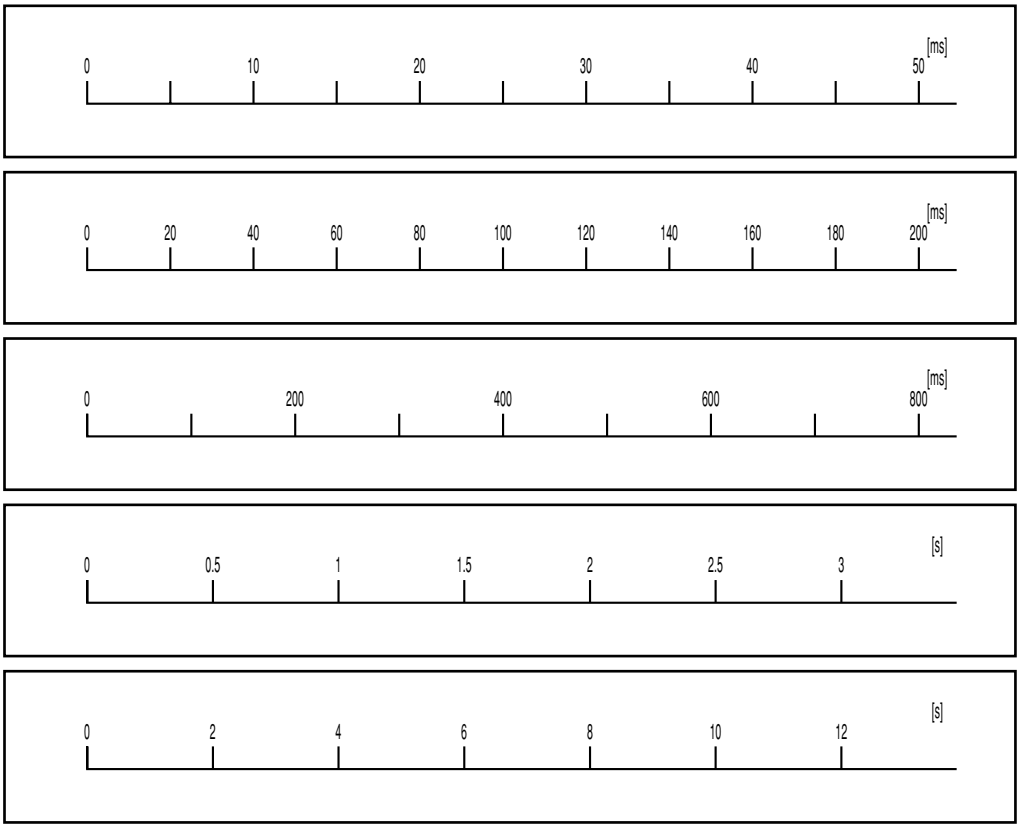
(6) Press the [F6] (Time chart) key to show the time axis in real time.



FB170409E.EPS

Figure B17.7 Sampling Trace Screen

The time axis will change like this.



FB170410E.EPS

If there is ever more data than is being displayed, you can scroll sideways.

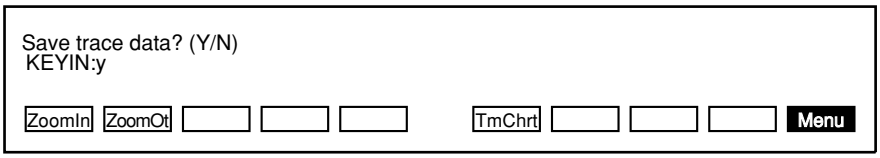
(One scroll sideways is in the displayed unit value.)

The displayed data may not be displayed correctly, when you make the time axis bigger in time chart display mode.

CAUTION

You cannot move the cursor in time chart display mode using the [Shift] + [→] and [Shift] + [←] keys.

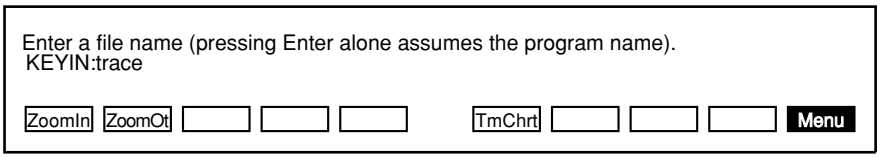
(7) To exit trace results reading, press the [F10] (Exit) key.
A message confirming whether to save the data or not will be displayed.



FB170411E.EPS

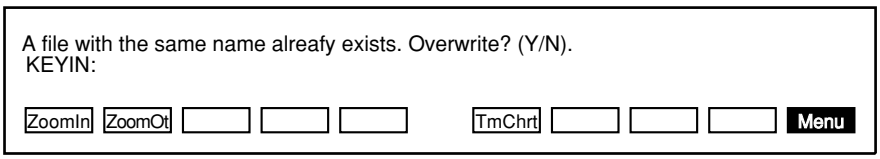
Enter “Y” if you want to save the data, or “N” if not.

(8) Enter the file name the data is to be saved to.



FB170412E.EPS

(9) If a file with that name already exists, a message confirming whether to overwrite or not will be displayed.



FB170413E.EPS

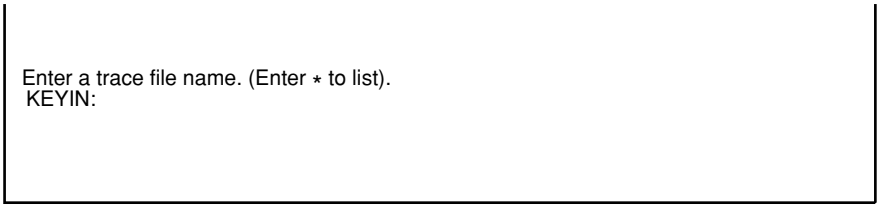
Enter “Y” if you want to overwrite, or “N” if not.

CAUTION

The location for saving sampling trace data files is fixed at the \Fam3dat folder created in the drive in which WideField is installed. File names should be 8 characters or less.

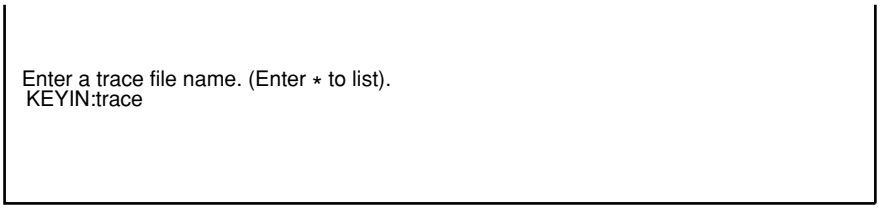
B17.4 Reading Saved Trace Data

(1) Select the “Display sampling trace data file” from the sampling trace menu and press the [↵] key.



FB170501E.EPS

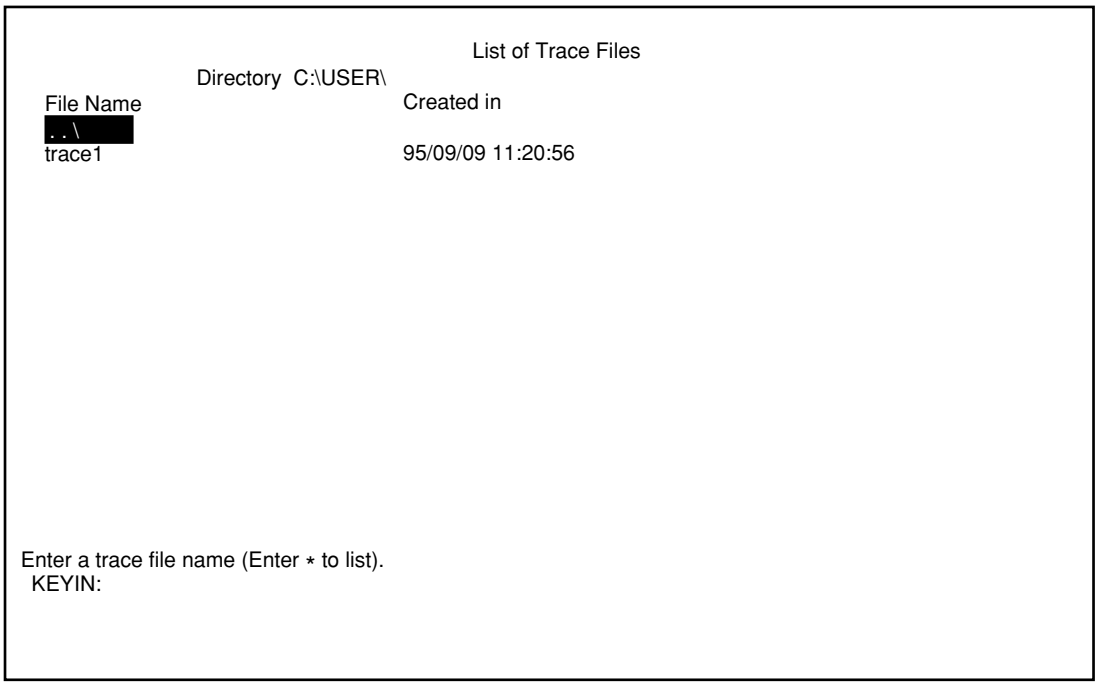
(2) Enter the saved filename.



FB170502E.EPS

- Trace File Name
- The trace file name must be a string of characters beginning with a letter up to 8 characters long.
- There is no distinction between upper and lower case. Either one is ok when entering. Make sure that trace file names are no longer than 34 character when they are specified with an absolute path.
- The file extension is “.trc.” It is attached automatically.
- If you do not specify a name when saving, the file name will be “.trc.”

(3) Pressing the [↵] key after entering “*” will display all the file names.



FB170503E.EPS

(4) Select the file to read, and press the [↵] key.
The trace results will be displayed.

(5) You may repeat this process as many times as needed.

SEE ALSO

See step (2) and after in “B17.3 Reading Sampling Trace Results” for further details on how to read the trace results.

(6) Press the [F10] (Exit) key.
You will exit from the trace file display.

B18. Device Management Tool

The device manager uploads the CPU's device data and saves it to a file. You can use this file to edit device data, download, and compare. You can also set the range of devices to upload and download.

The devices saved are as follows:

- **Internal relay (I)**
- **Shared relay / Extension shared relay (E)**
- **Link relay (L)**
- **Timer relay / current value(T)**
- **Counter relay / current value(C)**
- **Data register (D)**
- **Shared register / Extension shared register (R)**
- **Link register (W)**
- **Index register (V)**
- **File register (B) However, this is limited to between B000001 and B32768**

Devices that cannot be saved are as follows:

- **Input/output relay (X, Y)**
- **Timer/Counter Set Value**

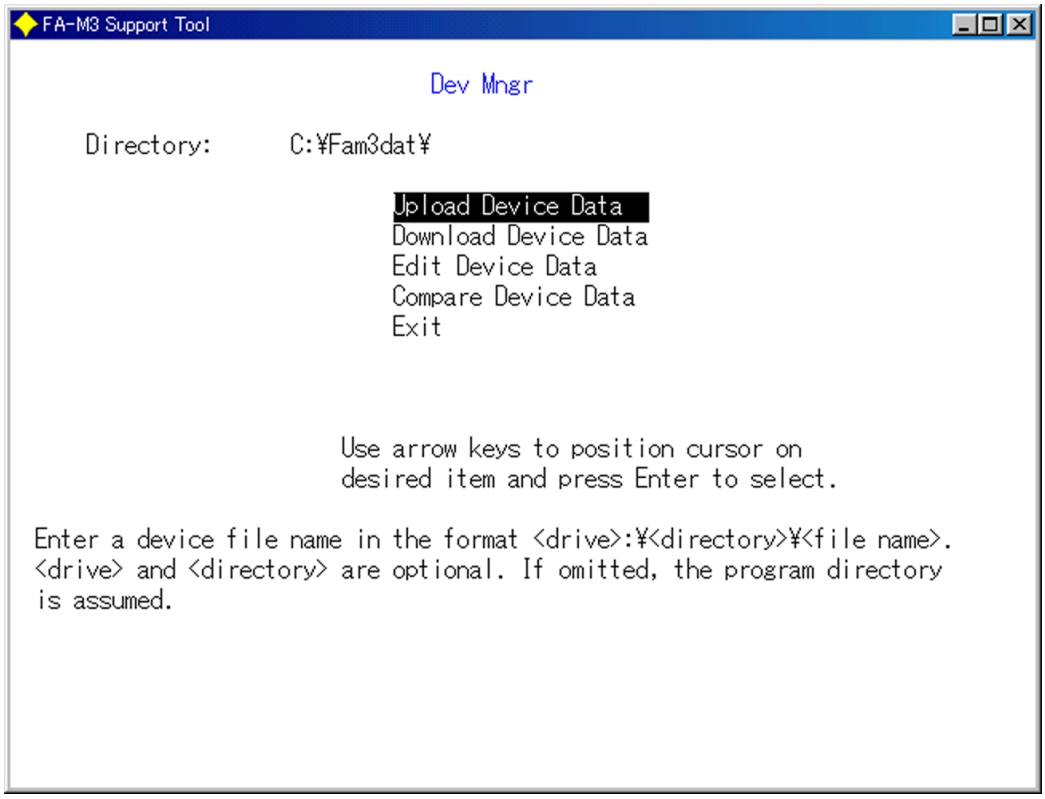
CAUTION

- The device management tool is separate from WideField and uses the same communication port as WideField. Therefore, when running WideField's online functions, the device manager cannot be used. Be sure to disconnect WideField before running it.
- RS-232C communication via modem cannot be used.
- The range of file registers that can be handled by the device manager is B000001 through B32768. File registers outside this range cannot be traced.
- Tag names are not supported.
- No new device data can be created. Edit files that have been uploaded.

B18.1 Device Management and Exiting

B18.1.1 Starting the Device Manager

(1) Select [Start] - [Program] - [WideField] - [FA-M3 Support Tool] - [Device Manager] from the start menu.



FB180101E.EPS

Figure B18.1 Device Manager First Screen

(2) Select the function with the arrow keys and press the [Enter] key. When this is done, connect to the CPU, and switch between the appropriate screens. If you are using Ethernet, enter the IP address and the CPU number to connect. (The initial value is the IP address set in the WideField environment settings.)

CAUTION

When using Ethernet, you will not be able to connect using the host name with the sampling trace tool. Be sure to specify the IP address. If you do not know the IP address, use a ping command to look it up.

B18.1.2 Exiting the Device Manager

Move the cursor to Exit in the device manager first screen and press the [Enter] key. You will exit the device manager.

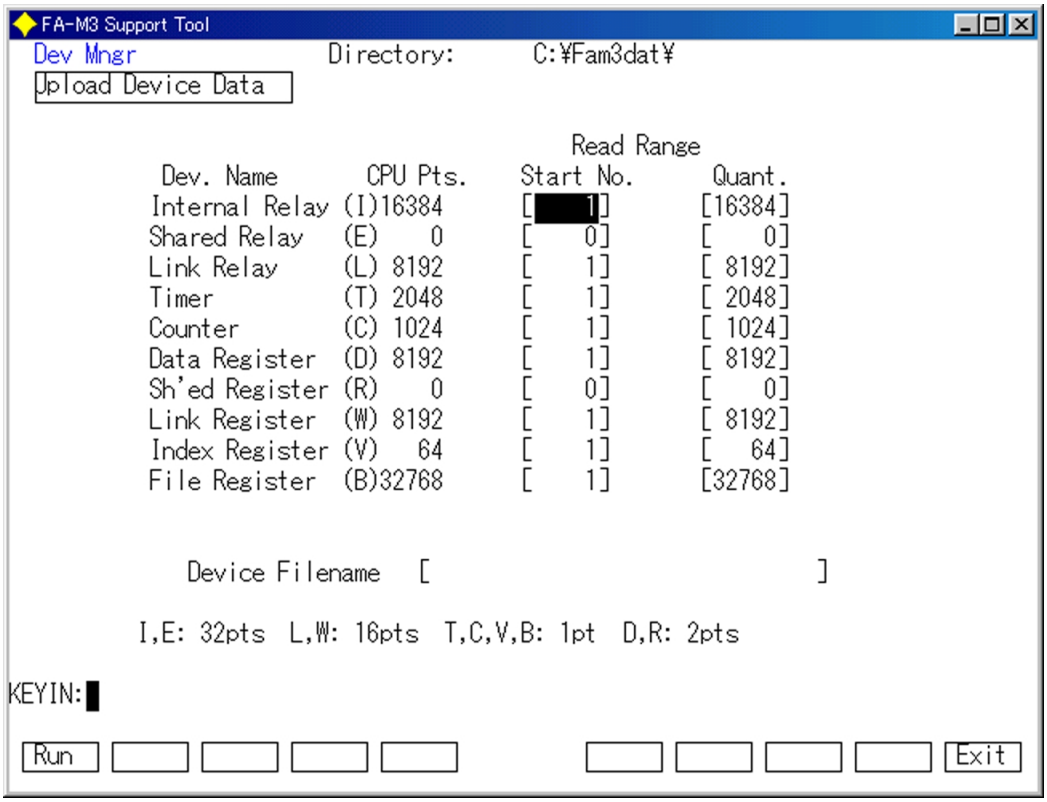
B18.2 Uploading Device Data

This section describes how to upload device data.

(1) Select “Upload Device Data” and press the [↵] key.

(2) Enter the host name and CPU number. (Only when using Ethernet.)

(3) The device upload screen will appear.



FB180201E.EPS

Figure B18.2 Device Upload Screen

(4) Set the read range. Use the arrow keys to specify the range of devices to upload, and enter the starting number and quantity.

TIP

Set it so that “Starting number + Quantity - 1” does not exceed the configuration value. Enter “0” for any devices you do not want to upload.

(5) Enter the device file name.
If you do not enter the directory name, a file will be created in \Fam3dat in the drive below the WideField installed drive.

FB180202E.EPS

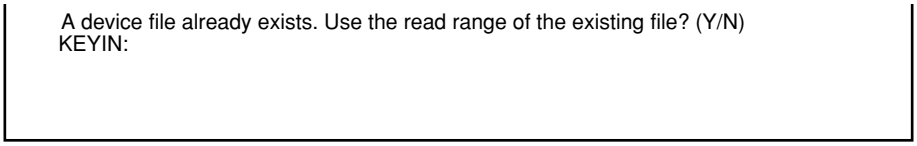
- If the directory does not exist, the following message will be displayed.

FB180203E.EPS

- If the directory name or file name are incorrect or too long, the following will be displayed.

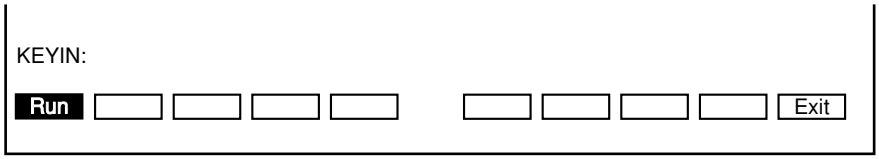
FB180204E.EPS

(6) If a pre-existing file name is entered, the following will be displayed. If you want to upload the same range as the last time, enter “Y.” If you want to upload a different new range, enter “N.” In this case the file will be overwritten when upload is exited.



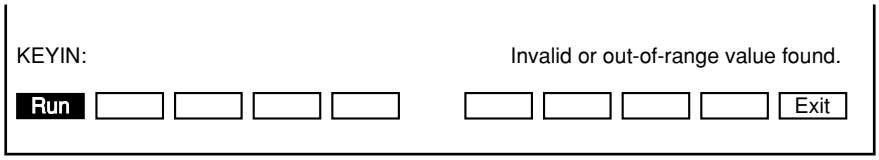
FB180205E.EPS

(7) When setup is complete, press the [F1] (Run) key.



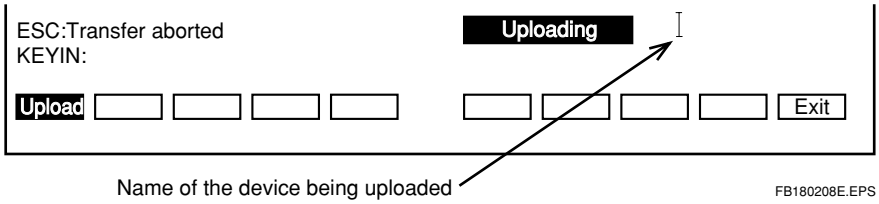
FB180206E.EPS

- If the set value is incorrect, the following will be displayed, and the cursor will be moved to where the error is.



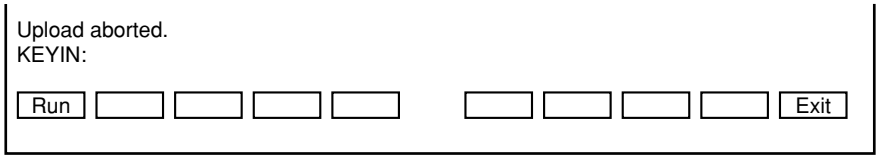
FB180207E.EPS

(8) Upload will start. Pressing the [Esc] key will interrupt the upload.



FB180208E.EPS

- If the [Esc] key is pressed, the following will be displayed.

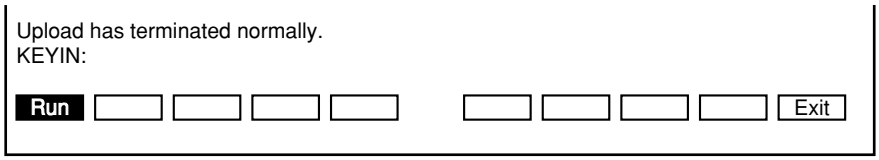


FB180209E.EPS

CAUTION

If upload is interrupted, a new file will not be created. The old file will remain as it was.

(9) When uploading is complete, the following will be displayed.



FB180210E.EPS

CAUTION

The set units for uploading vary from device to device.

Point Setup Units for each Device in the Device Manager

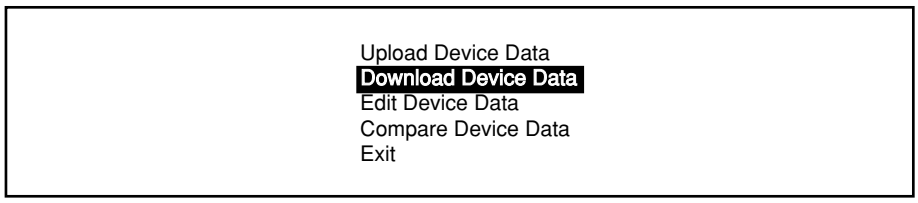
Device	Units of the number of points (points)
Internal relay (I)	32
Shared relay / Extension shared relay (E)	32
Link relay (L)	16
Timer (T)	1
Counter (C)	1
Data register (D)	2
Shared register (R)	2
Link register (W)	16
Index register (V)	1
File register (B)	1

TB180201E.EPS

B18.3 Downloading Device Data

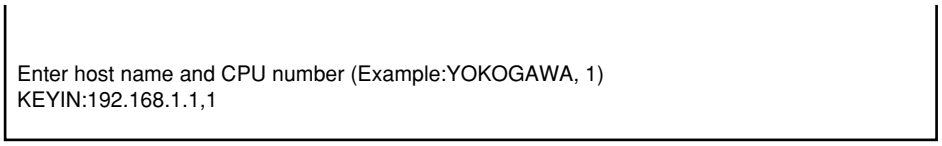
This section describes how to download device data.

(1) Select “Device Download Data” and press the [↵] key.



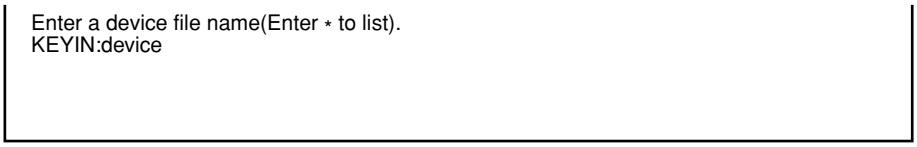
FB180301E.EPS

(2) Enter the host name and CPU number. (Only when using Ethernet.)



FB180302E.EPS

(3) Enter the device file name.



FB180303E.EPS

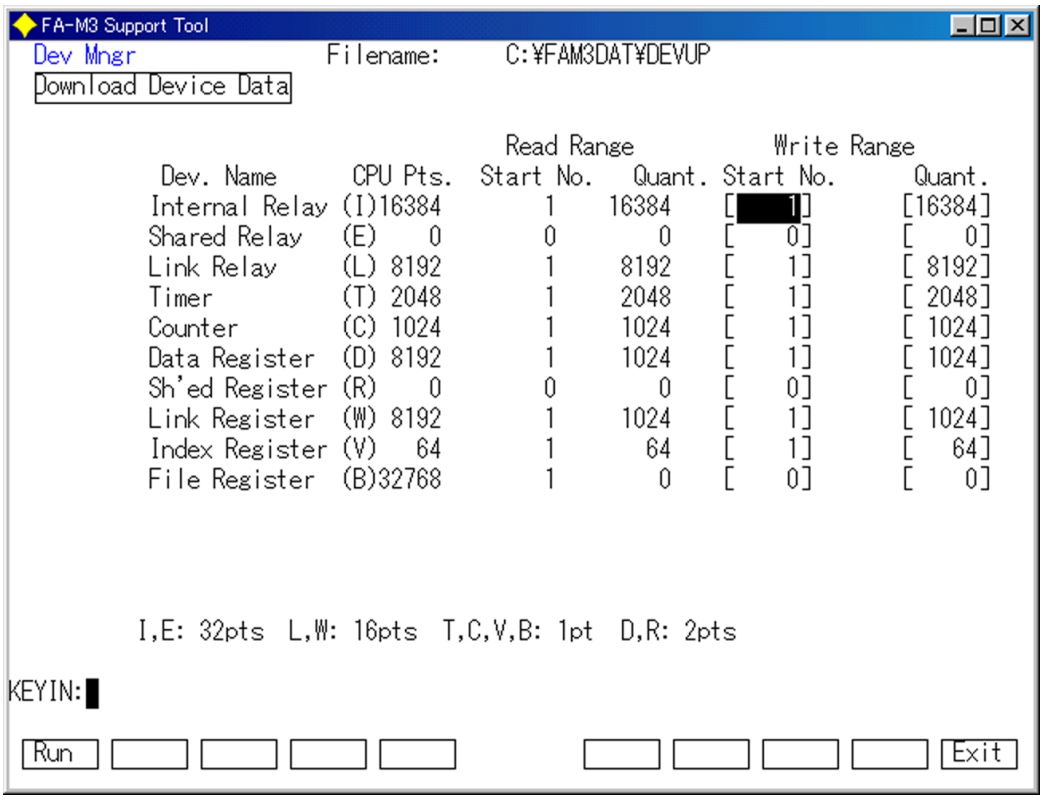
- If the directory does not exist, the following message will be displayed.

FB180304E.EPS

- If the directory name or file name are incorrect or too long, the following will be displayed.

FB180305E.EPS

(4) The device download screen will appear.



FB180306E.EPS

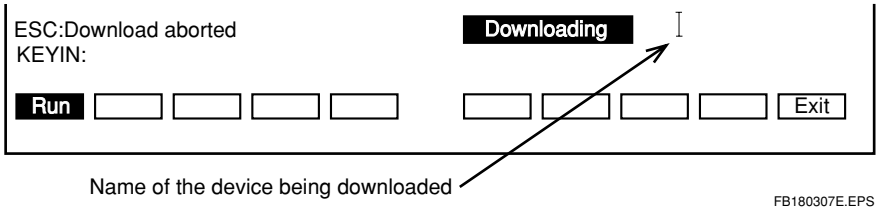
Figure B18.3 Device Download Screen

(5) Set the write range. Use the arrow keys to specify the range of devices to download, and enter the starting number and quantity. The starting number and quantity are set to the values they were at when uploaded, but file register will be set to “0.” When downloading file registers, enter the starting number and quantity.

TIP

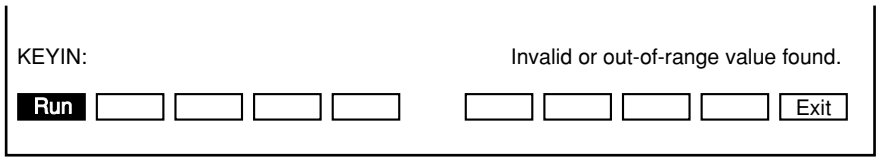
Set it so that “Starting number + Quantity - 1” does not exceed the configuration value. If the configuration data is different from the current FA-M3 configuration when you uploaded, a set value error will occur if the set value is not within the range of the current configuration. Enter “0” for any devices you do not want to download.

(6) When setup is complete, press the [F1] (Run) key. Download will start. Pressing the [Esc] key will interrupt the download.



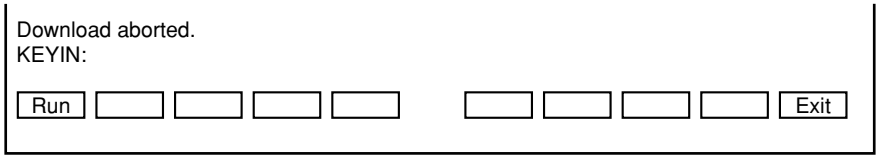
FB180307E.EPS

- If the set value is incorrect, the following will be displayed, and the cursor will be moved to where the error is.



FB180308E.EPS

- If the [Esc] key is pressed, the following will be displayed.

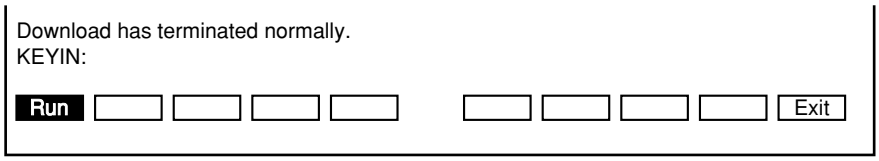


FB180309E.EPS

CAUTION

If download is interrupted, the CPU device data will be only partially rewritten. Re-download the correct device data.

(7) When downloading is complete, the following will be displayed.



FB180310E.EPS

CAUTION

The set units for downloading vary from device to device.

Point Setup Units for each Device in the Device Manager

Device	Units of number of points (points)
Internal relay (I)	32
Shared relay / Extension shared relay (E)	32
Link relay (L)	16
Timer (T)	1
Counter (C)	1
Data register (D)	2
Shared register (R)	2
Link register (W)	16
Index register (V)	1
File register (B)	1

TB180301E.EPS

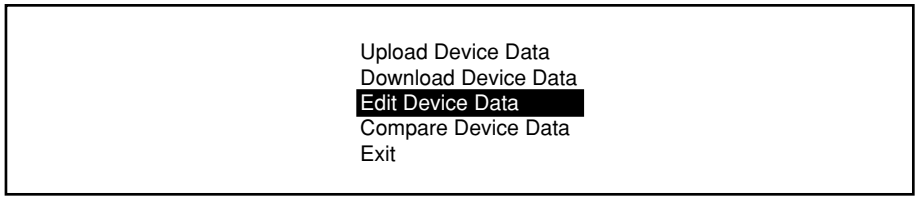
B18.4 Device Data Edit

This section describes how to edit device data.

B18.4.1 Bringing up the Device Edit Screen/Closing the Device Edit

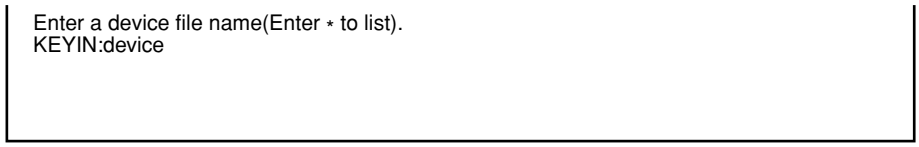
■ Bringing Up the Device Edit Screen

(1) Select device edit, and press the [↵] key.



FB180401E.EPS

(2) Enter the device file name..



FB180402E.EPS

- If the directory does not exist, the following message will be displayed.

FB180403E.EPS

- If the directory name or file name are incorrect or too long, the following message will be displayed.

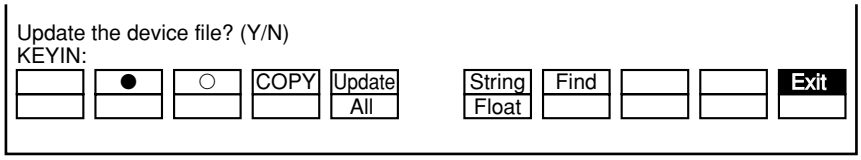
FB180404E.EPS

(3) The device edit screen will appear.

■ Closing the Device Edit

Closing the device edit, and returning to the menu.

(1) Press the [F10] (exit) key to quit the device edit.



FB180405E.EPS

(2) In order to renew, press “Y.” In order to quit without doing anything else, press “N.” You will return to the device manager menu.

B18.4.2 Operation of Special Keys

The following shows the use of special keys during device edit.

Table B18.1 List of special keys during device edit

Key	Operation
[↑]	• Moves cursor up when cursor is displayed.
[↓]	• Moves cursor down when cursor is displayed.
[←]	• Moves cursor left when cursor is displayed.
[→]	• Moves cursor right when cursor is displayed.
[PageUp]	• Displays the next page.
[PageDown]	• Displays the previous page.
[Tab]	• Changes the functions of the function keys.
[Esc]	• Interrupts a instruction.
[BackSpace]	• Returns the characters being entered back one character.

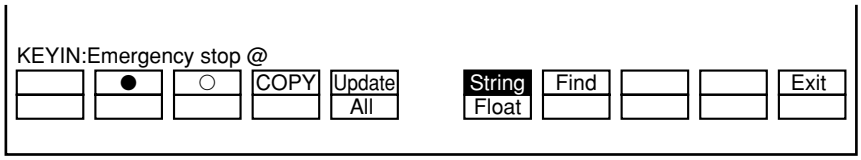
TB180401E.EPS

B18.4.3 String Display and Floating Point Display

Device edit has a string display function and a floating point display function.

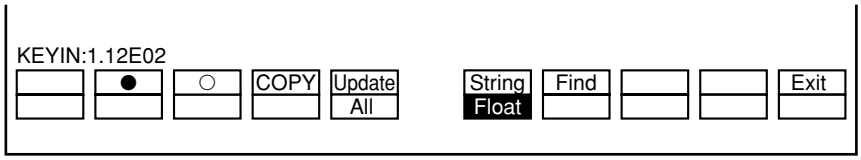
- String display and floating point display are set using the function keys.
- The string display function displays the KEYIN area from the current cursor position to the end of the string. It can only display up to 34 characters of ASCII code.
- Floating point display displays what it assumes to be 2 words from the current cursor position.

● **Press the [F6] (Character string) key to enter string display.**



FB180406E.EPS

● **Press [Shift + F6] (Floating point) to enter floating point display.**



FB180407E.EPS

● **Press either [F6] (Character string) or [Shift + F6] (Floating point) to return to normal display.**

CAUTION

If the beginning of the device where the data is stored is not properly specified, the stored data will not be properly displayed in string display or in floating point display.

B18.4.4 Device Display

■ Internal Relay/Shared Relay/Link Relay Display

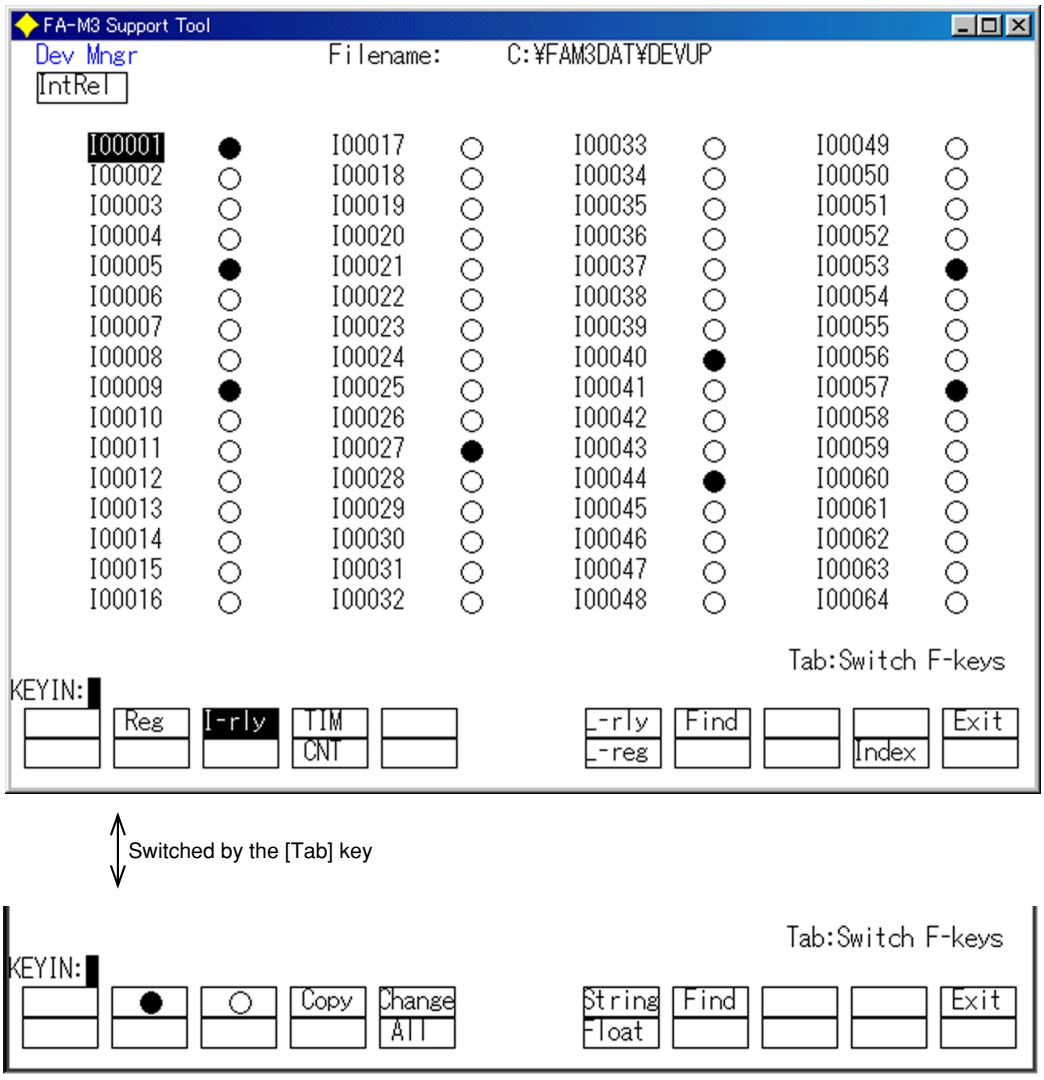
● Switching to Relay Display

(1) Press the following function keys.

- Internal relay : [F3] (Internal relay)
- Shared relay : [F5] (Shared relay)
- Link relay : [F6] (Link relay)

FB180408E.EPS

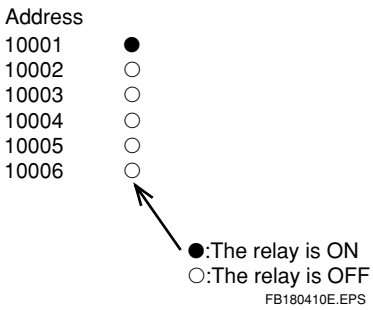
(2) The internal relay (shared relay, link relay) screen will appear.



FB180409E.EPS

Figure B18.4 Internal Relay Screen

Display Format



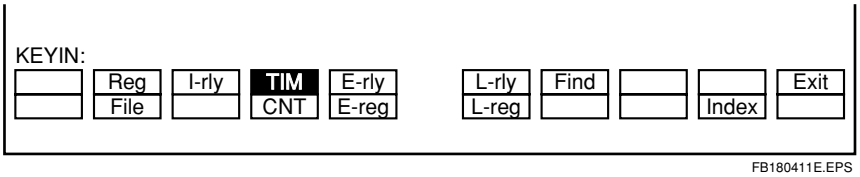
● Changing Screens

64 contacts can be displayed in internal relay/shared relay/link relay display. In order to display more contacts than this, change the screen by pressing the [Page Up] and [Page Down] keys.

■ Timer Display

● Switching to Timer Display.

(1) Press [F4] (Timer display).



(2) The timer screen will appear.

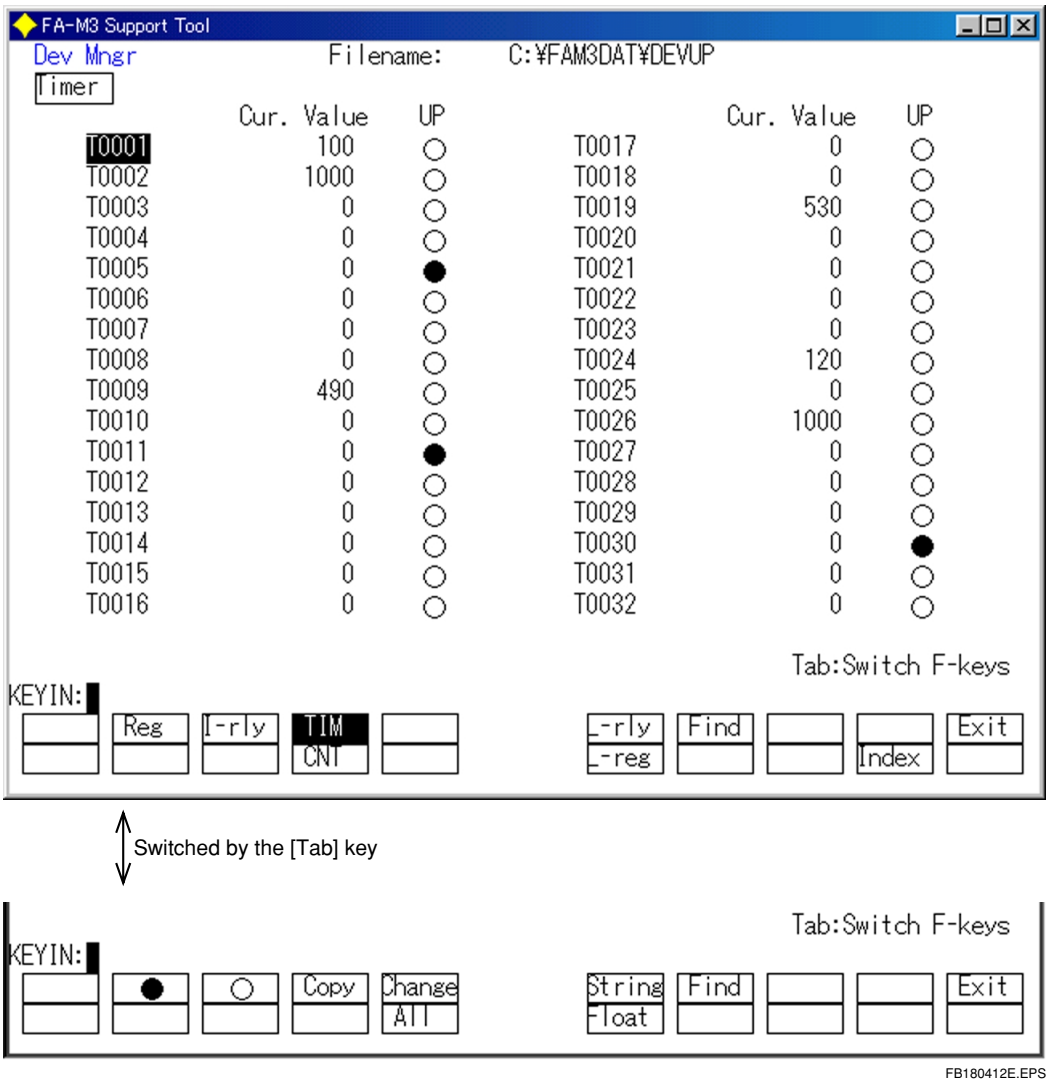


Figure B18.5 Timer Screen

Display Format

Address	Current Value	UP
T0001	20	●
T0002	30	○
T0003	15	○
T0004	0	○
T0005	40	○
T0006	50	○

●:The relay is ON
○:The relay is OFF
FB180413E.EPS

CAUTION

The timer's current value includes the count value. The actual value should be calculated at timer precision × count value.

● Switching Screens

Only 32 points can be displayed on one screen in timer display. In order to display more points than this, change the screen by pressing the [Page Up] and [Page Down] keys.

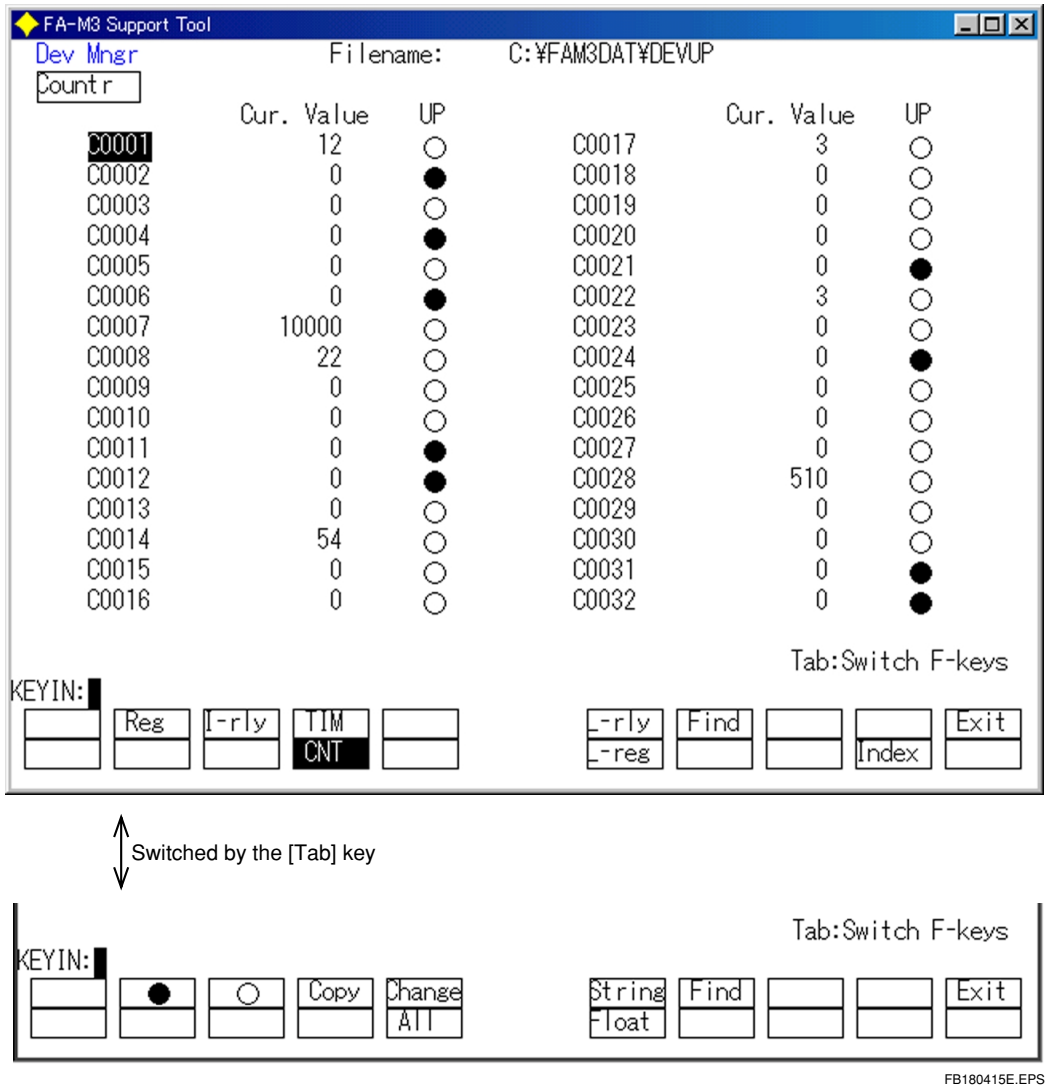
■ Counter Display

● Switching to Counter Display.

(1) Press [Shift] and [F4] (CNT) keys simultaneously.

FB180414E.EPS

(2) The counter screen will appear.



FB180415E.EPS

Figure B18.6 Counter Screen

Display Format

Address	Current Value	UP
C0001	15	●
C0002	20	○
C0003	0	○
C0004	0	○
C0005	0	○
C0006	0	○

●:The relay is ON
○:The relay is OFF
FB180416E.EPS

● Switching Screens

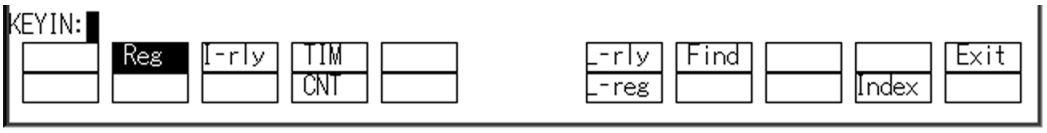
Only 32 points can be displayed on one screen in counter display. In order to display more points than this, change the screen by pressing the [Page Up] and [Page Down] keys.

■ Data Register/File Register/Shared Register/Link Register/Index Register Display

● Switching to Register Display.

(1) Press the following function keys.

- Data register : [F2] (reg)
- Shared register : [Shift + F5] (S-reg)
- Link register : [Shift + F6] (L-reg)
- File register : [Shift + F2] (File)
- Index register : [Shift + F9] (Index)



FB180417E.EPS

(2) The data register (shared register, link register) screen will appear.

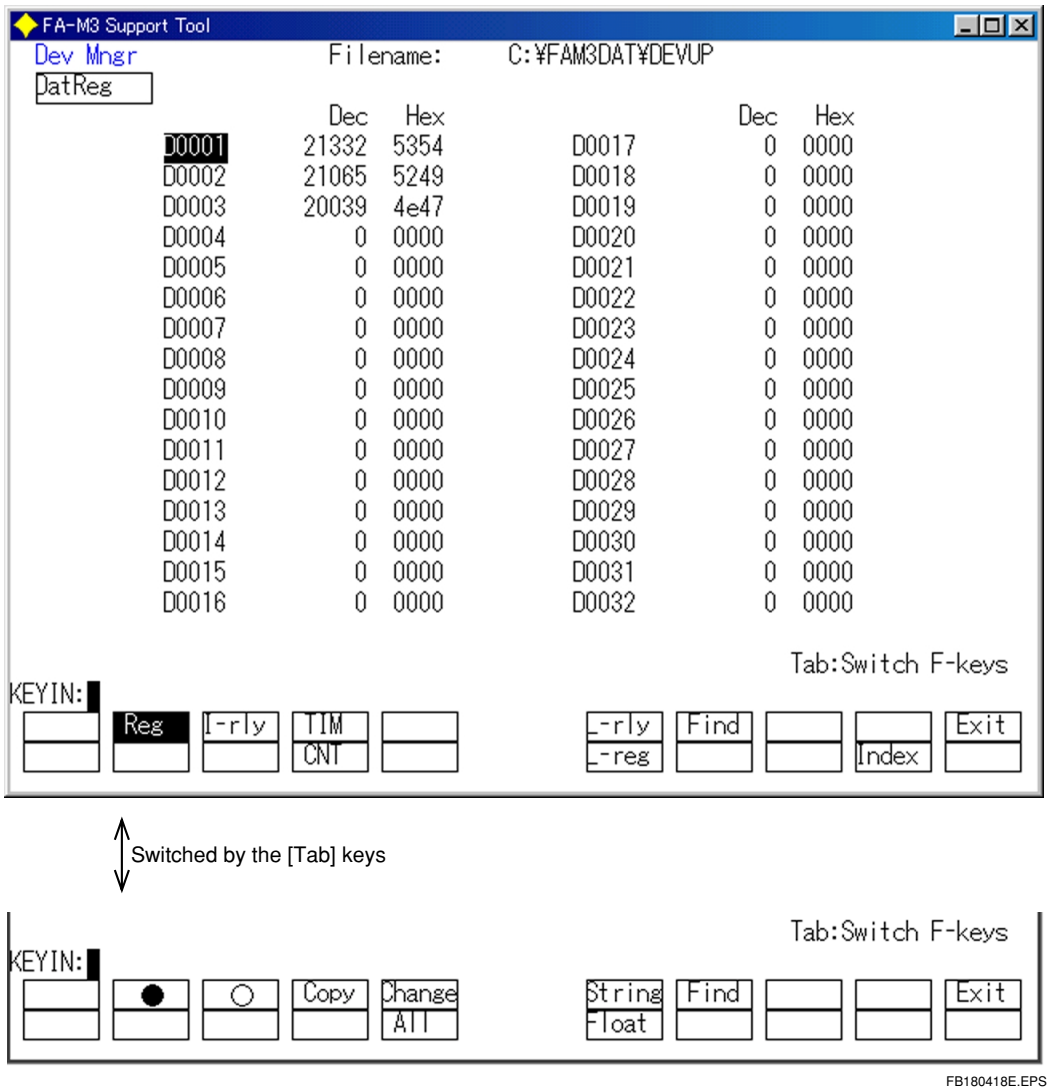
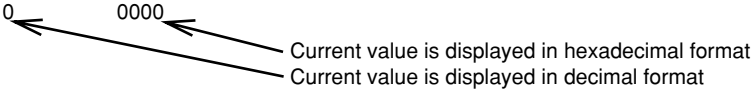


Figure B18.7 Data Register Screen

Display Format

Address	Decimal	Hexadecimal
D0001	0	0000
D0002	-1	FFFF
D0003	-2	FFFE
D0004	10	000A
D0005	16	0010
D0006	0	0000



● Switching Screens

Only 32 points can be displayed on one screen in register display. In order to display more points than this, change the screen by pressing the [Page Up] and [Page Down] keys.

B18.4.5 Device Data Edit

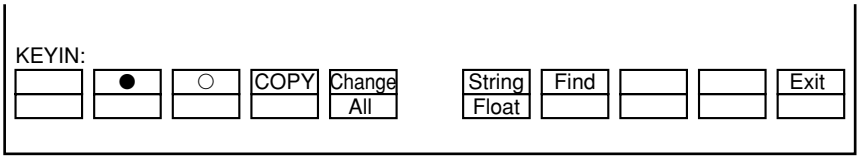
■ Changing Relay Data

Relay devices are turned ON (●) or OFF (○) in single units. The following relay devices can be edited.

- Internal relay
- Shared relay
- Link relay
- Timer relay
- Counter relay

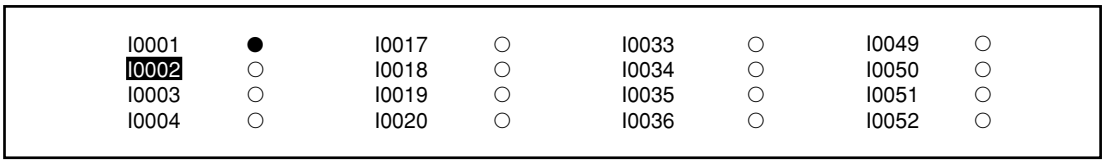
● Turning Relays ON

(1) Press the [Tab] key.
The [F2] (●) key will be displayed.



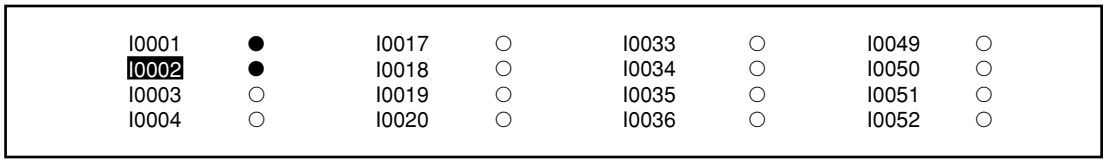
FB180420E.EPS

(2) Use the arrow keys to move the cursor to addresses where the relay is to be turned ON.



FB180421E.EPS

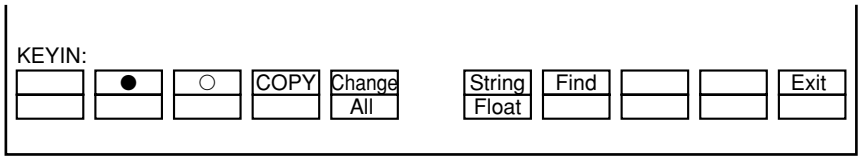
(3) Press the [F2] (●) key.
Data the cursor is positioned on will change to "●" .



FB180422E.EPS

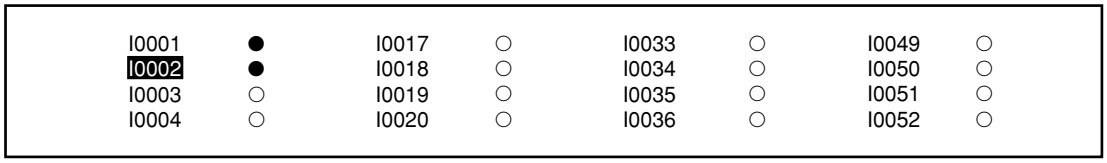
● Turning Relays OFF

(1) Press the [Tab] key.
The [F3] (○) key will be displayed.



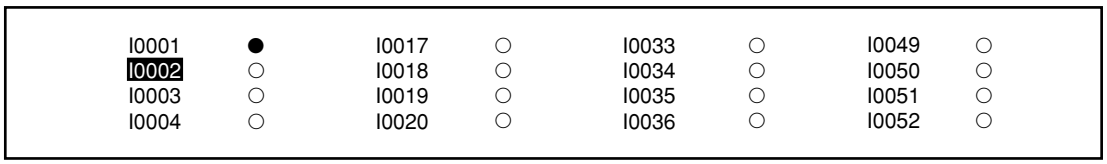
FB180423E.EPS

(2) Use the arrow keys to move the cursor to addresses where the relay is to be turned ON.



FB180424E.EPS

(3) Press the [F3] (○) key.
Data the cursor is positioned on will change to "○".



FB180425E.EPS

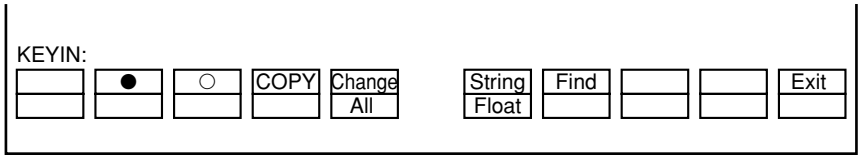
■ Changing Word Data

Changing the content of devices. The following devices can be edited.

- Internal relay
- Shared relay
- Link relay
- Timer
- Counter
- Data register
- Link Register
- Shared Register
- Index Register
- File Register

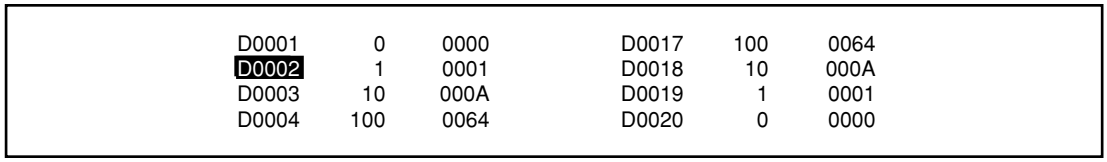
- Relays have 16 points from the specified address changed all at once.
- The timer/counter have the current timer/counter value changed. The timer/counter cannot have 16 points changed all at once.

(1) Press the [Tab] key. The [F5] (Change) key will be displayed.



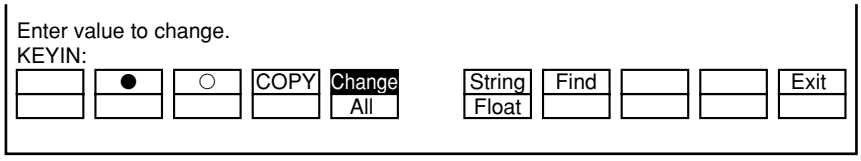
FB180426E.EPS

(2) Use the arrow keys to move the cursor to addresses to be changed.



FB180427E.EPS

(3) Press the [F5] (Change) key. Data the cursor is positioned on will change to [↵].

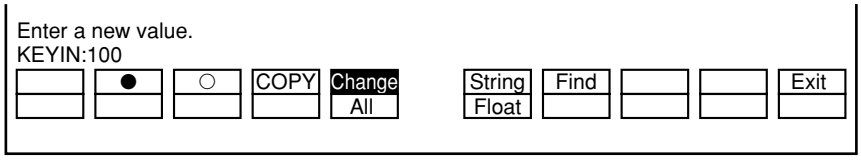


FB180428E.EPS

(4) Enter the changed data.
Data can be entered as decimal /hexadecimal /character string/ floating point.

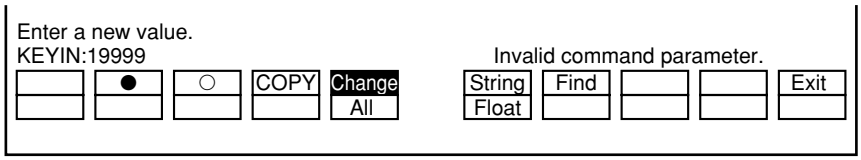
● Decimal Entry

Enter the numbers as is.



FB180429E.EPS

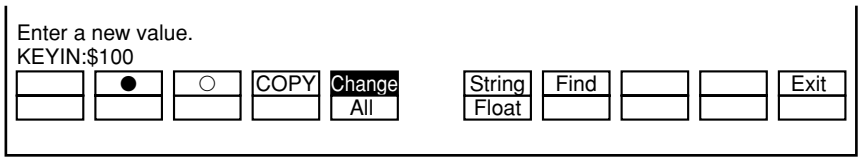
The following message will be displayed if the changed data is incorrect.



FB180430E.EPS

● Hexadecimal Entry

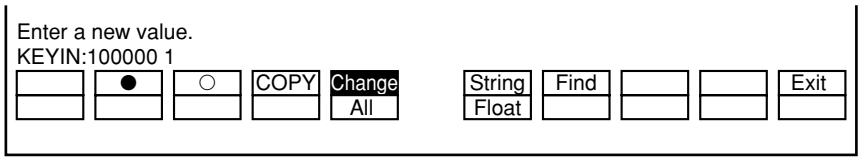
Enter the numbers with a “$” at the beginning.



FB180431E.EPS

● Long Word Entry

Enter the numbers with an “L” at the end.

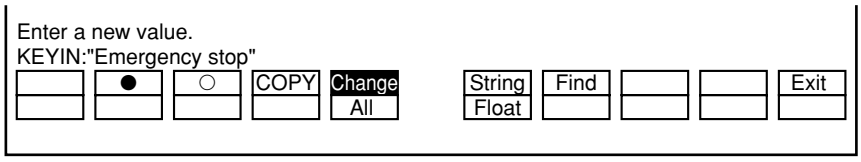


FB180432E.EPS

- Divide the number and the parameter “L” either with a space or with a comma. Both decimal and hexadecimal entry can be specified as long word.

● Character String Entry

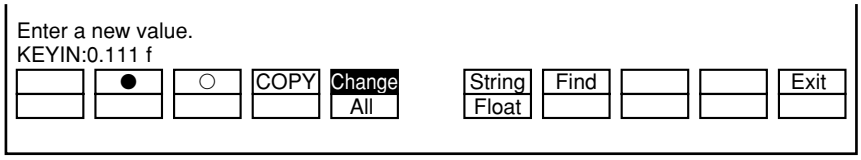
Enter the numbers quotation marks at the beginning and end.



FB180434E.EPS

● Floating Point Entry

Enter the numbers with an “F” at the end.



FB180435E.EPS

Any of the following operations will quit the change instruction.

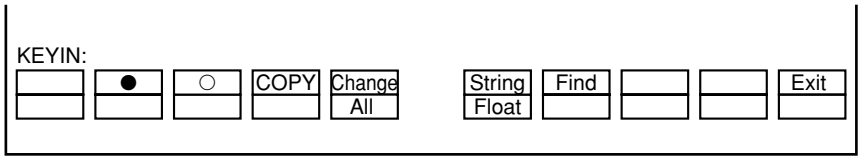
- Entering the change value.
- Pressing the [Esc] key.
- Press [Shift + F5] (Change).
- Executing any instruction other than a search.

■ Comprehensive Change

Changing the contents of devices all at once.

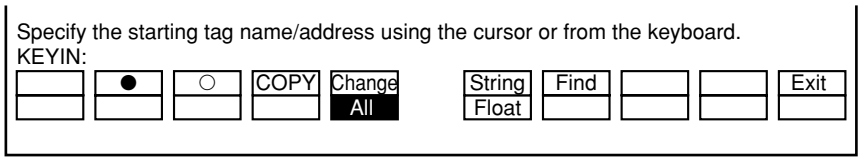
Comprehensive change changes a specified range to all identical data. Changes for registers are made in one word units, while relays are in 1 or 16 point units. The timer and counter have the current time/counter units changed at once. The timer/counter relay cannot be changed at once.

(1) Press the [Tab] key. The [Shift + F5] (Comprehensive) key will displayed.



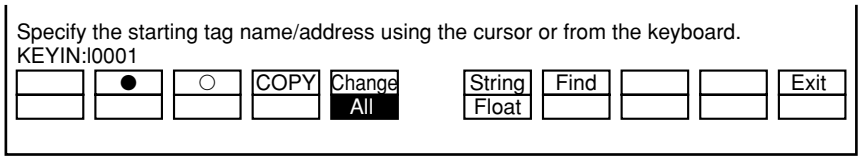
FB180436E.EPS

(2) Press the [Shift + F5] (Comprehensive) key.



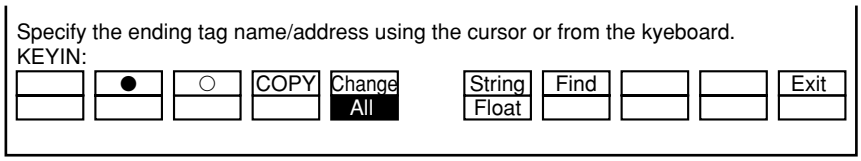
FB180437E.EPS

(3) Enter the address from which comprehensive change is to begin. (Tag names cannot be used.)



FB180438E.EPS

(4) Enter the address where comprehensive change is to end.



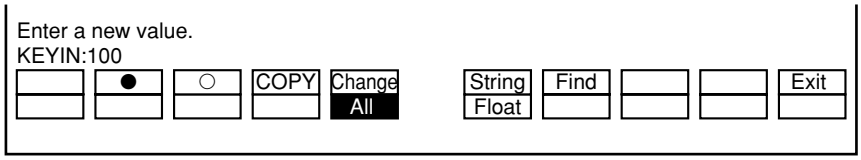
FB180439E.EPS

Other Methods for Specification

Other than the keyboard, you can also use the cursor displayed on the screen to specify addresses.

1. Use the arrow keys to move the parameters to be changed.
2. After moving the cursor, press the [↵] key.
   The address will be entered.

(5) Enter the value to be comprehensively changed.
Press the [F2] (●) key or the [F3] (○) to comprehensively change relays in 1 point units. To comprehensively change relays/registers in 1 word units, enter the values as is.



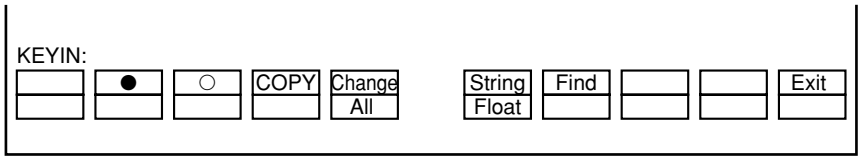
FB180440E.EPS

■ Copy

Copying the contents of a device.

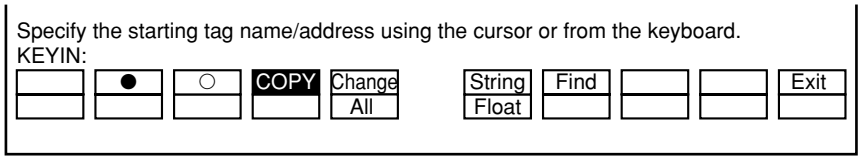
Copy copies a specified range of data to a specified location. For the timer and counter, the current timer/counter value and the up relay are copied at the same time.

(1) Press the [Tab] key. The [F4] (Copy) key will displayed.



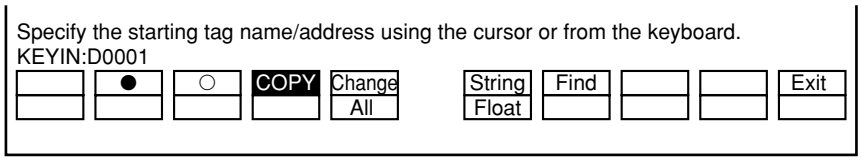
FB180441E.EPS

(2) Press the [F4] (Copy) key.



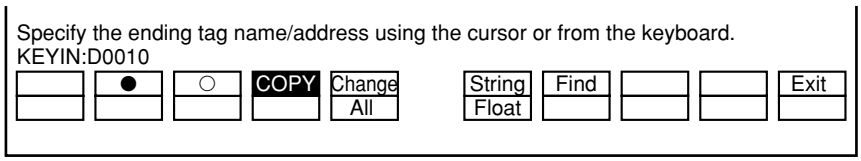
FB180442E.EPS

(3) Enter the address from which copy is to begin.



FB180443E.EPS

(4) Enter the address where copy is to end.



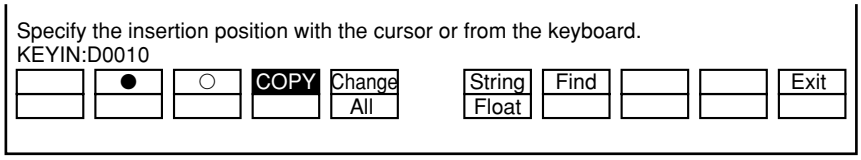
FB180444E.EPS

Other Methods for Specification

Other than the keyboard, you can also use the cursor displayed on the screen to specify addresses.

1. Use the arrow keys to move the parameters to be changed.
2. After moving the cursor, press the [↵] key.
   The address will be entered.

(5) Enter the address at the position to be inserted.



FB180445E.EPS

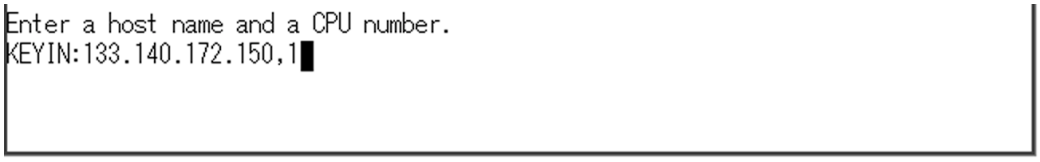
B18.4.6 Comparing Device Data

This section describes the method for comparing FA-M3 device data and device files.

(1) Select “Compare Device Data,” and press the [↵] key.

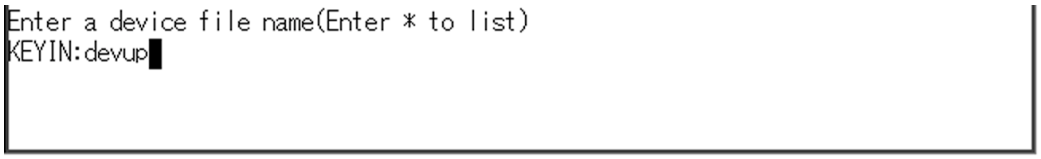
FB180501E.EPS

(2) Enter the host name and CPU number. (Only when Ethernet is used.)



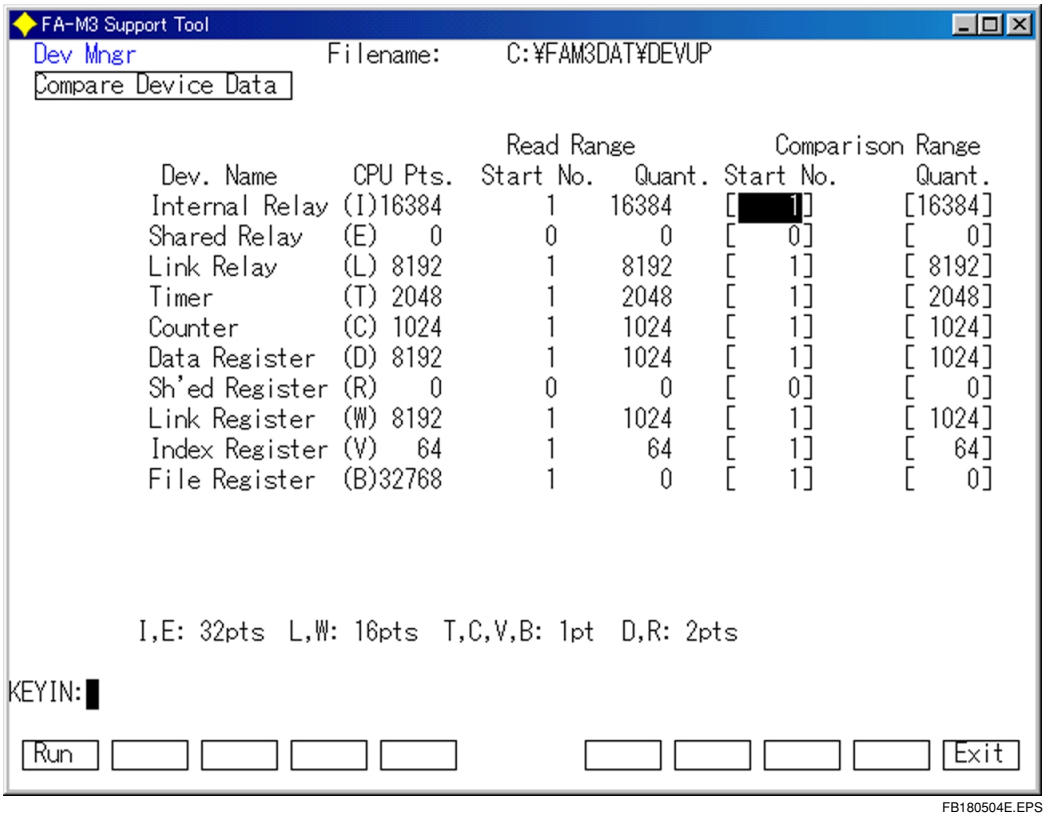
FB180502E.EPS

(3) Enter the device file name to be compared.



FB180503E.EPS

(4) The compare device data screen will appear.



FB180504E.EPS

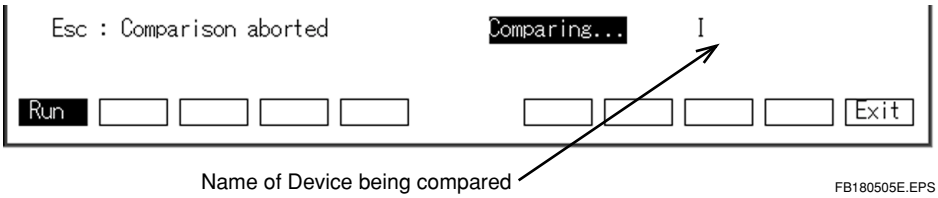
Figure B18.8 Compare Device Data Screen

(5) Set the range to be compared. Use the arrow keys to move the cursor when specifying the device range to be compared and enter the starting number and quantity. The values for the starting number and quantity that were uploaded will be set.

TIP

Set it so that “Starting number + Quantity - 1” does not exceed the configuration value. If the configuration data is different from the current FA-M3 configuration when you uploaded, a set value error will occur if the set value is not within the range of the current configuration. Enter “0” for any devices you do not want to download.

(6) When setup is complete, press the [F1] (Run) key. Comparing will start.



Pressing the [Esc] key will interrupt comparing.

(7) If the compared results are incorrect, the following will be displayed. Comparing will terminate when 16 devices are displayed. To see the next page, press the [F4] (Next Pg) key.

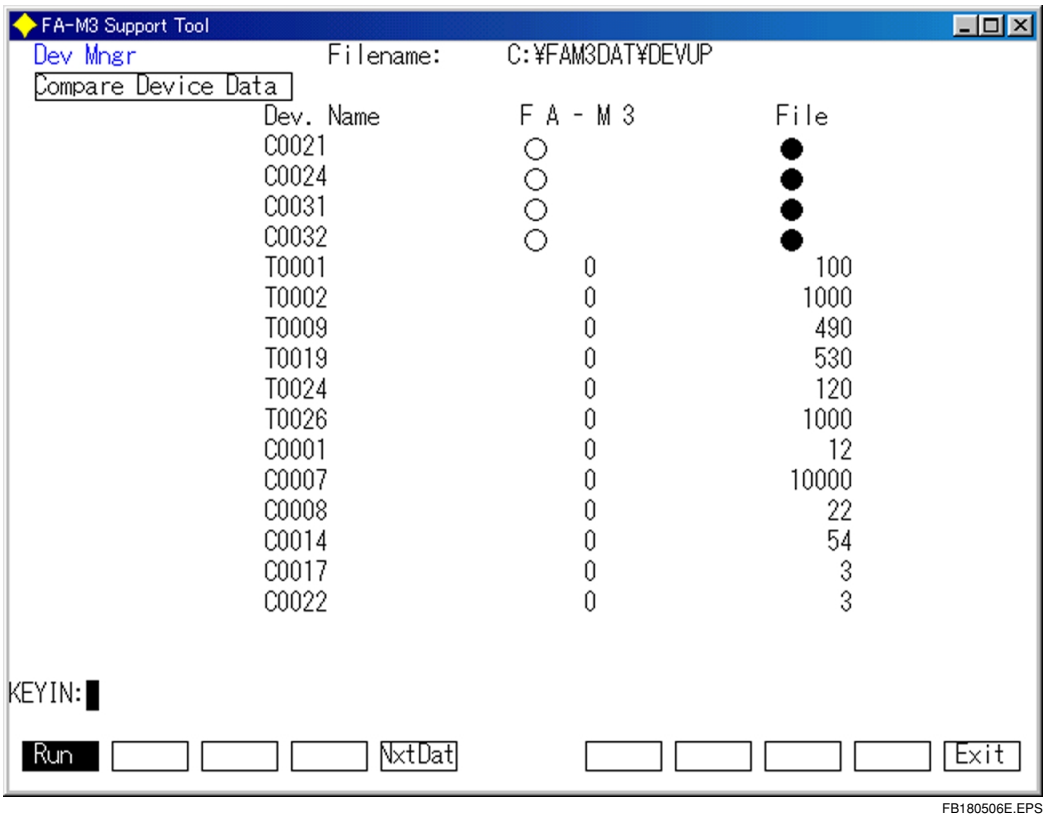
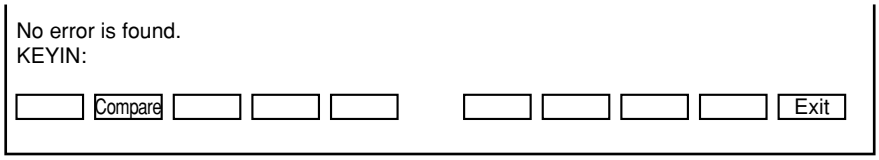


Figure B18.9 Device Compare Screen When the Compared Results are Incorrect

(8) If there are no mistakes in the results of the comparison, the following will be displayed.



FB180507E.EPS

(9) To repeat comparison (to see the compared results from the beginning), press the [F2] (Comparison) key.

CAUTION

The set units for comparing device data vary from device to device.

Point Setup Units for each Device in the Device Manager

Device	Units of the number of points (points)
Internal relay (I)	32
Shared relay / Extension shared relay (E)	32
Link relay (L)	16
Timer (T)	1
Counter (C)	1
Data register (D)	2
Shared register (R)	2
Link register (W)	16
Index register (V)	1
File register (B)	1

TB180501E.EPS

Blank Page

FA-M3
FA-M3 Programming Tool WideField Instruction Manual
PART-B Object Ladder Section

IM 34M6Q14-01E 1st Edition

CONTENTS

Blank Page

B19. Use of Local Devices

B19.1 What are local devices?

Local devices are independent devices inside blocks. Unlike normal devices, these can only be used inside blocks. Using a local device allows the developer to create highly independent ladder programs without having to think about their allocation within the entire program. The devices listed below can be used as local devices. (A part of a normal device is assigned to a local device.)

- Internal relay (I)
- Data register (D)
- File register (B)
- Timer (T) (However, the timer's precision is 10ms)
- Counter (C)

Local devices use a different notation for addresses than normal devices. Local devices are recognized by a "/" (slash) added before them.
Notation Examples

/I00001	Local Internal Relay
/D0001	Local Data Register
/B00001	Local File Register
/T00001	Local Timer
/C00001	Local Counter

Addresses for local devices are taken as continuing numbers with 1 as a starting number and only for the quantity set up in each block. For example, if 32 internal relays are used as local devices, then devices /I00001 to /I00032 can be used.

Local devices provide the following merits:

- You do not have to think about allocation of devices throughout the whole program. If any local device is not used, you will have to change the allocation of a device for that block if you want to change all device allocations, but if local devices are used, you will not have to worry about device allocation for the rest of the program.
- Blocks can easily be reused in other projects.
  Devices which are described as local devices do not need to be corrected when they are used in other projects.

B19.2 Setup Local Device

Local device setup involves setting the quantity of local devices in each block, and the location of devices within the whole project. Setting these two parameters will assign local devices in each block as shown in the figure below. In this example block 1, block 2, and block 3 are set to have 32, 64, and 96 internal relays respectively, and the local devices are located from starting number I00321.

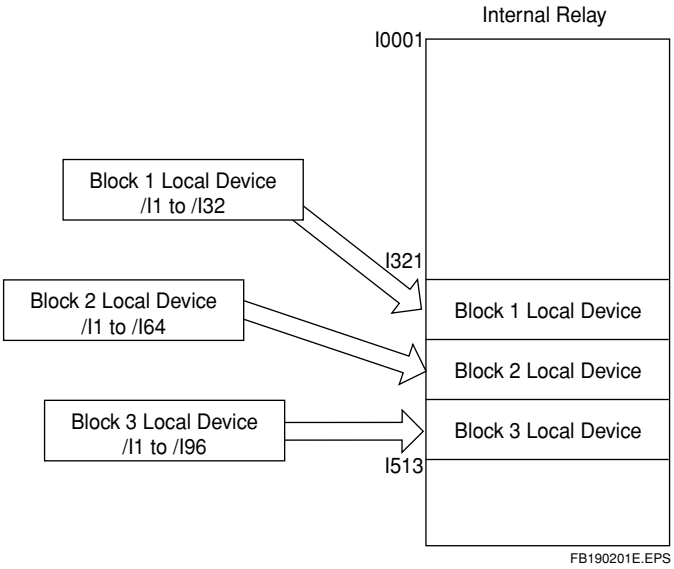


Figure B19.1 Local Device Assignment

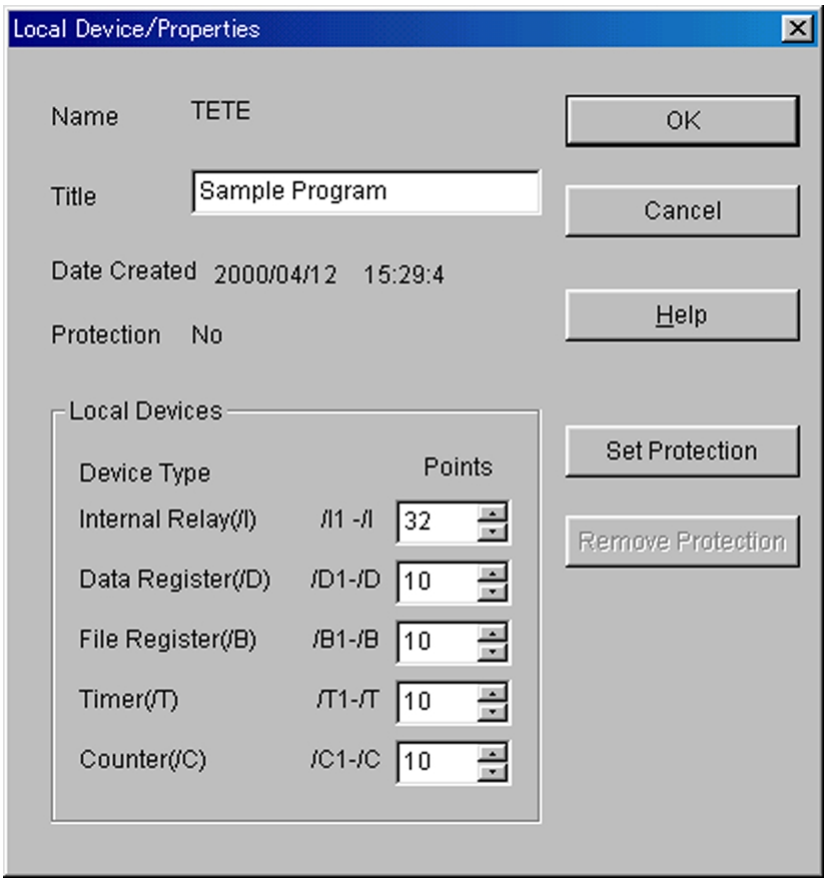
Table B19.1 Example of Local Device Assignment

Block Name	Local Device Address	Actual Device Address
Block 1	/I1 to /I32	I321 to I352
Block 2	/I1 to /I64	I353 to I416
Block 3	/I1 to /I96	I417 to I512

TB190201E.EPS

B19.2.1 Setup within Each Block

(1) With the block edit screen open, select [Edit] - [Local Device/Properties]. The Local Device/Properties dialog box will appear.



FB190202E.EPS

Figure 19.2 Block Properties Edit Dialog

(2) Set the points for each device, and select [OK]. In this example, the following local devices can be used in the block.

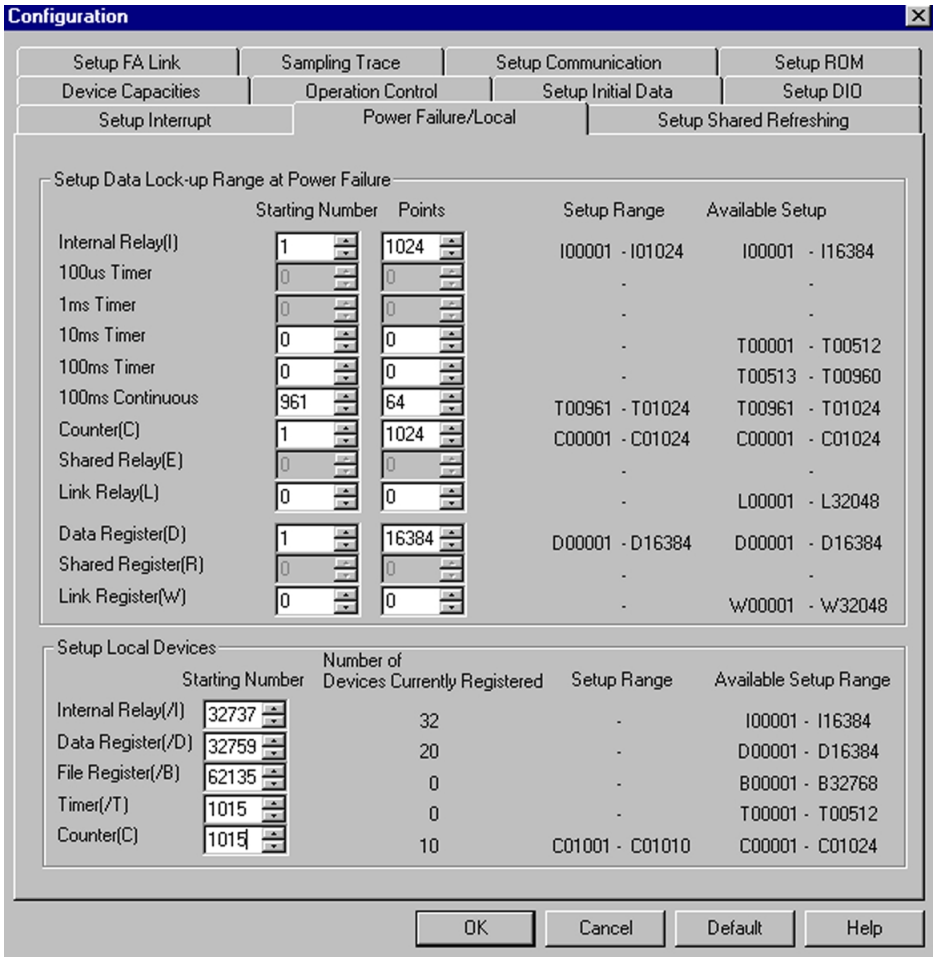
Internal Relay	/I1-/I32
Data Register	/D1-/D10
File Register	/B1-/B10
Timer	/T1-/T10
Counter	/C1-/C10

The number of local devices is set in 32 point units for the internal relay, 2 point units for the data register and file register, and in 1 point units for the timer and counter.

B19.2.2 Project Setup

(1) Select [Project] - [Configuration]. The configuration dialog box will appear.

(2) Click on the [Power Failure/Local] tab.



FB190203E.EPS

Figure B19.3 Configuration (Device Extension Setup Tab) Dialog

(3) Set the local device starting number. The present registered quantity displays the total number of local devices being used in each block in the project. Using this total as a reference, set the starting number so that it does not exceed the device range.

(4) Select [OK].

CAUTION

- When using local devices, always set the configuration to [Setup] in the architecture definition for executable programs. You cannot use local devices without setting up the configuration.
- When using macros as local devices, the macro local device quantity will not be displayed in the configuration total. Calculate beforehand the quantity of macro local devices being used, and set the quantity so that the starting number does not exceed the range for all devices.

B19.3 Programming with Local Devices

Local devices are used in exactly the same way as normal devices. Internal relay, data register, file register, timer, counter can all be used with all instructions. The only difference is that a "/" (slash) comes at the beginning of the device. Devices assigned as local devices are displayed with a different fixed color from other devices.

Figure 19.4 Example of Program Using Local Devices

B19.4 Reusing Programs Using Local Devices

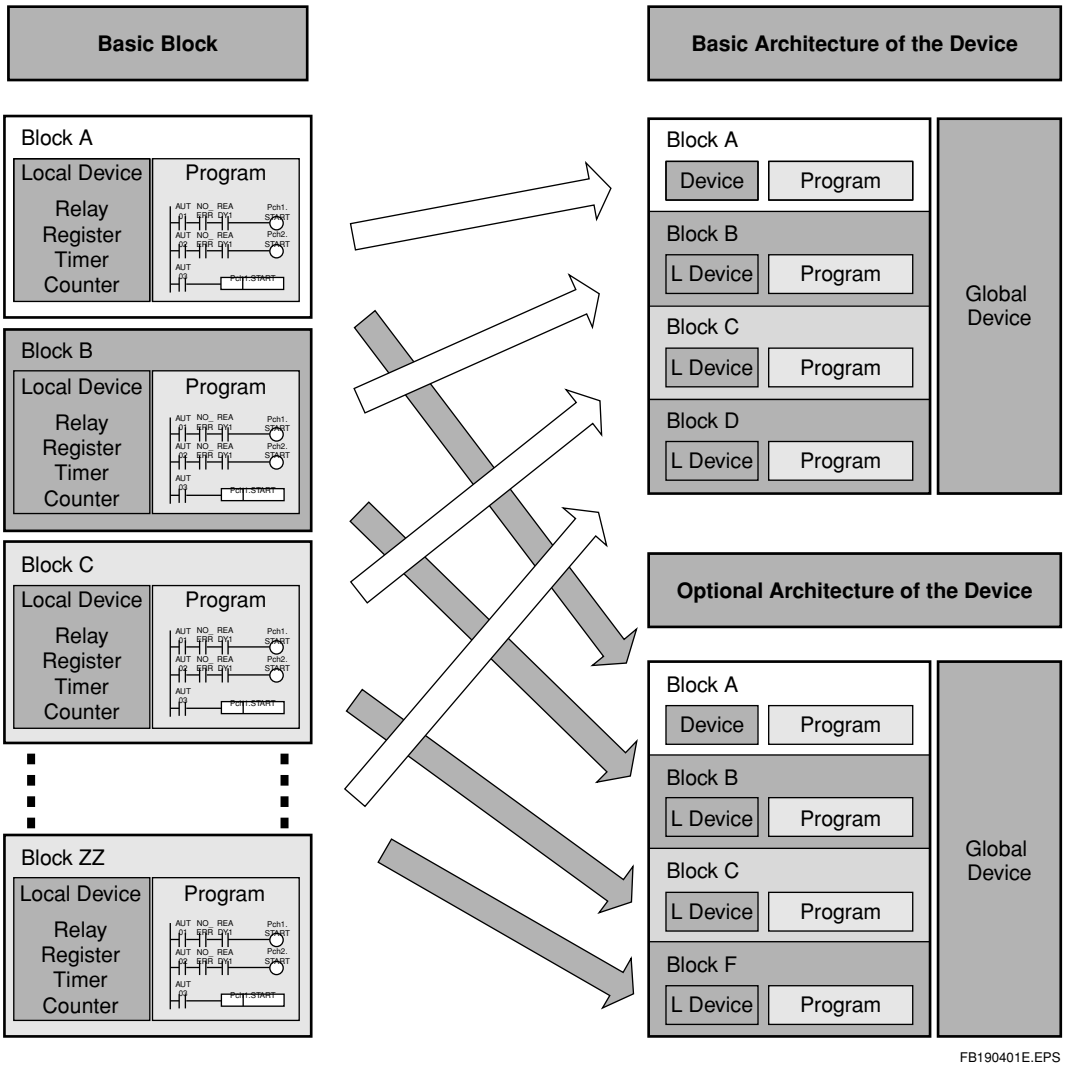


Figure B19.5 Reusing Programs Using Local Devices

When you want to change only part from a standard layout in, for example, customized design of a device, developing programs using local devices makes it unnecessary to have to worry about device assignments, making it very easy to reuse programs. Following the steps below, you will be able to add a block related to the customized part.

B19.4.1 Reusing Blocks

When reusing block in other projects, devices described in as local devices do not conflict with other blocks, so there is no need for you to correct them. Parts using normal devices should be corrected and can then be reused if necessary. (When I/O slot positions change, comprehensive changes can be made using project replacement, or the I/P device position change function, etc.

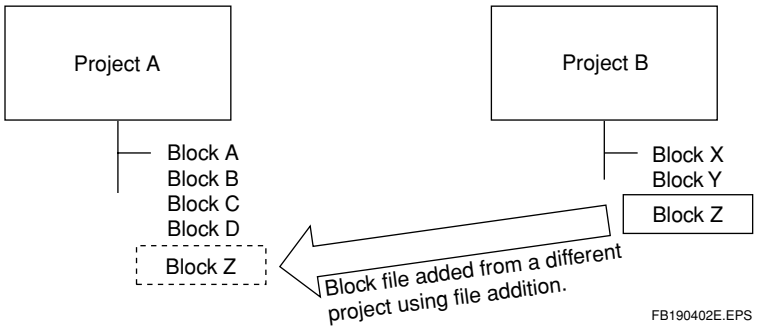


Figure B19.6 Adding a Block from Project B to Project A

The following steps are taken.

(1) Open a new project and select [Project] - [Insert File].

(2) Select the block to be reused.

(3) The block to be reused will be added to the new project.

B19.4.2 Setup Project

(1) Select [Project] - [Define Program Components] to add the block to the layout block.

(2) Following the “B19.2.2 Project Setup,” set the starting number for the local device.

Blank Page

B20. Using Macros

B20.1 About Macros

This section describes the thinking behind macros and their purpose.

B20.1.1 What are Macros?

Macros are a series of processes defined as one instruction. Macros can be named, which means that they can be used just like other pre-existing instructions by naming them according to their function.

B20.1.2 The Purpose of Macros

Using Macros has the following advantages.

● Program Visibility Increases

Program visibility decreases as the size of a program grows. As a results, debugging and maintenance work become more difficult. By using macros, program visibility increases and debugging and maintenance become easier.

● The Number of Program Steps Is Reduced

Writing program repeating the same process over and over increases the number of program steps. Bringing all those steps together into a macro reduces the number of steps to one.

● Macros Promote Modules in Programming

Past assets are easier to use. Parts which are made into macros have already undergone testing, so the amount of time used for debugging is reduced. Also, macros can be created independently, so many developers can work together at once.

● Expertise Is Accumulated

What is difficult to create with pre-existing instructions is accumulated as original know-how in the shape of macros. Also, by protecting macros, secrecy is maintained.

● Easier to Use than Subroutines

The following points are easier to use when compared to subroutines.

- The actual macro can be used as a black box
  With subroutines, the content of devices used internally is changed. Accordingly, caution is necessary to avoid using that device externally. With macros, devices used internally need not be worried about.
- Transference of parameters with macros is possible
  With subroutines, you have to decide interfaces ahead of time of what devices are to be used as input and what devices are to be used as output. With macros, changes can be made anytime for the devices and number of parameters in such interfaces.
- You do not have to put the actual macro into a program
  Subroutines must be part of programs, while with macros, the actual macro does not have to. It is linked automatically and sent to the CPU.

B20.1.3 Precautions Regarding Macros

The following restrictions apply to macros. Follow these restrictions when using macros.

● Usable CPU's

Some CPU's cannot be used with macros.

● Number of Macros that Can Be Used

Up to 64 macros can be used in one executable program. However, the same macro can be used any number of times.

● Number of Macros that Can Be Stored at Once

Only one macro can be created in one file. However, there is no limit on the number of files. Make one file for each macro.

● The Number of Parameters Delivered between Macro Calling Instructions and the Macro Itself

Up to 16 parameters can be passed between a macro calling instruction and the macro itself.

● Available Devices

The macro itself can be used with the following devices, apart from normal devices and local devices.

- Pointer Register (P)
- Macro Relay (H)
- Macro Register (A)
- Macro Index Register (U)

Due to the characteristics of macros, we only recommend using the actual macro itself with P, H, A, and U. The pointer register is the register which stores the parameters passed to the macro itself. The macro relay, macro register, and macro index register are equivalent to the internal relay, data register, and index register which can be used in the actual macro.

● Tag Name Statements

Tag name statements in the actual macro can be made for normal devices, local devices, and macro devices (P, H, A, U).

● Use of Local Devices in Macros

Do not call a macro when using a local device in that macro. (Save the macro under a different name, and then call it as a different macro.)

B20.1.4 Macro-Dedicated Devices and Macro Local Devices

■ Macro-dedicated Devices.

Macro-dedicated devices (A, H, U) are devices that can only be used with macro, and can be used with several different macros. Macro devices are not affected by the blocks that call them, but other macros are using the same device will conflict. Basically, macro-dedicated devices are instructions that are completed in one scan.

■ Macro Local Devices

Macro local devices are independent devices in each macro. While normal macro devices (A, H, U) are common to all macros, macro local devices are used as devices which do not affect other macros inside a macro. Using macro local devices allows you to develop macros that process in several scans. Macro local devices can use internal relays (/I), data registers (/D, file registers (/B), timers (/T), and counters (/C), just like blocks. Macro local devices are automatically allocated in the quantity set in the "Local Device/Properties." Using allocation for an internal relay as an example, the following figure shows the development of a macro local device to an actual device. The area to be allocated is behind a block's local device.

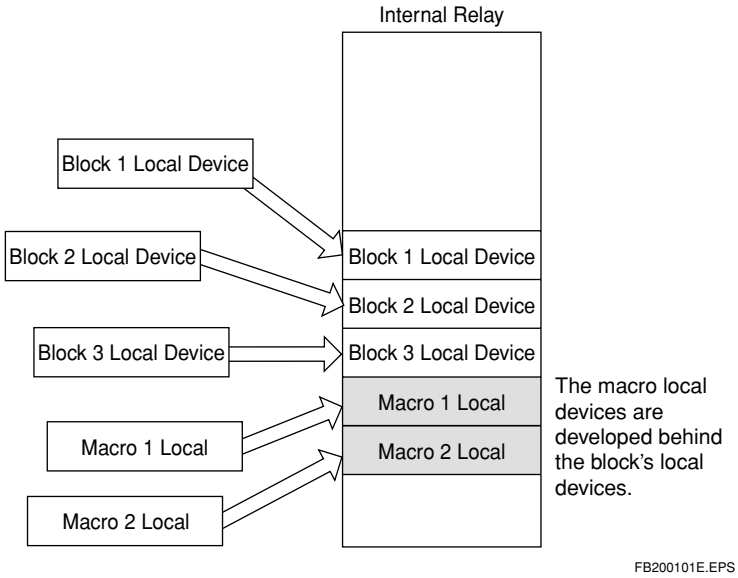


Figure B20.1 Development of a Macro Local Device to an Actual Device

CAUTION

Observe the following precautions when using a macro local device.

- Do not call a macro when using a local device in that macro. (Save the macro under a different name, and then call it as a different macro.)
- Do not nest macros.

B20.1.5 Macros that Process Over Several Scans

Using local devices in macros, it is possible to create function macros that process one function over multiple scans. For example, create in the following manner.

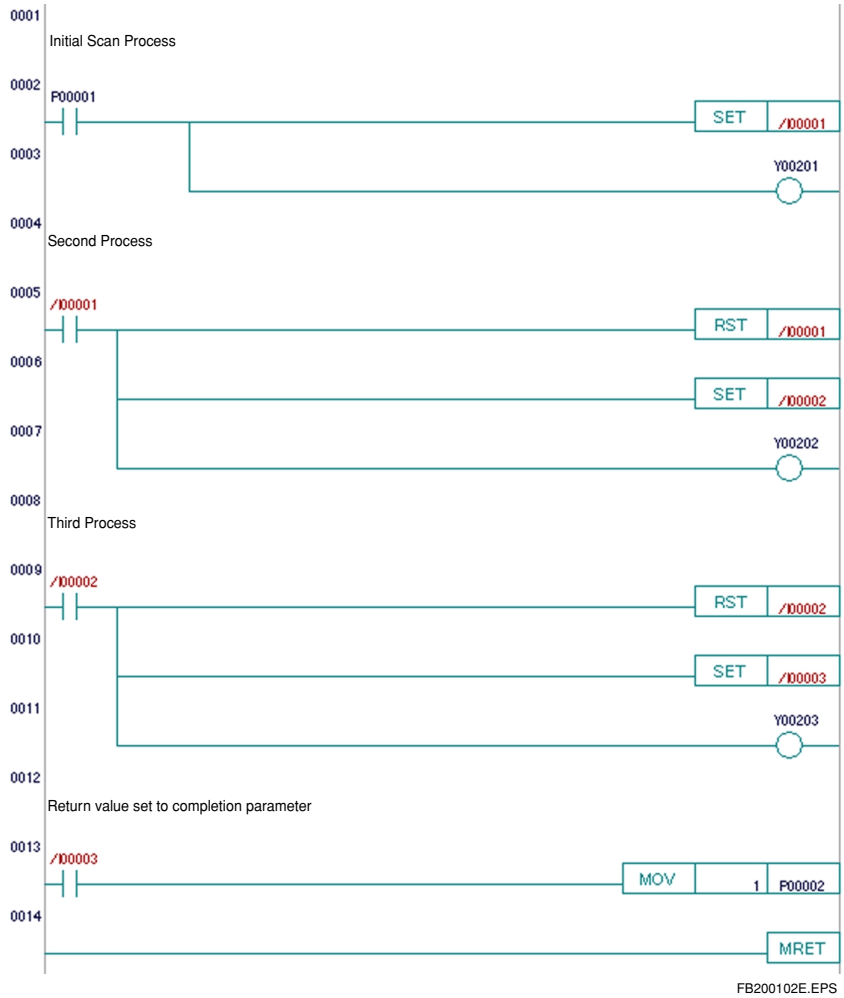


Figure B20.2 Example of Macro Processing over Multiple Scans

In this program, starting begins at P1, macro local devices /I1-/I3 are turned ON every time they are called, and when the process is completed, P2 is returned to 1, and a process is written notifying the caller of the completion of the process. This macro performs what a program that turns contacts Y201, Y202, and Y203 ON, each in turn, does.

■ Caller Processes

The calling format for macros described above is as follows.

Figure B20.3 Calling a Macro

SW11 is the macro launch relay, and D1 is the register where the return value at completion is sent.

CAUTION

When creating macros that carry out processes over multiple scans, always write the initialization processes and error processes for the local devices to be used.

B20.2 Developing Macros

This section describes how to develop macros. Macros are registered to the macro folder after being created in a project. It is not possible to directly edit or debug the actual macros stored in the macro folder. (The macro folder is equivalent to a library where you register macro instructions which have been debugged.) They are debugged by being created temporarily in a project and then taken out and debugged, after which they are registered to the macro folder and used.

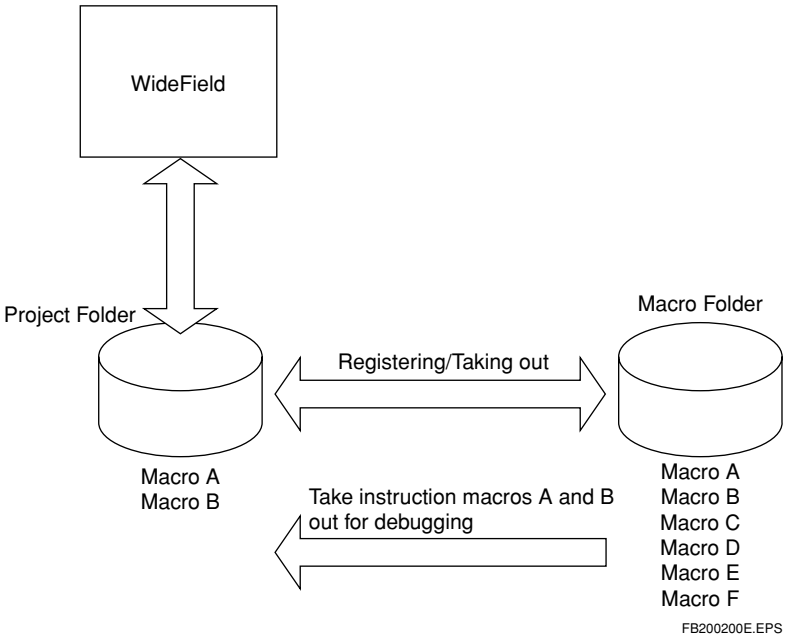


Figure B20.4 Creating Macros

● Initial Setting for Macros

This sets the storage location for the actual macro.

● Creating Macros

The actual macro is created inside a project. When you want to debug a macro which is already registered, take out the appropriate macro.

● Using Macros

Insert a call process for the created macro in the program block.

● Sending Macros

They are sent to the CPU in the project download. However, macros cannot be uploaded.

● Debugging Macros

Macros can be debugged from the monitor screen.

● Registering Macros

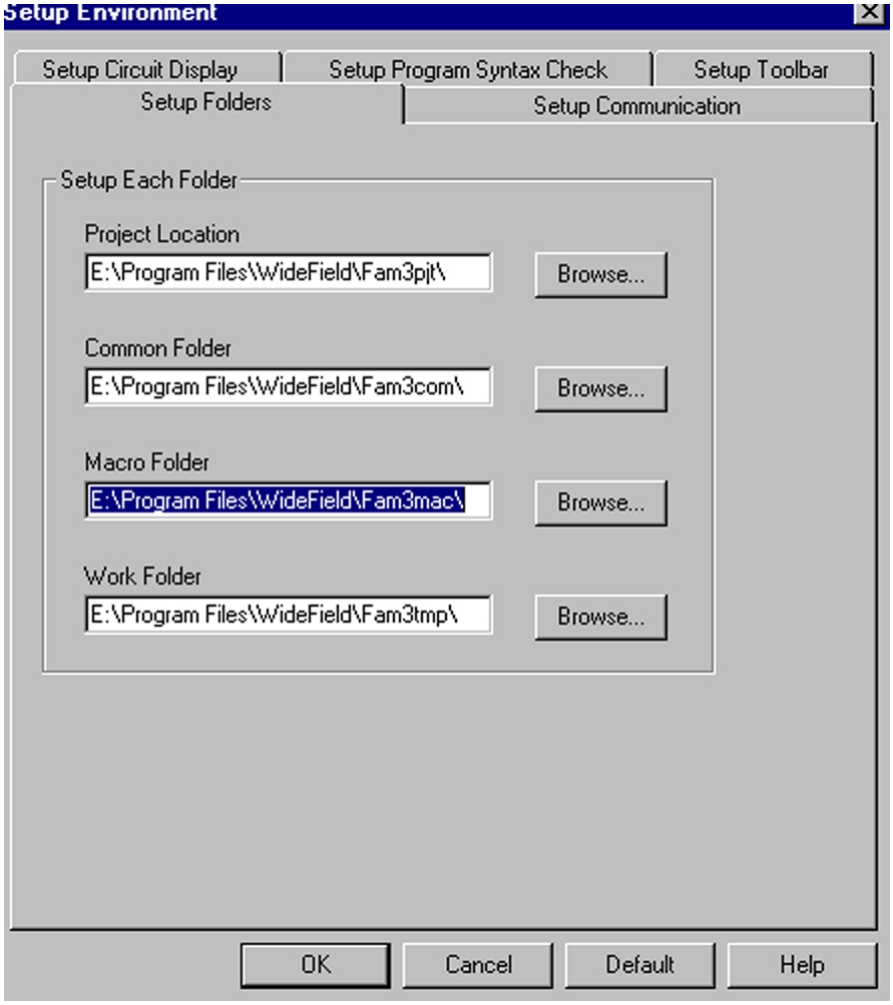
Macros are registered to the macro storage folder and can then be used in other projects.

B20.2.1 Initial Macro Setting

This sets the storage location (folder) of the macro. This is the location where debugged macros will be stored as a library.

■ Steps in the Initial Macro Setting Process

Select [Tools] - [Setup Environment]. The setup environment dialog box will open. Enter the location for the macro folder.



FB200201E.EPS

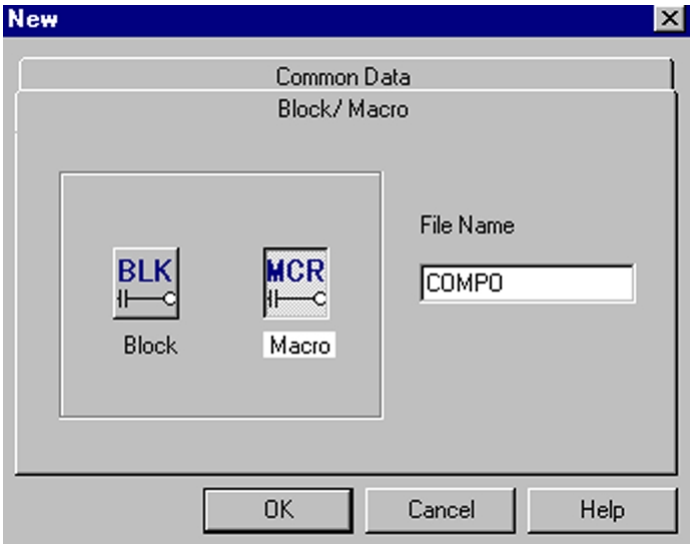
Figure B20.5 Setup Environment Screen

B20.2.2 Creating Macros

Actual macros cannot be entered into normal program blocks. The macro itself is created by specifying the macro when it is created. The macro itself comes in two types: macros for debugging which are located in the project folder, and ones that are already registered in the macro folder. When debugging or correcting them, open them into the project folder temporarily.

■ Creating New Macros

Open the project and select [File] - [New]. The create new dialog box will be displayed.



FB200202E.EPS

Figure B20.6 New Dialog Box

(1) Select the macro icon.

(2) Enter the macro name in the file name area.

(3) Select the [OK] button, and the macro edit screen will appear.

FB200203E.EPS

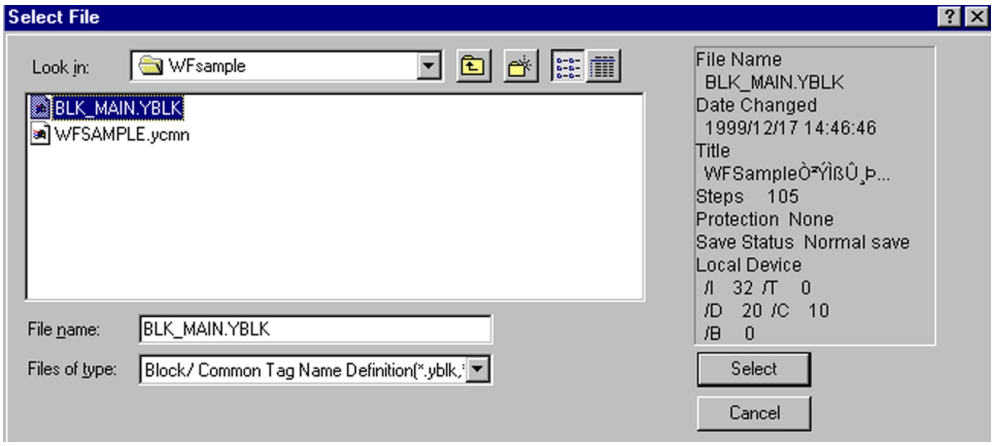
Figure B20.7 Edit Macro Screen

CAUTION

Make sure macro names and block names do not overlap.

■ Steps to Take Registered Macros Out of the Macro Folder

Open a project and select [Project] - [Take out macro]. Once this is selected, the following dialog box will be displayed, and a list of the macros stored in the macro folder will be displayed.



FB200204E.EPS

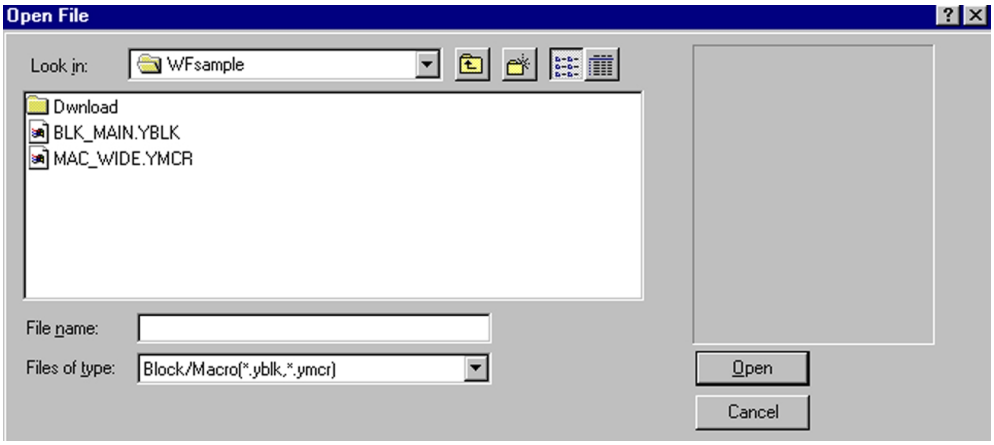
Figure B20.8 The Macro Take-Out Dialog Box

(1) Select the macro to be taken out, and enter the macro name in the file name.

(2) Select [Select] and the macro will be taken out into the project.

■ Steps to Open Pre-existing Macro Files Inside Projects

Select [File] - [Open] - [Block/Macro]. The dialog box to open a file will be displayed.



FB200205E.EPS

Figure B20.9 Dialog Box to Open a File

(1) Either select the macro file name or enter the macro name in the file name.

(2) Select the [Open] button.

(3) If the macro is protected, the password entry dialog box will be displayed. Enter the password and select the [OK] button.

FB200206E.EPS

Figure B20.10 Password Entry Screen

(4) The macro edit screen will appear.

■ Macro Edit

Macro edit comes equipped with the same functions as the normal ladder diagram edit function. Also, all steps are carried out as with normal ladder diagram edit and tag definition with the ladder diagram edit. However, with the macro edit, you can use devices specific to macros (macro relay, macro register, macro index register, macro pointer register).

CAUTION

Always enter the macro return instruction (MRET) at the end of a macro.

■ Setting Local Devices and Editing Properties in Macros

Setting local devices and editing properties in macros are both done just like blocks by selecting [Edit] - [Local Device/Properties] from the menu.

B20.2.3 Using Macros

To use macros, follow the same procedure for entering an applied instruction in a normal program block edit. There are two ways of entering an instruction: entry format and selection format. Entry format is carried out in the following manner.

Example:

MCALL EXTMOV Parameter 1 Parameter 2 Parameter 3

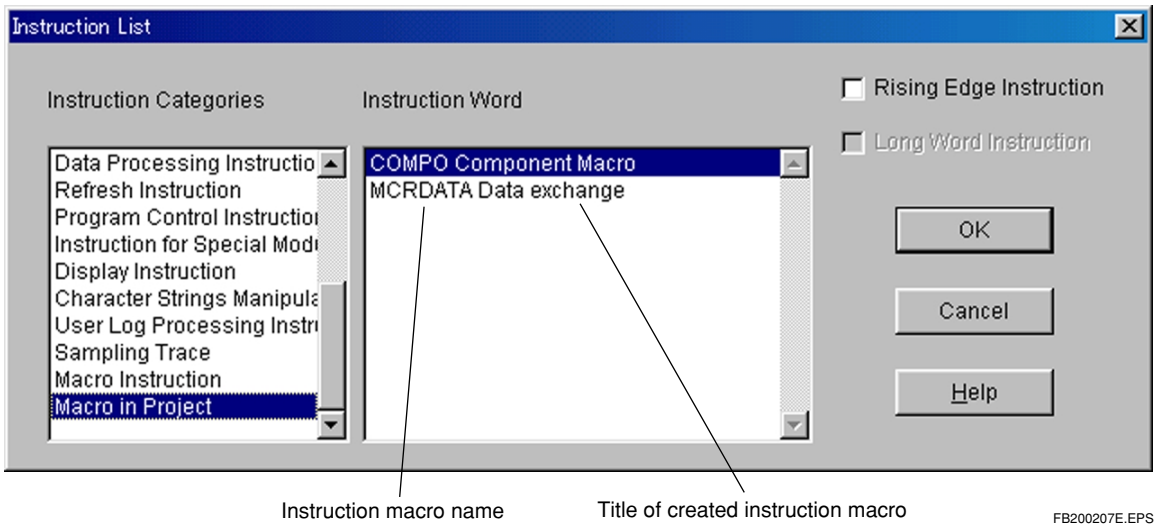
When using selection format in offline edit, the macros inside the project as well as the macros inside the macro folder are displayed among the instruction categories of the instruction list dialog. In online edit, macros in the CPU are displayed among the instruction categories.

The following macros are displayed among the instructions.

Table B20.1 Macro Instructions Displayed in the Instruction List.

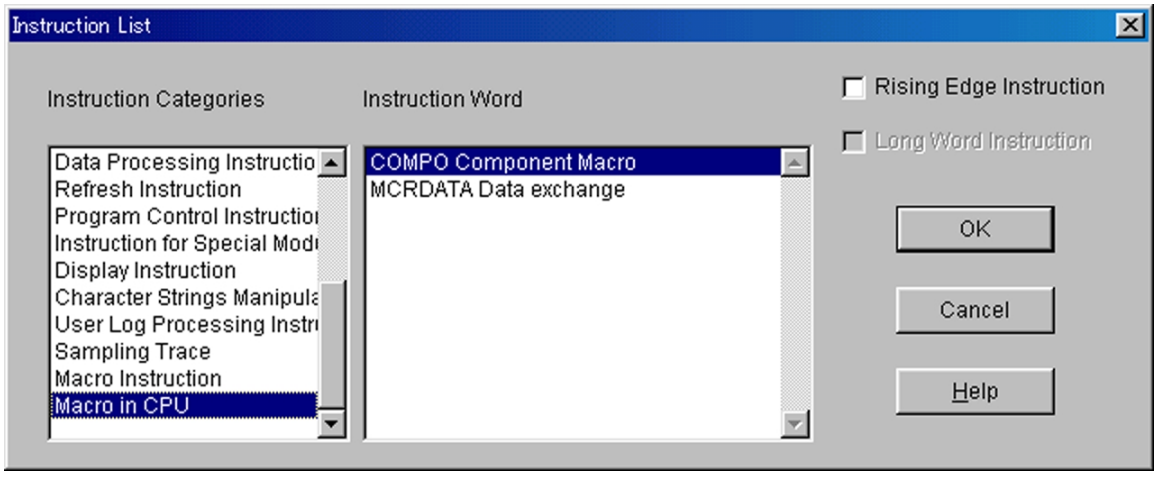
Instruction Categories	Macro instructions listed
Macro in Project	Macro instructions created in a project
Macro in Macro Folder	Macro instructions in the macro folder
Macro in CPU	Macro instructions downloaded into the CPU

TB200201E.EPS



FB200207E.EPS

Figure B20.11 Applied Instruction List Dialog (in offline edit)



FB200208E.EPS

Figure B20.12 Applied Instruction List Dialog (in online edit)

Parameters 1, 2, and 3 are set on the side of the caller. Optional devices can be used. With the actual macros, parameters 1, 2, and 3 correspond to macro pointer registers P1, P2, and P3. Up to 16 parameters can be passed to the actual macro, but for passing more than 3 parameters, use a PARA instruction before the MCALL instruction.

Example

PARA 4 D00001

In this example, D1 is made the fourth parameter of the instruction macro.

B20.2.4 Transfering Macros

Sending macros is done by downloading. When sending executable programs macros used in those executable programs are sent along automatically. If macros of the same name exist in both the project folder and the macro folder, the macros in the project folder will be sent. However, the actual macros cannot be uploaded. (See B.20.2.5) If you are using a macro in an executable program, other than the normal errors, the following errors may also appear during syntax checks or downloading executable programs.

- **Error: No Macro**

  The actual macro does not exist either in the project or in the macro folder.

- **Error: Number of Steps Exceeds the Highest Range for Type Selected**

  When using a macro, the steps in the macro itself are calculated in to the total number of steps in a block.

- **Error: No MRET Instruction**

  An MRET instruction is always necessary at the end of a macro.

- **Error: Number of Macros Exceeds the Highest Range for Type Selected**

  The type of macro that can be used is set for each CPU.

- **Error: Global Device Being Used in the Local Device Range**

  When using local devices in a macro, a macro local device is added behind the set range in a block. You will have to use global devices taking the macro local devices into consideration.

- **Error: Incorrect Setting for Local Device Range**

  When using local devices in a macro, you will have to set a starting number for the local device that is in the range that includes the number of macro local devices.

CAUTION

You must register macros when creating an executable program. Macros are automatically linked the executable program and sent to the CPU.

B20.2.5 Debugging Macros

Monitoring and debugging macros is done using the ladder diagram monitor and device monitors. Debugging is done with the project open.

■ Procedure in Monitoring the Actual Macros

Select [Online] - [Macro Monitor]. Operating macros will be listed.

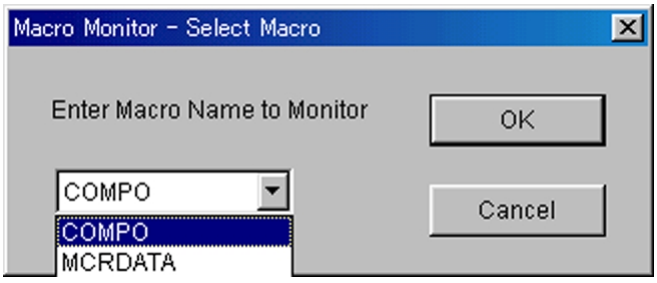


Figure B20.13 Macro Monitor Selection Dialog

(1) Select the macro name to monitor from the drop-down list.

(2) Selecting [OK] will open the program monitor screen for the macro selected. If the macro is protected, the password entry dialog box will be displayed. Multiple macro monitors can be launched for differing macros.

CAUTION

The following things cannot be done with the macro monitor.

- Monitoring the pointer device (P). (The pointer device will display a “0” value.)

The following restrictions apply when the project is not opened, or when the opened project and downloaded executable program are different.

● If the project is not opened

- The tag names and comments will not be displayed.
- The contents of the online edit cannot be saved to file.

● If the opened project and downloaded executable program are different

- The tag names and comments will not be displayed properly.

■ Quitting the macro monitor

Select [File] - [Exit].

■ Online Editing the Actual Macro

Select [Debug/Maintenance] - [Online Editing] from the macro monitor screen. Online edit can be performed just as with normal blocks. However, with macros, there are certain circuits that cannot be corrected. Make any corrections for uncorrectable circuits with the offline edit.

CAUTION

MRET and circuits including MRET cannot be corrected.

■ Uploading Actual Macros

Normally, actual macros cannot be sent with the upload menu. If you want to reflect the content of the online edit into your computer, select [File] - [Reflect to File] from the macro monitor screen. It will be saved to the project folder. Corrected macros will be registered to the macro folder.

■ Monitoring Macro-Dedicated Devices

Select [Online] - [Device Monitor], specify macro relay, macro register, and macro index register and start them. The monitor screen for the specified devices will open.

CAUTION

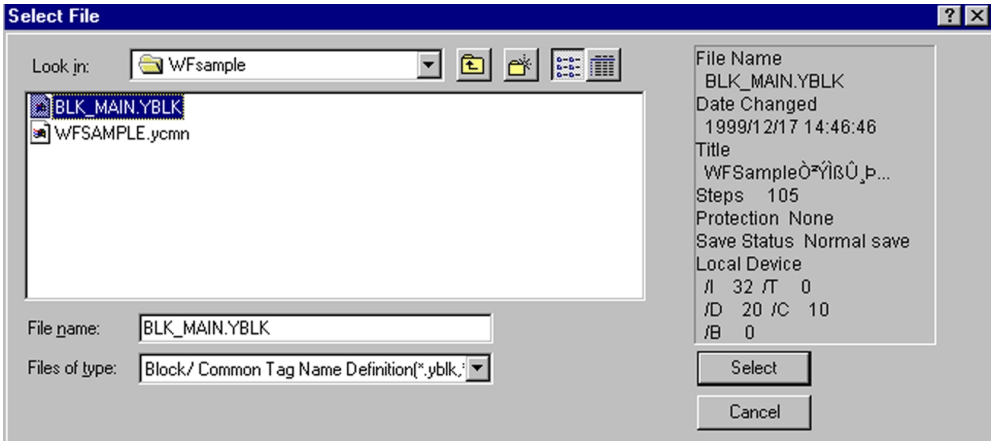
It is not possible to monitor the pointer device (P).

B20.2.6 Registering Macros

Debugged macros are registered to the macro folder, after which they can be reused in other projects.

■ Registering Macros

Select [Project] - [Macro Registry]. The macro registry dialog box will be displayed.



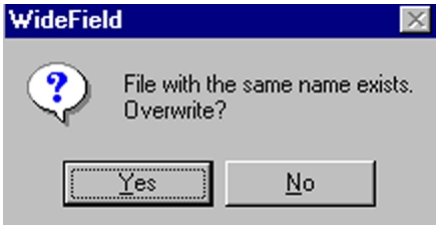
FB200210E.EPS

Figure B20.14 Macro Registry Dialog Box

(1) Select the file name, or enter it directly.

(2) select the [Select] button.

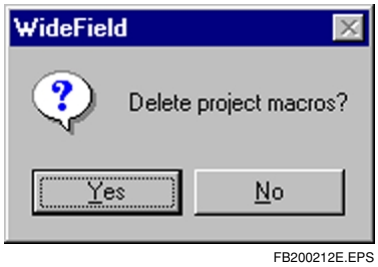
(3) If there is already a macro registered in the macro folder with the same name, the following confirmation message will be displayed. Clicking [Yes] will register the macro.



FB200211E.EPS

Figure B20.15 Overwrite Confirmation Dialog

(4) After registering, a dialog box will be displayed asking whether or not to delete the macro in the project.



FB200212E.EPS

Figure B20.16 Deletion Confirmation Dialog

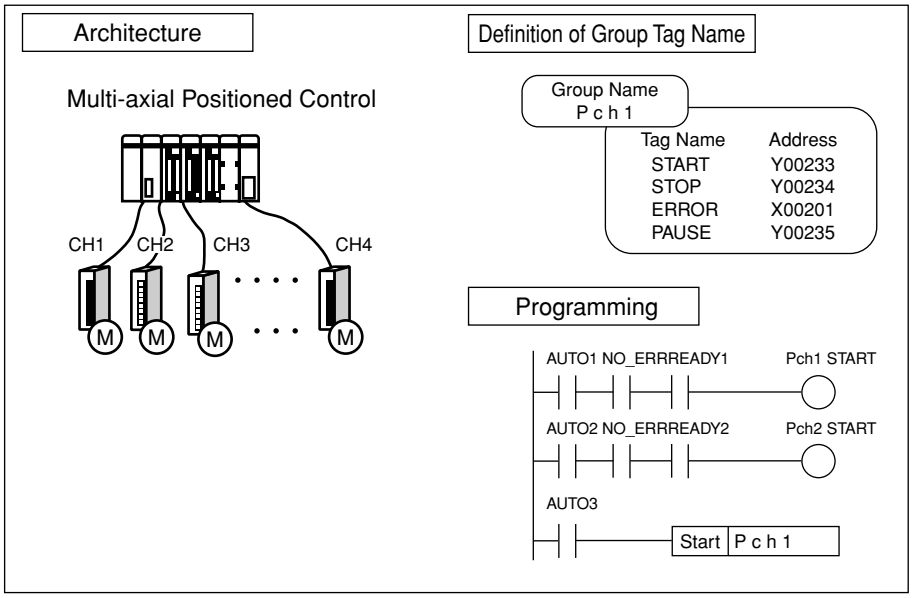
(5) Clicking [Yes] will delete the macro in the project. Clicking [No] will leave the macro in the project as is.

B21. How to Use Group Tag Names

Group tag names are a function that allows developers to group tag names and use those tag groups as independent data structures. Especially when there are identical components, this allows the user to distinguish data relations/structures/clusters at a glance. Also, by giving the elements in a group a common name, program creation becomes more standardized.

B21.1 Defining Group Tag Names

We will explain how to assign group tag names, using a multi-axial positioning module as an example. Assigning group tag names involves the [group template definition function] which defines the components in a group, and the [group name read function], which assigns group names.



FA050103E.EPS

■ Defining Group Components

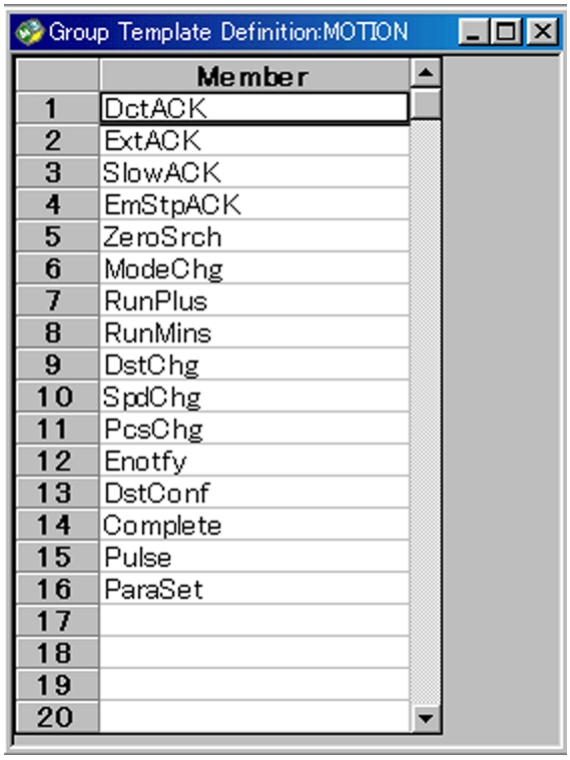
For example, for the positioning module F3NC52-0N, the I/O relay is defined as follows. This module is a two-axial control, so a relay with the same meaning is defined for each axis. In the table below, X□□□01 and X□□□17 respectively show operation instruction start ACK input relays for axis 1 and axis 2.

Positioning Module F3NC52-0N Input Relay Arrangement

Input Relay Number		Operation when ON
AX1 (Axis 1)	AX2 (Axis 2)	
X□□□01	X□□□17	Operation Instruction Start ACK
X□□□02	X□□□18	Extension Instruction ACK
X□□□03	X□□□19	Deceleration Stop ACK
X□□□04	X□□□20	Immediate Stop ACK
X□□□05	X□□□21	Complete Original Point Search
X□□□06	X□□□22	Control Mode Switch ACK
X□□□07	X□□□23	Positive Direction Run
X□□□08	X□□□24	Negative Direction Run
X□□□09	X□□□25	Target Value Change ACK
X□□□10	X□□□26	Speed Change ACK
X□□□11	X□□□27	Current Position Write ACK
X□□□12	X□□□28	Error Notification
X□□□13	X□□□29	Specified Point Detection Notification
X□□□14	X□□□30	Positioning Completion
X□□□15	X□□□31	Pulse Output Completion
X□□□16	X□□□32	Parameter Setup ACK

TB210101E.EPS

In cases like this, the group template concerning input relays is defined as follows. The group template is specified as “MOTION.”



FB210102E.EPS

Figure B21.1 Group Template Definition Screen

This definition allows, for example, all operation instruction start ACK terminals (X□□□01, X□□□17) to express meaning with the name DctACK.

■ Assigning Group Names

Next, open the tag definition screen for blocks, and define axis 1 and axis 2 with group names.

(1) Change the display format to address list, and select input relay (X).

(2) Click the X201 address line, and select the [Group] button. (For our purposes now, the module's assembly location will be supposed to be in the second slot.)

(3) Select the group template MOTION, enter AX1 for the group name, and select the [OK] button.

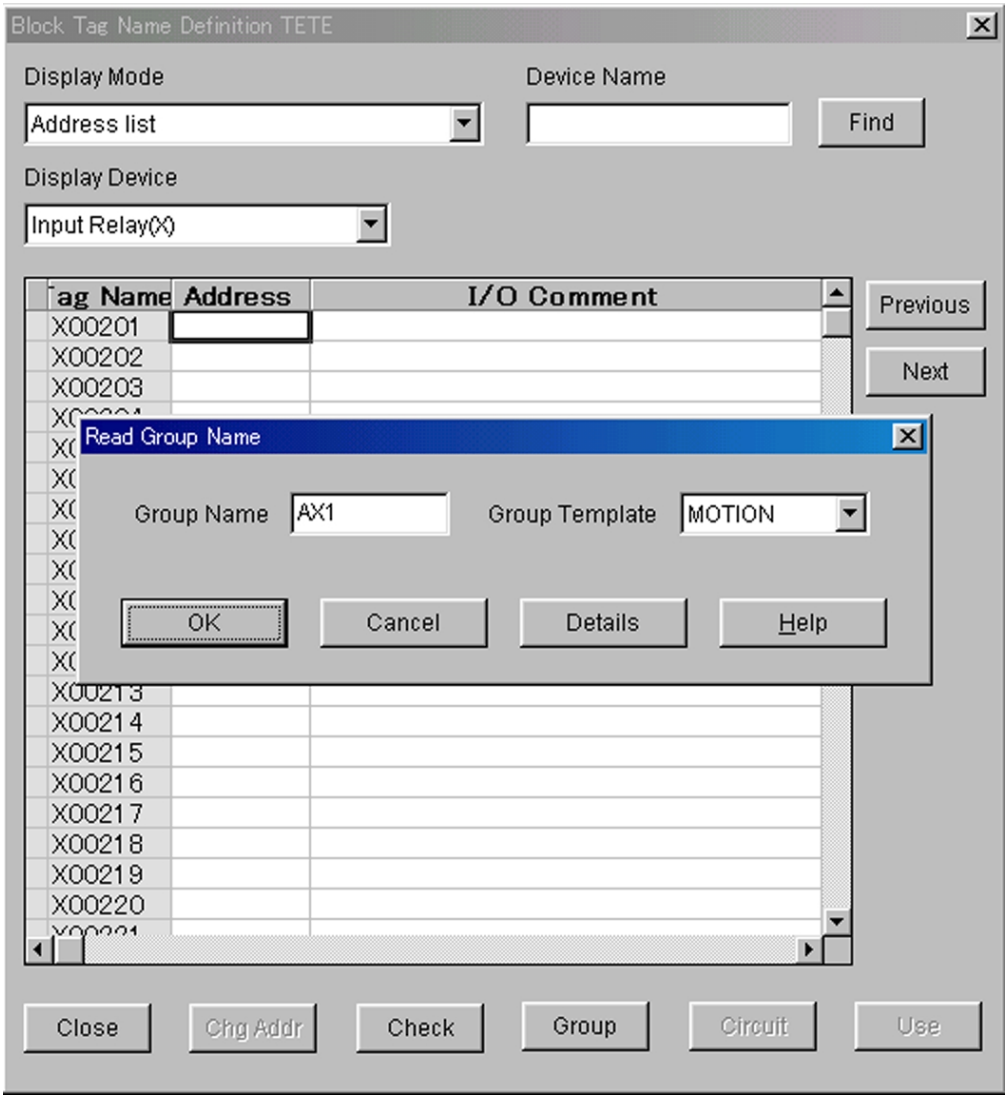


Figure B21.2 Group Name Assignment Dialog (Axis 1, AX1 entry example)

(4) The tag names will be assigned from X201 to X216 in AX1 member name format.

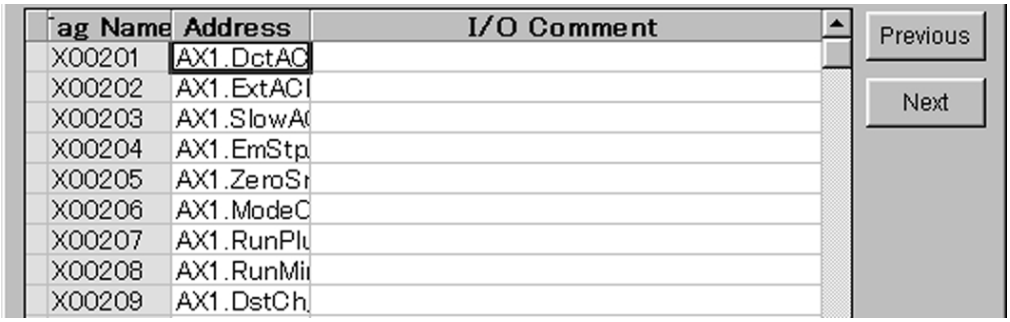


Figure B21.3 Example of Entry of Group Tag Name (Entering the AX1 group name for axis 1)

(5) Next, click the X217 address line, and select the [Group] button.

(6) Just as before, select the group template MOTION, but this time enter AX2 for the group name, and select the [OK] button.

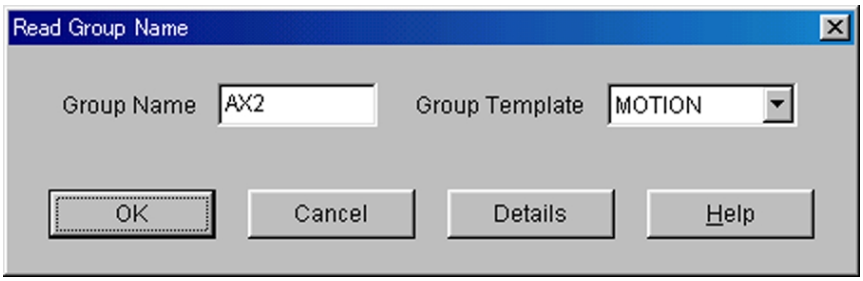


Figure B21.4 Group Name Assignment Dialog (Axis 2, AX2 entry example)

(7) The tag names will be assigned from X217 to X232 in AX2 member name format.

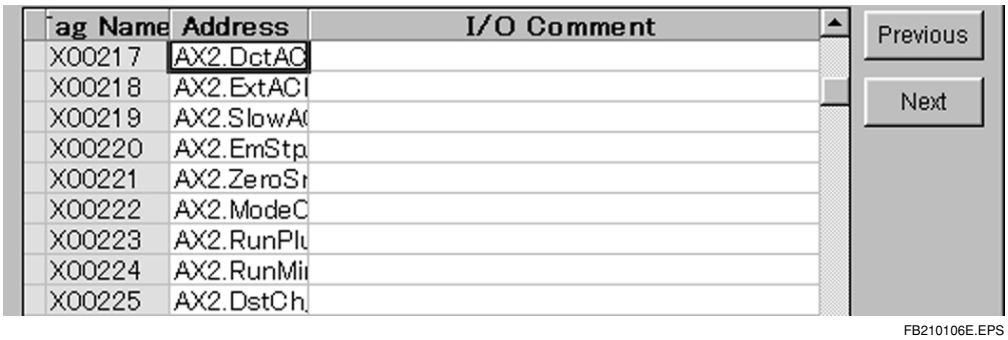


Figure B21.5 Example of Entry of Group Tag Name (Entering the AX2 group name for axis 2)

With this, assignment of group tag name is complete. Address X201 has been named AX1.DctACK, address X217 has been named AX2.DctACK, and the group name + member name notation now makes it possible to determine what tag is performing what function on what axis.

B21.2 Programming Using Group Tag Names

Programming using the tag names defined in the previous section allows you to program in the following way.

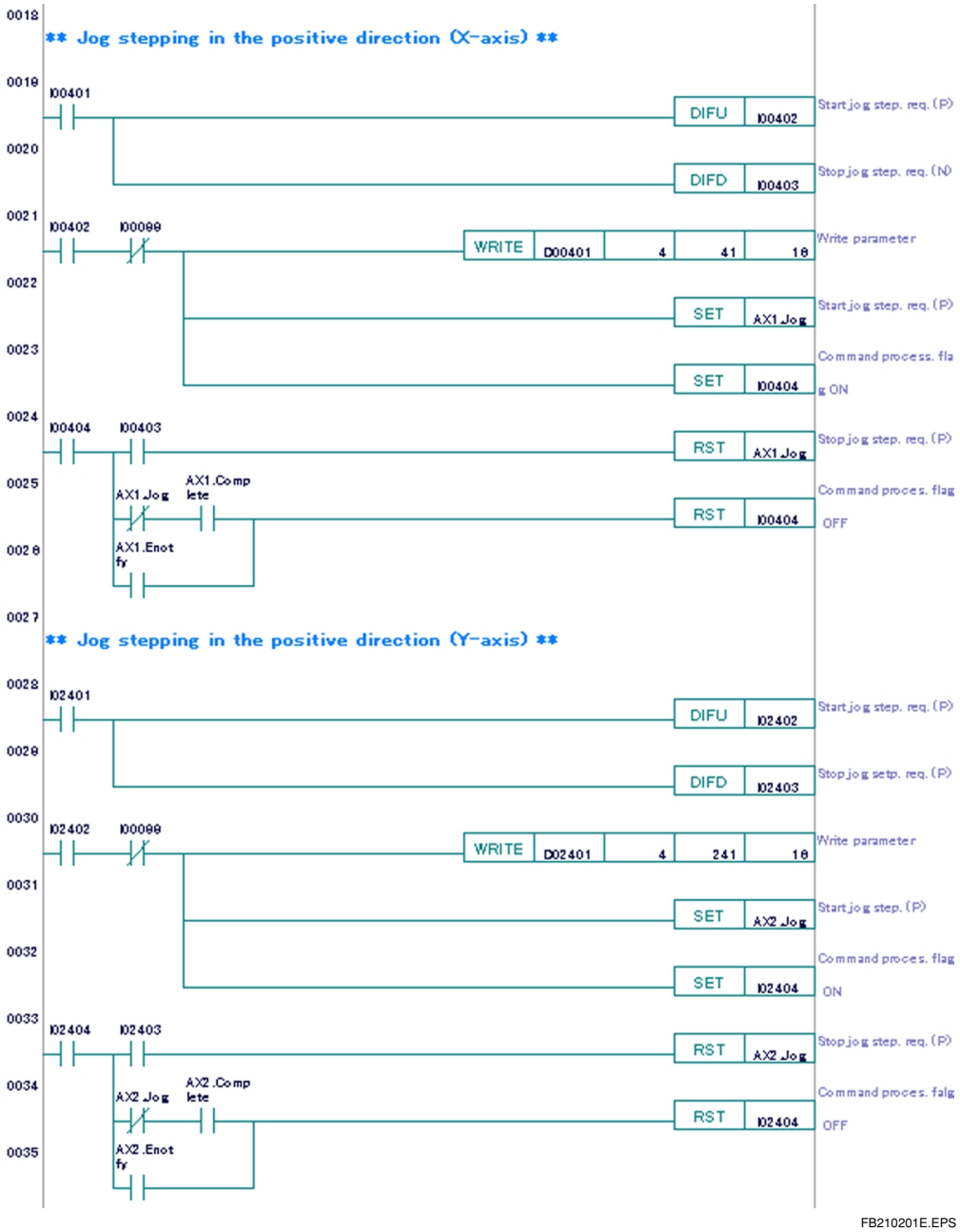


Figure B21.6 Example of a Program Using Group Tag Names

In this example, the exact same circuit pattern is written to both the X and Y axes. The tag meaning is immediately recognizable when compared to simply noting the address.

Using group templates in this manner, not only to avoid the hassle of having to defining each and every tag, but by defining group templates according to one set rule, you can standardize naming, so that anyone can write a program that is easy to understand when analyzing it later.
This example showed a two-axial positioning module, although defining tags by defining group templates offers the same convenience for multi-channel modules or cases when many of the same module are being used.

FA-M3

FA-M3 Programming Tool WideField Instruction Manual Appendix

IM 34M6Q14-01E 1st Edition

CONTENTS

Blank Page

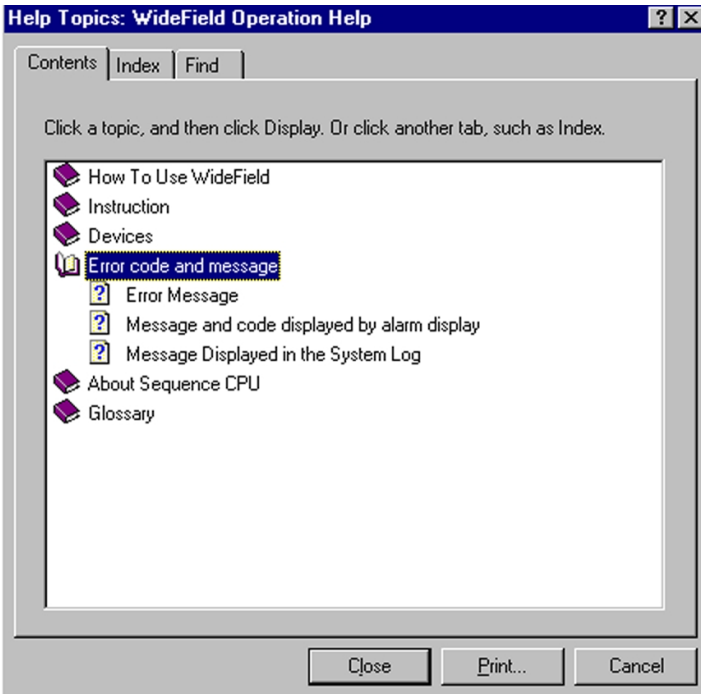
Appendix 1. Error Messages

This section describes how to confirm error messages displayed in WideField.

App. 1.1 Displaying Error Messages with the Online Help

Follow the steps below to confirm the content of error messages with the online help.

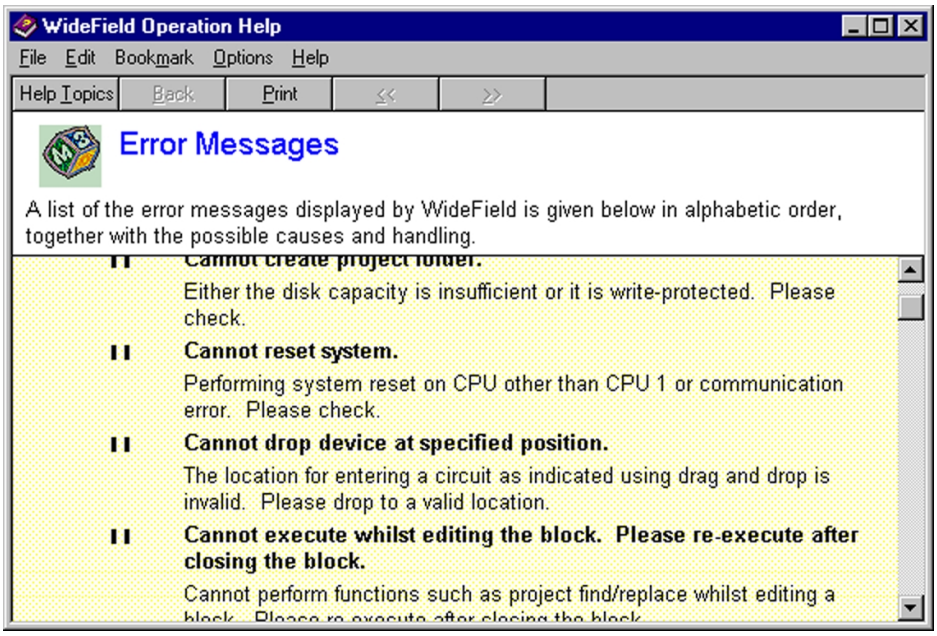
(1) Start the WideField help.



FBAP0101E.EPS

Figure App. 1.1 Search Screen for WideField Help Topics

(2) Switch to the “Topic Search” screen and double click on the “Error Messages” page to display error messages.



FBAP0102E.EPS

Figure App. 1.2 WideField Error Message Help

(3) A list of the error messages displayed by WideField is given in alphabetic order.

(4) If you want look up the error condition “Cannot reset system”, look for the message using the scroll bar on the right side of the help screen.

Revision Information

● Title : FA-M3 Programming Tool WideField Instruction Manual
● Manual No. : IM 34M6Q14-01E

July 2000/1st Edition
Newly published.

Written by Product Marketing Department, IT Controller Division.
Yokogawa Electric Corporation
Published by Yokogawa Electric Corporation
2-9-32 Nakacho, Musashino-shi, Tokyo 180-8750, JAPAN
Printed by Yokogawa Graphic Arts Co., Ltd.

Blank Page